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June 3, 2010

MEMORANDUM

SUBJECT: Transmittal of Final Report for "CAA Compliance Investigation, Intel Corporation, Rio Rancho, New Mexico" (VP0879)

FROM: David Parker, Civil Program Coordinator 
National Enforcement Investigations Center

TO: David Garcia
Associate Director
Air/Toxics and Inspection Coordination Branch
U.S. EPA Region 6

Included with this memorandum is a copy of the subject report. The onsite investigation was conducted from December 7 through 11, 2009. The onsite visit consisted of personnel interviews and plant inspections. Comments on the draft report have been included in the final report.

If you wish additional copies of the report or have any questions pertaining to the report, please contact Doreen Au at (303) 462-9266.

Attachment

cc: Kathleen Aisling, EPA Region 6
Debbie Ford, EPA Region 6



United States Environmental Protection Agency
Office of Enforcement and Compliance Assurance
Office of Criminal Enforcement, Forensics and Training

**ENFORCEMENT CONFIDENTIAL
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**CLEAN AIR ACT COMPLIANCE
INVESTIGATION REPORT**

NEICVP0879E01

Intel Corporation
Rio Rancho, New Mexico
NEIC Project No.: VP0879

June 2010

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NEIC

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A	Minor Source Permit 325-M-9 (37 pages)
B	Ethyl Lactate Calculations- CBI (13 pages)
C	Intel Ethyl Lactate Emission Factor Explanation - CBI (1 page)
D	Methanol Calculations – CBI (5 pages)
E	Calculation of Scrubber Removal Efficiencies (3 pages)

F	3 rd Quarter 2003 Annual HAP Monitoring, Appendix A (481 pages)
G	Scrubber Test Data Spreadsheet
H	EPA Guidance Document on Limiting the Potential to Emit (27 pages)
I	3 rd Quarter 2009 Emission Report (4 pages)

APPENDIX

A	Table of Permit Conditions (3 pages)

**This Contents page shows all of the sections contained in this report and
provides a clear indication of the end of this report.**

INTRODUCTION

At the request of U.S. Environmental Protection Agency (EPA) Region 6, EPA's National Enforcement Investigations Center (NEIC) conducted a focused Clean Air Act investigation at Intel Corporation (Intel) in Rio Rancho, New Mexico, from December 7 through 11, 2009. The scope of the investigation was to evaluate Intel's emission rates. Doreen Au and Kristine Pordesimo from NEIC were joined by Kathleen Aisling and Debbie Ford from EPA Region 6 and Alex Coca from New Mexico Environment Department (NMED). Credentials were presented to Frank Gallegos, environmental manager for the Rio Rancho facility.

FACILITY BACKGROUND

Intel's Rio Rancho facility began operations in 1980. The facility includes approximately 4 million square feet of manufacturing facilities and office space. Currently, the Intel Rio Rancho facility manufactures semiconductor wafers, microprocessors, micro controllers, flash memories, and chipsets, as presented on Intel's Web site. Intel has a minor source air permit, 325-M-9, which was originally issued on March 3, 2000, by NMED. Since the date of issuance, 22 revisions have been made to the minor source air permit. The most recent revision was issued on August 13, 2009.

FACILITY OPERATIONS

Intel's Rio Rancho facility currently manufactures semiconductor wafers, microprocessors, micro-controllers, flash memories, and chipsets. The manufacturing of these semiconductor devices involves a combination of many process steps that switch back and forth among different functional areas **[Figure 1]**. A functional area has a specific purpose and consists of process tools that may vary with the manufacturing process. As a new product is introduced, a new manufacturing process is developed. Process changes involve the replacement of most or all manufacturing equipment at the facility in addition to chemical or "recipe" changes. New products primarily involve changes to a semiconductor's wafer size or to the nanometer size of the transistor in the chip. A wafer size change is a large process change that typically involves changes to the entire processing line; a transistor size change typically involves changing selected tools in the process. As a company, Intel uses a "copy exactly" practice in developing technology. Once the design for a fabrication unit (Fab) has been developed and tested, Intel transfers the exact design, which also takes the strictest environmental regulations into consideration, to Intel facilities around the world.

This page contains
Confidential Business
Information and has
been redacted from the
report.

(Page 5 of 27 -
Figure 1)

Production starts with a raw silicon wafer that passes through [REDACTED] steps in order to create the desired product. Silicon on its own does not have the properties to act as a semiconductor. These properties are embedded in the wafer using different tools in multiple functional areas. The major functional areas at the Rio Rancho facility include the following:

- Oxidation
- Lithography
- Diffusion
- Etching
- Implantation
- Thin Films
- Planarization
- Defect Metrology/Wafer Handling
- Controlled Collapse Chip Connection

The finished product consists of several layers of different materials built on top of the silicon wafer. One silicon wafer contains multiple microprocessor chips. Intel's current production timeframe from wafer start to finish is [REDACTED].

Support facilities for the manufacturing process are located in the central utilities building (CUB). The CUB houses boilers, wastewater treatment facilities, and the acid waste neutralization (AWN) unit. Acid waste, fluoride waste, and metal waste generated during manufacturing processes are treated at the CUB prior to discharge into the city of Albuquerque publicly owned treatment works (POTW).

Oxidation

Oxidation is generally the first step in fabricating a semiconductor device. Wafers undergo oxidation to grow a thin layer of silicon dioxide on the wafer surface. The layer is formed by heating the wafer in a furnace. The silicon on the wafer surface oxidizes with either steam or oxygen to form a silicon dioxide layer. This layer acts as an insulator and protects the wafer during subsequent processing in other functional areas.

Lithography

Lithography is used to transfer a circuit pattern onto the wafer surface using ultraviolet (UV) light and photomasks. The wafer is first evenly coated with a layer of photoresist, a light-sensitive material, and heat-treated to remove any residual solvent in the photoresist material. A photomask is placed over the wafer surface and light is projected through voids in the photomask

to create the circuit pattern. Any excess photoresist is dissolved with developer solution. Subsequently, excess developer solution is removed through rinsing. The lithography process generates volatile organic compound (VOC) emissions and solvent waste.

Diffusion

Dopants are impurities intentionally added to the silicon wafer to alter its electrical conductivity. The diffusion process is used to introduce the dopant atoms into the semiconductor materials. Corrosive gases, fluorinated gases, ammonia, organic gases, inert gases, solvents, and water are all used in the diffusion process. Any emissions released during diffusion are classified as either ammonia exhaust or corrosive exhaust. A portion of the wastewater produced from diffusion includes fluoride waste; fluoride is removed from the wastewater before routing to the city of Albuquerque POTW. Other liquid waste generated from the diffusion process is sent to the AWN unit.

Etching

Etching is a process that chemically removes unwanted materials from the wafer from regions that are no longer protected by photoresist. There are two types of etching processes: dry etching and wet etching.

In dry etching, material is removed from the wafer by converting the unwanted material from a solid to a gaseous compound. Ionized gases react with the exposed wafer material and the unwanted material is removed from the wafer surface. Process gases used as dry etchants are typically fluorinated gases or corrosive gases. Dry etching results in byproduct emissions of hydrogen sulfide, hydrogen chloride, hydrogen fluoride, and chlorine. These emissions are exhausted to the acid gas scrubbers. Wastewater is treated as either fluoride waste or acid waste in the CUB.

In wet etching, corrosive solutions are used to dissolve unwanted material from the wafer. Materials used in wet etching include corrosive inorganic chemicals, corrosive organic solvents, water, and inert gases. VOCs are exhausted from tools involved in wet etching. Additionally, corrosive exhaust and ammonia exhaust generated from the wet etching functional area are routed to the scrubbers. Fluoride waste, solvent waste, ammonia waste, and acid waste are treated at the CUB before eventually being discharged to the city of Albuquerque POTW.

Implantation

Implantation introduces dopants to the wafer by using accelerated ions of a material. The properties of existing layers on the wafer are changed by the implantation process. The dose of the desired dopant and depth of implantation are key parameters in the implantation of

semiconductor materials. Arsenic is one of the dopant species used at the Rio Rancho facility, thus arsenic exhaust and arsenic wastewater are both generated from the implantation process. Generally, the materials used in implantation include dopant gases, inert gases, solvents, and water. In addition to arsenic emissions, corrosive gases are also released from tools in the implantation functional area. Arsenic exhaust passes through a high-efficiency particulate absorbing (HEPA) filter before venting to the atmosphere. Wastewater drained from the implantation process includes both acid and arsenic waste. Acid waste is routed to the AWN unit for treatment and the arsenic waste is collected as a separate stream.

Thin Films

In the thin film functional area, small amounts of material are deposited directly onto the wafer or onto previously deposited layers. The thin film process can be achieved either through chemical or physical deposition. In chemical deposition, either gas or liquid precursor materials react with the wafer surface to produce a thin film. In physical deposition, mechanical means, instead of chemical reactions are used to produce a thin film on the wafer surface. Corrosive gases, fluorinated gases, ammonia, inert gases, solvents, nitrous oxide, and water are used in thin film production. Precursor materials are used in chemical deposition as well as metal plating materials. Corrosive gases, ammonia, and VOCs are generated from the thin film functional area. All wastewater drained from the thin film functional area is treated at the CUB. Wastewater generated from thin film production includes acid waste, fluoride waste, concentrated metal waste, and dilute metal waste.

Planarization

Planarization is a chemical-mechanical process used to flatten the surface of a semiconductor wafer. Material on the wafer reacts with a corrosive chemical slurry, and a polishing pad removes the reacted material from the surface. Ammonia and corrosive gases from the planarization process are exhausted to the scrubbers. The planarization process generates acid waste, slurry metal waste, and ammonia waste which are routed to the wastewater treatment unit in the CUB.

Defect Metrology/Wafer Handling

Defect metrology and wafer handling include processes for moving wafers, measuring aspects of the fabrication performance, and evaluating defects. Isopropyl alcohol (IPA), which is used to wipe down the outside of process tools, accounts for the majority of solvent usage in the defect metrology and wafer handling functional area. Any vapors released from defect metrology or wafer handling are considered as general exhaust and are vented directly to the atmosphere.

Controlled Collapse Chip Connection

The controlled collapse chip connection (C4) functional area is designed to prepare the microprocessor chip for assembly and packing. This preparation process is composed of steps from other functional areas, including lithography, etching, and thin films. Therefore, emissions from the C4 area are the same as those released from the individual functional areas. Wastewater from this process area consists of solvents, fluoride, ammonia, acids, and metal waste.

Boilers

Intel has eight boilers onsite: two 1250 boiler horsepower (BHP) boilers at the North Energy Center that are rarely used and six 1250 BHP boilers at the CUB. The boilers at the CUB act as the primary steam supplier for the facility; however, not all six boilers are operated at all times. Boiler operation depends on both steam demand and weather conditions. To ensure complete combustion within the boilers, an Autoflame® system analyzes the combustion chamber in each boiler. An exhaust gas analyzer located at the boiler outlet monitors oxygen, carbon dioxide, and carbon monoxide. If a boiler is not operating efficiently, then that specific boiler is shut down and another boiler is used instead.

Based on the combustion chamber analysis, the variable frequency drive changes the speed of combustion by adjusting the motor that controls the fuel-to-air ratio in the boiler feed. Firing rates within the boilers are controlled by lever positions. Each of 10 lever positions corresponds to a specific firing rate and fuel-to-air ratio. The Autoflame® system adjusts the lever position so that the boilers operate at maximum efficiency.

Scrubbers

Exhaust from individual tools is routed to the main ductwork, which then branches into the appropriate scrubber system. The Rio Rancho facility utilizes recuperative thermal oxidizers (RTOs), acid gas scrubbers, and ammonia scrubbers as control devices for emissions generated from manufacturing processes. Exhaust streams containing VOCs and organic hazardous air pollutants (HAPs) are routed to the RTOs. Inorganic HAP exhaust streams are vented to acid gas scrubbers, and ammonia exhaust streams are vented to ammonia scrubbers. Emergency scrubbers are present onsite and are used in the event of catastrophic failure of the acid gas and/or ammonia scrubbers.

Currently, 18 acid gas scrubbers are operative on the Rio Rancho facility: 9 acid gas scrubbers located at Fab 11S, 3 acid gas scrubbers in Fab 11X, 4 acid gas scrubbers at the Fab 11X Bridge, and 2 acid gas scrubbers at the CUB. Ammonia exhaust generated at the Rio Rancho facility is vented to seven ammonia scrubbers: three ammonia scrubbers in Fab 11X

Bridge; two ammonia scrubbers in Fab 11X, and two ammonia scrubbers at the CUB. Three of the nine acid gas scrubbers in Fab 11S are being retrofitted as ammonia scrubbers, while the two ammonia scrubbers at the CUB are not currently being operated as ammonia scrubbers.

All scrubbers onsite use water as the scrubbing liquor, which flows counter-current to the exhaust stream through plastic packing. A water sump is located at the bottom of each scrubber and overflow from the sump is continuously sent to AWN. In the case of the acid gas scrubbers, sodium hydroxide (NaOH) is injected into the water stream for pH adjustment, whereas all ammonia scrubbers are injected with sulfuric acid (H₂SO₄). The water stream flows through the scrubber at a rate of approximately 6 gallons per minute (gpm) and has a recirculation flow rate of 600 to 700 gpm.

Thermal Oxidizers

Thermal oxidizers are primarily used to abate VOCs and organic HAPs from exhaust streams. The Rio Rancho facility utilizes both Durr and Munter thermal oxidizers. As the Durr units reach the end of their operating life they will be replaced by Munter RTOs. The thermal oxidizers onsite only accept dilute air streams. Both the Munter and Durr units are comprised of a concentrator and firebox. The air stream is concentrated on a desorption wheel that contains a zeolite catalyst. In the Munter unit, any components not absorbed onto the wheel are exhausted through the concentrator stack. The concentrated air stream is then sent to the firebox for incineration. The Munter unit has a separate stack for emissions released from the firebox, while the Durr unit has only one stack for exhaust from both the concentrator and firebox.

Intel currently operates one Munter unit at Fab 11X Bridge, one Munter unit at Fab 11S, and one Durr unit at Fab 11X. All thermal oxidizers onsite are subject to annual testing of exhaust streams. The concentration of total hydrocarbons and VOCs are measured using a portable flame ionization detector (FID) and Fourier transform infrared detector (FTIR). Removal efficiencies for the thermal oxidizers are calculated based on data collected from the FID and FTIR.

REGULATORY SUMMARY

Intel considers its Rio Rancho facility as a minor source of air emissions and uses minor source permit, 325-M-9, originally issued on March 3, 2000, by NMED to limit its emissions. Since the date of issuance, 22 revisions have been made to the minor source air permit. The most recent revision was issued on August 13, 2009 [**Attachment A**]. As a minor source, Intel does not consider the Rio Rancho facility to be subject to the requirements of 40 Code of Federal Regulations (CFR) 63 Subpart BBBBBB – National Emission Standards for Hazardous Air Pollutants for Semiconductor Manufacturing.

Intel considers its minor source permit as a flexible permit that allows Intel to make anticipated changes to manufacturing processes without further review or approval from the permitting authority. Intel uses overall plant-site emission limits (PSELs) as emission caps for the entire site. These include PSELs in tons per year (tpy) for HAPs, VOCs, particulates, carbon monoxide (CO), and nitrogen oxides (NO_x). Intel determines compliance with PSELs by calculating 12-month rolling total emissions of NO_x, CO, VOCs, HAPs, and particulate matter, which are included in quarterly reports that must be submitted to NMED.

INSPECTION SUMMARY

Emission Calculations

Emission Factors

As part of Intel's copy exactly practice, all Intel facilities use the same emission factor. An emission factor is defined as the ratio of the amount of chemical released per the amount of chemical used in the product recipe (prior to any control devices). Since all Intel facilities install exactly the same tools to manufacture a product and use the same chemical recipes, Intel expects that the emission factors are exactly the same across all facilities that manufacture the same product. Intel then uses a control device efficiency to adjust for any controls used. This control device efficiency is determined by each site and is not copied exactly across all Intel facilities. To determine the overall emission factor, the usage for a particular chemical must first be determined. Emissions from each process step are determined by the amount of chemical used per wafer and the measured emissions obtained during testing. Emission tests are performed on process tools at two separate points: during development and during 30 percent of production capacity.

NEIC reviewed two HAP emission factor calculations while onsite: ethyl lactate and methanol. The emission factors reviewed were for the current [REDACTED] process, also referred to as Process G in quarterly reports submitted by Intel. Ethyl lactate is used by [REDACTED]
[REDACTED] Within each tool, multiple processing steps occur. Within each processing step, each task is listed. Intel also determines how many times the processing step occurs on the wafer.

Intel determines the amount of ethyl lactate used in each task for each processing step in each tool calculated per wafer start. Intel then determines how much of the ethyl lactate used in each task is released into the vent stream. Data for the amount vented is collected during the development process; or if the step is similar to what was used in a previous product, Intel uses the previously determined emission rate. Once Intel knows the amount of ethyl lactate used per wafer start and the mass vented per wafer start, the mass of chemical emitted per mass of

chemical used is calculated. Intel then uses this emission factor multiplied by the chemical usage to determine the quantity of emissions vented from the process.

During the NEIC investigation, Intel personnel explained each of the processing steps for each of the tools [REDACTED] that used ethyl lactate when manufacturing wafers for the [REDACTED] process [Attachment B]. While NEIC was onsite, Intel personnel summed up the emissions for all of the tools and calculated an emission factor of 0.0078 pounds of ethyl lactate released per pound of ethyl lactate used. Intel's permit lists the emission factor as 0.0047 pounds of ethyl lactate released per pound of ethyl lactate used. NEIC asked Intel to further study the difference in emission factors because a higher emission factor leads to a higher emission rate.

Following the NEIC inspection, Intel provided an explanation for the difference in emission rates [Attachment C]. Intel explained that, [REDACTED], the consumption rate of ethyl lactate was accidentally doubled, which led to a lower emission rate. In addition, Intel also determined that the predispose step assumed a consumption rate on a per wafer start but was actually a per tool amount, which increased the emission rate. Intel recalculated the emission factor for ethyl lactate and determined that the appropriate emission factor should be 0.0064 pounds of ethyl lactate released per pound of ethyl lactate used. Intel has underreported emissions released by the [REDACTED] process by 36 percent since second quarter 2008 [Area of Noncompliance (AON) 1].

Only one tool uses methanol, and the calculation process is the same as for ethyl lactate. During the inspection, Intel determined that it used an incorrect specific gravity in the emission factor calculation [Attachment D]. Intel originally used a specific gravity of 0.79 and corrected the specific gravity to 1.04. The recalculated emission factor was 0.00085 instead of the original emission factor of 0.0112. Intel adjusted the specific gravity to 1.04 to account for the specific gravity of the mixture that methanol is a component of. Intel used the weight percent of methanol in the mixture and multiplied it by the specific gravity of the mixture to determine the mass of methanol used. Using the correct emission factor, Intel has overreported emissions of methanol by 8 percent since second quarter 2008 [AON 1].

Thermal Oxidizer Efficiencies

NEIC reviewed Intel's accounting for emissions that occur during RTO downtimes. Intel included the downtimes in its VOC calculations, but did not account for downtimes in its HAP calculations. Some of the VOCs are also HAPs controlled by the thermal oxidizers, specifically methanol and xylene. Intel failed to account for the downtimes in its HAP emission calculations in 2008 and 2009 [AON 1].

Intel is in the process of replacing the Durr RTOs with Munter RTOs. At the time of the NEIC inspection, one Durr unit and two Munter units were in operation. Intel was also in the process of installing a third Munter unit. The current configuration of the Munter units is that if both units are operational all vent streams are controlled by both units. If only one Munter unit is operation, it operates in full up mode and controls all vent streams. Intel explained that when the third Munter unit is placed in service and only one Munter unit is operation it will be able to vent some of the vent streams to the one Munter unit, but must vent the remaining streams to the atmosphere. Each of these operational scenarios should be considered by Intel when conducting performance tests to determine emissions from these units.

Scrubber Efficiencies

Scrubbers are used to control inorganic HAP emissions, including hydrogen chloride (HCl) and hydrogen fluoride (HF). Hydrogen chloride and hydrogen fluoride are common HAPs directly released by several tools and generated from chemical reactions within the tools. Inorganic HAP vent streams from the tools in each area are vented into a common header and controlled using multiple scrubbers. Fab 11S tools are vented to nine acid gas scrubbers, but three are being retrofitted as ammonia scrubbers; Fab 11X tools are vented to three acid gas scrubbers, but Intel plans to use only two scrubbers, and tools in the Fab 11X Bridge area are vented to four acid gas scrubbers. Intel uses the same scrubber efficiency for each of these scrubbers even though each area has different chemical loadings [**Area of Concern (AOC) A**].

Intel personnel explained that hydrogen fluoride is detected regularly at the scrubber inlet, while hydrogen chloride is only detected occasionally. Other HAPs are not typically detected in the inlet vent stream. Intel calculated scrubber removal efficiencies that are applied to each scrubber. The weighted removal efficiency is used to calculate emissions of hazardous air pollutants by applying it to the process emissions rate calculated from the emission factors.

The weighted removal efficiency was calculated using data from a series of stack tests performed in 1995 and 1996 at the Rio Rancho facility using EPA Compendium Method IP-9; in Oregon in 1998 and Arizona in 2000 with a FTIR; and at the Rio Rancho facility in 2003 using an FTIR and EPA Test Method 26A – *Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method*. The data that Intel used to calculate this efficiency were used, as described in the document, “Attachment 2: Calculation of Scrubber Removal Efficiencies” in the permit revision dated May 6, 2005 [**Attachment E**]. The weights were based on the inlet concentrations with higher inlet concentrations having higher weights. Intel excluded stack tests from 1995 and 1996 that had non-detect data points from the calculation. Intel excluded one of the 2003 tests where the inlet and outlet concentrations were measured and both contained some detections (Scrubber 8s.4.2ab), and excluded three of the

2003 tests where either the inlet and outlet concentrations were always non-detect (Scrubbers 7s.1.5, 9s.1.2e/f, and 9s.1.3ab)

In 2003, Intel did not run both the FTIR tests in conjunction with IP-9 tests. Without these data, it is unknown if using different test methodologies would provide consistent results. Therefore, it is unknown if all data points from 1995 through 2003 can be used conjunctively to determine Intel's scrubber efficiency.

Before 2005, Intel used a scrubber removal efficiency of 28 percent for HF. In 2005 Intel adjusted its scrubber efficiency to 70 percent based on test data. NEIC reviewed these data to determine if the data support an overall scrubber removal efficiency of 70 percent for HF.

Data Used in NEIC Analysis

NEIC analyzed the test data provided by Intel on measurements of scrubber efficiency to assess whether these data supports Intel's claim of an overall scrubber efficiency of 70 percent for HF. These tests were conducted in June through September 1995, August 1996, and August through September 2003. NEIC extracted and analyzed the underlying FTIR measurements taken approximately every 3 minutes for the 2003 tests, as reported in "Appendix A of the 3rd Quarter 2003 Annual HAP Monitoring" [Attachment F]. NEIC also examined data from a spreadsheet entitled "scrubber test data.xls," [Attachment G] which was reported by Intel to contain the individual test results from 1995 and 1996 that were summarized in Attachment E. NEIC was not able to reproduce the data used in the 2005 permit revision [Attachment E] from the data in "scrubber test data.xls" [Attachment G] in all cases. A comparison of the averages calculated by NEIC and the Attachment E data are shown in Table 1. Intel calculated the average removal efficiency as the ratio of the average of the inlet and outlet concentrations of the individual tests. An alternative approach to this calculation is to average the removal efficiencies calculated for each individual test. This alternative calculation is shown in Table 1, and the significance of these differences is discussed.

Table 1. CALCULATED SCRUBBER REMOVAL EFFICIENCIES
Intel Corporation
Rio Rancho, New Mexico

			"scrubber test data.xls"			Data in permit revision dated May 6, 2005 [Attachment E]				
Test Date	Scrubber Name	Tests (#)	HF Inlet (ppb)	HF Outlet (ppb)	RE ^{†1} (%)	HF Inlet (ppb)	HF Outlet (ppb)	RE ^{†1} (%)	RE [†] , diff (%)	Average of Individual Tests RE ^{†2} (%)
Jun-95	10.1.1d	1	110	60	45.5	113	90	20.4	25.1	45.5
Aug-95	10.1.1d	3	346	270	22.0	346	270	22.0	0.1	22.0
Jun-95	10.1.1e	2	134	27	80.2	134	27	79.9	0.4	80.1
Jun-95	10.1.1f	2	425	66	84.6	425	66	84.5	0.1	84.4
Aug-95	10.1.1f	1	52	11	78.8	44	22	50.0	28.8	78.8
Jun-95	9.1.3a	1	450	156	65.3	450	156	65.3	0.0	65.3
Aug-95	9.1.3a	3	2,273	149	93.4	2,273	149	93.4	0.0	89.3
Sep-95	9.1.3a	6	1,526	401	73.7	1,423	175	87.7	-14.0	63.9
Sep-95	7.1.1a	2	176	58	67.3	125	41	67.2	0.1	67.0
Aug-96	7.1.2	3	102	62	39.2	102	62	39.2	0.0	36.8
Sep-95	7.1.3	3	329	57	82.7	261	54	79.3	3.4	71.5
Aug-96	7.1.3	3	423	100	76.3	423	100	76.4	-0.1	67.6
Aug-96	11.1.5	3	4,977	1,055	78.8	4,977	1,055	78.8	0.0	77.8
Aug-96	11.1.3	3	1,667	132	92.1	1,667	132	92.1	0.0	92.3
* ppb = parts per billion [†]RE =removal efficiency (1) Intel calculated the average removal efficiency as $RE = 1 - \frac{\sum HF_{out}}{\sum HF_{in}}$ (2) NEIC calculated the average removal efficiency as $RE = \frac{\sum (1 - \frac{HF_{out}}{HF_{in}})}{n}$ where n denotes the number of tests performed on the scrubber.										

Summary of Results of NEIC Analysis

After analysis of Intel's scrubber removal efficiency data, the following observations were made:

- The efficiency data from scrubber 11s.1.6 from August 2003 show an atypical relationship between inlet and outlet gas concentrations for hydrogen fluoride [Attachment E]. The high removal efficiency of 80 percent calculated for this scrubber is of questionable validity.
- The test data are consistent with non-constant scrubber removal efficiency. In general, higher inlet gas concentrations lead to greater efficiencies. This relationship can be seen in

the overall test efficiency data across different stack tests. It is also observable within a single stack test in the 2003 tests, which used FTIR to obtain inlet and outlet concentrations at many time points during the test [**Attachment F**].

- A non-constant scrubber removal efficiency calls into question the methodology used by Intel to calculate overall removal efficiency as described in **Attachment E**. Intel calculates overall removal efficiency by giving higher weights to higher inlet concentrations. This approach would lead to underestimating HF emissions if lower inlet concentrations are more typical of operational conditions.

These observations are discussed in more detail below.

Questionable Scrubber Removal Efficiency for Hydrogen Fluoride at Scrubber 11s.1.6.

For the 3rd quarter 2003 Annual HAP Monitoring, the Rio Rancho facility used an FTIR to monitor both inlet and outlet concentrations during the emissions test approximately every 3 minutes. These data can provide insight into the operational behavior of the scrubber during the test.

The test for scrubber 11s.1.6 had both the highest inlet concentrations and the highest removal efficiency for HF of the four scrubbers (8s.4.2ab, 10s.4.2ab, 11s.1.6, and 11s.1.14) where both inlets and outlets were tested in 2003 and both inlet and outlet concentrations had some detections. The high inlet concentration means that Intel gave this test result a high weight in calculating the overall scrubber efficiency. The data from the scrubber 11s.1.6 test are shown in **Figure 2**. There is gap in the data at about 13:00 and missing data for the inlet data at about 15:00. The lack of correlation between inlet and outlet concentrations over time for these data is notable. For the other chemicals monitored for this scrubber where detection limits were adequate (ammonia [NH₃], nitrogen trifluoride [NF₃]) and for both HF and other monitored chemicals in the other tested scrubbers, a correlation between inlet and outlet concentrations over time is observed. For example, the data from scrubber 11s.1.14 exhibit a correlation between inlet and outlet concentrations over time, as shown in **Figure 3**. The reason for the unusual behavior of HF at scrubber 11s.1.6 is not clear and deserves closer attention; the high weight given to this test in the Intel calculation methodology is questionable given the potential issues.

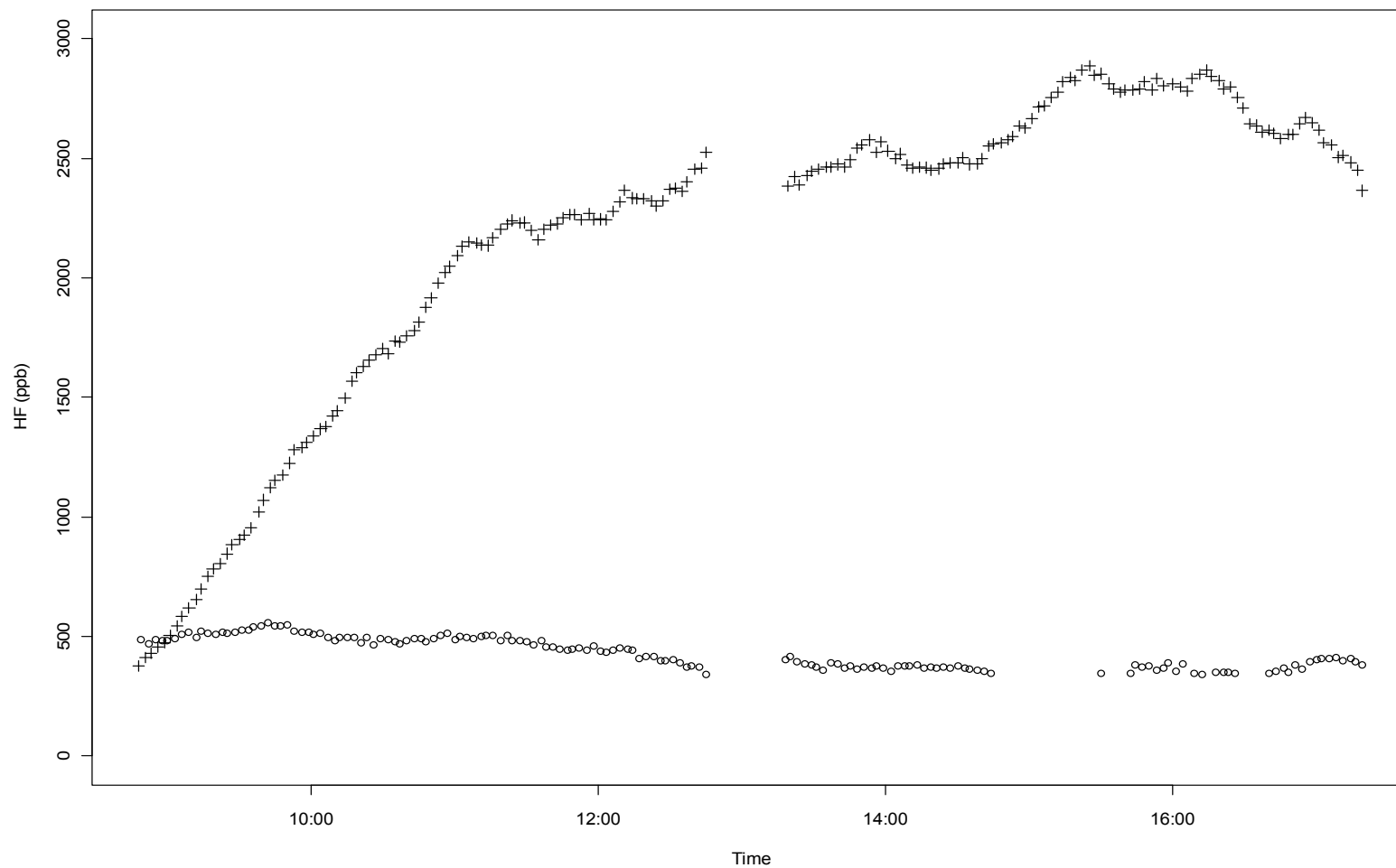


FIGURE 2: HF INLET AND OUTLET CONCENTRATIONS, SCRUBBER 11s.1.6. KEY: +, INLET; o, OUTLET

Intel Corporation
Rio Rancho, New Mexico

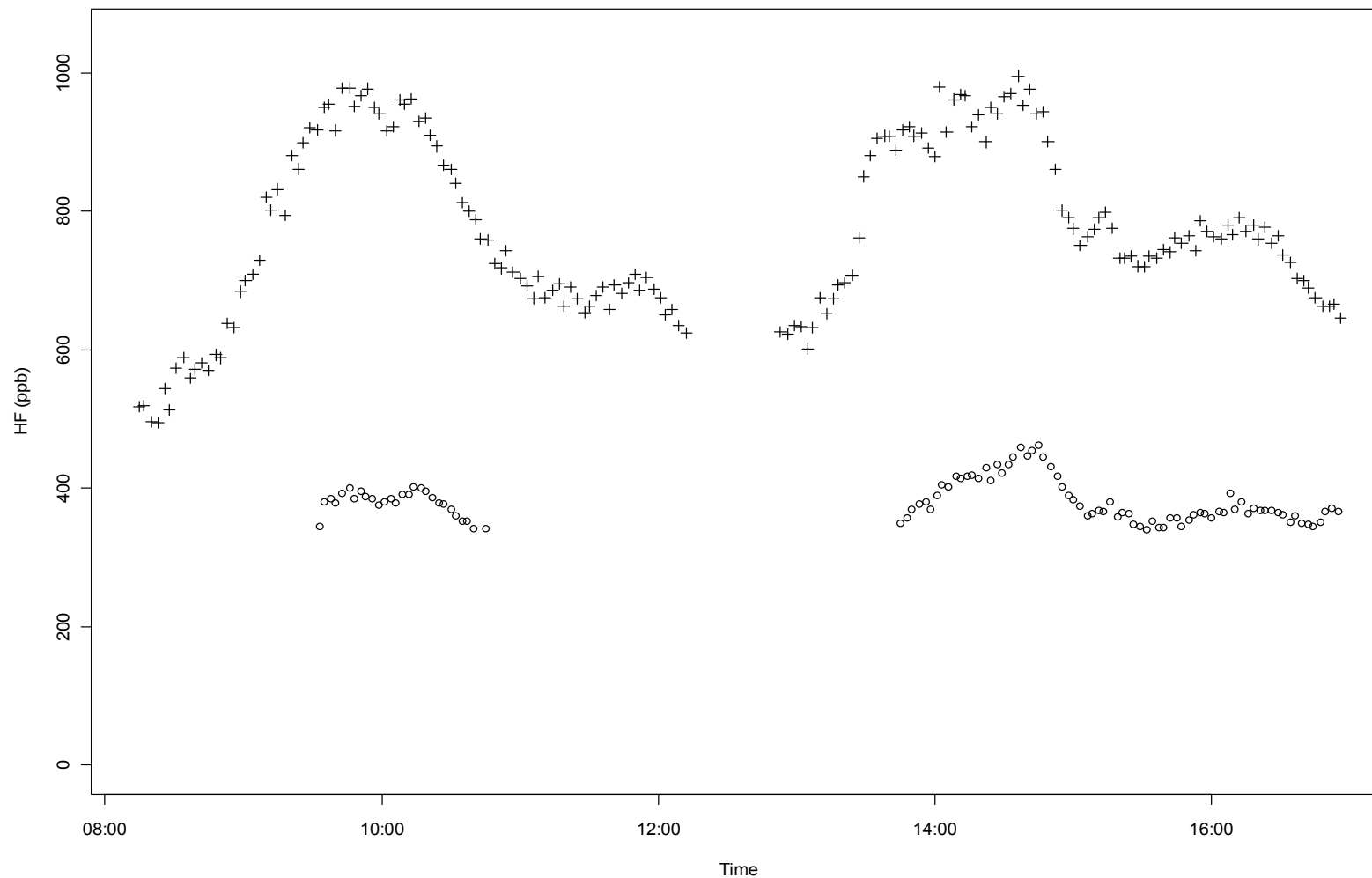


FIGURE 3: HF INLET AND OUTLET CONCENTRATIONS, SCRUBBER 11s.1.14. KEY: +, INLET; o, OUTLET.
Intel Corporation
Rio Rancho, New Mexico

Non-constant scrubber removal efficiency

Intel's approach assumes constant scrubber removal efficiency. This approach can be modeled as a linear relationship between input and output concentrations with no intercept; i.e., $C_o = \beta C_i$; i.e., a line with a slope of β and an intercept of zero; C_o represents outlet concentration and C_i represents inlet concentration. The removal efficiency is then $R = 1 - \beta$. If the linear relationship of $C_o = \beta C_i$ is transformed by taking the logarithm of both sides, the resulting equation is $\log(C_o) = \log(\beta) + \log(C_i)$; i.e., a line with a slope of one and an intercept term equal to the $\log(\beta)$ or $\log(1 - R)$. The constant removal efficiency model can be tested statistically by a regression analysis of the log of output concentration against the log of input concentration and allowing for a slope that does not equal one, i.e., a model $\log(C_o) = \log(\beta) + \alpha \cdot \log(C_i)$. If the slope term α is not significantly different from one, then the regression is consistent with a constant efficiency model. If the slope is different than one, then the removal efficiency will vary with concentration. The estimated removal efficiency at a particular concentration can be calculated as follows:

$$RE = 1 - \frac{C_{out}}{C_{in}} = 1 - \frac{10^{\log_{10}(\beta) + \alpha \cdot \log_{10}(C_{in})}}{C_{in}}$$

This regression analysis was performed on selected subsets of the scrubber efficiency data. Two analyses were performed. The first analysis addresses data from the individual stack test results from 1995 and 1996. The individual stack test results were used for this analysis, not the average values that were used by Intel in its calculations. The second analysis addresses FTIR data from scrubber 11s.1.14, which was used by Intel in its overall scrubber efficiency calculation in 2005 and has the highest degree of correlation between inlet and outlet concentrations of the four scrubber tests (8s.4.2ab, 10s.4.2ab, 11s.1.6, and 11s.1.14) from 2003. The results of these analyses are shown in **Table 2**, and the results are plotted in **Figure 4**.

Table 2. REGRESSION ANALYSIS RESULTS
Intel Corporation
Rio Rancho, New Mexico

Test	Term	Value	Std. Error	Lower Interval (2.5%)	Upper Interval (97.5%)
1995-1996	$\log_{10}(\beta)$ (Intercept)	0.44	0.32	-0.25	1.13
	Slope (α)	0.60	0.12	0.34	0.86
Scrubber 11s.1.14 (2003)	$\log_{10}(\beta)$ (Intercept)	1.20	0.20	0.79	1.62
	Slope (α)	0.47	0.07	0.33	0.61

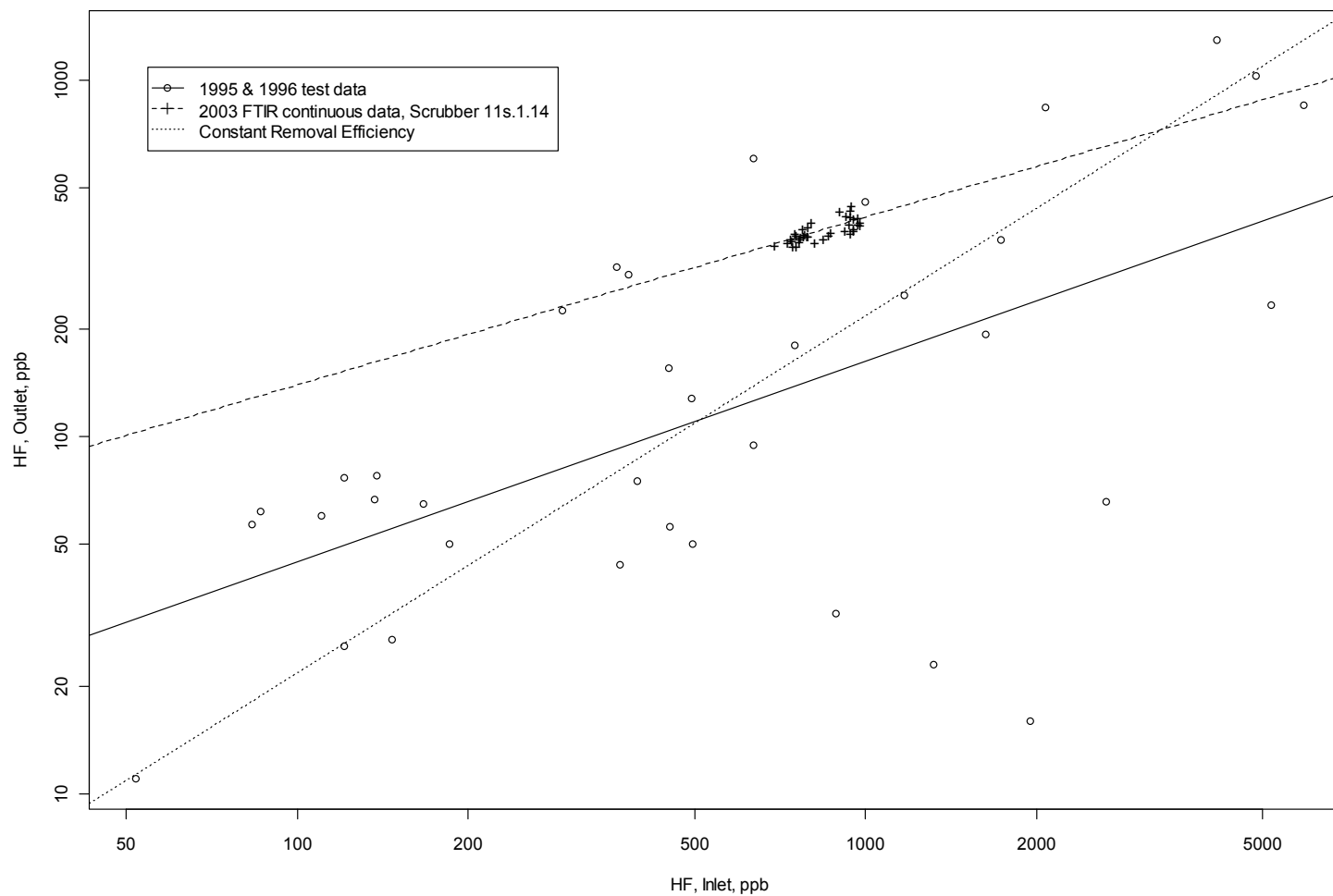


FIGURE 4: INLET VS. OUTLET CONCENTRATIONS, 1995 & 1996 TEST DATA AND 2003 DATA, SCRUBBER 11s.1.14

Intel Corporation
Rio Rancho, New Mexico

Both datasets show a strong non-constant relationship, as evidenced by the fact that the confidence intervals on the slopes do not include one. Scrubber 11s.1.14 from the 2003 test had a lower removal efficiency when compared to the data from 1995 and 1996, as shown in **Table 2** as a less negative value and shown in **Figure 4** as the line with the higher intercept. Although these two datasets were gathered at very different times using different analytical methodologies, they show a similar scaling relationship, as indicated by the similar slopes.

The use of the individual test results instead of the averaged values used by Intel results in a regression model with a higher intercept value than would be obtained with the average values. This result is expected because the averaging process used by Intel places greater weight on higher inlet value results and thus obtains a higher removal efficiency, since higher inlet concentrations have greater removal efficiencies. This can be seen in the data in **Table 1** by comparing the removal efficiency calculated by Intel for its 2005 permit revision data [**Attachment E**] with the average of the removal efficiencies calculated for each test result (the column labeled “Average of Individual Tests RE”).

Calculation of Scrubber Removal Efficiencies

A non-constant scrubber removal efficiency calls into question the methodology used by Intel to calculate removal efficiencies outlined in Attachment 2 of the permit revision dated May 6, 2005 [**Attachment E**]. Intel calculates its overall scrubber removal efficiency by applying higher weights to higher inlet concentrations. Because of the non-linear relationship between scrubber removal efficiency and inlet concentrations, this selection of weights results in a calculated scrubber removal efficiency that is higher than an unweighted average of scrubber removal efficiencies [**Attachment E**]. This approach could lead to underestimating HF emissions if lower concentrations are more typical of operational conditions. It appears from the 3rd quarter test in 2003 that lower inlet HF concentrations are more typical. Of the 27 scrubbers for which emissions were measured, 17 were non-detect for HF. The detection limit was not given in the report, but, based on NEIC’s analysis, the operating detection limit for HF seems to be around 300 parts per billion (ppb). If these test conditions reflect normal operating parameters, then the use of a high removal efficiency may not accurately account for the total HAP emissions.

NEIC cannot assess the accuracy of Intel’s methodology for applying the weighted removal efficiency of 70 percent for HF without more extensive knowledge of inlet concentrations, due to the non-linear relationship between inlet concentration and scrubber removal efficiency. Using the equation to calculate removal efficiency discussed above and coefficient values from **Table 2** estimated from the 1995 and 1996 data in the above equation, an expected value of 70 percent for the removal efficiency would be achieved at an inlet

concentration of HF of approximately 250 ppb, and higher efficiency values could be obtained for higher inlet concentrations. Thus, an overall removal efficiency of 70 percent is not an unreasonable expectation based on the 1995 and 1996 data.

There is considerable variability in the test data, which makes the estimate of overall scrubber efficiency highly uncertain. In the 1999 minor source permit application, Intel used a lower prediction interval to estimate the overall scrubber efficiency of 28 percent. In Intel's permit revision dated May 6, 2005, the approach to calculating the removal efficiency was changed and the lower prediction interval was dropped **[Attachment E]**. Intel's justification for this approach is "based on data collected since the permit was issued." This additional data is the 3rd quarter 2003 tests, which do not provide a substantial basis for updating the removal efficiency. The August 2003 test with a removal efficiency of 80 percent for scrubber 11s.1.6 is somewhat questionable, and the other two tests performed in September 2003 for scrubber 10s.4.2ab and scrubber 11s.1.14 that Intel used in its calculation had removal efficiencies of 53 percent and 59 percent, respectively **[Attachment E]**.

Although Intel's current approach outlined in the 2005 permit revision does not consider the substantial uncertainty in the test data and, therefore, may not be accurate, Intel's previous approach of using the lower prediction interval used in the 1999 minor source air permit application may be overly conservative. For this application, a statistical confidence limit is more appropriate than a prediction limit, since the quantity of interest is the overall efficiency calculated from the model parameters, not the potential range of an individual test. For example, using the regression model based on the 1995 and 1996 data, a 95-percent confidence limit on the removal efficiency at a 250 ppb inlet concentration ranges from 56.7 percent to 79 percent. This lower limit (56.7 percent) is considerably higher than the 1999 limit of 28 percent, but still accounts for statistical uncertainty in the test data **[AOC B]**.

In spring 2008, Intel added a sodium hydroxide injection system to adjust the pH of the scrubber liquor. Sodium hydroxide was added to the recirculation stream to treat odor from 1-heptanethiol. The increased pH lowers the odor of 1-heptanethiol. At the time of the NEIC inspection, this system was installed on all scrubbers, but only six scrubbers in the Fab 11S area and two scrubbers in the Fab 11X Bridge area have working injection systems. None of the scrubbers in the Fab 11X area has working injection systems. Since sodium hydroxide has been added to the scrubbers, no stack tests have been performed to determine if the addition has an effect on the removal efficiency of the scrubbers **[AOC C]**.

In addition to the difficulties of determining a true scrubber removal efficiency that can be used for all of the scrubbers, Intel's permits do not contain parametric monitoring requirements or operational ranges for any of the scrubbers. Without required continuous monitoring (e.g., pH, scrubber liquor flow) and specific operational requirements, there is no

mechanism to verify that the scrubber is continuously operating properly and can meet any specific efficiency [AOC D].

Minor Source Status

On June 13, 1989, EPA issued a guidance document entitled, “Limiting the Potential to Emit in New Source Permitting” [Attachment H]. One purpose of the guidance document is to clarify that in order to properly restrict a source’s potential to emit, the permit must contain federally and practically enforceable limits. NEIC reviewed Intel’s operating permit against this guidance document to determine if Intel’s conditions meet federally and practically enforceable guidelines.

The guidance document references the Louisiana-Pacific case in which Judge Arraj ruled that blanket emission limits alone should not be considered in determining “potential to emit” because they do not reflect permit conditions that restricted operations or production such as limits on hours of operation, fuel consumption, or final product.

In the guidance document, EPA defined production limits and operational limits. These definitions are:

Production limits: are restrictions on the amount of final product which can be manufactured or otherwise produced at a source.

Operational limits: are all other restrictions on the manner in which a source is run, including hours of operation, amount of raw material consumed, fuel combusted, or conditions which specify that the source must install and maintain add-on controls that operate at a specified emission rate or efficiency.

EPA also explained that all production and operation limits, except for hours of operation, are limits on a source’s capacity utilization. Permits must contain a production or operational limitation in addition to the emission limitation in cases in which the emission limitation does not reflect the maximum emissions of the source operating at full-design capacity without pollution control equipment. Production and operational limits must also be stated as conditions that can be enforced independently of each other and must be an independent condition in the permit. When permits contain production or operational limits, the permit should also have recordkeeping requirements that allow a permitting agency to verify a source’s compliance. When permits require add-on controls operated at a specified efficiency level,

permit writers should include any operating parameters and assumptions that the permitting agency depended on to determine that the control equipment would have a given efficiency.

NEIC reviewed Intel's 2009 operating permit and created a table to evaluate if conditions are federally and practically enforceable to limit Intel's potential to emit [**Appendix A**].

In Intel's permit, VOC emissions are limited with a blanket plant-site emission limit, along with operational limits on the minimum temperature the recuperative thermal oxidizers must maintain. The permit also requires Intel to continuously record the temperature using either a continuous strip chart recorder or an electronic equivalent. However, the permit conditions do not tie the minimum operational temperature of the RTO to a specific efficiency or specific emission rate [**AOC E**].

HAP emissions are limited with a blanket plant-site emission limit. Intel is required to vent the inorganic HAP emissions, which include HF and HCl, to acid gas scrubbers. The permit does not have any operational or production limits to complement the blanket plant-site emission limit. The "potential to emit" of HAPs is not practically limited by Intel's permit [**AOC E**].

Permitted Equipment

Intel received an updated permit from NMED on April 16, 2009. Since then, Intel has requested two revisions to the permit. The following units are listed in the permit, but are not used by Intel:

- Condition 2.C.ii.a, lists twelve 1250 BHP boilers. There are six boilers used by Intel at the CUB area (normally used) and two boilers at the North Energy Center (rarely used).
- Condition 3.B.i. references a bead activated carbon system used for VOC control. Intel abandoned the bead activated carbon system in place in the 1996/1997 time frame.
- Attachment A of the permit includes a list of acid gas scrubbers. According to Intel's minor source permit, there are 43 acid gas scrubbers; however, only 18 acid gas scrubbers and 7 ammonia scrubbers are operated onsite by Intel. There are six F11W scrubbers that are listed that have been decommissioned, but are still listed as air emission sources. There are also ten F11N scrubbers that are listed that are not in use. **Attachment A** also includes a list of thermal oxidizers. Five thermal oxidizers are listed as air emission sources in Intel's minor source permit; however, only three thermal oxidizers are currently operating onsite.

Without an accurate list of operational units in the permit, it is unclear what units are subject to permit limits and requirements [**AOC F**].

Quarterly, Intel reports the 12-month rolling total emissions of VOCs, NO_x, CO, particulates, and HAPs. In the 3rd quarter 2009 report, Intel reported the following 12-month rolling total emissions [**Attachment I**]:

VOC: 15.1 tons
NOx: 23.2 tons
CO: 4.7 tons
Particulates: 0.5 tons
Total HAPs: 2.8 tons

Limits established for these chemicals in the most recent April 16, 2009 NMED permit are as follows:

VOC: 96.5 tons (Condition 4.B)
NOx: 95.7 tons (Condition 2.B.i)
CO: 94.7 tons (Condition 2.B.i)
Particulates: 14.2 tons (Condition 2.B.ii)
Total HAPs: 24 tons (Table 2 as referenced by Condition 5.B)

The limits in the permit are significantly higher than emissions that have been reported by Intel or could be achieved by Intel running at maximum capacity [REDACTED])
[AOC G]. [REDACTED] NMED has set emission limits in the permit that cannot be exceeded by Intel under any circumstances.

Intel provided information that it designs its fabrication units to be installed at any site in the world, so each unit is designed to the strictest environmental regulations that the unit might be subject to. One example is that all units are designed to release less than 50 tons per year of VOCs. Therefore, Intel could lower the limits in its permits to at least the levels each fabrication unit is designed to and still allow for flexibility in its operations. In addition, the NMED permit does not contain short-term (hourly, daily, monthly) emission limits for VOCs and HAPs. Without short-term limits, Intel can have spikes in its emission profile that can lead to acute exposures of these chemicals [AOC H].

SUMMARY OF FINDINGS

On the basis of inspection observations, discussions with Intel personnel, and review of documentation, NEIC identified the following areas of noncompliance and areas of concern associated with Clean Air Act requirements. Areas of concern are inspection observations of potential problems that could result in environmental harm, noncompliance with permit or regulatory requirements, or are associated with pollution prevention issues.

AREA OF NONCOMPLIANCE

1. NSR Permit No. 0325-M9-R20 Condition 9.A.iii *Intel shall submit a quarterly report to the Department, in hard copy and on diskette or other electronic media. The report shall be submitted to the Department within forty-five (45) days of the end of each calendar quarter. The report shall include a spreadsheet containing: (a) the twelve (12) month rolling total emissions of NO_x, CO, VOCs, individual and total HAP, and particulates from HMDS.*

Intel did not properly calculate the emissions for ethyl lactate. The emission factors Intel developed underestimated the emissions of ethyl lactate by 36 percent. Intel also failed to account for the downtimes of the regenerative thermal oxidizers in its HAP emission calculations for methanol and xylene. This underestimates the emissions for both of these chemicals. Intel also overestimated the emissions of methanol by 8 percent.

AREAS OF CONCERN

A. Intel uses the same scrubber efficiency for each bank of scrubbers (Fab 11X, Fab 11S, Fab 11X Bridge) even though each area has different chemical loadings (different tools and different usages). Because each scrubber has different chemical loadings, the efficiency may vary for each of the different scrubbers.

B. NEIC cannot assess the accuracy of Intel's stated scrubber removal efficiency of 70 percent for hydrogen fluoride without more extensive knowledge of inlet concentrations, due to the non-linear relationship between inlet concentration and scrubber removal efficiency. An overall efficiency of 70 percent is not an unreasonable expectation. However, there is considerable variability in the test data used to estimate this removal efficiency. In Intel's 2005 permit revision, the only additional test data available to the methodology used to calculate scrubber removal efficiency were the 3rd quarter 2003 tests. The August 2003 test with a removal efficiency of 80 percent for scrubber 11s.1.6 is somewhat questionable, and the other two tests performed in September 2003 for scrubber 10s.4.2ab and scrubber 11s.1.14 had

removal efficiencies of 53 percent and 59 percent, respectively. Using the regression model [Figure 4], a 95-percent confidence limit at a 250 ppb inlet concentration indicates a removal efficiency range of 56.7 percent to 79 percent.

C. Intel has not performed stack testing on the scrubbers since sodium hydroxide has been added to adjust the pH of the scrubbing liquor medium. Without testing it is unclear if the same control efficiencies are attainable or appropriate for each of the scrubbers.

D. Intel's permits do not contain parametric monitoring requirements or operational ranges for any of the scrubbers. Without required continuous monitoring (e.g., pH, scrubber liquor flow) and specific operational requirements, NEIC cannot verify that the scrubber is continuously operating properly and can meet any specific efficiency.

E. Intel's permit conditions do not tie the minimum operational temperature of the RTO that controls volatile HAPs to a specific efficiency or specific emission rate. In addition, HAP emissions are limited with a blanket plant-site emission limit. Intel vents the inorganic HAP emissions, which include HF and HCl, to acid gas scrubbers, and Intel's permit does not have any operational or production limits to complement the blanket plant-site emission limit. These conditions do not meet the requirements in EPA's guidance document to practically limit a source's potential to emit.

F. Intel's permits do not contain an accurate listing of units that are used at the facility. Intel's permits include scrubbers, a bead activated carbon system, and boilers that are not currently used at the facility. Without an accurate permit, it is unclear which units are specifically regulated and what conditions apply to each unit.

G. The limits in the permit are significantly higher than emissions that have been reported by Intel or could be achieved by Intel running at maximum capacity. This indicates that Intel's permit does not reflect the true operational conditions at the site.

H. Intel's permit does not contain short-term (hourly, daily, monthly) emission limits for VOCs and HAPs. Without short-term limits, Intel can have spikes in its emission profile that can lead to acute exposures of these chemicals. Further, since the permit does not require monitoring and recordkeeping of emissions during upsets, NEIC could not accurately confirm Intel's minor source status.

**APPENDIX A
ENFORCEMENT CONFIDENTIAL**

PERMIT LANGUAGE	CONDITION #	TYPE OF CONDITION (I.E. BLANKET, PRODUCTION, OPERATIONAL, SHORT TERM, CEMS, RECORDKEEPING)	LIMIT VOC	LIMIT HAP	LIMIT NO _x	LIMIT CO	LIMIT TSP/ PM10	LIMIT SO ₂
Plant Site Emission Limits (12 month rolling total in tons per year)	Condition 2.B.i	Blanket			95.7 tpy	94.7 tpy		
Plant Site Emission Limits (12 month rolling total in tons per year)	Condition 2.B.ii	Blanket					14.2 tons	
Hourly Emission Limits for 1250 BHP boilers	Condition 2.B.iii and Table CS	Short term			Natural gas: 2.92 lbs/hr	5.6 lbs/hr	0.24 lb/hr	0.03 lb/hr
					#2 fuel oil: 7.8 lbs/hr	1.9 lbs/hr	0.8 lb/hr	27.5 lb/hr
Hourly Emission limits for RTOs (Munters, Durr)	Condition 2.B.iii and Table CS	Short term			Natural gas: 1.0 lb/hr	0.6 lb/hr	4.5 lb/hr	0.002 lb/hr
Maximum firing rate limitation for 1250 BHP boilers of 54 million BTU/hr for any single hour	Condition 2.C.ii.c	Operational			✓	✓	✓	✓
Boilers shall combust only natural gas except when circumstances beyond the control of Intel (emergency) or during testing onf the fuel delivery system and emergency boiler operations. Testing....shall be limited to thirty minutes monthly for each boiler	Condition 2.C.ii.d	Operational			✓	✓	✓	✓
Intel shall meter each 1250 HP boiler for fuel usage using a meter with a design accuracy of +/- 1 percent...	Condition 2.C.ii.e	Recordkeeping			✓	✓	✓	✓

**APPENDIX A
ENFORCEMENT CONFIDENTIAL**

PERMIT LANGUAGE	CONDITION #	TYPE OF CONDITION (I.E. BLANKET, PRODUCTION, OPERATIONAL, SHORT TERM, CEMS, RECORDKEEPING)	LIMIT VOC	LIMIT HAP	LIMIT NO _x	LIMIT CO	LIMIT TSP/ PM10	LIMIT SO ₂
Intel shall identify and record the firing lever position of each operation boiler at least every 5 minutes. The minimum level of data capture for each boiler shall be 90 percent for each calendar year...	Condition 2.C.ii.f	Recordkeeping			✓	✓	✓	✓
...Intel shall ensure that each pollutant generated by the Facility is conveyed to the appropriate control device... any Fab process exhaust stream which contains solvent VOCs (including organic HAPs) shall be ducted to a Recuperative Thermal Oxidizer (RTO) ...except that process exhaust streams for which the only VOC component is ethylene glycol may be vented to acid gas scrubbers	Condition 3.B.i		✓					
The plant site emissions of VOCs limit on a twelve month rolling average	Condition 4.B	Blanket	96.5 tons					
...Intel shall maintain the temperature of the Durr thermal oxidizers primary combustion chamber at a minimum of 1350 F and a single hour average of at least 1360 F plus or minus 10 F and the temperature of the Munters thermal oxidizers primary combustion chamber of 1370 F, and a single hour average of at least 1385 F, plus or minus 15 F	4.C.vi	Operational	✓	✓				
Intel shall continuously record the temperatures using a continuous stream chart recorder or electronic equivalent...	4.C.vii	Recordkeeping	✓	✓				
Any Fab process exhaust stream which contains inorganic HAPs... shall be ducted to acid gas scrubbers	Condition 3.B.ii			✓				

**APPENDIX A
ENFORCEMENT CONFIDENTIAL**

PERMIT LANGUAGE	CONDITION #	TYPE OF CONDITION (I.E. BLANKET, PRODUCTION, OPERATIONAL, SHORT TERM, CEMS, RECORDKEEPING)	LIMIT VOC	LIMIT HAP	LIMIT NO _x	LIMIT CO	LIMIT TSP/ PM10	LIMIT SO ₂
Intel shall operate the acid gas scrubbers on a continuous twenty-four (24) hour per day basis except for periods of start-up, shut-down, scheduled maintenance, and malfunction or during periods when the Fab being served by the equipment is not operating.	5.C.ii			✓				
Acid Gas Scrubbers a. maintenance and operational logs for the acid gas scrubbers; and b. weekly checks made on the acid gas scrubber recirculation water flow rates (in gallons per minute), replacement of the packing, and visual checks of the packing and spray nozzles for plugging.	8.B.iv	Recordkeeping		✓				



BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

New Mexico
ENVIRONMENT DEPARTMENT

Air Quality Bureau

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RON CURRY
Secretary

JON GOLDSTEIN
Deputy Secretary

CERTIFIED MAIL NO. 7008 0500 0001 1246 0989

RETURN RECEIPT REQUESTED

Permittee:

Intel Corporation
Mail Stop RR5-491
4100 Sara Rd.
Rio Rancho, NM 87124-1025

NSR Air Quality Permit No. 0325-M9-R20
Rio Rancho Facility
TEMPO No. 1103 - PRN20090001
AIRS No. 35-043-0005

Company Official:

Frank Gallegos
NM Site EH&S Manager

Agency Contact: Jay Stimmel

M. A. Uhl

Mary Uhl
Bureau Chief
Air Quality Bureau

APR 16 2009

Date of Issuance

This permit is not effective until the Department receives the permit fee of \$4960 as specified on the attached invoice. Please note that this permit fee is due regardless of the intended use or non-use of the permit or cancellation of the permit by the applicant or Department.

Air Quality Permit No. 0325-M9-R20 is issued by the Air Quality Bureau of the New Mexico Environment Department (Department) to Intel (Permittee) pursuant to the Air Quality Control Act (Act) and regulations adopted pursuant to the Act including Title 20, Chapter 2, Part 72 of the New Mexico Administrative Code (NMAC), (20.2.72 NMAC), Construction Permits and is enforceable pursuant to the Act and the air quality control regulations applicable to this source.

This permit authorizes the modification and operation of the Rio Rancho Facility (Facility). The function of the Facility is to manufacture semi-conductor chips for use in the computer industry. This Facility is located in Township 12 North, Range 2 East, Sections 31 and 32, in Rio Rancho, Sandoval County, New Mexico. The Universal Transverse Mercator (UTM) coordinates for this Facility are UTM E 349500 m, UTM N 3899500 m, and UTM zone 13. The physical address of the company is 4100 Sara Road.

This revision consists of a change to the thermal oxidizer (RTO) emission factors (EFs) used to calculate the Facility's nitrogen oxides (NO_x) and carbon monoxide (CO) emissions from the combustion of natural gas. The combustion emission factor for CO for the 1250 BHP boilers was revised and the emission factors for the Ammonia Treatment System were added. The emission factors used to calculate the Facility's hazardous air pollutant (HAP) (Table 3) and volatile organic compound (VOC) emissions (Table Z) were revised. The submission date for boiler emission factors in Condition 2.C.ii.f was changed from February 15 to March 15.

This permit supersedes all portions of 0325-M9, issued March 3, 2000, and all portions of all previous revisions to Air Quality Permit No. 0325-M9 (0325-M9-R1, issued September 25, 2000, through Air Quality Permit No. 0325-M9-R19, issued February 6, 2009) except the portion requiring compliance tests. Compliance test conditions from previous permits are still in effect, in addition to compliance test requirements contained in this permit.

The Department has reviewed the permit application for the proposed revision and has determined that the provisions of the Act and ambient air quality standards will be met. Conditions have been imposed in this permit to assure continued compliance. 20.2.72.210.D. NMAC, states that any term or condition imposed by the Department on a permit is enforceable to the same extent as a regulation of the Environmental Improvement Board.

Pursuant to 20.2.75.11 NMAC, the Department will assess an annual fee for this Facility. This regulation set the fee amount at \$1,500 through 2004 and requires it to be adjusted annually for the Consumer Price Index on January 1. The current fee amount is available by contacting the Department or can be found on the Department's website. The AQB will invoice the Permittee for the annual fee amount at the beginning of each calendar year. This fee does not apply to sources which are assessed an annual fee in accordance with 20.2.71 NMAC. For sources that satisfy the definition of "small business" in 20.2.75.7.F NMAC, this annual fee will be divided by two.

All fees shall be remitted in the form of a corporate check, certified check, or money order made payable to the "NM Environment Department, AQB" mailed to the address shown on the invoice and shall be accompanied by the remittance slip attached to the invoice.

Permit Conditions

- CONDITION 1. CONSTRUCTION AND OPERATION UNDER THIS PERMIT; NOTICE TO SUBSEQUENT OWNERS; ACCESS, POSTING OF PERMIT, CANCELLATION/REVOCATION, CONFIDENTIAL INFORMATION; APPEALS; AND PERMIT REOPENING
- A. Intel shall construct and operate the Facility in compliance with the conditions of this Permit and is authorized to operate 24 hours per day, 7 days per week, and 52 weeks per year with the sources of air emissions listed in Attachment A. New or replacement sources may require a permit revision.
 - B. Intel is allowed to make, without a permit revision or prior Department approval, physical or operational changes that are authorized or not prohibited by this Permit. This authorization includes changes in the processes or methods of operation, and changes in amount or type of materials or chemicals used, if:
 - i. such changes do not cause Facility emissions to exceed the Plant Site Emission Limits (PSELs) or other applicable limits;
 - ii. such changes comply with all applicable requirements under the state and federal Acts, and with all conditions of this Permit;
 - iii. Intel keeps records and provides information to the Department concerning such changes as required by this Permit; and
 - iv. the Department can verify the emissions as described in this Permit.
 - C. Use of HAPs other than those listed in Appendix X requires Department approval prior to use through the significant permit revision process under 20.2.72.219 NMAC, unless Intel demonstrates to the Department that use of such HAPs will not result in any emissions to the atmosphere.
 - D. Prior Department approval through the significant permit revision process under 20.2.72.219 NMAC is required for total potential emissions of a toxic air pollutant in excess of the screening level (specified in pounds per hour) in 20.2.72.502 NMAC - Toxic Air Pollutants and Emissions.
 - E. If at any time the Department determines that:
 - i. a condition of this Permit contains a material mistake;
 - ii. the Department relied upon information determined to be inaccurate in establishing a condition of this Permit; or
 - iii. a condition of this Permit is not adequate to determine compliance with any applicable state or federal air quality requirement, including the conditions of this Permit;

the Department may reopen the Permit, correct the inadequacy and reissue the Permit. Proceedings to reopen and revise the Permit shall affect only those parts of the Permit for which cause to reopen exists. The Department shall notify Intel by certified mail at least thirty (30) days in advance of the date on which the Department intends to reopen the Permit. The Department shall provide public notice and allow public participation regarding the revised condition only, as required by 20.2.72.206 NMAC - Public Notice and Participation, before reissuing the reopened Permit. The Department may, based on stack testing or other credible evidence, require Intel to revise emission factors in accordance with Condition 1.G of this Permit.

- F. Addition, replacement, and reconfiguration of the tools and semiconductor production equipment is authorized under this Permit and does not require a permit revision or prior Department approval provided all other conditions of this Permit are met.
- G. Intel shall make any decrease or increase in an emission factor listed in Tables 1, 3, Y, or Z of this Permit through the technical permit revision process in 20.2.72.219 NMAC.
- H. Intel shall use records of fuel usage maintained during the year prior to issuance of this Permit, as necessary, to calculate the twelve (12) month rolling total emissions during the first year following issuance of this Permit.
- I. The Permit and conditions apply in the event of any change in control or ownership of the Facility. An administrative permit revision is required in such case. Intel shall notify the succeeding owner of the Permit and conditions and shall notify the Department of the change in ownership within fifteen (15) days of that change.
- J. The Department shall be given the right to enter the Facility at all reasonable times to verify the terms and conditions of this Permit. Intel, upon either a verbal or written request from an authorized representative of the Department, shall produce any records or information necessary to establish that the terms and conditions of this Permit are being met.
- K. A copy of this Permit shall be retained at the plant site at all times and shall be made available to Department personnel for inspection upon request.
- L. Any records, reports, or information that Intel claims if made public would divulge confidential business records or methods or processes entitled to protection as trade secrets of Intel shall be clearly marked as such in accordance with the provisions of 20.2.1 NMAC and be accompanied by a justification of the claim.
- M. The Department may revoke this Permit if the applicant or permittee has knowingly and willfully misrepresented a material fact in the application for the Permit. Revocation will be made in writing, and administrative appeal may be taken to the Secretary of the Department within thirty (30) days. Appeals will be handled in accordance with the Department's Rules Governing Appeals From Compliance Orders.

- N. 20.2.72.207 NMAC provides that any person who participated in a permitting action before the Department and who is adversely affected by such permitting action, may file a petition for hearing before the Environmental Improvement Board. The petition shall be made in writing to the Environmental Improvement Board within thirty (30) days from the date notice is given of the Department's action and shall specify the portions of the permitting action to which the petitioner objects, certify that a copy of the petition has been mailed or hand-delivered and attach a copy of the permitting action for which review is sought. Unless a timely request for hearing is made, the decision of the Department shall be final. The petition shall be copied simultaneously to the Department upon receipt of the appeal notice. If the petitioner is not the applicant or permittee, the petitioner shall mail or hand-deliver a copy of the petition to the applicant or permittee. The Department shall certify the administrative record to the board. Petitions for a hearing shall be sent to:

Secretary, New Mexico Environmental Improvement Board
 1190 St. Francis Drive, Runnels Bldg. Rm. N2153
 P.O. Box 5469
 Santa Fe, New Mexico 87502

CONDITION 2. COMBUSTION-GENERATED POLLUTANTS

A. Definition of Combustion-Generated Pollutants

For purposes of this Permit, "combustion-generated pollutants" are the emissions of CO, NO_x, SO₂, TSP/PM₁₀, and combustion-generated VOCs which are emitted by the Central Utility Building (CUB), Energy Center (EC), Recuperative Thermal Oxidizers (RTOs), Ammonia Treatment System and emergency generators as a byproduct of combustion within these emission units. "Nitrogen dioxide" or "NO₂" or "NO_x" means nitrogen dioxide as defined in 20.2.2 NMAC.

B. Emissions Limits for Combustion-Generated Pollutants

- i. Plant Site Emission Limits (PSELs) for NO_x and CO
 The plant site emissions of NO_x and CO shall not exceed the following limits:

Pollutant	Twelve (12) Month Rolling Total (tpy)
NO _x	95.7
CO	94.7

The PSEL for total VOCs, which includes combustion-generated VOCs, is specified in Condition 4.B of this Permit.

- ii. Annual Emission Limits for TSP/PM₁₀

Total particulate matter emissions from the thermal oxidizers shall not exceed a twelve month rolling total of 14.2 tons.

iii. Hourly Emission Limits

The hourly emission rates shall not exceed the limits specified in Table CS.

C. Emissions of Combustion-Generated Pollutants

Emissions of combustion-generated pollutants do not pass through control equipment. Intel is limiting its potential to emit from these combustion sources to less than 100 tpy for each specified pollutant by restricting fuel usage and usage of particulate generating compounds.

i. Ammonia Treatment Plant

- a. The ammonia treatment plant shall combust only natural gas (see condition 2.C.v.).
- b. Intel shall operate the ammonia treatment plant in accordance with manufacturer's specifications. At all times the ammonia treatment plant is in operation, except during startup and cooldown periods, Intel shall maintain the temperature of the unit at a minimum of 525°F and a maximum of 650°F. Intel shall continuously record the temperatures using a continuous strip chart recorder or electronic equivalent. At any time the continuous recording mechanism is not operating, Intel shall record the temperatures not less than once per hour during the time the control unit is operating.

ii. 1250 BHP Boilers

- a. The twelve (12) 1250 boiler-horsepower boilers are subject to federal New Source Performance Standards (NSPS) contained in the Code of Federal Regulations (CFR), Title 40, Part 60, Subpart A - General Provisions, and Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, and Intel shall comply with the notification requirements in Subpart A and the specific requirements of Subpart Dc.
- b. The "boiler commission" or "boiler commission date" for each boiler shall be the date on which that boiler achieves the rate at which it will be operated under normal operating conditions or one hundred twenty (120) days from boiler startup, whichever is sooner.
- c. The maximum firing rate for each boiler shall not exceed 54 million Btu/hour for any single hour.
- d. The boilers shall combust only natural gas (see Condition 2.C.v.), except when circumstances beyond the control of Intel prohibit the use of natural gas (emergency situations) or when Intel tests the fuel

delivery system and emergency boiler operations. Under these circumstance, Intel may combust No. 2 diesel fuel (or equivalent fuel oil, i.e., fuel oil that has emissions equal to or less than No. 2 diesel fuel) in any of the boilers. Testing for the No. 2 diesel fuel delivery system and emergency boiler operation shall be limited to thirty (30) minutes monthly for each boiler.

- e. Intel shall meter each 1250 hp boiler for fuel usage using a meter with a design accuracy of $\pm 1\%$. The heat content of the fuel burned shall be based on information provided by the fuel supplier.
 - 1) The fuel meters shall be calibrated annually and the results submitted to the Department within thirty (30) days of the end of each calendar year.
- f. Intel shall identify and record the firing lever position of each operational boiler at least every 5 minutes. The minimum level of data capture for each boiler shall be 90% for each calendar year. This data shall be compiled to reflect the fraction of time that the 1250 BHP boilers are operated in each lever position. Annually, no later than March 15, Intel shall use this data to update the emission factors for the 1250 BHP boilers in Table 1, such that at that time the emission factors will be based on the most recent three years of operational data. This update of emission factors shall be accomplished by determining the average emission factor based on emission tests and fraction of time data for each lever position. For each lever position, the fraction of time that all boilers spend in that mode shall be multiplied by the highest emission factor of any boiler at that position. This derived number summed with the similarly derived numbers from all other lever positions will result in the average emission factor in Table 1. If Intel changes these emission factors, it shall do so in accordance with condition I.G.

iii. Emergency Generators

- a. Testing of the diesel fuel delivery system and emergency generator operation shall be in accordance with the NFPA 110, Standard for Emergency and Standby Power Systems.
- b. Testing of the diesel fuel delivery system and fire pump operations shall be in accordance with NFPA 25, Standard for Inspection, Testing and Maintenance for Water-based Fire Protection Systems and insurance requirements.
- c. Intel shall not use the emergency generators for more than five hundred (500) hours each per year unless Intel obtains a permit revision allowing such use. For record-keeping requirements on emergency generator use, see Condition 8 of this Permit.

- iv. Intel shall operate and maintain all combustion equipment in accordance with the manufacturers' specifications. Intel shall maintain records of the maintenance performed on all combustion equipment and shall make this information available to the Department upon request.
- v. All natural gas used shall be pipeline quality, with no more than 0.25 grains of H₂S per 100 scf of gas.

D. Compliance Determinations for Combustion-Generated Pollutants

- i. Calculation of Twelve (12) Month Rolling Total Emissions
 - a. Emissions of TSP/ PM₁₀, NO_x, CO, and combustion-generated VOCs shall be calculated by summing the total emissions over the most recent twelve (12) calendar months in accordance with the formula specified below.
 - b. Emissions of NO_x, CO, and combustion VOCs for the Facility shall be the sum of the emissions calculated monthly for each combustion unit in accordance with the following formula:

$$\text{Emissions} = (Q) \times (EF)$$

where:

Q = fuel usage (MMbtu/month for natural gas or 10³ Gal/month for No. 2 fuel oil)

EF = emission factor for each emissions unit and fuel type for boilers and RTOs as specified in attached Table 1; for other emission units, emission factor obtained from the manufacturer and accepted by the Department, or specified in the most recent version of AP-42.

- c. Emissions of TSP/PM₁₀ from RTOs shall be the sum of the emissions calculated monthly in accordance with the following formula:

$$PM = Q \times EF$$

where:

PM = emissions of particulate matter

Q = mass of HMDS purchased plus beginning mass in stock minus ending mass in stock

EF = emission factor specified in Table Y, reflecting the portion of HMDS which is emitted as PM.

- ii. Hourly Emissions from Combustion Sources
 - a. Except for TSP emissions from RTOs, compliance with the hourly emission rates specified in 2.B.iii shall be determined from records of fuel usage and equipment maintenance, unless otherwise determined by stack testing approved by the Department.
 - b. Compliance with hourly emission rates of TSP from RTOs shall be determined from records of fuel usage, HMDS usage and equipment maintenance, unless otherwise determined by stack testing approved by the Department.
- iii. Emissions occurring as a result of fuel oil combustion shall be included in the determination of compliance with the allowable emission rates.

CONDITION 3. DUCTING OF NON-COMBUSTION POLLUTANTS

- A. Intel may, without a permit revision or prior Department approval, replace, rebuild or reconfigure its air pollutant ducting system, but shall ensure that the pollutant ducting system is configured and maintained to convey Fab exhaust streams to the appropriate control device as specified in 3.B
- B. Except as provided in Condition 3.C, Intel shall ensure that each pollutant generated by the Facility is conveyed to the appropriate control device as follows:
 - i. Any Fab process exhaust stream which contains solvent VOCs (including organic HAPs) shall be ducted to a Recuperative Thermal Oxidizer (RTO) or Bead Activated Carbon system (BAC), except that process exhaust streams for which the only VOC component is ethylene glycol may be vented to acid gas scrubbers.
 - ii. Any Fab process exhaust stream which contains inorganic HAPs, except those for which the only HAP component is solid arsenic, shall be ducted to acid gas scrubbers.
 - iii. With approval from the Department, Intel may duct emissions to the atmosphere or to an exhaust system other than the system specified above. Intel shall submit to the Department a demonstration that such change in ducting would not increase overall emissions of any pollutant over that which would occur if the emissions were sent to the specified system, and shall make such revisions to the emission factors as appropriate in accordance with Condition 1.G. Such approved changes are within the scope of this Permit and shall not constitute a permit revision.
- C. Intel may vent emissions from wipe-down chemicals, such as isopropyl alcohol (IPA), used outside of process tools to the air or to general exhaust.

- D. Intel shall track the usage of all chemicals used in manufacturing to enable the accurate identification of the potential components of any exit exhaust stream.

CONDITION 4. TOTAL EMISSIONS OF VOLATILE ORGANIC COMPOUNDS

A. Definition of Volatile Organic Compound

A volatile organic compound (VOC) is an air contaminant that has been defined as a volatile organic compound pursuant to 40 CFR 51.100(s). Solvent VOCs include non-HAP solvents and organic HAPs.

B. Plant Site Emission Limit (PSEL) for Volatile Organic Compounds.

The plant site emissions of VOCs shall not exceed a twelve (12) month rolling total of 96.5 tons.

C. Operation of Solvent VOC Emission Control Equipment (RTO and BAC Systems)

- i. Intel shall operate a solvent VOC air pollution control unit (a recuperative thermal oxidizer or a bead activated carbon system) on each solvent VOC exhaust stack on a continuous twenty-four (24) hour per day basis, except for:
 - a) periods of start-up, shut-down, scheduled maintenance, and malfunction
 - b) in the event of the loss of the natural gas supply for thermal oxidizer units;
 - or c) during periods when solvent VOC's are not being emitted from a solvent exhaust stack being served by a control unit. The maximum duration of any single startup or cooldown period shall not exceed four (4) hours.
- ii. Intel shall maintain the control units in accordance with the manufacturer's recommendations, including replacements of bead activated carbon based on specific gravity measurements. Key spare parts for the control units, identified by the manufacturers of the units, shall be kept on site at all times. Intel shall record the date and time of each bead activated carbon unit charge replacement.
- iii. Intel shall not emit toxic metals listed pursuant to Section 112(b) of the Clean Air Act, 42 U.S.C. 7412(b) (i.e., the list of hazardous air pollutants) or halogenated compounds, used in the manufacturing process in a production operation, into the influent streams to a control unit.
- iv. Only natural gas shall be fired by the thermal oxidizers.
- v. Intel shall monitor fuel flow and heat content of the natural gas to each thermal oxidizer unit individually.
- vi. Intel shall operate each control unit in accordance with manufacturer's specifications. At all times a thermal oxidizer unit is in operation, except during startup and cooldown periods, Intel shall maintain the temperature of the Durr thermal oxidizers primary combustion chamber at a minimum of

1350°F, and a single hour average of at least 1360°F, plus or minus 10°F and the temperature of the Munters thermal oxidizers primary combustion chamber at a minimum of 1370°F, and a single hour average of at least 1385°F, plus or minus 15°F. At all times a bead activated carbon unit is in operation, except during startup, Intel shall maintain the desorption chamber temperature at a minimum of 300°F and the coolant return temperature at a maximum of 50°F. Intel shall continuously record the temperatures using a continuous strip chart recorder or electronic equivalent. At any time the continuous recording mechanism is not operating, Intel shall record the temperatures not less than once per hour during the time the control unit is operating.

- vii. Maintenance of each control unit shall be scheduled, to the extent possible, during periods when the production operation to which the control unit is connected is not in operation. No more than one (1) solvent VOC exhaust stack shall be uncontrolled because of scheduled maintenance of control units during the same time period.
- viii. Any future permit applications for a new VOC emission source at the Rio Rancho Facility shall include a thermal oxidizer, bead activated carbon system or other equivalent emissions control device, unless Intel demonstrates to the satisfaction of the Department that the VOC emissions increase or the toxicity of those emissions, or combination thereof, is not significant and the emissions will meet applicable federal and state requirements, including ambient air quality standards.
- ix. Intel shall notify the Department, as specified in Condition 9.A.vi, of any failure of any control unit to operate at the temperatures specified in Condition 4.C.vi, for any period of more than one hour in any twenty-four (24) hour period, except as provided in Conditions 4.C.i and 4.C.vi. In the event that the recording mechanism is not functioning, Intel shall report to the Department whenever two (2) or more hourly temperature readings fall below the temperatures specified in Condition 4.C.vi within a single twenty-four (24) hour period; and
- x. When an RTO or BAC is not in operation, Intel shall take steps to minimize VOC emissions, including but not limited to routing the affected solvent exhaust stream to the back-up unit, if the exhaust system is equipped with an operational unit.

D. Compliance Determinations for Volatile Organic Compounds

i. Calculation of Twelve (12) Month Rolling Total Emissions

The twelve (12) month rolling total emissions of VOCs shall be calculated by summing the total emissions over the most recent twelve (12) calendar months in accordance with Conditions 4.D.ii, iii, iv, and v.

- ii. Emissions from Storage Tanks
VOC emissions from storage tanks shall be determined using the most current version of the EPA TANKS Program.

- iii. Emissions from Wipe-down Use

Any amount of VOC used outside of process tools for wipe-down shall be assumed to be emitted to the atmosphere.

- iv. Other VOC Emissions

- a. Liquid Chemical Baths

Emissions from the liquid chemical baths shall be calculated for each VOC using the standard evaporation rate equation recognized by EPA for use in compliance with Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112(r) of the federal Act. This equation is:

$$W = MKAp/RT$$

where:

W = mass emissions of VOC

M = molecular weight

A = surface area

p = vapor pressure of liquid VOC at temperature T

R = ideal gas constant

T = temperature of liquid VOC

K = mass transfer coefficient, dependent upon air flow

- b. Process VOC gases and chemicals not used in chemical baths.

Emission of process gases and chemicals shall be calculated for each VOC in accordance with the following formula:

$$VOC_i = \text{Sum of } [(Q_i)(EF_i)]$$

where:

VOC_i = mass of emissions of VOC_i

Q_i = mass of chemical i purchased plus beginning mass in stock minus ending mass in stock

EF_i = emissions factor specified in Table Z, reflecting the portion of chemical i which is emitted as VOC_i

- v. Emissions from Combustion Sources

VOC emissions from combustion sources shall be calculated as specified in Condition 2.D.i.

CONDITION 5. HAZARDOUS AIR POLLUTANTS

A. Definition of Hazardous Air Pollutant

A hazardous air pollutant (HAP) is an air contaminant that has been listed as a hazardous air pollutant pursuant to Section 112(b) of the federal Act. For purposes of this Permit, organic HAPs are also classified and regulated as VOCs.

B. Emission Limits for Hazardous Air Pollutants

The plant site emissions of HAPs as listed in Appendix X shall not exceed the limits specified in Table 2.

C. Emission Controls for Hazardous Air Pollutants

i. Condition 3 of this Permit establishes the requirements for ducting of HAPs to the proper control equipment. Condition 4.C of this Permit establishes the requirements for the operation and maintenance of the RTOs and BACs. Conditions 5.E, 7.C, 7.D, and 8.B (ii, iii and iv) of this Permit establish the requirements for testing, monitoring and recordkeeping for the RTO/BAC systems and acid gas scrubbers.

ii. Intel shall operate the acid gas scrubbers on a continuous twenty-four (24) hour per day basis except for periods of start-up, shut-down, scheduled maintenance, and malfunction or during periods when the Fab being served by the equipment is not operating.

D. Compliance Determinations for Hazardous Air Pollutants

i. Calculation of Twelve (12) Month Rolling Total Emissions

The twelve (12) month rolling total emission of HAPs shall be calculated by summing the total emissions over the most recent twelve (12) calendar months in accordance with Conditions 5.D.ii, iii, iv, and v.

ii. Emissions from Storage Tanks

HAP emissions from storage tanks shall be determined using the most current version of the EPA TANKS Program.

iii. Emissions from Wipe-down Use

Any amount of HAP used outside of process tools for wipe-down shall be assumed to be emitted to the atmosphere.

iv. Emissions from Liquid Chemical Baths

Emissions from the liquid chemical baths shall be calculated for each HAP using the standard evaporation rate equation recognized by EPA for use in compliance with Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA), Section 112(r) of the federal Act and other applications. This equation is:

$$W = MKAp/RT$$

where:

W = mass emissions of HAP

M = molecular weight

A = surface area

p = vapor pressure of liquid HAP at temperature T

R = ideal gas constant

T = temperature of liquid HAP

K = mass transfer coefficient, dependent upon air flow

v. Emissions of Process Gases and Chemicals Not Used in Chemical Baths (including arsenic and inorganic/organic process gases and chemicals)

Emission of process gases and chemicals shall be calculated for each HAP in accordance with the following formula:

$$HAP_i = \text{Sum of } [(Q_j)(EF_{ji})]$$

where:

HAP_i = mass of emissions of HAP_i

Q_j = mass of chemical j purchased plus beginning mass in stock minus ending mass in stock, which contributes to formation of HAP_i

EF_{ji} = emissions factor reflecting the portion of chemical j which is emitted as HAP_i (see Table 3)

E. Verification of Emissions Calculations by Stack Testing

- i. Intel shall conduct initial stack testing for all HAPs for which emissions are calculated only by the evaporation rate equation specified in Condition 5.D.iv. During this testing Intel shall record the parameters used in the evaporation rate equation.
- ii. Intel shall conduct annual stack testing for all HAPs listed in Table 3 and in use at the time of testing.

- iii. Unless the Department approves otherwise, Intel shall conduct additional tests for HAPs if their emissions are calculated according to the equation in 5.D.v and one of the following circumstances exist: either the emission factor is already less than 1 and is being reduced, or the use of the HAP has just begun with an emission factor less than 1. Such tests shall be conducted within thirty (30) days of the change.
- iv. Initial and annual testing shall be performed as specified in Condition 7 of this Permit.
- v. The Department may require additional stack testing if the Department has reason to believe that the emissions of any HAPs subject to the annual testing requirement specified in this Condition has increased significantly.

CONDITION 6. TOXIC AIR POLLUTANTS

A. Definition of Toxic Air Pollutant

A Toxic Air Pollutant (TAP) is an air contaminant listed in 20.72.502 NMAC - Toxic Air Pollutants and Emissions.

B. Department Findings Regarding Toxic Air Pollutants

The Department finds that the permit application demonstrates that the total potential emissions of TAPs listed in the application do not exceed the screening levels (specified in pounds per hour) in 20.72.502. Therefore, the Department has determined that no ambient air quality modeling or emission limit is required for those TAPs.

- i. If at any time the Department has reason to believe that the total potential emissions of a TAP may exceed the applicable screening level (specified in pounds per hour) in 20.72.502 NMAC, the Department may require Intel to submit a demonstration of compliance with 20 NMAC 72 Subpart IV.
- ii. Demonstration of compliance with 20 NMAC 72 Subpart IV shall include:
 - a. a showing that the total potential emissions of the TAP are less than the screening level (specified in pounds per hour). The total potential emissions of the TAP shall be calculated in accordance with the methods of Condition 5.D of this Permit; and
 - b. if requested by the Department, stack testing using an EPA-approved or equivalent method approved by the Department.

CONDITION 7. TESTING

A. General Requirements

- i. Intel shall notify the Department's Program Manager, Compliance and Enforcement Section at least thirty (30) days prior to the test date, unless otherwise approved by the Department and allow a representative of the Department to be present at the test. Intel shall arrange a pretest meeting with the Department at least thirty (30) days prior to the test date, unless otherwise approved by the Department, and shall observe the following pre-testing and testing procedures:
 - a. Intel shall provide for the Department's approval a written test protocol at least one (1) week prior to the anticipated pre-test meeting date. The protocol shall describe the test methods to be used (including sampling methods and calibration procedures), shall list the equipment or devices to be tested (including sample locations), and shall describe data reduction procedures. Any variation from established sampling and analytical procedures or from Facility operating conditions shall be presented for Department approval.
 - b. The test protocol and compliance test report shall conform to the standard format specified by the Department. The most current version of the format may be obtained from the Enforcement and Compliance Section of the Air Quality Bureau.
 - c. Intel shall provide (a) sampling ports adequate for the test methods applicable to the Facility, (b) safe sampling platforms, (c) safe access to sampling platforms and (d) utilities for sampling and testing equipment. Sample ports of a size compatible with the test methods shall be located on the stack of each source to be tested in accordance with the provisions of 40 CFR 60, Appendix A, Method 1. Each stack shall be of sufficient height and diameter so that a representative test of the emissions can be performed in accordance with EPA Method 1.
 - d. During any boiler tests the fuel flow, firing rate, percent oxygen, and quadrant lever position shall be monitored and recorded. This information shall be included with the test report that is required to be furnished to the Department.
 - e. Where necessary to prevent cyclonic flow in the stacks, flow straighteners shall be installed.
 - f. The tests on combustion equipment shall be conducted at the loads specified by Department and contained in this condition.

- ii. The initial stack tests and the first set of annual stack tests shall be completed within one hundred eighty (180) days of the date of issuance of this Permit. All testing of HAPs emissions during the initial and annual test periods shall be started and completed within a period of sixty (60) continuous days. All tests of stacks within a Fab shall be completed prior to commencing tests in other Fabs unless tests of all stacks occur in other Fabs simultaneously.
- iii. Conditions from previous permits for initial compliance tests on new equipment such as boilers continue in effect until they are completed and are in addition to the compliance tests requirements contained in this Permit.
- iv. Alternative test methods, where authorized by this permit, shall conform to the requirements of 40 CFR 51.212.

B. CUB/EC (Natural Gas Boilers) NO_x, CO, and VOCs

- i. On an annual basis following boiler maintenance turnaround, Intel shall test the emission profile of one (1) 1250 BHP boiler in either the CUB or EC. In addition, Intel shall test one (1) 1250 BHP boiler in either the CUB or EC at a single load setting. The Department shall identify the boilers and the single load setting to be tested under this condition.
- ii. During the next emission profile testing specified in Condition 7.B.i, Intel shall conduct testing to determine the VOC emission rate (in lb/MMBtu) of one 1250 BHP boiler.
- iii. At any time, the Department may test any of the 1250 BHP boilers to verify the validity of the boiler emission factors in Table 1.
- iv. If the Department has reason to believe that the emissions profile of any 1250 BHP boiler has changed, the Department may require Intel to conduct additional tests to determine whether the boiler emission factors specified in Table 1 have changed.
- v. Intel shall conduct tests in accordance with applicable EPA Reference Methods 1 through 4, Method 5 for particulate matter, Method 25A for VOCs, Method 7E for NO_x, and Method 10 for CO contained in 40 CFR 60, Appendix A, and with the requirements of 40 CFR 60.8(f). The results of the NO_x tests shall be expressed as nitrogen dioxide (NO₂) using a molecular weight of 46 lb/lb-mole in all calculations (each ppm of NO/NO₂ is equivalent to 1.194×10^{-7} lb/scf).
- vi. For emissions profile testing for NO_x and CO on the 1250 BHP boilers, Intel shall use Method 7E and 10, but the Department may allow a single one (1) hour test at each of the ten (10) load settings of those boilers.

- vii. Intel shall determine the oxygen (%O₂) in the stack gas by using EPA Method 3 or 3A. Intel may determine the stack volume flow using an F factor, if approved by the Department, or by using the flow methods in 40 CFR 60, Appendix A.
- viii. If the Department finds, as a result of the profile testing of the 1250 BHP boilers specified in Condition 7.B.i through 7.B. vi of this Permit, that 1) the boiler emissions exceed the rates calculated by the boiler emission factors specified in Table 1 or 2) any emissions factor in the tested emissions profile exceeds the corresponding lever position value used in development of the average emission factor, the Department may require Intel to revise the boiler emission factors as described in 2.C.ii.f.
- ix. If the Department finds that the boiler emission rate from the single load test of the 1250 BHP boilers exceeds the corresponding lever position value used in development of the average emission factor, the Department may require Intel to revise the boiler emission factors as described in 2.C.ii.f.
- x. For each boiler, Intel shall provide a one-quarter (1/4) inch stainless steel sampling line adjacent to the sampling ports and extending down to within four (4) feet above ground level to provide access for future audits. The line shall extend into the stack a distance of 1/4 the stack diameter, but not less than one inch from the stack wall. The sampling line shall be maintained clear of blockage at all times. This line shall be installed no later than one hundred and eighty (180) days from the date of this Permit and shall be in place at the time of any required compliance tests.

C. BAC/RTO

- i. Intel shall conduct annual tests of the exit exhaust streams of the RTO/BAC stacks as required in Condition 5.E for HAPs ducted to the RTO/BAC stacks. Intel shall use EPA Method 18 or, with the Department's approval, another appropriate method for these tests.
- ii. Intel shall operate and maintain an emissions testing system to measure the concentration of total hydrocarbons and VOCs and the air flow from each stack. Intel shall begin the operation of the emissions testing system no later than ninety (90) days following issuance of this Permit
 - a. The emissions testing system shall consist of a portable flame ionization detector (FID) and Fourier Transform Infra-Red Detector (FTIR) that measure total hydrocarbons and VOCs, a method for analyzing flue gas for O₂ and CO₂ concentrations for stack gas molecular weight determination, a method for determining stack gas moisture and a flow measurement device that measures stack air flow. The testing system shall measure the stack gas concentration of total hydrocarbons and VOCs (ppmv), O₂, CO₂ and moisture content (%),

and stack gas flow rate (acf). The FID, FTIR, O₂ and CO₂ analyzers, and flow meters shall be calibrated and maintained at a frequency and by a method specified by the manufacturer and approved by the Department. Intel shall inspect the testing system during each sampling interval at each stack to ensure that representative samples of the total hydrocarbons and VOC exhaust streams are being obtained and analyzed.

- b. Intel shall test one solvent exhaust stack at a time for at least three hundred thirty-six (336) hours each quarter. All solvent exhaust stacks shall be tested during each quarter.
- c. Intel shall operate the FID for the entire time of the test period specified in 7.C.ii.b. above to measure total hydrocarbons from each solvent exhaust stack.
- d. Intel shall measure O₂, and CO₂ concentrations, moisture and stack gas flow rate and operate the FTIR in 8-hour increments at the start, mid-point, and end of the FID testing (24 hours total) for analysis of the VOC stack emissions.
- e. After the first year of monitoring, NMED may direct Intel to decrease or discontinue the use of the FID and increase the use of the FTIR and measurements of O₂, CO₂, and stack gas flow rate if NMED determines the emissions testing system is not accurately measuring VOC emissions.
- f. No later than thirty (30) days prior to the start of testing, Intel shall propose, for approval by the Department, standard procedures for operating, monitoring, and quality assurance for the testing system. The FID proposal shall conform to the requirements of 40 CFR 60.13 and 40 CFR 60 Appendix A, Method 25A. The FTIR proposal shall conform to the requirements of EPA Test Method 320 - Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectroscopy, and Addendum to Test Method 320 - Protocol for the Use of Extractive Fourier Transform Infrared (FTIR) Spectrometry for the Analyses of Gaseous Emissions from Stationary Sources.
- g. Intel shall conduct an initial certification of the testing system within ninety (90) days of the date of issuance of this Permit. The FID shall be certified in accordance with 40 CFR 60, Appendix A, Method 25A, and Appendix B, Performance Specification 8. The FTIR shall be certified in accordance with 40 CFR 63, Appendix A, Method 320, and Appendix B, Proposed Performance Specification 15. Intel shall conduct the certification of the flow meter in accordance with 40 CFR 60, Appendix A, Methods 1-4,

and Appendix B, Performance Specification 6. Intel shall re-certify the testing system at least every three (3) years from the date of initial certification or subsequent re-certification.

- h. Two (2) years after issuance of this Permit, Intel may submit a proposal to modify or discontinue the test requirements in Condition 7.C.ii (a through g). A proposal to modify the test requirements shall include a demonstration of the adequacy of the proposed testing for evaluating the validity of the VOC emissions calculations specified in Condition 4.D.iv. A proposal to discontinue the test requirements shall include methods to evaluate the validity of the VOC emissions calculations specified in Condition 4.D.iv. Intel shall obtain Department approval before implementing such proposed change or discontinuance in testing, but such change or discontinuance, if approved, is within the scope of this Permit and shall not constitute a Permit revision.

D. Acid Gas Scrubbers

- i. Intel shall conduct annual tests of the exit exhaust streams of acid gas scrubber stacks as required in Condition 5.E.ii for HAPs ducted to the acid gas scrubbers. All operational acid gas scrubber stacks shall be tested in each annual test period, except as specified in Condition 7.D.ii of this Permit.
- ii. After the completion of the first two annual tests, Intel may submit a statistically valid proposal for annual testing of less than all, but no less than one-third (1/3) of a random selection of the acid gas scrubber stacks. The proposal shall include a demonstration of the adequacy of the proposed sampling method for obtaining estimates of Facility emissions from the acid gas scrubber stacks. Intel shall obtain Department approval before implementing a change in testing, but such approved change is within the scope of this Permit and shall not constitute a permit revision.
- iii. For the tests required by Condition 7.D, Intel shall use EPA Compendium Method IP-9 or a FTIR for HCl and HF, EPA Method 26A for Cl₂, or other methods approved by the Department. For all other HAPs, Intel shall use test methods approved by the Department. The duration of the test for each stack shall be no less than eight (8) continuous hours, unless otherwise approved by the Department. For these tests, Intel shall comply with the notification requirements specified in Condition 7.A.i.

E. Ammonia Treatment Plant

- i. Intel shall conduct initial compliance testing for NO_x and CO in accordance with 20.2.72.213 NMAC.
- ii. Intel shall conduct initial compliance testing for NH₃.

- iii. Initial compliance testing procedures.
 - a. The emissions testing shall consist of a Fourier Transform Infrared Detector (FTIR) that measures NO_x, CO and NH₃, a method for analyzing flue gas for O₂ and CO₂ concentrations for stack gas molecular weight determination, a method for determining stack gas moisture and a flow measurement device that measures stack air flow. Testing shall measure the stack gas concentration of NO_x, CO and NH₃, O₂, CO₂ and moisture content (%), and stack gas flow rate (acf). The FTIR, O₂ and CO₂ analyzers, and flow device shall be calibrated and maintained at a frequency and by a method specified by the manufacturer and approved by the Department.
 - b. The compliance tests shall be conducted in accordance with the procedures defined in 40 CFR 60, Appendix A, Test Methods and further guided by EPA Test Method 320 - Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectroscopy, and Addendum to Test Method 320 - Protocol for the Use of Extractive Fourier Transform Infrared (FTIR) Spectrometry for the Analyses of Gaseous Emissions from Stationary Sources.
 - c. The duration for each test run shall be 60 minutes and each performance test shall consist of three separate runs. For the purpose of determining compliance with an applicable emission limit, the arithmetic mean of results of the three runs shall apply.
- iv. Intel shall sample and test the ammonia removal catalyst and NO_x removal catalyst every six months. The sampling and testing shall be conducted per manufacturer's recommendations. The catalyst sampling and testing is not subject to Specific Condition 7.A. Record-keeping requirements are identified in specific condition 8.B.v.c.

CONDITION 8. RECORDKEEPING

A. General

- i. Intel shall maintain records of changes in the processes or methods of operation, changes in the amount or type of materials and chemicals used, and physical changes to the Facility, sufficient to demonstrate that:
 - a. the emissions after the change do not exceed the PSEs or other applicable limits in this Permit;
 - b. the changes will not reduce the Department's ability to ensure compliance with this Permit; and

- c. the changes are within the scope of this Permit and applicable laws and regulations.
 - ii. Intel shall monitor and record all information used to complete compliance records and to perform emissions calculations.
 - iii. Intel shall keep records of the production level, expressed as percentage of full capacity, of each Fab. The records of any solvent exhaust stack test or acid gas scrubber exhaust stack test shall include the associated production level expressed as percentage of full capacity of that Fab.
 - iv. Intel shall maintain records documenting maintenance of combustion equipment in 2.C.iv and ducting of pollutants as required in Condition 3.
 - v. Intel shall keep records to support each parameter used to calculate emissions through the evaporation rate equation;
- B. Intel shall monitor and record the following information:
 - i. CUB/EC
 - a. annual natural gas fuel meter calibration reports;
 - b. hours of operation for each emergency generator;
 - c. calculations used to determine emission rates;
 - d. natural gas fuel flow and fuel heat content for each boiler;
 - e. records as required in Condition 2.C ii.a and 2.C.ii.f; and
 - f. records of the date, time, and nature of maintenance or repairs performed on the boilers.
 - ii. BAC/RTO
 - a. hours of the day and days of the week and month of solvent VOC air pollution control unit down time, scheduled and unscheduled maintenance as required in Condition 4.C.ix;
 - b. weekly record of pressure drop across RTOs;
 - c. specific gravity determinations made once every two (2) weeks on activated carbon of each BAC when in operation;
 - d. records of the date, time, and nature of maintenance or repairs performed on the solvent VOC air pollution control units;

- e. date and time of each bead activated carbon unit charge replacement;
 - f. hexamethyldisilazane (HMDS) purchase records and the records used to calculate the thermal oxidizer particulate emissions;
 - g. the date and time of the startup and shutdown of each RTO and BAC;
 - h. natural gas fuel flow and fuel heat content for each oxidizer; and
 - i. the operating temperatures required in 4.C.vi.
- iii. Solvent Exhaust Stack VOC Emissions Testing System
- a. records of the certifications and calibrations of the FID, FTIR, O₂ and CO₂ analyzers, and volume flow meters;
 - b. records of data capture and any breakdown of the testing system, the reasons for the breakdown, and the corrective measures taken; and
 - c. records of the information required in Condition 9.A.iii.e of the Permit.
- iv. Acid Gas Scrubbers
- a. maintenance and operational logs for the acid gas scrubbers; and
 - b. weekly checks made on the acid gas scrubber recirculation water flow rates (in gallons per minute), replacement of the packing, and visual checks of the packing and spray nozzles for plugging.
- v. Ammonia Treatment Plant
- a. Maintenance and operational logs for the ammonia treatment plant;
 - b. Air temperature, air flow, and air pressure;
 - c. Results of the semi-annual sampling of the catalytic material conducted per manufacturer's recommendations; and
 - d. Natural gas fuel flow and fuel heat content.
- vi. Toxic Air Pollutants
- Records of the estimated total potential emissions per Toxic Air Pollutant as calculated with the methods of Condition 5.D of this Permit.

- vii. Chemical Purchase, Usage, and Waste Disposal
 - a. for tanks storing solvent VOCs or HAPs, the tank dimensions, throughput and other information necessary to determine emissions from the storage tanks; and
 - b. the total monthly purchases and changes in stock of all chemicals used to calculate emissions including VOCs, HAPs, TAPs, and precursors of HAPs and TAPs.
- viii. Retention of Records - Intel shall maintain these records on-site for a minimum of five (5) years from the time of recording.

CONDITION 9. REPORTING

A. General Requirements

- i. Intel shall notify the Department in writing of:
 - a. the anticipated date of initial startup of each source, including each boiler, not less than thirty (30) days prior to the date;
 - b. the actual date of initial startup of each source within fifteen (15) days after the startup date;
 - c. the oxidizer and boiler serial number within fifteen (15) days after the initial startup date;
 - d. any change of operators, or location of the oxidizers within fifteen (15) days of such change;
 - e. any necessary update or correction no more than sixty (60) days after Intel knows or should have known of the condition necessitating the update or correction of the Permit;
 - f. any increases in emission factors as required in Condition 1.G; and
 - g. fuel meter calibrations as required in 2.C.ii.e.1.
- ii. The result of any partial or complete test conducted as a requirement of a condition of this Permit or conducted to demonstrate compliance with a condition of this Permit shall be submitted to the Department within thirty (30) days after the completion of the test. Two copies of any solvent exhaust test report shall be submitted to the Department. The results of testing required in condition 5.E.i shall include the parameters of the evaporation rate equation recorded during the test.

- iii. Intel shall submit a quarterly report to the Department, in hard copy and on diskette or other electronic media. The report shall be submitted to the Department within forty-five (45) days of the end of each calendar quarter. The report shall include a spread sheet containing:
 - a. the twelve (12) month rolling total emissions of NO_x, CO, VOCs, individual and total HAP, and particulates from HMDS;
 - b. in quarterly reports for quarters in which the annual stack testing required under Condition 7.D of this Permit is performed, the calculated annual emissions of HAPs from the test data;
 - c. the fuel usage in scf for the ammonia treatment system, each boiler and RTO, and the heat content of the natural gas in units of btu/scf;
 - d. the hours of emergency generator use;
 - e. test results obtained for the period of testing using the solvent exhaust VOC testing system, including:
 - 1) the exhaust flow rate (in dry standard cubic feet per hour) and temperature (in degrees Fahrenheit); and
 - 2) for each solvent exhaust stack, the average total hydrocarbon and VOC concentrations (in parts per million volume, dry basis) and average emission rate of VOCs in pounds per hour;
 - f. each factor used in the equations used to calculate emissions including the parameters of the evaporation rate equation;
 - g. the average total potential emissions of TAPs in pounds per hour calculated for the quarter based on usage or the equation specified in Condition 6.B;
 - h. the total monthly purchases and changes in stock of all chemicals used to calculate emissions including VOCs, HAPs, TAPs, and precursors of HAPs and TAPs; and
 - i. production level expressed as percentage of full capacity of each source Fab associated with emissions test data.
- iv. All calculations shall be computed in accordance with Conditions 2, 4 and 5 and Tables 1, 3, Y, and Z of this Permit.
- v. Excess emissions shall be reported as required by 20.2.7 NMAC - Excess Emissions.

- vi. Intel shall notify the Department via email within ten (10) days after the equipment has returned to normal operation for equipment downtimes specified in 4.C.ix and 5.C.ii. Notification shall include the equipment ID, date and time the unit went down, date and time the unit returned to normal operation, total time the equipment was down, and the reason for the downtime. The reason shall be listed as either preventative maintenance (PM), corrective maintenance (CM) or a brief description of the malfunction.
- vii. All submittals required by this Permit shall be addressed to:

Program Manager, Compliance and Enforcement Section
New Mexico Environment Department
Air Quality Bureau
1301 Siler Road, Building B
Santa Fe, New Mexico 87507-3113

B. CUB/EC

Intel shall report to the Department any change to the boiler burner fuel distribution system, the burner, or the burner air distribution system of any boiler and the effect of such change on the boiler emissions.

Table 1
Emission Factors for Boilers, RTOs and Ammonia Treatment System

	Emission Factors (EF)						
	TSP/ PM10	SO₂	NO_x	CO	VOC	EF Units	Basis for EF
1250 BHP Boilers Natural Gas	0.0045	0.6 lb/MMscf	0.04	0.0002	0.0027	TSP, NO _x , CO, VOC- lb/MMbtu	Emission profile testing (NO _x , O); Mfr's data (TSP); AP42 (SO ₂)
1250 BHP Boilers #2 fuel oil	2	71	20	5	0.2	lb/10 ³ gal	AP-42, Table 1.3.2, Jan. 1995
Fab 11S Recuperative Thermal Oxidizer (RTOs)	7.6 lb/MMscf	0.6 lb/MMscf	0.12	0.07	5.5 lb/MMscf	NO _x , CO - lb/MMbtu	Stack testing (NO _x , CO); AP-42 (SO ₂ , TSP, VOC)
Fab 11X Bridge & Fab 11X Fab RTOs	7.6 lb/MMscf	0.6 lb/MMscf	0.50	0.12	5.5 lb/MMscf	NO _x , CO - lb/MMbtu	Stack testing (NO _x , CO); AP-42 (SO ₂ , TSP, VOC)
Fab 11X Munters 1 & Fab 11X Munters 2 RTOs	7.6 lb/MMscf	0.6 lb/MMscf	100	84	5.5 lb/MMscf	NO _x , CO - lb/10 ⁶ scf	AP-42 (NO _x *, CO*, SO ₂ , TSP, VOC)
Ammonia Treatment System	7.6 lb/MMscf	0.6 lb/MMscf	0.06	0.03	5.5 lb/MMscf	NO _x , CO - lb/MMbtu	Mfg. data (NO _x , CO); AP-42 (SO ₂ , TSP, VOC)

*AP-42 emission factors for NO_x and CO shall be used for the Munters RTOs until the units have been tested and site specific emission factors are developed.

Attachment A		
Air Emission Sources		
<u>Boilers</u>		
Source	Stack	Description
blr-32-gd3-1	blr-32-gd3-1s	Boiler 1 - 1250 BHP
blr-32-gd3-2	blr-32-gd3-2s	Boiler 2 - 1250 BHP
blr-32-gd3-3	blr-32-gd3-3s	Boiler 3 - 1250 BHP
blr-32-gd3-4	blr-32-gd3-4s	Boiler 4 - 1250 BHP
blr-32-gd3-5	blr-32-gd3-5s	Boiler 5 - 1250 BHP
blr-32-gd3-6	blr-32-gd3-6s	Boiler 6 - 1250 BHP
blr-32-gd3-7	blr-32-gd3-7s	Boiler 7 - 1250 BHP
blr-32-gd3-8	blr-32-gd3-8s	Boiler 8 - 1250 BHP
blr-32-gd3-9	blr-32-gd3-9s	Boiler 9 - 1250 BHP
blr-32-gd3-10	blr-32-gd3-10s	Boiler 10 - 1250 BHP
ecs-boi-97	ecs-boi-97s	Boiler 9.7 - 1250 BHP
ecs-boi-98	ecs-boi-98s	Boiler 9.8 - 1250 BHP
<u>Thermal Oxidizers</u>		
Source	Stack	Description
voc south	voc south primary, voc south bypass	Fab 11S Thermal Oxidizer
voc-16-np2-1	voc-16-np2-1s	Fab 11X Bridge Thermal Oxidizer
voc-16-lt2-1	voc-16-lt2-1s	Fab 11X Fab Thermal Oxidizer
VOC138-1-120	VOC138-1-121-1s/VOC138-1-121-2s	Fab 11X Munters 1
VOC138-2-120	VOC138-2-121-1s/VOC138-2-121-2s/ VOC138-2-121-3s	Fab 11X Munters 2
<u>Other Sources</u>		
Source	Stack	Description
TBD	TBD	Ammonia Treatment System
<u>Acid Gas Scrubbers</u>		
Source	Stack	Description
sc-12-np2-1	sc-12-np2-1s	Fab 11XB Scrubber
sc-12-np2-2	sc-12-np2-2s	Fab 11XB Scrubber
sc-12-np2-3	sc-12-np2-3s	Fab 11XB Scrubber
sc-12-np2-4	sc-12-np2-4s	Fab 11XB Scrubber
sc-12-lt2-1	sc-12-lt2-1s	Fab 11XF Scrubber
sc-12-lt2-2	sc-12-lt2-2s	Fab 11XF Scrubber
sc-12-lt2-3	sc-12-lt2-3s	Fab 11XF Scrubber
sc-40-lt2-1	sc-40-lt2-1s/sc-40-lt2-2s	Fab 11XF Scrubber
sc-40-lt2-2	sc-40-lt2-1s/sc-40-lt2-2s	Fab 11XF Scrubber
sc-40-np2-1	sc-40-np2-1s	Fab 11XB Scrubber
sc-40-np2-2	sc-40-np2-2s	Fab 11XB Scrubber
sc-12-fb1-1	sc-12-fb1-1s	F11S Scrubber
sc-12-fb1-2	sc-12-fb1-2s	F11S Scrubber
sc-12-fb1-3	sc-12-fb1-3s	F11S Scrubber
sc-12-fb1-4	sc-12-fb1-4s	F11S Scrubber
sc-12-fb1-5	sc-12-fb1-5s	F11S Scrubber

Attachment A (continued)		
Air Emission Sources		
Acid Gas Scrubbers		
Source	Stack	Description
sc-12-fb1-7	sc-12-fb1-7s	F11S Scrubber
sc-12-fb1-8	sc-12-fb1-8s	F11S Scrubber
sc-12-fd1-1	sc-12-fd1-1s	F11S Scrubber
sc-12-fd1-3	sc-12-fd1-3s	F11S Scrubber
sc-12-fd1-6	sc-12-fd1-6s	F11S Scrubber
sc-12-cr1-1	sc-12-cr1-1s	C4 Scrubber
sc-12-cr1-2	sc-12-cr1-2s	C4 Scrubber
SC-12-GC1-1	SC-12-GC1-1s	CUB Scrubber
SC-40-GC1-1	SC-40-GC1-1s	CUB Scrubber
SC-12-GC1-2	SC-12-GC1-2s	CUB Scrubber
SC-40-GC1-2	SC-40-GC1-2s	CUB Scrubber
sc-12-cb1-1	sc-12-cb1-1s	F11N Scrubber
sc-12-cb1-2	sc-12-cb1-2s	F11N Scrubber
sc-12-cb1-3	sc-12-cb1-3s	F11N Scrubber
sc-12-cb1-4	sc-12-cb1-4s	F11N Scrubber
sc-12-cb1-5	sc-12-cb1-5s	F11N Scrubber
sc-12-cb1-6	sc-12-cb1-6s	F11N Scrubber
sc-12-cb1-7	sc-12-cb1-7s	F11N Scrubber
sc-12-cb1-8	sc-12-cb1-8s	F11N Scrubber
sc-12-bv1-1	sc-12-bv1-1s	F11N Scrubber
sc-12-bv1-2	sc-12-bv1-2s	F11N Scrubber
f9-scb-1.8	f9-scb-1.8s	F11W Scrubber
f9-scb-1.4	f9-scb-1.4s	F11W Scrubber
f9-scb-1.3	f9-scb-1.3s	F11W Scrubber
f9-scb-1.2	f9-scb-1.2s	F11W Scrubber
f9-scb-1.1	f9-scb-1.1s	F11W Scrubber
f9-sc-5-1-3	f9-sc-5-1-3s	F11W Scrubber
Notes:		
If equipment is replaced/relocated a new and unique number will be assigned as part of the required permitting process		
Sources with negligible or no emissions such as emergency gas pad scrubbers, ventilation exhaust, etc. are not individually identified in this Attachment		

Table CS Hourly Emission Limits for Combustion Sources							
Sources	Stacks	Description	Fuel	TSP/ PM10 (lb/hr)	SO2 (lb/hr)	CO (lb/hr)	NO _x (lb/hr)
blr-32-gd3-1 through blr-32-gd3-10	blr-32-gd3-1s through blr-32-gd3-10s	1250 BHP Boilers* (12 ea.)	natural gas	0.24	0.03	5.60	2.92
ecs-boi-97 ecs-boi-98	ecs-boi-97s ecs-boi-98s		#2 fuel oil	0.8	27.5	1.9	7.8
voc south voc-16-np2-1 voc-16-lt2-1	voc south primary, voc south bypass voc-16-np2-1s voc-16-lt2-1s	RTOs** (Durr)	natural gas	4.5	0.002	0.6	1.0
VOC138-1-120 VOC138-2-120	VOC138-1-121-1s/VOC138- 1-121-2s VOC138-2-121-1s/VOC138- 2-121-2s/VOC138-2-121-3s	RTOs** (Munters)					
TBD	TBD	Ammonia Treatment System	natural gas	0.05	0.002	1.0	1.0
*For boilers, emission rates are for each stack. **There are a total of 5 RTOs and emission rates are for each unit. Note: TSP/PM10 limit for RTO includes emissions from fuel combustion and from conversion of HMDS to particulates.							

Table 2
Plant Site Emission Limits (PSELs) for HAPs¹

Pollutant	Twelve (12) Month Rolling Total PSEL (tpy)
Cresols	7.4
Hexachlorobenzene	0.5
Hexachlorobutadiene	3.9
Hexachlorocyclopentadiene	2.1
Phenol	1.5
Phosphine	7.9
Phosphorus	1.9
Phosgene	5.9
Arsenic Compounds	0.2
Cobalt Compounds	0.4
Chromium Compounds	0.2
Lead Compounds	0.2
Manganese Compounds	3.8
Mercury Compounds	0.5
Nickel Compounds	0.3
Selenium Compounds	3.8
Other Individual HAPs	9.0
All HAPs Combined	24.0

¹ PSELs for individual HAPs were determined by the following analysis. For those HAPs for which an Effects Screening Level (ESL) has been established by the Texas Natural Resource Conservation Commission, Intel performed an air quality analysis which assumed that the HAP would be emitted at the rate of nine (9) tons per year. Within the ESL list, HCL is the only chemical for which TNRCC deviates from the published ESL of 0.1 ug/m³. TNRCC uses this value in humid areas; TNRCC uses 0.4 ug/m³ in dry areas. The 0.4 ug/m³ value was appropriate for Intel's analysis. Intel analyzed the resulting ambient air concentrations at the property line and the nearest sensitive receptor using an EPA approved air dispersion screening model. Intel then evaluated whether the relevant ESL would be exceeded under such circumstances. If application of the screening model analysis indicated a potential for exceeding the relevant ESL, Intel had the option to use a more refined, EPA-approved analysis to evaluate the accuracy of the screening model. If Intel declined to perform this additional analysis, or if such analysis confirmed the results of the screening model, a special emissions limit was established for such HAP so that model-predicted concentrations of the HAP in the ambient air would not exceed the ESL.

Table 3
Emission Factors for HAPs¹

*16 Chem
16 Chem Used.*

Pollutant	Chemical or Precursor	Emission Factor			
		G	H	I	J
<i>HF</i>					
SF6 to HF	Sulfur Hexafluoride (SF6)	0.0047	-	0.0009	-
CF4 to HF	Carbon Tetrafluoride (CF4)	0.0025	-	0.0037	-
CHF3 to HF	Trifluoromethane (CHF3)	0.0337	-	0.0114	-
NF3 to HF	Nitrogen Trifluoride (NF3)	0.0046	0.0047	0.0057	0.0046
WF6 to HF	Tungsten Hexafluoride (WF6)	0.0341	-	0.0341	-
C4F8 to HF	Octafluorocyclobutane (C4F8)	0.0255	-	0.0294	-
CH2F2 to HF	Difluoromethane (CH2F2)	0.0362	-	0.0248	-
C5F8 to HF	Octafluorocyclopentene (C5F8)	0.0343	-	0.0334	-
BF3 to HF	Boron Trifluoride (BF3)	0.0600	-	0.0600	-
HF to HF	Hydrogen Fluoride (HF)	-	0.1364	-	-
C4F6 to HF	Hexafluoro-1,3-butadiene (C4F6)	0.0508	-	0.0100	-
<i>HCl</i>					
Cl2 to HCl	Chlorine (Cl2)	0.0835	-	0.0500	-
DCE to HCl	Trans 1,2-Dichloroethene (DCE)	0.1004	-	0.1004	-
DCS to HCl	Dichlorosilane (DCS)	0.0002	-	0.0002	-
HCl	Hydrogen Chloride (HCl)	0.0017	-	0.0932	-
HCl	Hydrogen Chloride (HCl) VMB	0.0961	-	0.0961	-
HCl	Hydrogen Chloride (HCl) RFC	0.3100	-	0.3100	-
11AVD to HCl	11AVD	0.1021	-	0.1021	-
Cascade to HCl	Cascade	0.1021	-	0.1021	-
ACME to HCl	ACME	0.0024	-	0.1550	-
<i>Cl2</i>					
Cl2	Chlorine (Cl2)	0.2921	-	0.4372	-
DCE to Cl2	Trans 1,2-Dichloroethene (DCE)	0.0940	-	0.0940	-
DCS to Cl2	Dichlorosilane (DCS)	0.0000	0.0000	0.0000	0.0000
<i>Others</i>					
Cl2 to CCl4	Chlorine (Cl2)	0.0058	-	0.00001	-
Methanol (gensolve)	Methanol (abated)	-	0.0004	-	0.000004
AsH3	Arsine (AsH3)	0.0050	-	0.0050	-
PH3	Phosphine (PH3)	0.0050	-	0.0893	-
Diethylene Glycol Monomethyl Ether	Diethylene Glycol Monomethyl Ether	0.0000	-	0.0000	-
Bromoform ²	Sodium Bromide – CUB	0.0605			
Bromoform ²	Sodium Bromide – NEC	0.0096			
LCP Oxide Etch to NH ₃ ³	LCP Oxide Etch	0.0008		0.0008	
LCP Oxide Etch to NO _x ⁴	LCP Oxide Etch	0.0005		0.0005	
Any Other HAP Listed In Appendix X ⁵		1			

Notes:

¹ Emission factors take into account control efficiencies, where applicable. Chemicals having emission factors equal to zero (0.0) are either completely consumed in the process or are solid sources with negligible vapor pressures. Intel may revise the emission factors following Condition 1.G. EFs for processes no longer in use have been removed from this table.

² Site EF, not associated with a single process

³ NH₃ is not a HAP but will be reported with TAP emissions

⁴ NO_x is not a HAP but will be reported with site NO_x emissions

⁵ This category does not include those HAPs chemicals for which Intel uses the sink evaporation equation specified in Condition 5.D.iv to calculate emissions.

"-"chemical not used on this technology

*Control
efficiency
built in
to EF*

Appendix X - HAPs List

CAS#	Chemical Name	CAS#	Chemical Name
75058	Acetonitrile	91203	Naphthalene
79107	Acrylic acid	98953	Nitrobenzene
62533	Aniline	92933	4-Nitrobiphenyl
71432	Benzene (including benzene from	100027	4-Nitrophenol
75252	Bromoform	684935	N-Nitroso-N-methylurea
106990	1,3-Butadiene	108952	Phenol
56235	Carbon tetrachloride	75445	Phosgene
7782505	Chlorine	7803512	Phosphine
67663	Chloroform	7723140	Phosphorus
1319773	Cresols/Cresylic acid (isomers and	85449	Phthalic anhydride
95487	o-Cresol	1120714	1,3-Propane sultone
108394	m-Cresol	78875	Propylene dichloride
106445	p-Cresol	75569	Propylene oxide
106467	1,4-Dichlorobenzene(p)	100425	Styrene
121697	N,N-Diethyl aniline (N,N-	96093	Styrene oxide
60117	Dimethyl aminoazobenzene	79345	1,1,2,2-Tetrachloroethane
131113	Dimethyl phthalate	7550450	Titanium tetrachloride
75003	Ethyl chloride (Chloroethane)	108883	Toluene
107062	Ethylene dichloride (1,2-Dichloroethane)	120821	1,2,4-Trichlorobenzene
107211	Ethylene glycol	79005	1,1,2-Trichloroethane
75218	Ethylene oxide	79016	Trichloroethylene
75343	Ethylidene dichloride (1,1-Dichloroethane)	121448	Triethylamine
50000	Formaldehyde	540841	2,2,4-Trimethylpentane
118741	Hexachlorobenzene	108054	Vinyl acetate
87683	Hexachlorobutadiene	75354	Vinylidene chloride
77474	Hexachlorocyclopentadiene	1330207	Xylenes (isomers and mixture)
67721	Hexachloroethane	95476	o-Xylenes
110543	Hexane	108383	m-Xylenes
7647010	Hydrochloric acid	106423	p-Xylenes
7664393	Hydrogen fluoride (Hydrofluoric acid)		Antimony Compounds
108316	Maleic anhydride		Arsenic Compounds
67561	Methanol		Chromium Compounds
74839	Methyl bromide (Bromomethane)		Cobalt Compounds
74873	Methyl chloride (Chloromethane)		Cyanide Compounds
71556	Methyl chloroform (1,1,1-Trichloroethane)		Glycol ethers
78933	Methyl ethyl ketone (2-Butanone)		Lead Compounds
74884	Methyl iodide (Iodomethane)		Manganese Compounds
108101	Methyl isobutyl ketone (Hexone)		Mercury Compounds
80626	Methyl methacrylate		Nickel Compounds
1634044	Methyl tert butyl ether		Polycyclic Organic Matter
75092	Methylene chloride (Dichloromethane)		Selenium Compounds

Table Y
Emission Factors for TSP/PM10

Pollutant	Emissions Factor
HMDS	0.745

Table Z
Emission Factors for VOCs¹

Pollutant	Emission Factors			
	G	H	I	J
5-Chloro-2-methyl-4-isothiazolin 3-one	0.0000	-	0.0000	-
Carbon Monoxide ²	1.0000	1.0000	0.2139	-
1,2-Cyclohexylenedinitrilotetraacetic acid	0.0000	-	0.0000	-
Cyclohexanone	0.0051	-	0.0029	-
Diethyl Ketone	0.0026	-	0.0026	-
Diethylene Glycol Monomethyl Ether	0.0000	-	0.0000	-
Dimethyldimethoxysilane (DMDMOS)	0.0153	-	0.0933	-
Ethanol	0.0150	-	0.0156	-
Ethanol (Polyimide)	0.0133	-	0.0133	-
* Ethyl Lactate	0.0047	0.0135	0.0055	0.0135
Gamma-Butyrolactone	0.0071	-	0.0058	-
Hexafluoro-1,3-butadiene (C4F6)	0.1226	-	0.3263	-
Hexamethyldisilazane (HMDS)	0.0163	-	0.0171	-
Isoamyl Ether	-	-	0.0058	-
Isopropyl Alcohol (abated)	0.0062	0.0125	0.0057	0.0161
Isopropyl Alcohol (bottled)	0.9020	-	0.9020	-
Isopropyl Alcohol (SLAM)	0.0153	-	0.0167	-
Malonic Acid	0.0000	-	0.0000	-
* Methanol (gensolve)	-	0.0004	-	0.000004
Methyl Isobutyl Carbinol	-	-	0.0058	-
2-Methyl-4-isothiazolin 3-one	0.0000	-	0.0000	-
Methyl n-amyl ketone (2-Heptanone)	-	0.0135	-	0.0135
1-Methyl-2-pyrrolidinone (NMP)	0.0005	-	0.0005	-
1-Methyl-2-pyrrolidinone - (from GenSolve)	-	0.0009	-	0.000004
n-Butanol	0.0049	-	0.0049	-
Octafluorocyclopentene (C5F8)	0.1472	-	0.1588	-
PDMAT	0.0092	-	0.0092	-
Propylene Glycol Monomethyl Ether (PGME)	0.0058	0.0105	0.0167	0.0099
Propylene Glycol Monomethyl Ether Acetate (PGMEA)	0.0059	-	0.3513	-
Propene (C3H6)	-	-	0.1883	-
Tetrakis(dimethylamino)titanium (TDMAT) to Diethyl Amine	0.0300	-	0.0300	-
Tetramethylsilane	0.0100	-	0.0100	-
Trans 1,2-Dichloroethene (DCE)	0.0000	-	0.0000	-
Any Other VOC chemicals ³	1			

Notes:

¹ Emission factors take into account control efficiencies, where applicable. Chemicals having emission factors equal to zero (0.0) are either completely consumed in the process or are solid sources with negligible vapor pressures. Intel may revise the emission factors following Condition 1.G. EFs for processes no longer in use have been removed from this table.

² Carbon Monoxide is not a VOC but will be reported with site CO emissions

³ This category does not include those VOC chemicals for which Intel will use the sink evaporation equation specified in Condition 4.D.iv.a to calculate emissions.

"-"chemical not used on this technology



BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

New Mexico
ENVIRONMENT DEPARTMENT

Air Quality Bureau
1301 Siler Road, Building B
Santa Fe, NM 87507-3113
Phone (505) 476-4300
Fax (505) 476-4375
www.nmenv.state.nm.us



RON CURRY
Secretary

JON GOLDSTEIN
Deputy Secretary

June 23, 2009

Sarah Chavez
Environmental Engineer
Intel Corporation
4100 Sara Road
Rio Rancho, NM 87124

Administrative Permit Revision
20.2.72.219.A(1)(e) NMAC
NSR No. 0325-M9-R21
IDEA ID No. 1103 - PRN20090002
Intel - Rio Rancho Facility
AIRS No. 35043000

Dear Ms. Chavez:

This letter is to acknowledge your letter of June 5, 2009 to revise Air Quality Permit 0325-M9-R20 for Intel Corporation, Intel - Rio Rancho Facility, Rio Rancho, in Sandoval County, New Mexico. This revision is pursuant to Title 20 of the New Mexico Administrative Code Chapter 2 Part 72 (20.2.72 NMAC) Construction Permits Section 219.A(1)(e). This revision consists of the following activity, which is exempt under 20.2.72.202.B(4) NMAC: the reconfiguration of gas scrubber stack: Current source: sc-12-cb1-1; New source: sc-40-np2-3; Current stack: sc-12-cb1-1s; New stack: sc-40-np2-3s. The request was received by the New Mexico Environment Department's Air Quality Bureau (Department) on June 8, 2009.

A review of the information you submitted confirms that the requirements specified in 20.2.72 NMAC, Construction Permits, Permit Processing and Requirements, Section 219.A are met. 20.2.72.219.A.3 NMAC specifies that administrative permit revisions become effective upon receipt of the notification by the Department.

This letter shall be attached to Air Quality Permit No. 0325-M9-R20, issued by the Department on April 16, 2009 to serve as acknowledgment by the Department that this administrative revision is authorized.

If you have any questions, please do not hesitate to contact me in Santa Fe at 505-476-5550.

Sincerely,

A handwritten signature in black ink that reads "Coleman Smith".

Coleman Smith
Air Permit Specialist
New Source Review Unit
Permitting Section

Enclosure: Industry/Consultant Feedback Questionnaire with envelope



BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

New Mexico
ENVIRONMENT DEPARTMENT

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RON CURRY
Secretary

JON GOLDSTEIN
Deputy Secretary

August 13, 2009

Sarah Chavez
Environmental Engineer
Intel Corporation
4100 Sara Road
Rio Rancho, NM 87124

Administrative Permit Revision
20.2.72.219.A(1)(e) NMAC
NSR No. 0325-M9-R22
IDEA ID No. 1103 - PRN20090003
Intel - Rio Rancho Facility
AIRS No. 35043000

Dear Ms. Chavez:

This letter is to acknowledge your letter of July 30, 2009 to revise Air Quality Permit 0325-M9-R21 for Intel Corporation, Intel - Rio Rancho Facility, Rio Rancho, in Sandoval County, New Mexico. This revision is pursuant to Title 20 of the New Mexico Administrative Code Chapter 2 Part 72 (20.2.72 NMAC) Construction Permits Section 219.A(1)(e). This revision consists of the following activities, which are exempt under 20.2.72.202.B(4) NMAC:

Reconfiguration/corrections to gas scrubber and thermal oxidizer stacks:

- 1) Current source: SC-12-fb1-7; Current stack: SC-12-fb1-7s
New source: RRFB-SC142-1; New stack: RRFB-SC142-1s
- 2) Current source: SC-12-fd1-1; Current stack: SC-12-fd1-1s
New source: RRFB-SC142-3; New stack: RRFB-SC142-3s
- 3) Current source: SC-12-fb1-8; Current stack: SC-12-fb1-8s
New source: RRFB-SC142-2; New stack: RRFB-SC142-2s
- 4) Current source: VOC138-1-120; Current stack: VOC138-1-121-1s/VOC138-1-121-2s
New source: unchanged; New stack: VOC138-1-120-1s/VOC138-1-120-2s
- 5) Current source: VOC138-2-120; Current stack: VOC138-2-121-1s/VOC138-2-121-2s
New source: unchanged; New stack: VOC138-2-120-1s/VOC138-2-120-2s
- 6) Current source: voc south (see Item 7 below); Current stack: voc south primary, voc south bypass
New source: VOC138-3-120; New stack: VOC138-3-120-1s/VOC138-3-120-2s

Additional corrections to Permit 0325M9R20 (most recent Technical Revision):

- 7) All future permit nomenclature referring to the source "voc south" shall be referred to as "Fab 11X Munters 3".

Attachment B contains
Confidential Business
Information and has
been redacted from the
report.

Attachment C contains Confidential Business Information and has been redacted from the report.

Attachment D contains
Confidential Business
Information and has
been redacted from the
report.

Attachment 2

Calculation of Scrubber Removal Efficiencies

Calculation of Scrubber Removal Efficiencies

The scrubber tests have demonstrated removal efficiencies for HCl, HF, and Cl₂. The tests have also shown that the concentrations of HCl, HF and Cl₂ change during daily operations.

Intel's facility operates a series of batch operations which result in various concentrations of HCl, HF, Cl₂ exhausted to the scrubbers. For demonstration of a long term efficiency for the scrubbers during the course of a year's operations an average of the efficiencies among the stacks tested is the most appropriate method. This assumes that even though the inlet concentrations seen by the scrubber will vary over time, during the course of the year the cycles of the higher and lower inlet concentrations level out because the semiconductor wafers processed require the same production steps. In the October 1999 minor source permit application Intel originally chose to subtract a statistical prediction factor from the average to assure a conservative emission estimates.

In 2003, NMED requested that Intel conduct simultaneous inlet and outlet testing on a representative number of scrubbers at the NM Site. This testing was conducted using Method 320 (FTIR) and Method 26A (impinger) and resulted in data for 7 scrubbers at the site. The tests were conducted during our normal permit required compliance testing and test results were included in the report and submitted to NMED in 2003.

Intel has reviewed both the historical and current inlet and outlet data and calculated a weighted removal efficiency. Intel has chosen this approach to account for the different air flows and concentrations in the systems across the site. In addition, based on data collected since the permit was issued, Intel believes that the conservatism in the original method is no longer needed. The weighted removal efficiency was calculated as follows:

$$\text{Weighted Inlet (D)} = \text{Flow Rate (A)} * \text{Inlet (B)}$$

$$\text{Weighting Factor (E)} = \text{Weighted Inlet (D)} / \Sigma \text{Weighted Inlet}$$

$$\text{Weighted Removal Efficiency (F)} = \Sigma (\text{Removal Efficiency (C)} * \text{Weighting Factor (E)})$$

The letters in parentheses refer to the column heading in the table below.

Intel has done this evaluation for the three constituents, HCl, HF, and Cl₂; they are the only chemicals routed to scrubbers in which removal efficiency is used in the emission factor. The evaluation for HCl and Cl₂ resulted in slightly higher removal efficiencies, while the evaluation for HF showed a significant increase. In order to remain consistent with the other factories around Intel that are currently using 69% for HCl, 70% for HF and 53% for Cl₂, only the HF removal efficiency will be changed. The removal efficiencies that will be used to calculate emissions are:

- 69% for HCl;
- 70% for HF; and
- 53% for Cl₂.

Below is a summary of the data for HF:

Scrubber Number	Test Date	(A) Flow (dscfm) (avg flow for test period)	(B) HF Inlet (ppb)	HF Outlet (ppb)	(C) Removal Efficiency %	(D) Weighted Inlet	(E) Weighting Factor	(F) Weighted Removal Efficiency
10.1.1d	Jun-95	17508	113	90	20%	1969650	0.49%	0.10%
10.1.1d	Aug-95	19917	346	270	22%	6897921	1.73%	0.38%
10.1.1e	Jun-95	17308	134	27	80%	2319272	0.58%	0.47%
10.1.1e	Aug-96	19386	39	45	-17%	749592	0.19%	-0.03%
10.1.1f	Jun-95	18132	425	66	85%	7706100	1.93%	1.63%
10.1.1f	Aug-95	20675	44	22	49%	909700	0.23%	0.11%
9.1.3a	Jun-95	21718	450	156	65%	9773100	2.45%	1.60%
9.1.3a	Aug-95	13007	2273	149	93%	29569246	7.40%	6.91%
9.1.3a	Sep-95	13691	1423	175	88%	19475447	4.87%	4.27%
7.1.1a	Sep-95	48450	125	41	67%	6040100	1.51%	1.02%
7.1.2	Aug-96	35527	102	62	39%	3623754	0.91%	0.36%
7.1.3	Sep-95	34812	261	54	80%	9094635	2.28%	1.81%
7.1.3	Aug-96	34486	423	100	76%	14587578	3.65%	2.78%
11.1.5	Aug-96	24116	4977	1055	79%	120025332	30.03%	23.66%
11.1.3	Aug-96	28116	1667	132	92%	46860000	11.72%	10.80%
10s.4.2ab	Sep-03	37479	846	349	59%	31721797	7.94%	4.66%
11s.1.14	Sep-03	28602	784	370	53%	22428045	5.61%	2.96%
11s.1.6	Aug-03	30145	2188	431	80%	65963889	16.50%	13.25%
						399715160	100.00%	77%

**INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER**

FIELD AND SOURCE DOCUMENTATION

**APPENDIX A
Field and Measurement Data**

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER

FIELD AND SOURCE DOCUMENTATION

APPENDIX A
Field and Measurement Data

SECTION 1
Fab 7 Acid Scrubber Results

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

Scrubber Inlet 7s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
7S_1_5 INLET 08 25 03 SAMPLE_0035.LAB	8/25/2003 9:58	ND	ND	ND	ND	ND	1.39	380.6	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0036.LAB	8/25/2003 10:01	ND	ND	ND	ND	ND	1.39	380.2	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0037.LAB	8/25/2003 10:03	ND	ND	ND	ND	ND	1.39	382.8	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0038.LAB	8/25/2003 10:06	ND	ND	ND	ND	ND	1.39	382.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0039.LAB	8/25/2003 10:09	ND	ND	ND	ND	ND	1.38	381.7	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0040.LAB	8/25/2003 10:12	ND	ND	ND	ND	ND	1.39	382.5	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0041.LAB	8/25/2003 10:14	ND	ND	ND	ND	ND	1.38	381.8	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0042.LAB	8/25/2003 10:17	ND	ND	ND	ND	ND	1.39	381.8	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0043.LAB	8/25/2003 10:20	ND	ND	ND	ND	ND	1.38	379.9	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0044.LAB	8/25/2003 10:23	ND	ND	ND	ND	ND	1.38	381.7	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0045.LAB	8/25/2003 10:26	ND	ND	ND	ND	ND	1.37	379.8	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0046.LAB	8/25/2003 10:28	ND	ND	ND	ND	ND	1.37	381.4	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0047.LAB	8/25/2003 10:31	ND	ND	ND	ND	ND	1.36	377.1	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0048.LAB	8/25/2003 10:34	ND	ND	ND	ND	ND	1.36	376.9	ND	ND	150.51	1.011
7S_1_5 INLET 08 25 03 SAMPLE_0049.LAB	8/25/2003 10:37	ND	ND	ND	ND	ND	1.36	378.5	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0050.LAB	8/25/2003 10:39	ND	ND	ND	ND	ND	1.37	380.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0051.LAB	8/25/2003 10:42	ND	ND	ND	ND	ND	1.37	380.2	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0052.LAB	8/25/2003 10:45	ND	ND	ND	ND	ND	1.37	380.1	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0053.LAB	8/25/2003 10:48	ND	ND	ND	ND	ND	1.36	378.1	ND	ND	150.51	1.011
7S_1_5 INLET 08 25 03 SAMPLE_0054.LAB	8/25/2003 10:50	ND	ND	ND	ND	ND	1.37	380.2	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0055.LAB	8/25/2003 10:53	ND	ND	ND	ND	ND	1.37	382.8	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0056.LAB	8/25/2003 10:56	ND	ND	ND	ND	ND	1.36	381.2	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0057.LAB	8/25/2003 10:59	ND	ND	ND	ND	ND	1.36	380.7	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0058.LAB	8/25/2003 11:02	ND	ND	ND	ND	ND	1.36	381.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0059.LAB	8/25/2003 11:04	ND	ND	ND	ND	ND	1.37	382.8	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0060.LAB	8/25/2003 11:07	ND	ND	ND	ND	ND	1.37	383.5	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0061.LAB	8/25/2003 11:10	ND	ND	ND	ND	ND	1.37	381.8	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0062.LAB	8/25/2003 11:13	ND	ND	ND	ND	ND	1.37	382.4	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0063.LAB	8/25/2003 11:15	ND	ND	ND	ND	ND	1.37	384.0	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0064.LAB	8/25/2003 11:18	ND	ND	ND	ND	ND	1.36	382.4	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0065.LAB	8/25/2003 11:21	ND	ND	ND	ND	ND	1.37	382.1	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0066.LAB	8/25/2003 11:24	ND	ND	ND	ND	ND	1.36	381.0	ND	ND	150.51	1.011
7S_1_5 INLET 08 25 03 SAMPLE_0067.LAB	8/25/2003 11:26	ND	ND	ND	ND	ND	1.36	381.2	ND	ND	150.51	1.011
7S_1_5 INLET 08 25 03 SAMPLE_0068.LAB	8/25/2003 11:29	ND	ND	ND	ND	ND	1.37	387.4	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0069.LAB	8/25/2003 11:32	ND	ND	ND	ND	ND	1.37	386.3	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0070.LAB	8/25/2003 11:35	ND	ND	ND	ND	ND	1.38	386.4	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0071.LAB	8/25/2003 11:37	ND	ND	ND	ND	ND	1.37	386.6	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0072.LAB	8/25/2003 11:40	ND	ND	ND	ND	ND	1.37	385.4	ND	ND	150.51	1.011
7S_1_5 INLET 08 25 03 SAMPLE_0073.LAB	8/25/2003 11:43	ND	ND	ND	ND	ND	1.38	386.7	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0074.LAB	8/25/2003 11:46	ND	ND	ND	ND	ND	1.40	387.9	ND	18.072	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0075.LAB	8/25/2003 11:49	ND	ND	ND	ND	ND	1.39	388.2	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0076.LAB	8/25/2003 11:51	ND	ND	ND	ND	ND	1.39	385.2	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0077.LAB	8/25/2003 11:54	ND	ND	ND	ND	ND	1.38	384.9	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0078.LAB	8/25/2003 11:57	ND	ND	ND	ND	ND	1.39	382.1	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0079.LAB	8/25/2003 12:00	ND	ND	ND	ND	ND	1.39	383.7	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0080.LAB	8/25/2003 12:02	ND	ND	ND	ND	ND	1.38	383.3	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0081.LAB	8/25/2003 12:05	ND	ND	ND	ND	ND	1.37	381.1	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0082.LAB	8/25/2003 12:08	ND	ND	ND	ND	ND	1.36	378.6	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0083.LAB	8/25/2003 12:11	ND	ND	ND	ND	ND	1.36	376.5	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0084.LAB	8/25/2003 12:13	ND	ND	ND	ND	ND	1.35	374.0	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0085.LAB	8/25/2003 12:16	ND	ND	ND	ND	ND	1.35	375.3	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0086.LAB	8/25/2003 12:19	ND	ND	ND	ND	ND	1.35	374.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0087.LAB	8/25/2003 12:22	ND	ND	ND	ND	ND	1.33	373.9	ND	ND	150.51	1.006

Scrubber Inlet 7s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
7S_1_5 INLET 08 25 03 SAMPLE_0088.LAB	8/25/2003 12:25	ND	ND	ND	ND	ND	1.34	376.3	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0089.LAB	8/25/2003 12:27	ND	ND	ND	ND	ND	1.33	376.4	ND	ND	149.76	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0090.LAB	8/25/2003 12:30	ND	ND	ND	ND	ND	1.32	375.7	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0091.LAB	8/25/2003 12:33	ND	ND	ND	ND	ND	1.32	378.1	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0092.LAB	8/25/2003 12:36	ND	ND	ND	ND	ND	1.31	376.4	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0093.LAB	8/25/2003 12:38	ND	ND	ND	ND	ND	1.32	378.2	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0094.LAB	8/25/2003 12:41	ND	ND	ND	ND	ND	1.31	376.3	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0095.LAB	8/25/2003 12:44	ND	ND	ND	ND	ND	1.31	376.0	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0096.LAB	8/25/2003 12:47	ND	ND	ND	ND	ND	1.32	375.2	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0097.LAB	8/25/2003 12:49	ND	ND	ND	ND	ND	1.32	376.3	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0098.LAB	8/25/2003 12:52	ND	ND	ND	ND	ND	1.33	374.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0099.LAB	8/25/2003 12:55	ND	ND	ND	ND	ND	1.32	374.3	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0100.LAB	8/25/2003 12:58	ND	ND	ND	ND	ND	1.32	373.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0101.LAB	8/25/2003 13:00	ND	ND	ND	ND	ND	1.31	372.3	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0102.LAB	8/25/2003 13:03	ND	ND	ND	ND	ND	1.31	374.0	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0103.LAB	8/25/2003 13:06	ND	ND	ND	ND	ND	1.31	373.7	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0104.LAB	8/25/2003 13:09	ND	ND	ND	ND	ND	1.31	372.1	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0105.LAB	8/25/2003 13:12	ND	ND	ND	ND	ND	1.32	374.0	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0106.LAB	8/25/2003 13:14	ND	ND	ND	ND	ND	1.32	373.7	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0107.LAB	8/25/2003 13:17	ND	ND	ND	ND	ND	1.31	370.7	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0108.LAB	8/25/2003 13:20	ND	ND	ND	ND	ND	1.33	372.0	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0109.LAB	8/25/2003 13:23	ND	ND	ND	ND	ND	1.34	369.9	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0110.LAB	8/25/2003 13:25	ND	ND	ND	ND	ND	1.35	372.2	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0111.LAB	8/25/2003 13:28	ND	ND	ND	ND	ND	1.36	371.3	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0112.LAB	8/25/2003 13:31	ND	ND	ND	ND	ND	1.39	376.2	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0113.LAB	8/25/2003 13:34	ND	ND	ND	10491.00	ND	1.40	374.4	ND	26.433	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0114.LAB	8/25/2003 13:36	ND	ND	ND	26541.81	ND	1.39	372.6	ND	41.883	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0115.LAB	8/25/2003 13:39	ND	ND	ND	10764.13	ND	1.40	371.5	ND	23.513	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0116.LAB	8/25/2003 13:42	ND	ND	ND	12432.25	ND	1.42	372.4	ND	32.243	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0117.LAB	8/25/2003 13:45	ND	ND	ND	14707.16	ND	1.40	373.4	ND	18.805	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0118.LAB	8/25/2003 13:48	ND	ND	ND	815.50	ND	1.39	372.9	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0119.LAB	8/25/2003 13:53	ND	ND	ND	299.43	ND	1.39	375.6	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0120.LAB	8/25/2003 13:55	ND	ND	ND	213.69	ND	1.38	374.6	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0121.LAB	8/25/2003 13:58	ND	ND	ND	4548.49	ND	1.39	374.0	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0122.LAB	8/25/2003 14:01	ND	ND	ND	16735.76	ND	1.39	373.2	ND	28.525	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0188.LAB	8/25/2003 17:25	ND	ND	ND	ND	ND	1.35	372.4	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0189.LAB	8/25/2003 17:27	ND	ND	ND	ND	ND	1.35	372.6	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0190.LAB	8/25/2003 17:30	ND	ND	ND	ND	ND	1.35	373.4	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0191.LAB	8/25/2003 17:33	ND	ND	ND	ND	ND	1.35	372.8	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0192.LAB	8/25/2003 17:36	ND	ND	ND	ND	ND	1.34	371.0	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0193.LAB	8/25/2003 17:38	ND	ND	ND	ND	ND	1.35	372.8	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0194.LAB	8/25/2003 17:41	ND	ND	ND	ND	ND	1.34	370.5	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0195.LAB	8/25/2003 17:44	ND	ND	ND	ND	ND	1.35	370.4	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0196.LAB	8/25/2003 17:47	ND	ND	ND	ND	ND	1.35	370.2	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0197.LAB	8/25/2003 17:49	ND	ND	ND	ND	ND	1.35	369.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0198.LAB	8/25/2003 17:52	ND	ND	ND	ND	ND	1.34	369.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0199.LAB	8/25/2003 17:55	ND	ND	ND	ND	ND	1.35	371.8	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0200.LAB	8/25/2003 17:58	ND	ND	ND	ND	ND	1.35	371.4	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0201.LAB	8/25/2003 18:00	ND	ND	ND	ND	ND	1.35	369.8	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0202.LAB	8/25/2003 18:03	ND	ND	ND	ND	ND	1.34	369.6	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0203.LAB	8/25/2003 18:06	ND	ND	ND	ND	ND	1.33	369.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0204.LAB	8/25/2003 18:09	ND	ND	ND	ND	ND	1.33	370.0	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0205.LAB	8/25/2003 18:12	ND	ND	ND	ND	ND	1.34	372.3	ND	ND	150.51	0.996

Scrubber Inlet 7s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
7S_1_5 INLET 08 25 03 SAMPLE_0206.LAB	8/25/2003 18:14	ND	ND	ND	ND	ND	1.34	370.1	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0207.LAB	8/25/2003 18:17	ND	ND	ND	ND	ND	1.33	369.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0208.LAB	8/25/2003 18:20	ND	ND	ND	ND	ND	1.34	369.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0209.LAB	8/25/2003 18:23	ND	ND	ND	ND	ND	1.34	369.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0210.LAB	8/25/2003 18:25	ND	ND	ND	ND	ND	1.34	370.8	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0211.LAB	8/25/2003 18:28	ND	ND	ND	ND	ND	1.35	373.4	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0212.LAB	8/25/2003 18:31	ND	ND	ND	ND	ND	1.34	371.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0213.LAB	8/25/2003 18:34	ND	ND	ND	ND	ND	1.34	371.6	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0214.LAB	8/25/2003 18:36	ND	ND	ND	ND	ND	1.34	371.6	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0215.LAB	8/25/2003 18:39	ND	ND	ND	ND	ND	1.35	374.0	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0216.LAB	8/25/2003 18:42	ND	ND	ND	ND	ND	1.34	372.8	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0217.LAB	8/25/2003 18:45	ND	ND	ND	ND	ND	1.35	375.3	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0218.LAB	8/25/2003 18:47	ND	ND	ND	ND	ND	1.34	372.6	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0219.LAB	8/25/2003 18:50	ND	ND	ND	ND	ND	1.34	372.6	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0220.LAB	8/25/2003 18:53	ND	ND	ND	ND	ND	1.33	372.2	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0221.LAB	8/25/2003 18:56	ND	ND	ND	ND	ND	1.34	371.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0222.LAB	8/25/2003 18:59	ND	ND	ND	ND	ND	1.34	373.4	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0223.LAB	8/25/2003 19:01	ND	ND	ND	ND	ND	1.34	370.7	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0224.LAB	8/25/2003 19:04	ND	ND	ND	ND	ND	1.34	371.4	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0225.LAB	8/25/2003 19:07	ND	ND	ND	ND	ND	1.35	374.2	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0226.LAB	8/25/2003 19:10	ND	ND	ND	ND	ND	1.34	372.7	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0227.LAB	8/25/2003 19:12	ND	ND	ND	ND	ND	1.34	372.4	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0228.LAB	8/25/2003 19:15	ND	ND	ND	ND	ND	1.35	372.7	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0229.LAB	8/25/2003 19:18	ND	ND	ND	ND	ND	1.35	374.6	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0230.LAB	8/25/2003 19:21	ND	ND	ND	ND	ND	1.34	372.4	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0231.LAB	8/25/2003 19:23	ND	ND	ND	ND	ND	1.34	372.3	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0232.LAB	8/25/2003 19:26	ND	ND	ND	ND	ND	1.34	374.1	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0233.LAB	8/25/2003 19:29	ND	ND	ND	ND	ND	1.33	371.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0234.LAB	8/25/2003 19:32	ND	ND	ND	ND	ND	1.34	373.3	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0235.LAB	8/25/2003 19:35	ND	ND	ND	ND	ND	1.34	372.8	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0236.LAB	8/25/2003 19:37	ND	ND	ND	ND	ND	1.34	370.5	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0237.LAB	8/25/2003 19:40	ND	ND	ND	ND	ND	1.33	370.6	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0238.LAB	8/25/2003 19:43	ND	ND	ND	ND	ND	1.33	370.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0239.LAB	8/25/2003 19:46	ND	ND	ND	ND	ND	1.34	371.1	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0240.LAB	8/25/2003 19:48	ND	ND	ND	ND	ND	1.35	371.1	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0241.LAB	8/25/2003 19:51	ND	ND	ND	ND	ND	1.35	373.1	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0242.LAB	8/25/2003 19:54	ND	ND	ND	ND	ND	1.34	370.9	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0243.LAB	8/25/2003 19:57	ND	ND	ND	ND	ND	1.34	370.7	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0244.LAB	8/25/2003 19:59	ND	ND	ND	ND	ND	1.35	372.7	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0245.LAB	8/25/2003 20:02	ND	ND	ND	ND	ND	1.34	371.3	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0246.LAB	8/25/2003 20:05	ND	ND	ND	ND	ND	1.34	371.6	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0247.LAB	8/25/2003 20:08	ND	ND	ND	ND	ND	1.35	372.9	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0248.LAB	8/25/2003 20:11	ND	ND	ND	ND	ND	1.34	371.5	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0249.LAB	8/25/2003 20:13	ND	ND	ND	ND	ND	1.36	374.0	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0250.LAB	8/25/2003 20:16	ND	ND	ND	ND	ND	1.35	372.2	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0251.LAB	8/25/2003 20:19	ND	ND	ND	ND	ND	1.36	372.14	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0252.LAB	8/25/2003 20:22	ND	ND	ND	ND	ND	1.36	371.98	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0253.LAB	8/25/2003 20:24	ND	ND	ND	ND	ND	1.37	374.68	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0254.LAB	8/25/2003 20:27	ND	ND	ND	ND	ND	1.35	373.11	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0255.LAB	8/25/2003 20:30	ND	ND	ND	ND	ND	1.36	375.59	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0256.LAB	8/25/2003 20:33	ND	ND	ND	ND	ND	1.34	372.12	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0257.LAB	8/25/2003 20:35	ND	ND	ND	ND	ND	1.34	375.11	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0258.LAB	8/25/2003 20:38	ND	ND	ND	ND	ND	1.33	374.72	ND	ND	150.51	1.001

Scrubber Inlet 7s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
7S_1_5 INLET 08 25 03 SAMPLE_0259.LAB	8/25/2003 20:41	ND	ND	ND	ND	ND	1.32	373.97	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0260.LAB	8/25/2003 20:44	ND	ND	ND	ND	ND	1.32	374.74	ND	ND	149.76	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0261.LAB	8/25/2003 20:46	ND	ND	ND	ND	ND	1.32	372.42	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0262.LAB	8/25/2003 20:49	ND	ND	ND	ND	ND	1.33	373.82	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0263.LAB	8/25/2003 20:52	ND	ND	ND	ND	ND	1.33	371.13	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0264.LAB	8/25/2003 20:55	ND	ND	ND	ND	ND	1.33	371.03	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0265.LAB	8/25/2003 20:58	ND	ND	ND	ND	ND	1.33	370.52	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0266.LAB	8/25/2003 21:00	ND	ND	ND	ND	ND	1.34	370.20	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0267.LAB	8/25/2003 21:03	ND	ND	ND	ND	ND	1.35	371.76	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0268.LAB	8/25/2003 21:06	ND	ND	ND	ND	ND	1.35	369.89	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0269.LAB	8/25/2003 21:09	ND	ND	ND	ND	ND	1.35	369.52	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0270.LAB	8/25/2003 21:11	ND	ND	ND	ND	ND	1.35	371.29	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0271.LAB	8/25/2003 21:14	ND	ND	ND	ND	ND	1.34	368.08	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0272.LAB	8/25/2003 21:17	ND	ND	ND	ND	ND	1.36	371.54	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0273.LAB	8/25/2003 21:20	ND	ND	ND	ND	ND	1.36	371.81	ND	ND	150.51	0.996
7S_1_5 INLET 08 25 03 SAMPLE_0274.LAB	8/25/2003 21:22	ND	ND	ND	ND	ND	1.34	368.07	ND	ND	150.51	1.006
7S_1_5 INLET 08 25 03 SAMPLE_0275.LAB	8/25/2003 21:25	ND	ND	ND	ND	ND	1.34	370.49	ND	ND	150.51	1.001
7S_1_5 INLET 08 25 03 SAMPLE_0276.LAB	8/25/2003 21:28	ND	ND	ND	ND	ND	1.34	370.63	ND	ND	150.51	1.001

Average _{wet}	ND	ND	ND	693.91	ND	1.35	375.23	ND	17.82	150.50	1.001

Reference Method Calculations

FAB 7 - C4 Scrubbers

7s.1.5 Inlet

Run No.	Run 1	Run 2	
Date	8/25/2003	8/25/2003	
Start Time	10:01	17:26	AVERAGE
Stop Time	14:01	21:26	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	84.9	96.7	90.8
Volume Metered (acf)	196.698	205.960	201.329
Volume Metered (dscf)	160.374	164.387	162.380
Volume of Water Collected (g)	43.4	45.2	44.3
Volume of Water Collected (scf)	2.046	2.131	2.089
Average Delta H (in. H ₂ O)	2.00	2.00	2.00
Stack Flow Rate <u>Outlet</u> Flow Traverse (dscfm)	6,532	8,056	7,294
Chlorine			
Collected Cl ₂ micrograms (ug)	17.2	16.4	16.8
Cl ₂ Concentration (ug/dscf)	0.11	0.10	0.10
Cl ₂ Concentration (ppb)	1	1	1
Cl ₂ Emission Rate (lbs/hr)	0.0001	0.0001	0.0001

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments			Sample Train No.	C	Filter No.:	NA	Run No.:	1
Plant Name:	FAB 7 - C4 Scrubbers				Leak Check Initial:	0.002	cfm@	15	(in. Hg)	
Plant Location:	Rio Rancho, NM				Leak Check Final:	cfm@		(in. Hg)		
Project No.:	31397-1600-00000				Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	7s.1.5 Inlet				1		733.6	736.6		
Date:	8/25/2003				24	2	650.6	652.5		
Technicians:	PER/SCT					3	657.4	660.5		
Meter Box No.:	90401				Y_d:	1.006	4	738.1	739.7	
Probe / Pitot No	Teflon / HA-1	C_p:	0.84	5	673.5	673.7				
Nozzle No.:	NA	dH_g:	1.725	6	852.9	886.5				
Nozzle Dia:	NA	Stack Dia. (in.):	42.00	Stack Area (ft²):	9.62	Start Time:	10:01	Net Impinger Gain (g):	43.4	
Initial Meter Reading (ft³):	484.732	Port Width (in.):	0.75	Port Length (in.):	1.00	End Time:	14:01	Theta	240	
		BP (in. Hg):	24.89	Static Pressure (in.):	#REF!					
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
Center	10	77	77	2.00	492.990	50	1.0			
Center	20	81	77	2.00	501.210	47	1.0			
Center	30	88	77	2.00	509.450	47	1.0			
Center	40	88	78	2.00	517.970	48	1.0			
Center	50	89	79	2.00	526.340	49	1.0			
Center	60	90	80	2.00	534.710	50	1.0			
Center	70	89	80	2.00	543.060	51	1.0			
Center	80	90	79	2.00	551.410	51	1.0			
Center	90	90	79	2.00	559.730	51	1.0			
Center	100	90	80	2.00	568.050	51	1.0			
Center	110	89	80	2.00	576.360	51	1.0			
Center	120	89	80	2.00	584.670	52	1.0			
Center	130	87	81	2.00	592.970	55	1.0			
Center	140	88	81	2.00	601.250	55	1.0			
Center	150	89	81	2.00	609.540	55	1.0			
Center	160	89	82	2.00	617.820	55	1.0			
Center	170	90	82	2.00	625.760	55	1.0			
Center	180	90	82	2.00	633.460	55	1.0			
Center	190	91	83	2.00	642.100	54	1.0			
Center	200	91	83	2.00	650.530	55	1.0			
Center	210	92	83	2.00	657.980	54	1.0			
Center	220	93	84	2.00	665.320	53	1.0			
Center	230	94	85	2.00	672.890	53	1.0			
Center	240	94	86	2.00	681.430	52	1.0			
Average / Net			84.9	2.0	196.698	52.0	1.0			

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic			Sample Train No. B		Filter No.: NA		Run No.: 2	
Plant Name:	FAB 7 - C4 Scrubbers				Leak Check Initial: 0.002		cfm@ 15		(in. Hg)	
Plant Location:	Rio Rancho, NM				Leak Check Final: 0.002		cfm@ 5.0		(in. Hg)	
Project No.:	31397-1600-00000				Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	7s.1.5 Inlet					1	640.5	645.7		
Date:	8/25/2003					2	642.7	644.9		
Technicians:	PER/SCT					3	630.9	633.9		
Meter Box No.: 90401	Y_d: 1.006					4	751.9	664.3		
Probe/Pitot No.: Teflon / HA-1	C_p: 0.84	5	749.5	835.0						
Nozzle No.: NA	dH₀: 1.725	Stack Dia. (in.): 42.00		Stack Area (ft²): 9.62		6	828.5	865.4		
Nozzle Dia: NA		Port Width (in.): 0.75		Port Length (in.): 1.00		Start Time: 17:26		Net Impinger Gain (g): 45.2		
Initial Meter Reading (ft³):	685.607	BP (in. Hg): 24.89		Static Pressure (in.): #REF!		End Time: 21:26		Theta 240		
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
Center	10	99	99	2.00	694.290	50	1.0			
Center	20	100	97	2.00	702.730	50	1.0			
Center	30	101	96	2.00	711.120	51	1.0			
Center	40	102	96	2.00	719.760	52	1.0			
Center	50	101	95	2.00	728.390	53	1.0			
Center	60	101	95	2.00	737.010	53	1.0			
Center	70	102	94	2.00	745.610	54	1.0			
Center	80	103	94	2.00	754.190	54	1.0			
Center	90	103	95	2.00	762.790	53	1.0			
Center	100	102	95	2.00	771.380	54	1.0			
Center	110	103	94	2.00	779.980	53	1.0			
Center	120	102	94	2.00	788.580	54	1.0			
Center	130	102	94	2.00	797.170	54	1.0			
Center	140	102	93	2.00	805.760	53	1.0			
Center	150	101	93	2.00	814.400	53	1.0			
Center	160	102	93	2.00	823.000	54	1.0			
Center	170	101	92	2.00	831.520	54	1.0			
Center	180	101	93	2.00	840.100	54	1.0			
Center	190	100	92	2.00	848.680	58	1.0			
Center	200	99	92	2.00	857.250	59	1.0			
Center	210	95	91	2.00	865.880	59	1.0			
Center	220	93	89	2.00	874.420	59	1.0			
Center	230	92	88	2.00	882.990	59	1.0			
Center	240	92	87	2.00	891.567	59	1.0			
Average / Net		96.7		2.0	205.960	54.4	1.0			

Scrubber Outlet 7s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
7S_1_5 OUTLET 08 25 03 SAMPLE_0051.LAB	8/25/2003 10:00	ND	ND	ND	ND	ND	2.19	372.4	ND	ND	149.02	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0052.LAB	8/25/2003 10:03	ND	ND	ND	ND	ND	2.20	375.3	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0053.LAB	8/25/2003 10:06	ND	ND	ND	ND	ND	2.20	374.4	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0054.LAB	8/25/2003 10:08	ND	ND	ND	ND	ND	2.18	373.3	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0055.LAB	8/25/2003 10:11	ND	ND	ND	ND	ND	2.19	374.5	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0056.LAB	8/25/2003 10:13	ND	ND	ND	ND	ND	2.21	377.5	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0057.LAB	8/25/2003 10:16	ND	ND	ND	ND	ND	2.21	378.1	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0058.LAB	8/25/2003 10:19	ND	ND	ND	ND	ND	2.20	377.0	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0059.LAB	8/25/2003 10:21	ND	ND	ND	ND	ND	2.21	378.6	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0060.LAB	8/25/2003 10:24	ND	ND	ND	ND	ND	2.21	377.9	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0061.LAB	8/25/2003 10:26	ND	ND	ND	ND	ND	2.20	376.6	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0062.LAB	8/25/2003 10:29	ND	ND	ND	ND	ND	2.19	376.9	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0063.LAB	8/25/2003 10:32	ND	ND	ND	ND	ND	2.20	375.5	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0064.LAB	8/25/2003 10:34	ND	ND	ND	ND	ND	2.19	375.9	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0065.LAB	8/25/2003 10:37	ND	ND	ND	ND	ND	2.19	379.0	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0066.LAB	8/25/2003 10:39	ND	ND	ND	ND	ND	2.18	380.3	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0067.LAB	8/25/2003 10:42	ND	ND	ND	ND	ND	2.21	382.8	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0068.LAB	8/25/2003 10:45	ND	ND	ND	ND	ND	2.20	380.2	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0069.LAB	8/25/2003 10:47	ND	ND	ND	ND	ND	2.19	378.9	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0070.LAB	8/25/2003 10:50	ND	ND	ND	ND	ND	2.22	381.4	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0071.LAB	8/25/2003 10:52	ND	ND	ND	ND	ND	2.21	377.4	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0072.LAB	8/25/2003 10:55	ND	ND	ND	ND	ND	2.21	377.3	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0073.LAB	8/25/2003 10:58	ND	ND	ND	ND	ND	2.21	380.9	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0074.LAB	8/25/2003 11:00	ND	ND	ND	ND	ND	2.20	378.7	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0075.LAB	8/25/2003 11:03	ND	ND	ND	ND	ND	2.21	376.9	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0076.LAB	8/25/2003 11:05	ND	ND	ND	ND	ND	2.20	375.0	ND	ND	149.02	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0077.LAB	8/25/2003 11:08	ND	ND	ND	ND	ND	2.20	376.5	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0078.LAB	8/25/2003 11:11	ND	ND	ND	ND	ND	2.21	379.8	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0079.LAB	8/25/2003 11:13	ND	ND	ND	ND	ND	2.20	378.1	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0080.LAB	8/25/2003 11:16	ND	ND	ND	ND	ND	2.20	377.1	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0081.LAB	8/25/2003 11:18	ND	ND	ND	ND	ND	2.19	376.8	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0082.LAB	8/25/2003 11:21	ND	ND	ND	ND	ND	2.19	375.6	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0083.LAB	8/25/2003 11:24	ND	ND	ND	ND	ND	2.19	376.1	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0084.LAB	8/25/2003 11:26	ND	ND	ND	ND	ND	2.20	377.7	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0085.LAB	8/25/2003 11:29	ND	ND	ND	ND	ND	2.19	377.8	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0086.LAB	8/25/2003 11:31	ND	ND	ND	ND	ND	2.21	382.0	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0087.LAB	8/25/2003 11:34	ND	ND	ND	ND	ND	2.20	379.2	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0088.LAB	8/25/2003 11:37	ND	ND	ND	ND	ND	2.20	380.0	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0089.LAB	8/25/2003 11:39	ND	ND	ND	ND	ND	2.20	380.7	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0090.LAB	8/25/2003 11:42	ND	ND	ND	ND	ND	2.22	381.2	ND	ND	149.02	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0091.LAB	8/25/2003 11:44	ND	ND	ND	ND	ND	2.21	379.8	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0092.LAB	8/25/2003 11:47	ND	ND	ND	ND	ND	2.21	379.8	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0093.LAB	8/25/2003 11:50	ND	ND	ND	ND	ND	2.22	380.4	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0094.LAB	8/25/2003 11:52	ND	ND	ND	ND	ND	2.23	377.8	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0095.LAB	8/25/2003 11:55	ND	ND	ND	ND	ND	2.23	377.6	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0096.LAB	8/25/2003 11:57	ND	ND	ND	ND	ND	2.23	375.3	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0097.LAB	8/25/2003 12:00	ND	ND	ND	ND	ND	2.23	373.4	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0098.LAB	8/25/2003 12:03	ND	ND	ND	ND	ND	2.24	372.5	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0099.LAB	8/25/2003 12:05	ND	ND	ND	ND	ND	2.24	371.6	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0100.LAB	8/25/2003 12:08	ND	ND	ND	ND	ND	2.25	370.7	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0101.LAB	8/25/2003 12:10	ND	ND	ND	ND	ND	2.24	369.6	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0102.LAB	8/25/2003 12:13	ND	ND	ND	ND	ND	2.25	369.1	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0103.LAB	8/25/2003 12:16	ND	ND	ND	ND	ND	2.26	370.9	ND	ND	149.76	0.992

Scrubber Outlet 7s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
7S_1_5 OUTLET 08 25 03 SAMPLE_0104.LAB	8/25/2003 12:18	ND	ND	ND	ND	ND	2.25	367.5	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0105.LAB	8/25/2003 12:21	ND	ND	ND	ND	ND	2.25	368.6	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0106.LAB	8/25/2003 12:23	ND	ND	ND	ND	ND	2.25	368.9	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0107.LAB	8/25/2003 12:26	ND	ND	ND	ND	ND	2.26	369.0	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0108.LAB	8/25/2003 12:29	ND	ND	ND	ND	ND	2.26	369.1	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0109.LAB	8/25/2003 12:31	ND	ND	ND	ND	ND	2.27	370.7	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0110.LAB	8/25/2003 12:34	ND	ND	ND	ND	ND	2.27	370.6	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0111.LAB	8/25/2003 12:36	ND	ND	ND	ND	ND	2.26	367.8	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0112.LAB	8/25/2003 12:39	ND	ND	ND	ND	ND	2.28	369.3	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0113.LAB	8/25/2003 12:42	ND	ND	ND	ND	ND	2.27	369.2	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0114.LAB	8/25/2003 12:44	ND	ND	ND	ND	ND	2.27	368.9	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0115.LAB	8/25/2003 12:47	ND	ND	ND	ND	ND	2.27	367.8	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0116.LAB	8/25/2003 12:49	ND	ND	ND	ND	ND	2.26	365.5	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0117.LAB	8/25/2003 12:52	ND	ND	ND	ND	ND	2.25	363.9	ND	ND	149.02	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0118.LAB	8/25/2003 12:55	ND	ND	ND	ND	ND	2.26	366.1	ND	ND	150.51	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0119.LAB	8/25/2003 12:57	ND	ND	ND	ND	ND	2.25	362.5	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0120.LAB	8/25/2003 13:00	ND	ND	ND	ND	ND	2.25	362.8	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0121.LAB	8/25/2003 13:02	ND	ND	ND	ND	ND	2.24	362.5	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0122.LAB	8/25/2003 13:05	ND	ND	ND	ND	ND	2.25	363.9	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0123.LAB	8/25/2003 13:08	ND	ND	ND	ND	ND	2.24	362.7	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0124.LAB	8/25/2003 13:10	ND	ND	ND	ND	ND	2.24	362.3	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0125.LAB	8/25/2003 13:13	ND	ND	ND	ND	ND	2.24	360.7	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0126.LAB	8/25/2003 13:15	ND	ND	ND	ND	ND	2.25	362.6	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0127.LAB	8/25/2003 13:18	ND	ND	ND	ND	ND	2.24	359.8	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0128.LAB	8/25/2003 13:21	ND	ND	ND	ND	ND	2.24	359.9	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0129.LAB	8/25/2003 13:23	ND	ND	ND	ND	ND	2.25	361.5	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0130.LAB	8/25/2003 13:26	ND	ND	ND	ND	ND	2.26	362.1	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0131.LAB	8/25/2003 13:28	ND	ND	ND	ND	ND	2.25	360.1	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0132.LAB	8/25/2003 13:31	ND	ND	ND	ND	ND	2.25	360.0	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0133.LAB	8/25/2003 13:34	ND	ND	ND	ND	ND	2.26	362.0	ND	ND	149.02	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0134.LAB	8/25/2003 13:36	ND	ND	ND	ND	ND	2.26	361.6	ND	ND	151.25	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0135.LAB	8/25/2003 13:39	ND	ND	ND	ND	ND	2.26	361.8	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0136.LAB	8/25/2003 13:41	ND	ND	ND	ND	ND	2.26	360.0	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0137.LAB	8/25/2003 13:44	ND	ND	ND	ND	ND	2.26	359.9	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0138.LAB	8/25/2003 13:47	ND	ND	ND	189.82	ND	2.27	362.3	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0139.LAB	8/25/2003 13:49	ND	ND	ND	204.58	ND	2.27	360.9	ND	ND	149.02	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0140.LAB	8/25/2003 13:52	ND	ND	ND	216.77	ND	2.28	361.5	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0141.LAB	8/25/2003 13:54	ND	ND	ND	204.05	ND	2.27	358.4	ND	ND	149.02	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0142.LAB	8/25/2003 13:57	ND	ND	ND	197.05	ND	2.28	359.8	ND	ND	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0143.LAB	8/25/2003 14:00	ND	ND	ND	193.15	ND	2.28	357.7	ND	ND	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0144.LAB	8/25/2003 14:02	ND	ND	ND	211.12	ND	2.27	358.1	ND	ND	149.02	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0214.LAB	8/25/2003 17:25	ND	ND	ND	ND	ND	2.25	375.9	ND	62.825	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0215.LAB	8/25/2003 17:27	ND	ND	ND	ND	ND	2.26	377.5	ND	58.938	149.02	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0216.LAB	8/25/2003 17:30	ND	ND	ND	ND	ND	2.26	378.4	ND	61.168	149.02	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0217.LAB	8/25/2003 17:32	ND	ND	ND	ND	ND	2.24	375.2	ND	59.568	149.02	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0218.LAB	8/25/2003 17:35	ND	ND	ND	ND	ND	2.25	377.6	ND	61.516	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0219.LAB	8/25/2003 17:38	ND	ND	ND	ND	ND	2.23	374.9	ND	59.355	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0220.LAB	8/25/2003 17:40	ND	ND	ND	ND	ND	2.24	375.1	ND	64.190	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0221.LAB	8/25/2003 17:43	ND	ND	ND	ND	ND	2.23	375.7	ND	58.974	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0222.LAB	8/25/2003 17:45	ND	ND	ND	ND	ND	2.22	374.9	ND	58.911	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0223.LAB	8/25/2003 17:48	ND	ND	ND	ND	ND	2.22	374.4	ND	57.616	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0224.LAB	8/25/2003 17:51	ND	ND	ND	ND	ND	2.23	376.2	ND	56.572	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0225.LAB	8/25/2003 17:53	ND	ND	ND	ND	ND	2.22	373.8	ND	59.243	149.76	0.992

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 7s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
7S_1_5 OUTLET 08 25 03 SAMPLE_0226.LAB	8/25/2003 17:56	ND	ND	ND	ND	ND	2.22	373.9	ND	61.714	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0227.LAB	8/25/2003 17:58	ND	ND	ND	ND	ND	2.22	373.2	ND	57.397	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0228.LAB	8/25/2003 18:01	ND	ND	ND	ND	ND	2.22	373.7	ND	55.590	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0229.LAB	8/25/2003 18:04	ND	ND	ND	ND	ND	2.22	373.8	ND	59.247	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0230.LAB	8/25/2003 18:06	ND	ND	ND	ND	ND	2.23	375.6	ND	56.197	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0231.LAB	8/25/2003 18:09	ND	ND	ND	ND	ND	2.23	375.9	ND	58.153	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0232.LAB	8/25/2003 18:11	ND	ND	ND	ND	ND	2.23	376.3	ND	57.038	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0233.LAB	8/25/2003 18:14	ND	ND	ND	ND	ND	2.22	374.7	ND	59.600	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0234.LAB	8/25/2003 18:17	ND	ND	ND	ND	ND	2.22	373.6	ND	59.305	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0235.LAB	8/25/2003 18:19	ND	ND	ND	ND	ND	2.21	373.7	ND	56.207	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0236.LAB	8/25/2003 18:22	ND	ND	ND	ND	ND	2.21	373.1	ND	59.724	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0237.LAB	8/25/2003 18:24	ND	ND	ND	ND	ND	2.21	374.3	ND	53.639	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0238.LAB	8/25/2003 18:27	ND	ND	ND	ND	ND	2.22	376.5	ND	59.830	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0239.LAB	8/25/2003 18:30	ND	ND	ND	ND	ND	2.22	377.1	ND	58.743	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0240.LAB	8/25/2003 18:32	ND	ND	ND	ND	ND	2.22	377.2	ND	61.054	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0241.LAB	8/25/2003 18:35	ND	ND	ND	ND	ND	2.23	377.4	ND	57.264	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0242.LAB	8/25/2003 18:37	ND	ND	ND	ND	ND	2.21	375.3	ND	58.829	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0243.LAB	8/25/2003 18:40	ND	ND	ND	ND	ND	2.22	378.4	ND	60.322	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0244.LAB	8/25/2003 18:43	ND	ND	ND	ND	ND	2.21	377.1	ND	59.321	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0245.LAB	8/25/2003 18:45	ND	ND	ND	ND	ND	2.21	378.1	ND	60.353	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0246.LAB	8/25/2003 18:48	ND	ND	ND	ND	ND	2.20	376.4	ND	60.351	149.02	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0247.LAB	8/25/2003 18:50	ND	ND	ND	ND	ND	2.20	376.4	ND	55.999	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0248.LAB	8/25/2003 18:53	ND	ND	ND	ND	ND	2.21	377.4	ND	57.952	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0249.LAB	8/25/2003 18:56	ND	ND	ND	ND	ND	2.20	375.0	ND	58.174	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0250.LAB	8/25/2003 18:58	ND	ND	ND	ND	ND	2.20	374.3	ND	57.449	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0251.LAB	8/25/2003 19:01	ND	ND	ND	ND	ND	2.19	374.1	ND	62.477	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0252.LAB	8/25/2003 19:03	ND	ND	ND	ND	ND	2.20	374.3	ND	60.438	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0253.LAB	8/25/2003 19:06	ND	ND	ND	ND	ND	2.21	377.5	ND	59.236	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0254.LAB	8/25/2003 19:09	ND	ND	ND	ND	ND	2.19	375.8	ND	58.584	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0255.LAB	8/25/2003 19:11	ND	ND	ND	ND	ND	2.20	378.7	ND	61.227	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0256.LAB	8/25/2003 19:14	ND	ND	ND	ND	ND	2.20	378.7	ND	61.494	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0257.LAB	8/25/2003 19:16	ND	ND	ND	ND	ND	2.19	376.0	ND	59.544	149.02	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0258.LAB	8/25/2003 19:19	ND	ND	ND	ND	ND	2.19	376.7	ND	61.758	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0259.LAB	8/25/2003 19:22	ND	ND	ND	ND	ND	2.19	375.9	ND	61.025	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0260.LAB	8/25/2003 19:24	ND	ND	ND	ND	ND	2.20	378.0	ND	60.034	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0261.LAB	8/25/2003 19:27	ND	ND	ND	ND	ND	2.20	377.9	ND	61.383	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0262.LAB	8/25/2003 19:29	ND	ND	ND	ND	ND	2.18	375.4	ND	61.726	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0263.LAB	8/25/2003 19:32	ND	ND	ND	ND	ND	2.19	376.4	ND	63.894	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0264.LAB	8/25/2003 19:35	ND	ND	ND	ND	ND	2.19	376.1	ND	63.444	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0265.LAB	8/25/2003 19:37	ND	ND	ND	ND	ND	2.19	376.6	ND	61.744	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0266.LAB	8/25/2003 19:40	ND	ND	ND	ND	ND	2.17	374.5	ND	60.656	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0267.LAB	8/25/2003 19:42	ND	ND	ND	ND	ND	2.18	376.2	ND	62.439	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0268.LAB	8/25/2003 19:45	ND	ND	ND	ND	ND	2.18	376.6	ND	65.147	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0269.LAB	8/25/2003 19:48	ND	ND	ND	ND	ND	2.18	376.3	ND	62.882	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0270.LAB	8/25/2003 19:50	ND	ND	ND	ND	ND	2.17	374.4	ND	62.607	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0271.LAB	8/25/2003 19:53	ND	ND	ND	ND	ND	2.17	374.0	ND	61.45	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0272.LAB	8/25/2003 19:55	ND	ND	ND	ND	ND	2.18	376.4	ND	61.56	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0273.LAB	8/25/2003 19:58	ND	ND	ND	ND	ND	2.18	376.0	ND	63.57	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0274.LAB	8/25/2003 20:01	ND	ND	ND	ND	ND	2.18	376.4	ND	59.25	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0275.LAB	8/25/2003 20:03	ND	ND	ND	ND	ND	2.17	376.4	ND	60.87	149.76	0.987
7S_1_5 OUTLET 08 25 03 SAMPLE_0276.LAB	8/25/2003 20:06	ND	ND	ND	ND	ND	2.16	374.6	ND	58.37	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0277.LAB	8/25/2003 20:08	ND	ND	ND	ND	ND	2.16	374.4	ND	60.57	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0278.LAB	8/25/2003 20:11	ND	ND	ND	ND	ND	2.16	374.5	ND	62.33	149.76	0.992

Scrubber Outlet 7s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
7S_1_5 OUTLET 08 25 03 SAMPLE_0279.LAB	8/25/2003 20:14	ND	ND	ND	ND	ND	2.16	375.2	ND	59.64	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0280.LAB	8/25/2003 20:16	ND	ND	ND	ND	ND	2.16	375.5	ND	59.20	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0281.LAB	8/25/2003 20:19	ND	ND	ND	ND	ND	2.17	375.9	ND	60.70	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0282.LAB	8/25/2003 20:21	ND	ND	ND	ND	ND	2.17	375.8	ND	56.77	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0283.LAB	8/25/2003 20:24	ND	ND	ND	ND	ND	2.17	376.7	ND	56.75	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0284.LAB	8/25/2003 20:27	ND	ND	ND	ND	ND	2.16	376.9	ND	59.74	149.02	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0285.LAB	8/25/2003 20:29	ND	ND	ND	ND	ND	2.17	378.8	ND	63.86	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0286.LAB	8/25/2003 20:32	ND	ND	ND	ND	ND	2.18	379.9	ND	63.78	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0287.LAB	8/25/2003 20:34	ND	ND	ND	ND	ND	2.16	378.5	ND	61.38	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0288.LAB	8/25/2003 20:37	ND	ND	ND	ND	ND	2.16	377.6	ND	60.35	149.02	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0289.LAB	8/25/2003 20:40	ND	ND	ND	ND	ND	2.17	378.2	ND	61.67	149.02	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0290.LAB	8/25/2003 20:43	ND	ND	ND	ND	ND	2.19	381.1	ND	60.08	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0291.LAB	8/25/2003 20:45	ND	ND	ND	ND	ND	2.19	381.1	ND	57.95	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0292.LAB	8/25/2003 20:48	ND	ND	ND	ND	ND	2.18	378.3	ND	60.43	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0293.LAB	8/25/2003 20:50	ND	ND	ND	ND	ND	2.19	379.3	ND	63.29	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0294.LAB	8/25/2003 20:53	ND	ND	ND	ND	ND	2.18	377.7	ND	61.66	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0295.LAB	8/25/2003 20:56	ND	ND	ND	ND	ND	2.18	378.7	ND	60.38	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0296.LAB	8/25/2003 20:58	ND	ND	ND	ND	ND	2.19	379.0	ND	56.54	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0297.LAB	8/25/2003 21:01	ND	ND	ND	ND	ND	2.18	377.3	ND	59.437	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0298.LAB	8/25/2003 21:03	ND	ND	ND	ND	ND	2.19	378.5	ND	57.935	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0299.LAB	8/25/2003 21:06	ND	ND	ND	ND	ND	2.18	376.7	ND	61.940	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0300.LAB	8/25/2003 21:09	ND	ND	ND	ND	ND	2.19	378.8	ND	59.297	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0301.LAB	8/25/2003 21:11	ND	ND	ND	ND	ND	2.19	378.3	ND	58.155	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0302.LAB	8/25/2003 21:14	ND	ND	ND	ND	ND	2.18	378.4	ND	56.963	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0303.LAB	8/25/2003 21:16	ND	ND	ND	ND	ND	2.19	377.8	ND	62.145	149.76	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0304.LAB	8/25/2003 21:19	ND	ND	ND	ND	ND	2.17	376.4	ND	58.253	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0305.LAB	8/25/2003 21:22	ND	ND	ND	ND	ND	2.19	377.9	ND	60.617	149.02	0.992
7S_1_5 OUTLET 08 25 03 SAMPLE_0306.LAB	8/25/2003 21:24	ND	ND	ND	ND	ND	2.17	376.9	ND	61.760	149.76	0.997
7S_1_5 OUTLET 08 25 03 SAMPLE_0307.LAB	8/25/2003 21:27	ND	ND	ND	ND	ND	2.17	377.9	ND	59.715	149.76	0.997

Run 1 Average_{wet}

ND

ND

ND

155.14

ND

2.23

371.17

ND

ND

Reference Method Calculations

FAB 7 - C4 Scrubber

7s.1.5 Outlet

Run No.	Run 1	Run 2	
Date	8/25/2003	8/25/2003	
Start Time	10:00	17:25	AVERAGE
Stop Time	14:00	21:25	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Average Meter Temperature (°F)	81.4	92.9	87.1
Volume Metered (acf)	158.789	157.346	158.068
Volume Metered (dscf)	129.063	125.212	127.138
Volume of Water Collected (g)	58.6	57.3	57.9
Volume of Water Collected (scf)	2.763	2.702	2.732
Average Delta H (in. H ₂ O)	1.09	1.05	1.07
AVG SQRT of dH (in. H ₂ O)	1.0421	1.0242	1.0331
Measured Moisture (%)	2.1%	2.1%	2.1%
Saturation Moisture (%)	2.3%	2.3%	2.3%
Moisture Used for Calculations (%)	2.2%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.61	28.61	28.61
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.04	-0.04	-0.04
Stack Pressure (in. Hg)	24.89	24.89	24.89
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5207	0.5069	0.5138
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.2249	0.2774	0.2511
Stack Temperature Isokinetic Traverse (°F)	63.0	62.9	63.0
Stack Temperature Flow Traverse (°F)	67.2	67.4	67.3
Velocity (ft/sec) Isokinetic Traverse	32.05	31.19	31.62
Velocity (ft/sec) Flow Traverse	13.90	17.14	15.52
Nozzle Diameter (in.)	0.250	0.250	0.250
% Isokinetics	100.00	99.61	99.8
Stack Diameter (in.)	42.00	42.00	42.00
Stack Area (ft ²)	9.62	9.62	9.62
Stack Flow Rate Isokinetic Traverse (acfm)	18,500	18,007	18,253
Stack Flow Rate Flow Traverse (acfm)	8,023	9,895	8,959
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	15,181	14,785	14,983
Stack Flow Rate Outlet Flow Traverse (dscfm)	6,532	8,056	7,294
Chlorine			
Collected Cl ₂ micrograms (ug)	16.2	15.8	16.0
Cl ₂ Concentration (ug/dscf)	0.13	0.13	0.13
Cl ₂ Concentration (ppb)	2	2	2
Cl ₂ Emission Rate (lbs/hr)	1.08E-04	1.34E-04	1.21E-04

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/25/2003												
Unit Number: FAB 7 - C4 Scrubber	Stack Diameter (in.): 42.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.04												
Run No.: 1	Operators: PER/SCT												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.89												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 9:32 End: 9:44		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %													
Comments :													

NE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.29	67
2	0.24	67
3	0.22	67
4	0.15	68
5	0.06	66
6	0.04	66
7	0.01	67
8	0.01	66
9	0.00	67
10	0.00	68
11	0.00	68
12	0.00	69

NW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.04	68
2	0.04	69
3	0.03	68
4	0.01	68
5	0.00	70
6	0.00	67
7	0.06	66
8	0.10	66
9	0.14	66
10	0.18	65
11	0.19	65
12	0.16	69
Total Average: sqrt dp = 0.2249		67.2

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/25/2003												
Unit Number: FAB 7 - C4 Scrubber	Stack Diameter (in.): 42.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.06												
Run No.: 2	Operators: PER/SCT												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.89												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 15:37 End: 15:55		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %													
Comments :													

NE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.24	68
2	0.32	72
3	0.24	69
4	0.16	69
5	0.09	69
6	0.04	70
7	0.02	67
8	0.01	67
9	0.01	67
10	0.01	67
11	0.01	68
12	0.01	69

NW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.08	67
2	0.09	66
3	0.07	66
4	0.06	66
5	0.07	66
6	0.06	66
7	0.09	65
8	0.12	65
9	0.12	65
10	0.13	65
11	0.11	67
12	0.08	71
Total Average: sqrt dp = 0.2774		67.4

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Location Notes and Comments					Sample Train No. AA		Filter No.: NA		Run No.: 1		
Plant Name:	FAB 7 - C4 Scrubber						Leak Check Initial:		0.003	cfm@	15	(in. Hg)	
Plant Location:	Rio Rancho, NM						Leak Check Final:		0.002	cfm@	5.0	(in. Hg)	
Project No.:	31397-1600-00000						Total Traverse Points		Impinger	Initial	Final		
Sampling Location:	7s.1.5						24		1	660.1	676.1		
Date:	8/25/2003								2	743.1	754.2		
Technicians:	PER/SCT								3	535.2	538.0		
Meter Box No.: 90394	Y_d: 0.999								4	649.8	652.1		
Probe / Pitot No.: 501 / HA-1	C_p: 0.84			5	641.0	641.5							
Nozzle No.: NA	dH₀: 1.721	Stack Dia. (in.): 42.00	Stack Area (ft²): 9.62		6	864.8	890.7						
Nozzle Dia: 0.250	0.251, 0.250, 0.250	Port Width (in.): 4.00	Port Length (in.): 4.00		Start Time: 10:00		Net Impinger Gain (g): 58.6						
Initial Meter Reading (ft³): 925.441		BP (in. Hg): 24.89	Static Pressure (in.): -0.04		End Time: 14:00		Theta 240						
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)		
SW1	10	62	73	74	0.260	0.95	931.810	92	232	55	1		
SW1	20	62	75	73	0.270	1.07	938.280	88	229	54	1		
SW1	30	62	80	73	0.280	1.19	945.080	80	234	55	1		
SW1	40	62	84	74	0.270	1.10	951.800	75	234	57	1		
SW1	50	62	85	75	0.280	1.12	958.480	69	235	55	1		
SW1	60	60	85	75	0.290	1.17	965.040	66	235	55	1		
SW1	70	61	84	75	0.280	1.12	971.700	65	235	55	1		
SW1	80	61	85	75	0.270	1.08	978.360	64	233	55	1		
SW1	90	61	85	75	0.270	1.08	985.040	65	235	55	1		
SW1	100	61	86	75	0.280	1.13	991.710	69	235	55	1		
SW1	110	62	86	76	0.270	1.08	998.370	74	236	55	1		
SW1	120	62	86	76	0.280	1.12	1005.030	85	232	50	1		
SW1	130	63	86	77	0.290	1.16	1011.680	91	236	53	1		
SW1	140	64	86	77	0.270	1.08	1018.370	94	235	49	1		
SW1	150	64	87	78	0.270	1.08	1025.060	96	236	53	1		
SW1	160	65	87	78	0.280	1.12	1031.820	97	236	54	1		
SW1	170	65	88	79	0.270	1.08	1038.530	100	238	55	1		
SW1	180	64	88	79	0.260	1.04	1044.980	101	240	55	1		
SW1	190	65	89	79	0.250	1.00	1051.450	101	241	56	1		
SW1	200	65	90	80	0.260	1.04	1057.880	102	242	57	1		
SW1	210	65	90	81	0.280	1.13	1064.740	103	241	54	1		
SW1	220	65	91	79	0.270	1.08	1071.340	102	243	53	1		
SW1	230	65	92	80	0.250	1.01	1077.670	102	244	52	1		
SW1	240	65	93	82	0.260	1.05	1084.230	100	243	52	1		
Average / Net		63.0		81.4	0.271	1.1	158.789	86.7	236.7	54.1	1.0		

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic					Sample Train No.		Filter No.: NA		Run No.: 2	
Plant Name:	FAB 7 - C4 Scrubber						Leak Check Initial:		0.002 cfm@ 17 (in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:		0.002 cfm@ 5.0 (in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	FAB 7 - C4 Scrubber							1	578.5	590.8		
Date:	8/25/2003						24	2	620.4	630.7		
Technicians:	PER/SCT							3	644.7	647.6		
Meter Box No.: 90394	Y_d : 0.999							4	634.7	639.5		
Probe / Pitot No.: 501 / HA-1	C_p : 0.84	5	648.8	646.3								
Nozzle No.: NA	$dH_{\oplus}$: 1.721	Stack Dia. (in.): 42.00		Stack Area (ft²): 9.62		6	944.9	974.4				
Nozzle Dia: 0.250	0.251, 0.250, 0.250	Port Width (in.): 4.00		Port Length (in.): 4.00		Start Time: 17:25		Net Impinger Gain (g): 57.3				
Initial Meter Reading (ft³):	86.187	BP (in. Hg): 24.89		Static Pressure (in.): -0.04		End Time: 21:25		Theta 240				
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
SW1	10	65	90	90	0.260	1.06	92.470	245	244	46	1.0	
SW1	20	65	92	89	0.260	1.06	99.020	343	243	40	1.0	
SW1	30	64	95	89	0.280	1.15	105.560	390	243	40	2.0	
SW1	40	64	97	90	0.260	1.07	112.290	175	243	44	2.0	
SW1	50	64	98	90	0.250	1.03	118.990	165	244	46	2.0	
SW1	60	64	98	90	0.240	0.99	125.600	255	243	48	2.0	
SW1	70	64	98	90	0.260	1.07	132.060	178	242	49	2.0	
SW1	80	64	99	90	0.270	1.11	138.680	242	242	52	2.0	
SW1	90	63	99	90	0.260	1.07	145.120	279	244	52	2.0	
SW1	100	63	99	91	0.260	1.07	151.780	261	243	51	2.0	
SW1	110	63	99	91	0.270	1.11	158.450	259	241	50	2.0	
SW1	120	63	99	91	0.250	1.03	165.130	269	243	51	2.0	
SW1	130	62	99	91	0.260	1.10	171.710	230	242	51	2.0	
SW1	140	62	99	91	0.250	1.00	178.270	249	250	51	2.0	
SW1	150	62	98	90	0.250	1.00	184.860	246	251	52	2.0	
SW1	160	62	98	90	0.260	1.00	191.430	248	251	52	2.0	
SW1	170	62	98	90	0.250	1.00	197.950	248	251	52	2.0	
SW1	180	62	98	90	0.240	1.00	204.430	248	250	54	2.0	
SW1	190	62	97	90	0.250	1.00	210.920	248	252	55	2.0	
SW1	200	62	97	89	0.240	0.99	217.360	248	251	56	2.0	
SW1	210	62	92	88	0.260	1.06	223.900	236	249	58	2.0	
SW1	220	62	91	87	0.250	1.02	230.400	240	251	59	2.0	
SW1	230	62	90	86	0.290	1.18	236.880	238	250	59	2.0	
SW1	240	62	90	86	0.250	1.02	243.533	238	250	60	2.0	
Average / Net		62.9		92.9	0.3	1.0	157.346	249.1	246.4	51.2	1.9	

EPA REFERENCE METHOD 1

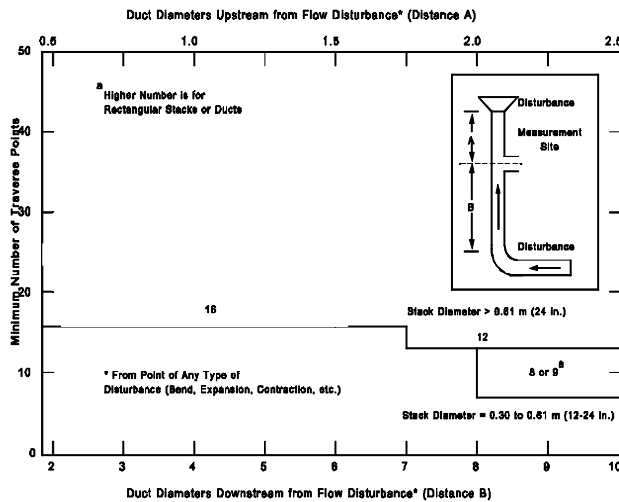
FIELD DATA SHEET

CIRCULAR STACKS

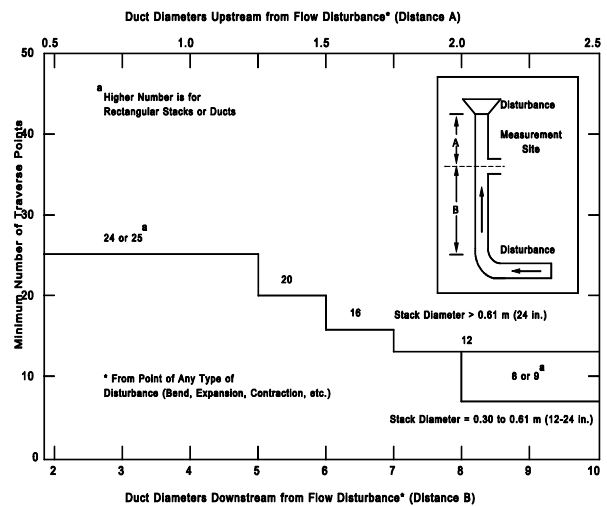
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 7s.1.5
 TRC Project No.: 31397-1600-00000
 Date: 8/25/2003
 Technician: S. Thorpe
 Circular/Rectangular: C

Stack Diameter: 41.5
 Sample Port Diameter: 3.0
 Sample Port Depth: 4.00
 Diameters Upstream: 2.0
 Diameters Downstream: 2.0
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	4 14/16
2	6 12/16
3	8 14/16
4	11 6/16
5	14 6/16
6	18 12/16
7	30 12/16
8	35 2/16
9	38 2/16
10	40 10/16
11	42 12/16
12	44 10/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 9s.1.2h Outlet FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2H OUTLET 08 26 03 SAMPLE_0028.LAB	8/26/2003 9:22	ND	ND	ND	ND	ND	2.18	367.1	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0029.LAB	8/26/2003 9:25	ND	ND	ND	ND	ND	2.19	366.2	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0030.LAB	8/26/2003 9:27	ND	ND	ND	179.76	ND	2.19	368.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0031.LAB	8/26/2003 9:30	ND	ND	ND	169.43	ND	2.22	366.7	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0032.LAB	8/26/2003 9:33	ND	ND	ND	157.94	ND	2.21	367.0	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0036.LAB	8/26/2003 9:43	ND	ND	ND	ND	ND	2.21	374.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0037.LAB	8/26/2003 9:46	ND	ND	ND	ND	ND	2.21	372.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0038.LAB	8/26/2003 9:48	ND	ND	ND	ND	ND	2.22	372.0	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0039.LAB	8/26/2003 9:51	ND	ND	ND	ND	ND	2.22	372.3	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0040.LAB	8/26/2003 9:53	ND	ND	ND	ND	ND	2.22	372.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0041.LAB	8/26/2003 9:56	ND	ND	ND	ND	ND	2.22	371.5	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0042.LAB	8/26/2003 9:59	ND	ND	ND	ND	ND	2.23	370.7	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0043.LAB	8/26/2003 10:01	ND	ND	ND	ND	ND	2.23	370.0	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0044.LAB	8/26/2003 10:04	ND	ND	ND	ND	ND	2.22	371.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0045.LAB	8/26/2003 10:06	ND	ND	ND	ND	ND	2.22	370.3	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0046.LAB	8/26/2003 10:09	ND	ND	ND	ND	ND	2.22	367.3	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0047.LAB	8/26/2003 10:12	ND	ND	ND	ND	ND	2.22	367.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0048.LAB	8/26/2003 10:14	ND	ND	ND	ND	ND	2.21	367.9	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0049.LAB	8/26/2003 10:17	ND	ND	ND	ND	ND	2.21	366.9	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0050.LAB	8/26/2003 10:19	ND	ND	ND	ND	ND	2.21	364.8	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0051.LAB	8/26/2003 10:22	ND	ND	ND	ND	ND	2.21	364.8	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0052.LAB	8/26/2003 10:25	ND	ND	ND	ND	ND	2.22	364.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0053.LAB	8/26/2003 10:27	ND	ND	ND	ND	ND	2.23	364.7	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0054.LAB	8/26/2003 10:30	ND	ND	ND	ND	ND	2.23	366.5	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0055.LAB	8/26/2003 10:32	ND	ND	ND	ND	ND	2.22	366.7	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0056.LAB	8/26/2003 10:35	ND	ND	ND	ND	ND	2.22	366.3	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0057.LAB	8/26/2003 10:37	ND	ND	ND	ND	ND	2.22	364.7	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0058.LAB	8/26/2003 10:40	ND	ND	ND	ND	ND	2.22	364.2	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0059.LAB	8/26/2003 10:43	ND	ND	ND	ND	ND	2.23	364.2	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0060.LAB	8/26/2003 10:45	ND	ND	ND	ND	ND	2.22	363.9	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0061.LAB	8/26/2003 10:48	ND	ND	ND	ND	ND	2.22	366.5	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0062.LAB	8/26/2003 10:50	ND	ND	ND	ND	ND	2.23	366.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0063.LAB	8/26/2003 10:53	ND	ND	ND	ND	ND	2.23	368.5	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0064.LAB	8/26/2003 10:56	ND	ND	ND	ND	ND	2.23	367.1	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0065.LAB	8/26/2003 10:58	ND	ND	ND	ND	ND	2.24	366.9	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0066.LAB	8/26/2003 11:01	ND	ND	ND	ND	ND	2.24	365.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0067.LAB	8/26/2003 11:03	ND	ND	ND	ND	ND	2.23	367.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0068.LAB	8/26/2003 11:06	ND	ND	ND	ND	ND	2.23	367.1	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0069.LAB	8/26/2003 11:09	ND	ND	ND	ND	ND	2.24	364.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0070.LAB	8/26/2003 11:11	ND	ND	ND	ND	ND	2.24	364.0	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0071.LAB	8/26/2003 11:14	ND	ND	ND	ND	ND	2.24	364.5	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0072.LAB	8/26/2003 11:16	ND	ND	ND	ND	ND	2.23	364.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0073.LAB	8/26/2003 11:19	ND	ND	ND	ND	ND	2.24	364.0	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0074.LAB	8/26/2003 11:22	ND	ND	ND	ND	ND	2.25	364.0	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0075.LAB	8/26/2003 11:24	ND	ND	ND	ND	ND	2.24	366.0	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0076.LAB	8/26/2003 11:27	ND	ND	ND	ND	ND	2.23	365.3	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0077.LAB	8/26/2003 11:29	ND	ND	ND	ND	ND	2.24	362.9	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0078.LAB	8/26/2003 11:32	ND	ND	ND	ND	ND	2.24	362.2	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0079.LAB	8/26/2003 11:35	ND	ND	ND	ND	ND	2.24	362.8	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0080.LAB	8/26/2003 11:37	ND	ND	ND	ND	ND	2.25	363.3	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0081.LAB	8/26/2003 11:40	ND	ND	ND	ND	ND	2.24	363.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0082.LAB	8/26/2003 11:42	ND	ND	ND	ND	ND	2.25	364.6	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0083.LAB	8/26/2003 11:45	ND	ND	ND	ND	ND	2.25	363.3	ND	ND	149.76	1.008

Scrubber Outlet 9s.1.2h Outlet FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2H OUTLET 08 26 03 SAMPLE_0084.LAB	8/26/2003 11:48	ND	ND	ND	ND	ND	2.25	365.3	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0085.LAB	8/26/2003 11:50	ND	ND	ND	ND	ND	2.25	365.8	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0086.LAB	8/26/2003 11:53	ND	ND	ND	ND	ND	2.24	366.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0087.LAB	8/26/2003 11:55	ND	ND	ND	ND	ND	2.24	364.1	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0088.LAB	8/26/2003 11:58	ND	ND	ND	ND	ND	2.25	363.5	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0089.LAB	8/26/2003 12:01	ND	ND	ND	ND	ND	2.24	363.5	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0090.LAB	8/26/2003 12:03	ND	ND	ND	ND	ND	2.24	366.4	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0091.LAB	8/26/2003 12:06	ND	ND	ND	ND	ND	2.25	365.9	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0092.LAB	8/26/2003 12:08	ND	ND	ND	ND	ND	2.25	364.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0093.LAB	8/26/2003 12:11	ND	ND	ND	ND	ND	2.26	364.7	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0094.LAB	8/26/2003 12:14	ND	ND	ND	ND	ND	2.24	366.5	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0095.LAB	8/26/2003 12:16	ND	ND	ND	ND	ND	2.25	365.7	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0096.LAB	8/26/2003 12:19	ND	ND	ND	ND	ND	2.25	362.9	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0097.LAB	8/26/2003 12:21	ND	ND	ND	ND	ND	2.26	361.7	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0098.LAB	8/26/2003 12:24	ND	ND	ND	ND	ND	2.25	360.7	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0099.LAB	8/26/2003 12:27	ND	ND	ND	ND	ND	2.25	361.0	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0100.LAB	8/26/2003 12:29	ND	ND	ND	ND	ND	2.25	359.2	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0101.LAB	8/26/2003 12:32	ND	ND	ND	159.53	ND	2.25	359.8	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0102.LAB	8/26/2003 12:34	ND	ND	ND	ND	ND	2.27	359.9	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0103.LAB	8/26/2003 12:37	ND	ND	ND	ND	ND	2.26	359.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0104.LAB	8/26/2003 12:39	ND	ND	ND	ND	ND	2.26	361.8	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0105.LAB	8/26/2003 12:42	ND	ND	ND	ND	ND	2.27	360.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0106.LAB	8/26/2003 12:45	ND	ND	ND	ND	ND	2.27	359.3	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0107.LAB	8/26/2003 12:47	ND	ND	ND	ND	ND	2.27	361.5	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0108.LAB	8/26/2003 12:50	ND	ND	ND	ND	ND	2.27	360.9	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0109.LAB	8/26/2003 12:52	ND	ND	ND	ND	ND	2.27	362.6	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0110.LAB	8/26/2003 12:55	ND	ND	ND	ND	ND	2.27	362.6	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0111.LAB	8/26/2003 12:58	ND	ND	ND	ND	ND	2.27	363.8	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0112.LAB	8/26/2003 13:00	ND	ND	ND	ND	ND	2.26	364.1	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0113.LAB	8/26/2003 13:03	ND	ND	ND	ND	ND	2.27	364.0	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0114.LAB	8/26/2003 13:05	ND	ND	ND	ND	ND	2.26	361.7	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0115.LAB	8/26/2003 13:08	ND	ND	ND	ND	ND	2.27	362.7	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0116.LAB	8/26/2003 13:11	ND	ND	ND	ND	ND	2.26	361.8	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0117.LAB	8/26/2003 13:13	ND	ND	ND	ND	ND	2.27	362.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0118.LAB	8/26/2003 13:16	ND	ND	ND	ND	ND	2.27	361.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0119.LAB	8/26/2003 13:18	ND	ND	ND	ND	ND	2.27	362.7	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0120.LAB	8/26/2003 13:21	ND	ND	ND	ND	ND	2.28	363.0	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0121.LAB	8/26/2003 13:24	ND	ND	ND	ND	ND	2.27	363.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0136.LAB	8/26/2003 14:26	ND	ND	ND	451.33	ND	2.28	379.8	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0137.LAB	8/26/2003 14:28	ND	ND	ND	610.74	ND	2.27	379.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0138.LAB	8/26/2003 14:31	ND	ND	ND	619.63	ND	2.29	383.3	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0139.LAB	8/26/2003 14:33	ND	ND	ND	582.54	ND	2.29	382.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0140.LAB	8/26/2003 14:36	ND	ND	ND	529.97	ND	2.29	386.5	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0141.LAB	8/26/2003 14:39	ND	ND	ND	487.71	ND	2.28	387.8	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0142.LAB	8/26/2003 14:41	ND	ND	ND	451.38	ND	2.28	386.6	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0143.LAB	8/26/2003 14:44	ND	ND	ND	410.69	ND	2.29	384.6	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0144.LAB	8/26/2003 14:46	ND	ND	ND	380.45	ND	2.28	384.2	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0145.LAB	8/26/2003 14:49	ND	ND	ND	354.21	ND	2.30	383.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0146.LAB	8/26/2003 14:52	ND	ND	ND	337.48	ND	2.28	381.3	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0147.LAB	8/26/2003 14:54	ND	ND	ND	318.12	ND	2.30	383.6	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0148.LAB	8/26/2003 14:57	ND	ND	ND	297.78	ND	2.29	379.7	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0149.LAB	8/26/2003 14:59	ND	ND	ND	281.48	ND	2.29	381.5	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0150.LAB	8/26/2003 15:02	ND	ND	ND	269.10	ND	2.29	380.2	ND	ND	149.02	1.003

Scrubber Outlet 9s.1.2h Outlet FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2H OUTLET 08 26 03 SAMPLE_0151.LAB	8/26/2003 15:05	ND	ND	ND	261.54	ND	2.29	379.9	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0152.LAB	8/26/2003 15:07	ND	ND	ND	236.43	ND	2.28	381.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0153.LAB	8/26/2003 15:10	ND	ND	ND	225.22	ND	2.29	380.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0154.LAB	8/26/2003 15:12	ND	ND	ND	229.33	ND	2.28	379.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0155.LAB	8/26/2003 15:15	ND	ND	ND	213.90	ND	2.29	384.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0156.LAB	8/26/2003 15:18	ND	ND	ND	209.50	ND	2.30	382.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0157.LAB	8/26/2003 15:20	ND	ND	ND	209.66	ND	2.30	382.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0158.LAB	8/26/2003 15:23	ND	ND	ND	197.75	ND	2.29	383.7	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0159.LAB	8/26/2003 15:25	ND	ND	ND	195.43	ND	2.28	382.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0160.LAB	8/26/2003 15:28	ND	ND	ND	186.62	ND	2.29	381.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0161.LAB	8/26/2003 15:31	ND	ND	ND	184.64	ND	2.29	377.6	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0162.LAB	8/26/2003 15:33	ND	ND	ND	181.84	ND	2.29	380.3	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0163.LAB	8/26/2003 15:36	ND	ND	ND	180.20	ND	2.29	378.8	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0164.LAB	8/26/2003 15:38	ND	ND	ND	177.57	ND	2.27	379.0	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0165.LAB	8/26/2003 15:41	ND	ND	ND	177.41	ND	2.29	378.6	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0166.LAB	8/26/2003 15:43	ND	ND	ND	176.47	ND	2.29	376.0	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0167.LAB	8/26/2003 15:46	ND	ND	ND	176.60	ND	2.29	377.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0168.LAB	8/26/2003 15:49	ND	ND	ND	167.93	ND	2.28	377.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0169.LAB	8/26/2003 15:51	ND	ND	ND	170.16	ND	2.27	377.3	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0170.LAB	8/26/2003 15:54	ND	ND	ND	167.70	ND	2.28	377.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0171.LAB	8/26/2003 15:56	ND	ND	ND	173.01	ND	2.28	374.9	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0172.LAB	8/26/2003 15:59	ND	ND	ND	160.04	ND	2.27	375.4	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0173.LAB	8/26/2003 16:02	ND	ND	ND	156.97	ND	2.27	375.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0174.LAB	8/26/2003 16:04	ND	ND	ND	ND	ND	2.27	375.3	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0175.LAB	8/26/2003 16:07	ND	ND	ND	ND	ND	2.28	376.7	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0176.LAB	8/26/2003 16:09	ND	ND	ND	ND	ND	2.27	377.1	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0177.LAB	8/26/2003 16:12	ND	ND	ND	ND	ND	2.27	375.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0178.LAB	8/26/2003 16:15	ND	ND	ND	ND	ND	2.26	373.8	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0179.LAB	8/26/2003 16:17	ND	ND	ND	ND	ND	2.27	373.6	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0180.LAB	8/26/2003 16:20	ND	ND	ND	ND	ND	2.27	371.7	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0181.LAB	8/26/2003 16:22	ND	ND	ND	ND	ND	2.28	372.8	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0182.LAB	8/26/2003 16:25	ND	ND	ND	ND	ND	2.27	373.3	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0183.LAB	8/26/2003 16:28	ND	ND	ND	ND	ND	2.27	373.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0184.LAB	8/26/2003 16:30	ND	ND	ND	ND	ND	2.28	371.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0185.LAB	8/26/2003 16:33	ND	ND	ND	ND	ND	2.28	372.3	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0186.LAB	8/26/2003 16:35	ND	ND	ND	ND	ND	2.28	375.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0187.LAB	8/26/2003 16:38	ND	ND	ND	ND	ND	2.27	374.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0188.LAB	8/26/2003 16:41	ND	ND	ND	ND	ND	2.28	375.2	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0189.LAB	8/26/2003 16:43	ND	ND	ND	ND	ND	2.28	374.7	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0190.LAB	8/26/2003 16:46	ND	ND	ND	ND	ND	2.28	376.1	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0191.LAB	8/26/2003 16:48	ND	ND	ND	ND	ND	2.27	376.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0192.LAB	8/26/2003 16:51	ND	ND	ND	ND	ND	2.28	374.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0193.LAB	8/26/2003 16:54	ND	ND	ND	241.04	ND	2.27	373.1	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0194.LAB	8/26/2003 16:56	ND	ND	ND	301.19	ND	2.28	373.1	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0195.LAB	8/26/2003 16:59	ND	ND	ND	306.02	ND	2.28	369.6	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0196.LAB	8/26/2003 17:01	ND	ND	ND	287.92	ND	2.28	373.1	ND	ND	149.02	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0197.LAB	8/26/2003 17:04	ND	ND	ND	268.14	ND	2.28	373.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0198.LAB	8/26/2003 17:07	ND	ND	ND	255.21	ND	2.28	373.3	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0199.LAB	8/26/2003 17:09	ND	ND	ND	236.61	ND	2.28	372.0	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0200.LAB	8/26/2003 17:12	ND	ND	ND	230.10	ND	2.28	372.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0201.LAB	8/26/2003 17:14	ND	ND	ND	214.46	ND	2.28	373.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0202.LAB	8/26/2003 17:17	ND	ND	ND	199.82	ND	2.26	373.1	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0203.LAB	8/26/2003 17:20	ND	ND	ND	187.12	ND	2.26	372.4	ND	ND	149.76	1.003

Scrubber Outlet 9s.1.2h Outlet FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2H OUTLET 08 26 03 SAMPLE_0204.LAB	8/26/2003 17:22	ND	ND	ND	167.59	ND	2.27	370.4	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0205.LAB	8/26/2003 17:25	ND	ND	ND	158.03	ND	2.27	372.4	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0206.LAB	8/26/2003 17:27	ND	ND	ND	153.68	ND	2.26	375.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0207.LAB	8/26/2003 17:30	ND	ND	ND	152.26	ND	2.27	375.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0208.LAB	8/26/2003 17:33	ND	ND	ND	ND	ND	2.26	372.5	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0209.LAB	8/26/2003 17:35	ND	ND	ND	ND	ND	2.27	374.6	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0210.LAB	8/26/2003 17:38	ND	ND	ND	ND	ND	2.26	371.9	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0211.LAB	8/26/2003 17:40	ND	ND	ND	ND	ND	2.26	374.1	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0212.LAB	8/26/2003 17:43	ND	ND	ND	ND	ND	2.26	374.0	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0213.LAB	8/26/2003 17:46	ND	ND	ND	ND	ND	2.26	373.3	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0214.LAB	8/26/2003 17:48	ND	ND	ND	ND	ND	2.25	373.0	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0215.LAB	8/26/2003 17:51	ND	ND	ND	ND	ND	2.25	372.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0216.LAB	8/26/2003 17:53	ND	ND	ND	ND	ND	2.23	373.1	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0217.LAB	8/26/2003 17:56	ND	ND	ND	ND	ND	2.24	374.1	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0218.LAB	8/26/2003 17:59	ND	ND	ND	ND	ND	2.22	372.0	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0219.LAB	8/26/2003 18:01	ND	ND	ND	ND	ND	2.23	374.8	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0220.LAB	8/26/2003 18:04	ND	ND	ND	ND	ND	2.23	370.7	ND	ND	149.02	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0221.LAB	8/26/2003 18:06	ND	ND	ND	ND	ND	2.23	373.0	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0222.LAB	8/26/2003 18:09	ND	ND	ND	ND	ND	2.23	373.6	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0223.LAB	8/26/2003 18:12	ND	ND	ND	ND	ND	2.21	374.7	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0224.LAB	8/26/2003 18:14	ND	ND	ND	ND	ND	2.23	374.7	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0225.LAB	8/26/2003 18:17	ND	ND	ND	ND	ND	2.23	374.0	ND	ND	149.76	1.008
9S_1_2H OUTLET 08 26 03 SAMPLE_0226.LAB	8/26/2003 18:19	ND	ND	ND	ND	ND	2.23	374.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0227.LAB	8/26/2003 18:22	ND	ND	ND	ND	ND	2.22	374.4	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0228.LAB	8/26/2003 18:24	ND	ND	ND	ND	ND	ND	373.9	ND	ND	149.76	1.003
9S_1_2H OUTLET 08 26 03 SAMPLE_0229.LAB	8/26/2003 18:27	ND	ND	ND	ND	ND	ND	372.8	ND	ND	149.02	1.003
Run 1 Average _{wet}		ND	ND	ND	152.01	ND	2.24	365.07	ND	ND		

Reference Method Calculations

FAB 7

9s.1.2h

Run No.	Run 1	Run 2	
Date	8/26/2003	8/26/2003	
Start Time	9:22	14:27	AVERAGE
Stop Time	13:32	18:27	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Average Meter Temperature (°F)	86.7	101.8	94.3
Volume Metered (acf)	147.263	182.636	164.950
Volume Metered (dscf)	118.467	143.190	130.829
Volume of Water Collected (g)	54.3	65.8	60.1
Volume of Water Collected (scf)	2.560	3.102	2.831
Average Delta H (in. H ₂ O)	0.93	1.42	1.17
AVG SQRT of dH (in. H ₂ O)	0.9627	1.1902	1.0764
Measured Moisture (%)	2.1%	2.1%	2.1%
Saturation Moisture (%)	2.3%	2.4%	2.3%
Moisture Used for Calculations (%)	2.2%	2.3%	2.3%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.61	28.61	28.61
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	
Stack Static Pressure (in. H ₂ O)	-0.09	-0.09	-0.09
Stack Pressure (in. Hg)	24.88	24.88	24.88
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.4657	0.4623	0.4640
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.3912	0.3045	0.3479
Stack Temperature Isokinetic Traverse (°F)	62.9	64.1	63.5
Stack Temperature Flow Traverse (°F)	60.5	65.5	63.0
Velocity (ft/sec) Isokinetic Traverse	28.66	28.48	28.57
Velocity (ft/sec) Flow Traverse	24.02	18.79	21.40
Nozzle Diameter (in.)	0.250	0.280	0.265
% Isokinetics	102.62	99.77	101.2
Stack Diameter (in.)	42.00	42.00	42.00
Stack Area (ft ²)	9.62	9.62	9.62
Stack Flow Rate Isokinetic Traverse (acfm)	16,546	16,443	16,494
Stack Flow Rate Flow Traverse (acfm)	13,867	10,844	12,356
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	13,579	13,458	13,519
Stack Flow Rate Outlet Flow Traverse (dscfm)	11,433	8,853	10,143
Chlorine			
Collected Cl ₂ micrograms (ug)	15.5	62.4	39.0
Cl ₂ Concentration (ug/dscf)	0.13	0.44	0.28
Cl ₂ Concentration (ppb)	2	5	3
Cl ₂ Emission Rate (lbs/hr)	0.0002	0.0005	0.0004

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/26/2003
Unit Number:	9s.1.2h	Stack Diameter (in.):	42.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.09
Run No.:	1	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.89
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	7:36	
	End:	7:49	

SE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.07	60
2	0.09	60
3	0.12	61
4	0.11	61
5	0.09	60
6	0.10	61
7	0.12	61
8	0.14	61
9	0.21	60
10	0.24	61
11	0.26	59
12	0.23	62

SW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.39	61
2	0.37	59
3	0.35	61
4	0.27	61
5	0.18	60
6	0.13	60
7	0.07	60
8	0.07	60
9	0.08	61
10	0.09	60
11	0.11	61
12	0.09	61
Total Average:	sqrt dp = 0.3912	60.5

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/26/2003
Unit Number:	9s.1.2h	Stack Diameter (in.):	42.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.07
Run No.:	2	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.89
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	13:48	
	End:	13:57	

SE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.04	68
2	0.05	68
3	0.05	68
4	0.04	67
5	0.05	67
6	0.03	67
7	0.07	66
8	0.10	65
9	0.13	65
10	0.21	64
11	0.22	63
12	0.14	65

SW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.28	65
2	0.34	64
3	0.29	63
4	0.20	64
5	0.13	64
6	0.08	64
7	0.02	64
8	0.02	64
9	0.03	66
10	0.05	65
11	0.04	67
12	0.04	68
Total Average:	sqrt dp = 0.3045	65.5

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments Run paused at 9:32, restarted 9:42					Sample Train No. AA		Filter No.: NA		Run No.: 1	
Plant Name:	FAB 7						Leak Check Initial: 0.003 cfm@ 15 (in. Hg)					
Plant Location:	Rio Rancho, NM						Leak Check Final: 0.002 cfm@ 8 (in. Hg)					
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.2h							1	643.7	656.6		
Date:	8/26/2003							2	731.5	741.0		
Technicians:	PER/SCT							3	535.7	538.4		
Meter Box No.: 90394	Y_d: 0.999							4	637.8	637.2		
Probe/Pitot No.: 502 / HA-1	C_p: 0.84	5	645.9	644.9								
Nozzle No.: NA	dH₀: 1.721	Stack Dia. (in.): 42.00		Stack Area (ft²): 9.62		6	796.5	827.3				
Nozzle Dia: 0.250	0.250, 0.250, 0.251	Port Width (in.): 3.00		Port Length (in.): 4.00		Start Time: 9:22		Net Impinger Gain (g): 54.3				
Initial Meter Reading (ft³):	245.213	BP (in. Hg): 24.89		Static Pressure (in.): -0.09		End Time: 13:32		Theta 240				
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
SW10	10	61	70	69	0.230	0.96	251.380	232	241	55	2.0	
S11	20	62	75	72	0.240	0.96	257.720	234	245	54	2.0	
S11	30	62	84	73	0.230	0.96	263.960	232	243	54	2.0	
S11	40	63	86	75	0.220	0.95	270.060	246	245	56	2.0	
S11	50	63	87	77	0.230	0.96	276.240	244	243	57	2.0	
S11	60	63	87	79	0.220	0.95	282.410	257	244	58	2.0	
S11	70	63	87	78	0.220	0.94	288.590	249	243	58	2.0	
S11	80	63	88	79	0.230	0.97	294.790	245	244	54	2.0	
S11	90	63	89	79	0.220	0.95	300.880	245	244	52	2.0	
S11	100	63	90	80	0.220	0.95	307.170	244	244	52	2.0	
S11	110	63	91	81	0.230	0.96	313.440	245	245	53	2.0	
S11	120	63	92	82	0.220	0.95	319.630	245	243	54	2.0	
S11	130	64	93	85	0.220	0.94	325.840	245	246	57	2.0	
S11	140	63	91	85	0.210	0.90	332.000	244	243	57	2.0	
S11	150	63	92	85	0.220	0.95	338.210	243	246	61	2.0	
S11	160	63	91	85	0.210	0.90	344.370	247	243	62	2.0	
S11	170	63	93	85	0.210	0.90	350.420	245	245	58	2.0	
S11	180	63	95	86	0.210	0.90	356.460	244	245	57	2.0	
S11	190	63	95	87	0.210	0.90	362.500	248	243	59	2.0	
S11	200	63	97	88	0.190	0.82	368.630	244	243	59	2.0	
S11	210	63	100	90	0.190	0.82	374.600	247	243	59	2.0	
S11	220	63	100	92	0.210	0.91	380.490	246	242	60	2.0	
S11	230	63	103	94	0.210	0.92	386.380	246	240	60	2.0	
S11	240	63	104	97	0.210	0.92	392.476	247	242	60	2.0	
Average / Net		62.9		86.7	0.217	0.9	147.263	244.3	243.5	56.9	2.0	

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments changed to a .280 nozzle due to reduced measured flow					Sample Train No.	SF	Filter No.:	NA	Run No.:	2		
Plant Name:	FAB 7						Leak Check Initial:	0.001	cfm@	12	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.05	cfm@	9	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	9s.1.2h								1		601.3		617.4	
Date:	8/26/2003						24		2		630.2		641.0	
Technicians:	PER/SCT								3		645.4		650.5	
Meter Box No.:	90394						Y_d:	0.999			4		633.6	
Probe/Pitot No.:	502 / HA-1	C_p:	0.84			5		628.0		623.0				
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	42.00	Stack Area (ft²):	9.62	6		963.8		1001.8		
Nozzle Dia:	0.280	0.280, 0.281, 0.279	Port Width (in.):	3.00	Port Length (in.):	4.00	Start Time:	14:27	Net Impinger Gain (g):	65.8				
Initial Meter Reading (ft³):	392.794	BP (in. Hg):	24.89	Static Pressure (in.):	-0.09	End Time:	18:27	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
SW10	10	63	99	99	0.210	1.40	400.360	240	239	54	2.0			
SW10	20	64	102	100	0.210	1.40	407.870	267	232	47	2.0			
SW10	30	64	104	100	0.210	1.45	415.340	264	245	50	2.0			
SW10	40	64	105	99	0.210	1.40	422.910	251	246	50	2.0			
SW10	50	64	105	100	0.210	1.40	430.450	240	245	50	2.0			
SW10	60	64	106	100	0.210	1.40	438.000	239	247	52	2.0			
SW10	70	64	108	100	0.210	1.40	445.500	239	245	54	2.0			
SW10	80	64	108	101	0.210	1.40	453.070	241	245	55	2.0			
SW10	90	64	108	101	0.210	1.45	460.740	241	244	55	2.0			
SW10	100	64	108	100	0.210	1.40	468.200	245	245	56	2.0			
SW10	110	64	108	102	0.220	1.45	475.940	240	246	60	2.0			
SW10	120	64	108	101	0.220	1.45	483.700	238	245	50	2.0			
SW10	130	64	109	101	0.220	1.40	491.460	250	245	49	2.0			
SW10	140	65	107	101	0.220	1.45	499.200	257	245	50	2.0			
SW10	150	65	107	101	0.220	1.40	507.000	246	245	53	2.5			
SW10	160	65	105	100	0.220	1.45	514.800	247	246	57	2.5			
SW10	170	65	103	99	0.210	1.40	522.330	248	247	58	2.5			
SW10	180	65	103	98	0.220	1.45	529.970	247	246	58	2.5			
SW10	190	65	103	97	0.210	1.40	537.600	249	247	60	2.5			
SW10	200	64	103	96	0.210	1.40	545.090	247	247	54	2.5			
SW10	210	64	102	95	0.210	1.40	552.570	246	245	52	2.5			
SW10	220	64	102	95	0.210	1.40	560.060	246	247	54	2.5			
SW10	230	63	101	94	0.220	1.45	567.750	245	242	55	2.5			
SW10	240	63	99	93	0.220	1.40	575.430	244	246	58	2.5			
Average / Net		64.1		101.8	0.2	1.4	182.636	246.5	244.7	53.8	2.2			

EPA REFERENCE METHOD 1

FIELD DATA SHEET

CIRCULAR STACKS

Firm Name: **INTEL**

Plant Location: **Rio Rancho, NM**

Sampling Location: **9s.1.2h**

TRC Project No.: **31397-1600-00000**

Date: **8/16/2003**

Technician: **S. Thorpe**

Circular/Rectangular: **C**

Stack Diameter: **41.5**

Sample Port Diameter: **3.0**

Sample Port Depth: **4.00**

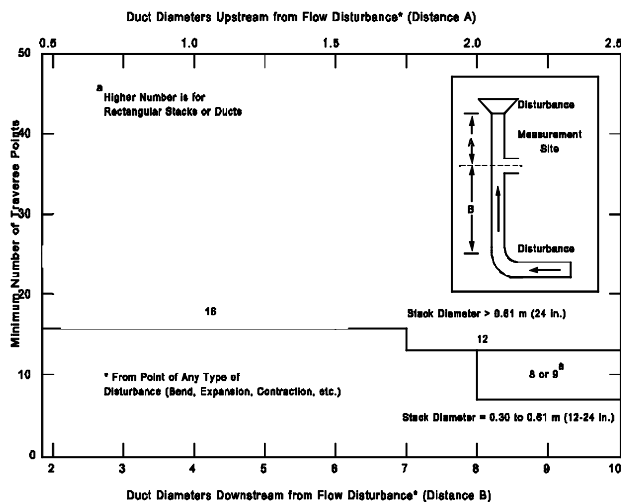
Diameters Upstream: **2.0**

Diameters Downstream: **2.0**

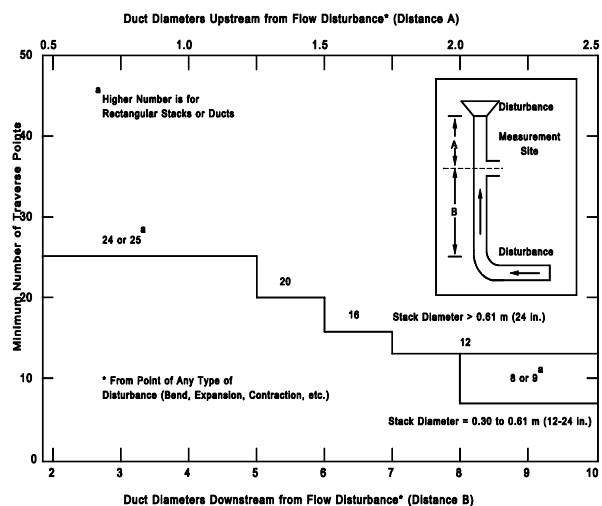
Flow or Particulate Test: **P**

Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	4 14/16
2	6 12/16
3	8 14/16
4	11 6/16
5	14 6/16
6	18 12/16
7	30 12/16
8	35 2/16
9	38 2/16
10	40 10/16
11	42 12/16
12	44 10/16
13	
14	
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**INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER**

FIELD AND SOURCE DOCUMENTATION

APPENDIX A
Field and Measurement Data

SECTION 2
Feb 11W Acid Scrubber Results

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

Scrubber Outlet 9s.1.1b FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1B OUTLET 08 08 03 SAMPLE_0003 abs.lab	8/8/2003 10:09	ND	ND	ND	199.43	ND	2.25	391.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0004 abs.lab	8/8/2003 10:12	ND	ND	ND	241.10	ND	2.23	390.1	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0005 abs.lab	8/8/2003 10:15	ND	ND	ND	225.41	ND	2.25	392.3	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0006 abs.lab	8/8/2003 10:17	ND	ND	ND	238.66	ND	2.25	392.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0007 abs.lab	8/8/2003 10:20	ND	ND	ND	197.30	ND	2.23	389.8	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0008 abs.lab	8/8/2003 10:23	ND	ND	ND	209.94	ND	2.24	390.2	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0009 abs.lab	8/8/2003 10:26	ND	ND	ND	243.95	ND	2.24	390.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0010 abs.lab	8/8/2003 10:29	ND	ND	ND	287.24	ND	2.24	390.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0011 abs.lab	8/8/2003 10:31	ND	ND	ND	316.17	ND	2.23	391.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0012 abs.lab	8/8/2003 10:34	ND	ND	ND	293.98	ND	2.24	394.0	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0013 abs.lab	8/8/2003 10:37	ND	ND	ND	265.97	ND	2.23	392.4	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0014 abs.lab	8/8/2003 10:40	ND	ND	ND	303.89	ND	2.24	396.0	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0015 abs.lab	8/8/2003 10:42	ND	ND	ND	318.35	ND	2.24	395.7	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0016 abs.lab	8/8/2003 10:45	ND	ND	ND	247.18	ND	2.24	395.9	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0017 abs.lab	8/8/2003 10:48	ND	ND	ND	216.81	ND	2.24	395.2	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0018 abs.lab	8/8/2003 10:51	ND	ND	ND	225.51	ND	2.23	390.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0019 abs.lab	8/8/2003 10:54	ND	ND	ND	270.60	ND	2.23	391.1	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0020 abs.lab	8/8/2003 10:56	ND	ND	ND	252.75	ND	2.23	392.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0021 abs.lab	8/8/2003 10:59	ND	ND	ND	230.22	ND	2.23	391.9	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0022 abs.lab	8/8/2003 11:02	ND	ND	ND	184.75	ND	2.23	394.7	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0023 abs.lab	8/8/2003 11:05	ND	ND	ND	122.70	ND	2.21	391.0	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0024 abs.lab	8/8/2003 11:07	ND	ND	ND	113.24	ND	2.22	390.3	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0025 abs.lab	8/8/2003 11:10	ND	ND	ND	115.21	ND	2.23	389.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0026 abs.lab	8/8/2003 11:13	ND	ND	ND	137.19	ND	2.22	387.9	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0027 abs.lab	8/8/2003 11:16	ND	ND	ND	116.60	ND	2.23	389.7	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0028 abs.lab	8/8/2003 11:19	ND	ND	ND	109.20	ND	2.22	388.1	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0029 abs.lab	8/8/2003 11:21	ND	ND	ND	100.90	ND	2.23	390.4	ND	ND	151.25	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0030 abs.lab	8/8/2003 11:24	ND	ND	ND	105.62	ND	2.24	390.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0031 abs.lab	8/8/2003 11:27	ND	ND	ND	104.18	ND	2.24	390.9	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0032 abs.lab	8/8/2003 11:30	ND	ND	ND	136.76	ND	2.24	391.0	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0033 abs.lab	8/8/2003 11:32	ND	ND	ND	136.52	ND	2.24	390.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0034 abs.lab	8/8/2003 11:35	ND	ND	ND	99.11	ND	2.24	390.1	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0035 abs.lab	8/8/2003 11:38	ND	ND	ND	100.27	ND	2.24	389.8	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0036 abs.lab	8/8/2003 11:41	ND	ND	ND	122.98	ND	2.24	389.9	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0037 abs.lab	8/8/2003 11:44	ND	ND	ND	157.84	ND	2.25	390.9	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0038 abs.lab	8/8/2003 11:46	ND	ND	ND	98.21	ND	2.25	391.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0039 abs.lab	8/8/2003 11:49	ND	ND	ND	115.77	ND	2.25	390.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0040 abs.lab	8/8/2003 11:52	ND	ND	ND	126.34	ND	2.26	390.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0041 abs.lab	8/8/2003 11:55	ND	ND	ND	191.03	ND	2.20	391.5	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0042 abs.lab	8/8/2003 11:58	ND	ND	ND	196.32	ND	2.22	395.5	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0043 abs.lab	8/8/2003 12:00	ND	ND	ND	192.86	ND	2.22	392.1	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0044 abs.lab	8/8/2003 12:03	ND	ND	ND	234.02	ND	2.23	391.5	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0045 abs.lab	8/8/2003 12:06	ND	ND	ND	253.52	ND	2.23	391.2	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0046 abs.lab	8/8/2003 12:09	ND	ND	ND	251.83	ND	2.21	389.8	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0047 abs.lab	8/8/2003 12:13	ND	ND	ND	322.16	ND	2.22	393.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0048 abs.lab	8/8/2003 12:16	ND	ND	ND	253.54	ND	2.21	392.1	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0049 abs.lab	8/8/2003 12:19	ND	ND	ND	257.09	ND	2.19	388.0	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0050 abs.lab	8/8/2003 12:22	ND	ND	ND	287.16	ND	2.20	389.9	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0051 abs.lab	8/8/2003 12:24	ND	ND	ND	212.79	ND	2.20	387.5	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0052 abs.lab	8/8/2003 12:27	ND	ND	ND	241.44	ND	2.22	392.1	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0053 abs.lab	8/8/2003 12:30	ND	ND	ND	187.32	ND	2.21	390.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0054 abs.lab	8/8/2003 12:33	ND	ND	ND	159.02	ND	2.20	388.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0055 abs.lab	8/8/2003 12:36	ND	ND	ND	170.27	ND	2.19	387.0	ND	ND	150.51	1.001

Scrubber Outlet 9s.1.1b FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1B OUTLET 08 08 03 SAMPLE_0056 abs.lab	8/8/2003 12:38	ND	ND	ND	266.97	ND	2.19	385.7	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0057 abs.lab	8/8/2003 12:41	ND	ND	ND	271.32	ND	2.19	385.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0058 abs.lab	8/8/2003 12:44	ND	ND	ND	254.02	ND	2.20	385.3	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0059 abs.lab	8/8/2003 12:47	ND	ND	ND	270.06	ND	2.19	385.2	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0060 abs.lab	8/8/2003 12:50	ND	ND	ND	266.55	ND	2.20	386.9	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0061 abs.lab	8/8/2003 12:52	ND	ND	ND	266.00	ND	2.20	387.2	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0062 abs.lab	8/8/2003 12:55	ND	ND	ND	264.77	ND	2.17	383.2	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0063 abs.lab	8/8/2003 12:58	ND	ND	ND	268.24	ND	2.20	388.4	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0064 abs.lab	8/8/2003 13:01	ND	ND	ND	266.75	ND	2.19	388.5	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0065 abs.lab	8/8/2003 13:03	ND	ND	ND	261.73	ND	2.18	386.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0066 abs.lab	8/8/2003 13:06	ND	ND	ND	250.91	ND	2.19	387.3	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0067 abs.lab	8/8/2003 13:09	ND	ND	ND	259.72	ND	2.19	389.9	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0068 abs.lab	8/8/2003 13:12	ND	ND	ND	265.73	ND	2.19	390.8	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0069 abs.lab	8/8/2003 13:15	ND	ND	ND	251.35	ND	2.20	392.4	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0070 abs.lab	8/8/2003 13:17	ND	ND	ND	281.11	ND	2.19	388.0	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0071 abs.lab	8/8/2003 13:20	ND	ND	ND	262.96	ND	2.19	387.2	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0072 abs.lab	8/8/2003 13:23	ND	ND	ND	273.29	ND	2.20	388.2	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0073 abs.lab	8/8/2003 13:26	ND	ND	ND	304.47	ND	2.19	385.8	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0074 abs.lab	8/8/2003 13:29	ND	ND	ND	263.72	ND	2.18	384.1	ND	ND	150.51	1.006
9S_1_1B OUTLET 08 08 03 SAMPLE_0075 abs.lab	8/8/2003 13:31	ND	ND	ND	300.61	ND	2.19	385.9	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0076 abs.lab	8/8/2003 13:34	ND	ND	ND	313.26	ND	2.20	385.2	ND	ND	149.76	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0077 abs.lab	8/8/2003 13:37	ND	ND	ND	303.18	ND	2.22	387.8	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0078 abs.lab	8/8/2003 13:40	ND	ND	ND	317.78	ND	2.22	388.1	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0079 abs.lab	8/8/2003 13:43	ND	ND	ND	335.20	ND	2.24	390.5	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0080 abs.lab	8/8/2003 13:45	ND	ND	ND	311.89	ND	2.24	390.4	ND	ND	151.25	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0081 abs.lab	8/8/2003 13:48	ND	ND	ND	282.67	ND	2.23	390.0	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0082 abs.lab	8/8/2003 13:51	ND	ND	ND	279.46	ND	2.20	386.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0083 abs.lab	8/8/2003 13:54	ND	ND	ND	292.03	ND	2.21	388.4	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0084 abs.lab	8/8/2003 13:57	ND	ND	ND	331.55	ND	2.20	387.2	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE_0085 abs.lab	8/8/2003 13:59	ND	ND	ND	334.71	ND	2.19	385.1	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE_0086 abs.lab	8/8/2003 14:02	ND	ND	ND	339.56	ND	2.20	387.0	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0004 abs.lab	8/8/2003 14:34	ND	ND	ND	332.14	ND	2.20	392.1	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0005 abs.lab	8/8/2003 14:37	ND	ND	ND	319.89	ND	2.21	394.8	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0006 abs.lab	8/8/2003 14:40	ND	ND	ND	345.23	ND	2.20	392.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0007 abs.lab	8/8/2003 14:43	ND	ND	ND	357.04	ND	2.21	393.7	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0008 abs.lab	8/8/2003 14:45	ND	ND	ND	346.83	ND	2.20	393.7	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0009 abs.lab	8/8/2003 14:48	ND	ND	ND	394.25	ND	2.19	392.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0010 abs.lab	8/8/2003 14:51	ND	ND	ND	379.24	ND	2.21	395.0	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0011 abs.lab	8/8/2003 14:54	ND	ND	ND	362.69	ND	2.21	394.7	ND	ND	151.25	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0012 abs.lab	8/8/2003 14:57	ND	ND	ND	326.03	ND	2.21	392.3	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0013 abs.lab	8/8/2003 14:59	ND	ND	ND	370.17	ND	2.21	392.5	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0014 abs.lab	8/8/2003 15:02	ND	ND	ND	417.37	ND	2.22	391.9	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0015 abs.lab	8/8/2003 15:05	ND	ND	ND	354.99	ND	2.21	391.0	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0016 abs.lab	8/8/2003 15:08	ND	ND	ND	330.36	ND	2.20	388.3	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0017 abs.lab	8/8/2003 15:11	ND	ND	ND	303.12	ND	2.20	388.3	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0018 abs.lab	8/8/2003 15:13	ND	ND	ND	298.57	ND	2.21	389.3	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0019 abs.lab	8/8/2003 15:16	ND	ND	ND	236.14	ND	2.22	391.7	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0020 abs.lab	8/8/2003 15:19	ND	ND	ND	209.47	ND	2.24	395.0	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0021 abs.lab	8/8/2003 15:22	ND	ND	ND	222.88	ND	2.24	396.4	ND	ND	151.25	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0022 abs.lab	8/8/2003 15:25	ND	ND	ND	220.09	ND	2.22	390.8	ND	ND	151.25	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0023 abs.lab	8/8/2003 15:27	ND	ND	ND	157.92	ND	2.23	391.3	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0024 abs.lab	8/8/2003 15:30	ND	ND	ND	168.05	ND	2.22	389.9	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0025 abs.lab	8/8/2003 15:33	ND	ND	ND	176.55	ND	2.21	388.4	ND	ND	150.51	1.001

Scrubber Outlet 9s.1.1b FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0026 abs.lab	8/8/2003 15:36	ND	ND	ND	218.98	ND	2.22	390.7	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0027 abs.lab	8/8/2003 15:39	ND	ND	ND	229.88	ND	2.21	389.6	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0028 abs.lab	8/8/2003 15:41	ND	ND	ND	204.43	ND	2.21	388.7	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0029 abs.lab	8/8/2003 15:44	ND	ND	ND	190.08	ND	2.20	386.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0030 abs.lab	8/8/2003 15:47	ND	ND	ND	220.31	ND	2.22	389.0	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0031 abs.lab	8/8/2003 15:50	ND	ND	ND	213.38	ND	2.21	389.3	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0032 abs.lab	8/8/2003 15:53	ND	ND	ND	235.10	ND	2.23	391.2	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0033 abs.lab	8/8/2003 15:55	ND	ND	ND	249.89	ND	2.21	388.3	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0034 abs.lab	8/8/2003 15:58	ND	ND	ND	245.01	ND	2.21	388.6	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0035 abs.lab	8/8/2003 16:01	ND	ND	ND	236.53	ND	2.21	388.9	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0036 abs.lab	8/8/2003 16:04	ND	ND	ND	191.76	ND	2.20	387.0	ND	ND	151.25	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0037 abs.lab	8/8/2003 16:06	ND	ND	ND	181.83	ND	2.21	388.5	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0038 abs.lab	8/8/2003 16:09	ND	ND	ND	219.13	ND	2.20	386.3	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0039 abs.lab	8/8/2003 16:12	ND	ND	ND	202.29	ND	2.22	391.4	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0040 abs.lab	8/8/2003 16:15	ND	ND	ND	173.79	ND	2.20	386.8	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0041 abs.lab	8/8/2003 16:18	ND	ND	ND	195.95	ND	2.21	389.0	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0042 abs.lab	8/8/2003 16:20	ND	ND	ND	173.57	ND	2.22	390.9	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0043 abs.lab	8/8/2003 16:23	ND	ND	ND	192.71	ND	2.22	393.4	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0044 abs.lab	8/8/2003 16:26	ND	ND	ND	195.76	ND	2.22	394.5	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0045 abs.lab	8/8/2003 16:29	ND	ND	ND	182.56	ND	2.22	394.0	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0046 abs.lab	8/8/2003 16:32	ND	ND	ND	168.07	ND	2.22	394.6	ND	ND	151.25	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0047 abs.lab	8/8/2003 16:34	ND	ND	ND	172.02	ND	2.22	392.9	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0048 abs.lab	8/8/2003 16:37	ND	ND	ND	206.82	ND	2.21	391.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0049 abs.lab	8/8/2003 16:40	ND	ND	ND	244.45	ND	2.22	393.5	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0050 abs.lab	8/8/2003 16:43	ND	ND	ND	276.37	ND	2.23	395.7	ND	ND	151.25	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0051 abs.lab	8/8/2003 16:46	ND	ND	ND	329.42	ND	2.22	390.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0052 abs.lab	8/8/2003 16:48	ND	ND	ND	341.49	ND	2.23	389.7	ND	ND	151.25	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0053 abs.lab	8/8/2003 16:51	ND	ND	ND	306.25	ND	2.22	387.6	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0054 abs.lab	8/8/2003 16:54	ND	ND	ND	281.12	ND	2.21	385.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0055 abs.lab	8/8/2003 16:57	ND	ND	ND	303.76	ND	2.22	387.3	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0056 abs.lab	8/8/2003 17:00	ND	ND	ND	331.52	ND	2.23	389.2	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0057 abs.lab	8/8/2003 17:02	ND	ND	ND	314.51	ND	2.21	386.7	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0058 abs.lab	8/8/2003 17:05	ND	ND	ND	292.93	ND	2.21	386.2	ND	ND	151.25	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0059 abs.lab	8/8/2003 17:08	ND	ND	ND	253.38	ND	2.19	383.2	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0060 abs.lab	8/8/2003 17:11	ND	ND	ND	203.89	ND	2.21	387.6	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0061 abs.lab	8/8/2003 17:14	ND	ND	ND	162.47	ND	2.19	384.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0062 abs.lab	8/8/2003 17:16	ND	ND	ND	155.40	ND	2.22	391.0	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0063 abs.lab	8/8/2003 17:19	ND	ND	ND	139.82	ND	2.20	388.6	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0064 abs.lab	8/8/2003 17:22	ND	ND	ND	144.85	ND	2.22	393.1	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0065 abs.lab	8/8/2003 17:25	ND	ND	ND	163.26	ND	2.21	388.1	ND	ND	151.25	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0066 abs.lab	8/8/2003 17:27	ND	ND	ND	155.06	ND	2.23	389.6	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0067 abs.lab	8/8/2003 17:30	ND	ND	ND	131.92	ND	2.22	386.2	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0068 abs.lab	8/8/2003 17:33	ND	ND	ND	157.95	ND	2.23	387.5	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0069 abs.lab	8/8/2003 17:36	ND	ND	ND	170.49	ND	2.23	387.3	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0070 abs.lab	8/8/2003 17:39	ND	ND	ND	200.45	ND	2.22	387.4	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0071 abs.lab	8/8/2003 17:41	ND	ND	ND	239.83	ND	2.20	383.2	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0072 abs.lab	8/8/2003 17:44	ND	ND	ND	185.94	ND	2.20	385.3	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0073 abs.lab	8/8/2003 17:47	ND	ND	ND	155.88	ND	2.21	387.8	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0074 abs.lab	8/8/2003 17:50	ND	ND	ND	164.20	ND	2.19	384.8	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0075 abs.lab	8/8/2003 17:53	ND	ND	ND	186.12	ND	2.19	385.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0076 abs.lab	8/8/2003 17:55	ND	ND	ND	192.35	ND	2.20	387.8	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0077 abs.lab	8/8/2003 17:58	ND	ND	ND	190.95	ND	2.18	385.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0078 abs.lab	8/8/2003 18:01	ND	ND	ND	192.85	ND	2.19	387.0	ND	ND	150.51	0.996

Scrubber Outlet 9s.1.1b FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0079 abs.lab	8/8/2003 18:04	ND	ND	ND	338.63	ND	2.21	387.3	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0080 abs.lab	8/8/2003 18:07	ND	ND	ND	355.29	ND	2.21	387.8	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0081 abs.lab	8/8/2003 18:09	ND	ND	ND	333.55	ND	2.18	383.1	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0082 abs.lab	8/8/2003 18:12	ND	ND	ND	345.67	ND	2.18	383.0	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0083 abs.lab	8/8/2003 18:15	ND	ND	ND	351.72	ND	2.19	383.5	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0084 abs.lab	8/8/2003 18:18	ND	ND	ND	363.89	ND	2.21	388.7	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0085 abs.lab	8/8/2003 18:20	ND	ND	ND	391.93	ND	2.20	387.2	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0086 abs.lab	8/8/2003 18:23	ND	ND	ND	412.33	ND	2.20	387.0	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0087 abs.lab	8/8/2003 18:26	ND	ND	ND	433.45	ND	2.19	385.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0088 abs.lab	8/8/2003 18:29	ND	ND	ND	425.64	ND	2.21	388.3	ND	ND	150.51	0.996
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0089 abs.lab	8/8/2003 18:32	ND	ND	ND	439.05	ND	2.22	390.9	ND	ND	150.51	0.990
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0090 abs.lab	8/8/2003 18:34	ND	ND	ND	468.45	ND	2.19	386.4	ND	ND	150.51	1.001
9S_1_1B OUTLET 08 08 03 SAMPLE R2_0091 abs.lab	8/8/2003 18:37	ND	ND	ND	476.89	ND	2.18	386.2	ND	ND	150.51	1.001

Average_{wet}

ND

ND

ND

246.19

ND

2.21

389.51

ND

ND

150.55

0.998

Reference Method Calculations

Fab 11 West

9s.1.1b

Run No.	Run 1	Run 2	
Date	8/8/2003	8/8/2003	
Start Time	10:00	14:36	AVERAGE
Stop Time	14:00	18:36	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.92	24.92	24.92
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	96.3	99.1	97.7
Volume Metered (acf)	164.646	168.216	166.431
Volume Metered (dscf)	131.354	133.532	132.443
Volume of Water Collected (g)	57.0	61.4	59.2
Volume of Water Collected (scf)	2.688	2.895	2.791
Average Delta H (in. H ₂ O)	1.20	1.20	1.20
AVG SQRT of dH (in. H ₂ O)	1.0954	1.0954	1.0954
Measured Moisture (%)	2.0%	2.1%	2.1%
Saturation Moisture (%)	2.7%	2.6%	2.7%
Moisture Used for Calculations (%)	2.2%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.62	28.61	28.62
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.43	-0.43	-0.43
Stack Pressure (in. Hg)	24.89	24.89	24.89
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.9883	0.9950	0.9916
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.8703	0.8756	0.8729
Stack Temperature Isokinetic Traverse (°F)	67.7	67.1	67.4
Stack Temperature Flow Traverse (°F)	68.9	69.0	68.9
Velocity (ft/sec) Isokinetic Traverse	61.08	61.47	61.28
Velocity (ft/sec) Flow Traverse	53.85	54.19	54.02
Nozzle Diameter (in.)	0.185	0.185	0.185
% Isokinetics	98.37	99.24	98.8
Stack Diameter (in.)	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	46,052	46,350	46,201
Stack Flow Rate Flow Traverse (acfm)	40,599	40,860	40,729
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	37,464	37,751	37,607
Stack Flow Rate Outlet Flow Traverse (dscfm)	32,954	33,161	33,058
Chlorine			
Collected Cl. micrograms (ug)	36.2	27.2	31.7
Cl ₂ Concentration (ug/dscf)	0.28	0.20	0.24
Cl ₂ Concentration (ppb)	3	2	3
Cl ₂ Emission Rate (lbs/hr)	0.0012	0.0009	0.0010

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/8/2003												
Unit Number: 9s.1.1b	Stack Diameter (in.): 48.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.52												
Run No.: 1	Operators: ST/BMB												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.92												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 8:00 End: 8:15		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %													
Comments :													

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.90	70
2	0.96	70
3	0.90	70
4	0.89	69
5	0.80	69
6	0.86	69
7	0.65	69
8	0.72	69
9	0.68	68
10	0.73	68
11	0.72	68
12	0.71	69

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.84	70
2	0.85	70
3	0.82	69
4	0.80	69
5	0.79	69
6	0.73	68
7	0.65	68
8	0.59	68
9	0.55	68
10	0.71	68
11	0.74	69
12	0.67	69
Total Average: sqrt dp = 0.8703		68.9

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/8/2003
Unit Number:	9s.1.1b	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.41
Run No.:	2	Operators:	ST/BMB
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.92
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	14:20
		End:	14:35

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.82	69
2	0.96	69
3	0.93	69
4	0.84	69
5	0.83	69
6	0.86	69
7	0.76	69
8	0.75	69
9	0.74	69
10	0.73	69
11	0.74	69
12	0.73	69

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.72	69
2	0.77	69
3	0.78	69
4	0.84	69
5	0.85	69
6	0.84	69
7	0.64	69
8	0.52	69
9	0.51	69
10	0.72	69
11	0.76	69
12	0.85	69
Total Average:	sqrt dp = 0.8756	69.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:		Intel		Location Notes and Comments				Sample Train No. AA		Filter No.: NA		Run No.: 1							
Plant Name:		Fab 11 West						Leak Check Initial:		0.005 cfm@ 15		(in. Hg)							
Plant Location:		Rio Rancho, NM						Leak Check Final:		0.005 cfm@ 3		(in. Hg)							
Project No.:		31397-1600-00000						Total Traverse Points		Impinger		Initial		Final					
Sampling Location:		9s.1.1b						24		1		677.9		685.2					
Date:		8/8/2003								2		741.2		757.2					
Technicians:		ST/BMB								3		536.4		537.6					
Meter Box No.: 90401		Y_d: 1.006				4		638.9		669.8									
Probe/Pitot No 301 / HA-1		C_p: 0.84				5		657.3		621.5									
Nozzle No.: NA		dH₀: 1.725		Stack Dia. (in.): 48.00		Stack Area (ft²): 12.57		6		853.6		891.0							
Nozzle Dia: 0.185		0.185, 0.185, 0.186		Port Width (in.): 3.00		Port Length (in.): 2.50		Start Time: 10:00		Net Impinger Gain (g): 57.0									
Initial Meter Reading (ft³):		301.901		BP (in. Hg): 24.92		Static Pressure (in.): -0.43		End Time: 14:00		Theta 240									
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)								
West Point 2	10	67	80	80	0.980	1.20	308.530	233	238	50	2								
West Point 2	20	68	86	81	0.980	1.20	315.200	234	236	51	2								
West Point 2	30	68	91	82	0.980	1.20	321.790	254	254	51	2								
West Point 2	40	68	93	84	0.980	1.20	328.700	256	256	52	2								
West Point 2	50	68	95	87	0.980	1.20	335.400	256	257	52	2								
West Point 2	60	68	98	89	0.980	1.20	342.090	256	256	52	2								
West Point 2	70	68	99	90	0.980	1.20	349.020	255	257	52	2								
West Point 2	80	68	99	90	0.980	1.20	356.050	256	258	52	2								
West Point 2	90	68	99	92	0.980	1.20	362.870	256	258	54	2								
West Point 2	100	68	100	93	0.980	1.20	369.490	255	255	54	2								
West Point 2	110	68	100	93	0.980	1.20	376.410	254	258	55	2								
West Point 2	120	68	100	93	0.980	1.20	383.400	254	258	55	2								
West Point 2	130	68	101	97	0.980	1.20	390.330	253	255	55	2								
West Point 2	140	68	103	97	0.980	1.20	397.400	253	255	55	2								
West Point 2	150	68	104	97	0.980	1.20	404.150	251	256	55	2								
West Point 2	160	68	104	98	0.980	1.20	411.210	251	255	56	2								
West Point 2	170	68	104	98	0.980	1.20	418.080	255	255	57	2								
West Point 2	180	68	104	98	0.990	1.20	424.940	255	257	57	2								
West Point 2	190	67	103	98	0.990	1.20	431.950	249	260	58	2								
West Point 2	200	67	103	100	0.960	1.20	439.010	253	257	58	2								
West Point 2	210	67	104	99	0.960	1.20	445.800	252	258	52	2								
West Point 2	220	67	105	100	0.960	1.20	452.690	249	260	52	2								
West Point 2	230	67	105	100	0.960	1.20	459.710	251	260	52	2								
West Point 2	240	67	105	100	0.960	1.20	466.547	252	260	53	2								
Average / Net		67.7		96.3		1.0		1.2		164.646		251.8		255.4		53.8		1.5	

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic				Sample Train No. SF		Filter No.: NA		Run No.: 2	
Plant Name:	Fab 11 West					Leak Check Initial: 0.005 cfm@ 15		(in. Hg)			
Plant Location:	Rio Rancho, NM					Leak Check Final: 0.001 cfm@ 2.0		(in. Hg)			
Project No.:	31397-1600-00000					Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.1b							1	598.2	608.5	
Date:	8/8/2003					24	2	614.4	621.3		
Technicians:	ST/BMB						3	646.7	654.3		
Meter Box No.: 90401	Y_d: 1.006						4	641.3	641.4		
Probe / Pitot No.: 301 / HA-1	C_p: 0.84	5	643.5	646.4							
Nozzle No.: NA	dH₀: 1.725	Stack Dia. (in.): 48.00		Stack Area (ft²): 12.57		6	960.3	993.9			
Nozzle Dia: 0.185	0.185, 0.185, 0.186	Port Width (in.): 3.00		Port Length (in.): 2.50		Start Time: 14:36		Net Impinger Gain (g): 61.4			
Initial Meter Reading (ft³):	466.796	BP (in. Hg): 24.92		Static Pressure (in.): -0.43		End Time: 18:36		Theta 240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
West Point 2	10	67	99	100	0.990	1.20	473.640	252	267	55	2.0
West Point 2	20	66	100	98	0.990	1.20	480.580	254	263	55	2.0
West Point 2	30	66	102	97	0.990	1.20	487.540	253	265	55	2.0
West Point 2	40	67	104	98	0.990	1.20	494.490	251	262	55	2.0
West Point 2	50	67	105	98	0.990	1.20	501.530	252	263	55	2.0
West Point 2	60	67	102	98	0.990	1.20	508.550	256	253	55	2.0
West Point 2	70	68	102	98	0.980	1.20	515.570	252	257	55	2.0
West Point 2	80	67	103	98	0.980	1.20	522.530	250	255	55	2.0
West Point 2	90	68	106	100	1.000	1.20	529.680	252	258	55	2.0
West Point 2	100	67	103	98	1.000	1.20	536.750	252	259	55	2.0
West Point 2	110	68	104	99	0.990	1.20	543.760	249	256	54	2.0
West Point 2	120	68	102	98	0.990	1.20	550.760	248	257	53	2.0
West Point 2	130	68	102	98	0.980	1.20	557.730	249	257	53	2.0
West Point 2	140	67	103	96	0.990	1.20	564.690	253	256	51	2.0
West Point 2	150	67	102	96	1.000	1.20	571.840	254	257	55	2.0
West Point 2	160	66	102	96	0.990	1.20	578.980	251	258	55	2.0
West Point 2	170	67	100	96	0.980	1.20	585.970	254	257	55	2.0
West Point 2	180	67	100	95	0.990	1.20	593.270	251	256	55	2.0
West Point 2	190	68	100	95	1.000	1.20	600.330	251	256	55	2.0
West Point 2	200	67	100	94	0.990	1.20	607.240	249	255	55	2.0
West Point 2	210	67	99	93	0.980	1.20	614.270	253	254	55	2.0
West Point 2	220	68	99	94	1.000	1.20	621.090	249	256	55	2.0
West Point 2	230	66	99	93	0.990	1.20	628.040	250	256	55	2.0
West Point 2	240	67	98	93	0.990	1.20	635.012	249	255	55	2.0
Average / Net		67.1		99.1	1.0	1.2	168.216	251.4	257.8	54.6	2.0

EPA REFERENCE METHOD 1

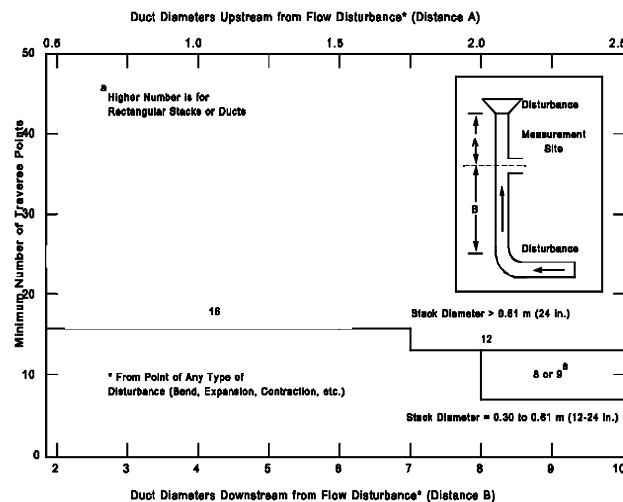
FIELD DATA SHEET

CIRCULAR STACKS

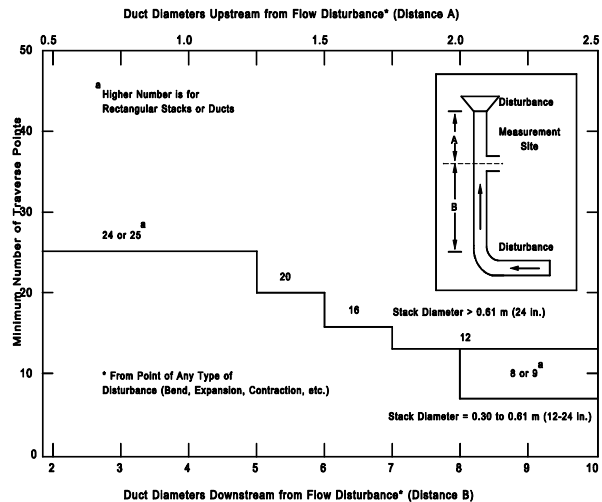
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 9s.1.1b
 TRC Project No.: 31397-1600-00000
 Date: 8/8/2003
 Technician: S. Thorpe
 Circular/Rectangular: C

Stack Diameter: 32.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 2.5
 Diameters Upstream: 2.1
 Diameters Downstream: 2.2
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	3 8/16
2	4 10/16
3	6 4/16
4	8 3/16
5	10 8/16
6	13 14/16
7	23 2/16
8	26 8/16
9	28 13/16
10	30 12/16
11	32 6/16
12	33 8/16
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Scrubber Outlet 9s.1.1c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1C OUTLET 08 07 03 SAMPLE_0031 abs.lab	8/7/2003 9:23	ND	ND	ND	326.17	ND	2.25	396.4	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0032 abs.lab	8/7/2003 9:25	ND	ND	ND	288.62	ND	2.23	394.0	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0033 abs.lab	8/7/2003 9:28	ND	ND	ND	239.77	ND	2.24	395.8	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0034 abs.lab	8/7/2003 9:31	ND	ND	ND	278.31	ND	2.24	395.3	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0035 abs.lab	8/7/2003 9:34	ND	ND	ND	293.97	ND	2.23	394.0	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0036 abs.lab	8/7/2003 9:37	ND	ND	ND	284.28	ND	2.24	396.2	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0037 abs.lab	8/7/2003 9:39	ND	ND	ND	323.92	ND	2.23	394.6	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0038 abs.lab	8/7/2003 9:42	ND	ND	ND	329.07	ND	2.23	393.9	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0039 abs.lab	8/7/2003 9:45	ND	ND	ND	294.87	ND	2.24	395.7	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0040 abs.lab	8/7/2003 9:48	ND	ND	ND	338.87	ND	2.24	396.0	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0041 abs.lab	8/7/2003 9:50	ND	ND	ND	289.21	ND	2.25	395.6	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0042 abs.lab	8/7/2003 9:53	ND	ND	ND	223.84	ND	2.22	390.0	ND	ND	150.51	1.011
9S_1_1C OUTLET 08 07 03 SAMPLE_0043 abs.lab	8/7/2003 9:56	ND	ND	ND	240.38	ND	2.24	393.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0044 abs.lab	8/7/2003 9:59	ND	ND	ND	309.61	ND	2.24	393.0	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0045 abs.lab	8/7/2003 10:02	ND	ND	ND	322.46	ND	2.23	391.1	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0046 abs.lab	8/7/2003 10:04	ND	ND	ND	374.04	ND	2.25	393.9	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0047 abs.lab	8/7/2003 10:07	ND	ND	ND	332.24	ND	2.24	392.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0048 abs.lab	8/7/2003 10:10	ND	ND	ND	339.33	ND	2.24	393.0	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0049 abs.lab	8/7/2003 10:13	ND	ND	ND	399.17	ND	2.23	390.3	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0050 abs.lab	8/7/2003 10:15	ND	ND	ND	446.47	ND	2.23	390.3	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0051 abs.lab	8/7/2003 10:18	ND	ND	ND	441.90	ND	2.22	389.2	ND	ND	150.51	1.011
9S_1_1C OUTLET 08 07 03 SAMPLE_0052 abs.lab	8/7/2003 10:21	ND	ND	ND	451.38	ND	2.23	391.3	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0053 abs.lab	8/7/2003 10:24	175.43	ND	ND	333.20	ND	2.18	390.5	ND	ND	150.51	1.011
9S_1_1C OUTLET 08 07 03 SAMPLE_0054 abs.lab	8/7/2003 10:26	173.84	ND	ND	251.48	ND	2.18	390.0	ND	ND	150.51	1.011
9S_1_1C OUTLET 08 07 03 SAMPLE_0055 abs.lab	8/7/2003 10:29	167.43	ND	ND	231.41	ND	2.19	391.7	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0056 abs.lab	8/7/2003 10:32	168.19	ND	ND	260.13	ND	2.20	391.7	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0057 abs.lab	8/7/2003 10:35	161.87	ND	ND	237.54	ND	2.20	392.1	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0058 abs.lab	8/7/2003 10:38	163.90	ND	ND	295.93	ND	2.20	391.0	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0059 abs.lab	8/7/2003 10:40	157.21	ND	ND	257.64	ND	2.21	393.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0060 abs.lab	8/7/2003 10:43	153.21	ND	ND	240.95	ND	2.20	392.2	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0061 abs.lab	8/7/2003 10:46	141.41	ND	ND	172.04	ND	2.19	390.1	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0062 abs.lab	8/7/2003 10:49	139.43	ND	ND	197.81	ND	2.20	391.8	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0063 abs.lab	8/7/2003 10:51	137.21	ND	ND	202.46	ND	2.18	388.4	ND	ND	151.25	1.011
9S_1_1C OUTLET 08 07 03 SAMPLE_0064 abs.lab	8/7/2003 10:54	137.41	ND	ND	173.92	ND	2.20	391.8	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0065 abs.lab	8/7/2003 10:57	124.33	ND	ND	184.17	ND	2.20	392.0	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0066 abs.lab	8/7/2003 11:00	127.49	ND	ND	187.19	ND	2.19	390.4	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0067 abs.lab	8/7/2003 11:03	127.94	ND	ND	192.02	ND	2.20	393.5	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0068 abs.lab	8/7/2003 11:05	121.57	ND	ND	192.40	ND	2.19	393.0	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0069 abs.lab	8/7/2003 11:08	120.56	ND	ND	189.51	ND	2.18	389.4	ND	ND	150.51	1.011
9S_1_1C OUTLET 08 07 03 SAMPLE_0070 abs.lab	8/7/2003 11:11	110.92	ND	ND	184.71	ND	2.19	390.9	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0071 abs.lab	8/7/2003 11:14	115.46	ND	ND	193.50	ND	2.19	391.6	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0072 abs.lab	8/7/2003 11:16	113.04	ND	ND	167.45	ND	2.19	390.5	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0073 abs.lab	8/7/2003 11:19	105.25	ND	ND	160.83	ND	2.19	390.3	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0074 abs.lab	8/7/2003 11:22	103.28	ND	ND	139.20	ND	2.19	390.7	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0075 abs.lab	8/7/2003 11:25	90.70	ND	ND	134.71	ND	2.19	390.6	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0076 abs.lab	8/7/2003 11:28	91.98	ND	ND	140.20	ND	2.19	390.6	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0077 abs.lab	8/7/2003 11:30	79.57	ND	ND	307.00	ND	2.19	388.1	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0078 abs.lab	8/7/2003 11:33	87.31	ND	ND	221.76	ND	2.20	390.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0079 abs.lab	8/7/2003 11:36	90.36	ND	ND	218.32	ND	2.20	390.7	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0080 abs.lab	8/7/2003 11:39	86.49	ND	ND	194.67	ND	2.18	387.0	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0081 abs.lab	8/7/2003 11:41	86.11	ND	ND	182.88	ND	2.17	385.0	ND	ND	150.51	1.011
9S_1_1C OUTLET 08 07 03 SAMPLE_0082 abs.lab	8/7/2003 11:44	72.74	ND	ND	190.49	ND	2.18	386.3	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0083 abs.lab	8/7/2003 11:47	72.58	ND	ND	168.00	ND	2.19	387.4	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0084 abs.lab	8/7/2003 11:50	58.91	ND	ND	185.60	ND	2.19	387.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0085 abs.lab	8/7/2003 11:53	66.37	ND	ND	177.09	ND	2.19	387.7	ND	ND	150.51	1.001

TRC Environmental Corporaiton
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 9s.1.1c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1C OUTLET 08 07 03 SAMPLE_0086 abs.lab	8/7/2003 11:55	64.81	ND	ND	195.44	ND	2.19	387.8	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0087 abs.lab	8/7/2003 11:58	46.64	ND	ND	190.46	ND	2.18	386.1	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0088 abs.lab	8/7/2003 12:01	39.87	ND	ND	184.94	ND	2.20	389.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0089 abs.lab	8/7/2003 12:04	39.92	ND	ND	203.21	ND	2.19	386.3	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0090 abs.lab	8/7/2003 12:06	38.71	ND	ND	213.28	ND	2.19	386.2	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0091 abs.lab	8/7/2003 12:09	35.95	ND	ND	200.84	ND	2.21	388.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0092 abs.lab	8/7/2003 12:12	32.47	ND	ND	210.95	ND	2.22	389.7	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0093 abs.lab	8/7/2003 12:15	27.51	ND	ND	207.76	ND	2.22	389.9	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0094 abs.lab	8/7/2003 12:18	23.87	ND	ND	221.20	ND	2.21	390.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0095 abs.lab	8/7/2003 12:20	24.59	ND	ND	190.01	ND	2.20	388.1	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0096 abs.lab	8/7/2003 12:23	15.35	ND	ND	189.42	ND	2.20	386.9	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0097 abs.lab	8/7/2003 12:26	27.20	ND	ND	197.24	ND	2.21	389.3	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0098 abs.lab	8/7/2003 12:29	21.83	ND	ND	167.68	ND	2.19	386.0	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0099 abs.lab	8/7/2003 12:32	29.03	ND	ND	154.01	ND	2.20	387.0	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0100 abs.lab	8/7/2003 12:34	23.30	ND	ND	142.27	ND	2.18	384.6	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0101 abs.lab	8/7/2003 12:37	22.94	ND	ND	122.14	ND	2.18	384.6	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0102 abs.lab	8/7/2003 12:40	29.50	ND	ND	128.70	ND	2.19	384.2	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0103 abs.lab	8/7/2003 12:43	20.95	ND	ND	120.36	ND	2.18	384.3	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0104 abs.lab	8/7/2003 12:45	13.76	ND	ND	112.84	ND	2.20	386.2	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0105 abs.lab	8/7/2003 12:48	17.51	ND	ND	107.97	ND	2.18	383.3	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0106 abs.lab	8/7/2003 12:51	3.40	ND	ND	103.83	ND	2.20	386.0	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0107 abs.lab	8/7/2003 12:54	0.65	ND	ND	108.17	ND	2.19	384.9	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0108 abs.lab	8/7/2003 12:57	9.67	ND	ND	114.05	ND	2.19	385.0	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0109 abs.lab	8/7/2003 12:59	10.81	ND	ND	118.30	ND	2.20	384.9	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0110 abs.lab	8/7/2003 13:02	5.90	ND	ND	117.50	ND	2.20	385.2	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0111 abs.lab	8/7/2003 13:05	ND	ND	ND	121.67	ND	2.20	384.3	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0112 abs.lab	8/7/2003 13:08	ND	ND	ND	151.86	ND	2.21	385.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0113 abs.lab	8/7/2003 13:10	ND	ND	ND	173.13	ND	2.20	383.3	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0114 abs.lab	8/7/2003 13:13	ND	ND	ND	174.93	ND	2.21	385.8	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SAMPLE_0115 abs.lab	8/7/2003 13:16	ND	ND	ND	150.37	ND	2.20	383.2	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SAMPLE_0116 abs.lab	8/7/2003 13:19	5.28	ND	ND	151.69	ND	2.22	387.6	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0000 abs.lab	8/7/2003 13:39	9.19	ND	ND	ND	ND	0.86	154.1	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0001 abs.lab	8/7/2003 13:42	16.88	ND	ND	ND	ND	0.88	153.4	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0002 abs.lab	8/7/2003 13:44	30.25	ND	ND	10.53	ND	0.87	151.7	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0003 abs.lab	8/7/2003 13:47	11.07	ND	ND	2.62	ND	0.87	153.0	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0004 abs.lab	8/7/2003 13:50	7.20	ND	ND	33.66	ND	0.87	154.6	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0005 abs.lab	8/7/2003 13:53	ND	ND	ND	56.97	ND	0.86	155.8	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0006 abs.lab	8/7/2003 13:56	16.57	ND	ND	53.89	ND	0.86	157.6	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0007 abs.lab	8/7/2003 13:58	9.70	ND	ND	39.78	ND	0.86	156.7	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0008 abs.lab	8/7/2003 14:01	ND	ND	ND	46.24	ND	0.86	153.9	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0009 abs.lab	8/7/2003 14:04	ND	ND	ND	68.16	ND	0.87	152.6	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0010 abs.lab	8/7/2003 14:07	ND	ND	ND	74.36	ND	0.86	150.4	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0011 abs.lab	8/7/2003 14:10	ND	ND	ND	67.08	ND	0.87	151.3	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0012 abs.lab	8/7/2003 14:12	ND	ND	ND	56.15	ND	0.87	150.6	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0013 abs.lab	8/7/2003 14:15	ND	ND	ND	53.33	ND	0.86	151.6	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0014 abs.lab	8/7/2003 14:18	ND	ND	ND	64.17	ND	0.86	150.2	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0015 abs.lab	8/7/2003 14:21	ND	ND	ND	94.92	ND	0.85	150.3	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0016 abs.lab	8/7/2003 14:23	ND	ND	ND	75.12	ND	0.85	150.9	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0017 abs.lab	8/7/2003 14:26	ND	ND	ND	67.06	ND	0.85	150.9	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0018 abs.lab	8/7/2003 14:29	ND	ND	ND	53.07	ND	0.86	152.2	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0019 abs.lab	8/7/2003 14:32	ND	ND	ND	78.82	ND	0.86	151.7	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0020 abs.lab	8/7/2003 14:35	ND	ND	ND	77.86	ND	0.86	150.4	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0021 abs.lab	8/7/2003 14:37	ND	ND	ND	64.38	ND	0.86	150.7	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0022 abs.lab	8/7/2003 14:40	ND	ND	ND	50.14	ND	0.86	151.0	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0023 abs.lab	8/7/2003 14:43	ND	ND	ND	53.74	ND	0.86	150.3	ND	ND	151.25	1.006

Scrubber Outlet 9s.1.1c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0024 abs.lab	8/7/2003 14:46	ND	ND	ND	70.15	ND	0.86	150.2	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0025 abs.lab	8/7/2003 14:49	ND	ND	ND	58.45	ND	0.87	151.8	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0026 abs.lab	8/7/2003 14:51	ND	ND	ND	42.63	ND	0.87	152.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0027 abs.lab	8/7/2003 14:54	ND	ND	ND	25.27	ND	0.86	152.0	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0028 abs.lab	8/7/2003 14:57	ND	ND	ND	54.64	ND	0.87	151.7	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0029 abs.lab	8/7/2003 15:00	ND	ND	ND	61.20	ND	0.88	152.9	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0030 abs.lab	8/7/2003 15:03	ND	ND	ND	59.24	ND	0.87	153.8	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0031 abs.lab	8/7/2003 15:05	ND	ND	ND	46.64	ND	0.87	154.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0032 abs.lab	8/7/2003 15:08	ND	ND	ND	53.99	ND	0.87	156.0	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0033 abs.lab	8/7/2003 15:11	ND	ND	ND	47.68	ND	0.88	153.8	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0034 abs.lab	8/7/2003 15:14	ND	ND	ND	33.38	ND	0.88	153.4	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0035 abs.lab	8/7/2003 15:16	ND	ND	ND	27.60	ND	0.86	155.0	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0036 abs.lab	8/7/2003 15:19	ND	ND	ND	10.89	ND	0.87	155.2	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0037 abs.lab	8/7/2003 15:22	ND	ND	ND	35.18	ND	0.87	156.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0038 abs.lab	8/7/2003 15:25	ND	ND	ND	13.73	ND	0.86	155.3	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0039 abs.lab	8/7/2003 15:28	ND	ND	ND	22.31	ND	0.86	156.0	ND	ND	151.25	0.996
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0040 abs.lab	8/7/2003 15:30	ND	ND	ND	21.21	ND	0.86	156.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0041 abs.lab	8/7/2003 15:33	ND	ND	ND	18.01	ND	0.86	156.4	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0042 abs.lab	8/7/2003 15:36	ND	ND	ND	42.28	ND	0.86	157.6	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0043 abs.lab	8/7/2003 15:39	ND	ND	ND	7.32	ND	0.86	157.4	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0044 abs.lab	8/7/2003 15:42	ND	ND	ND	59.92	ND	0.87	158.8	ND	ND	151.25	0.996
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0045 abs.lab	8/7/2003 15:44	ND	ND	ND	64.65	ND	0.87	158.2	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0046 abs.lab	8/7/2003 15:47	ND	ND	ND	40.09	ND	0.86	157.4	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0047 abs.lab	8/7/2003 15:50	ND	ND	ND	23.60	ND	0.86	156.9	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0048 abs.lab	8/7/2003 15:53	ND	ND	ND	28.22	ND	0.87	157.2	ND	ND	151.25	0.996
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0049 abs.lab	8/7/2003 15:56	ND	ND	ND	18.18	ND	0.87	155.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0050 abs.lab	8/7/2003 15:58	ND	ND	ND	232.53	ND	2.21	389.3	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0051 abs.lab	8/7/2003 16:01	ND	ND	ND	242.89	ND	2.20	389.5	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0052 abs.lab	8/7/2003 16:04	ND	ND	ND	215.00	ND	2.20	388.8	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0053 abs.lab	8/7/2003 16:07	ND	ND	ND	247.35	ND	2.20	387.8	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0054 abs.lab	8/7/2003 16:09	ND	ND	ND	263.84	ND	2.20	388.6	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0055 abs.lab	8/7/2003 16:12	ND	ND	ND	230.50	ND	2.20	388.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0056 abs.lab	8/7/2003 16:15	ND	ND	ND	209.87	ND	2.21	389.8	ND	ND	151.25	0.996
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0057 abs.lab	8/7/2003 16:18	ND	ND	ND	200.05	ND	2.19	387.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0058 abs.lab	8/7/2003 16:21	ND	ND	ND	183.93	ND	2.20	388.5	ND	ND	150.51	0.996
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0059 abs.lab	8/7/2003 16:23	ND	ND	ND	233.61	ND	2.19	386.3	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0060 abs.lab	8/7/2003 16:26	ND	ND	ND	240.97	ND	2.20	388.5	ND	ND	150.51	0.996
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0061 abs.lab	8/7/2003 16:29	ND	ND	ND	216.95	ND	2.20	389.7	ND	ND	151.25	0.996
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0062 abs.lab	8/7/2003 16:32	ND	ND	ND	189.18	ND	2.19	386.7	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0063 abs.lab	8/7/2003 16:35	ND	ND	ND	197.25	ND	2.19	386.7	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0064 abs.lab	8/7/2003 16:37	ND	ND	ND	231.75	ND	2.19	386.9	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0065 abs.lab	8/7/2003 16:40	ND	ND	ND	230.43	ND	2.20	389.2	ND	ND	151.25	0.996
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0066 abs.lab	8/7/2003 16:43	ND	ND	ND	246.90	ND	2.19	386.7	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0067 abs.lab	8/7/2003 16:46	ND	ND	ND	254.19	ND	2.19	386.8	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0068 abs.lab	8/7/2003 16:49	ND	ND	ND	275.37	ND	2.19	388.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0069 abs.lab	8/7/2003 16:51	0.03	ND	ND	256.91	ND	2.20	389.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0070 abs.lab	8/7/2003 16:54	ND	ND	ND	291.70	ND	2.21	390.9	ND	ND	150.51	0.996
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0071 abs.lab	8/7/2003 16:57	ND	ND	ND	279.95	ND	2.19	388.5	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0072 abs.lab	8/7/2003 17:00	ND	ND	ND	263.05	ND	2.18	387.0	ND	ND	151.25	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0073 abs.lab	8/7/2003 17:02	ND	ND	ND	278.78	ND	2.19	388.1	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0074 abs.lab	8/7/2003 17:05	ND	ND	ND	287.30	ND	2.20	388.9	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0075 abs.lab	8/7/2003 17:08	ND	ND	ND	273.45	ND	2.19	388.4	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0076 abs.lab	8/7/2003 17:11	ND	ND	ND	266.42	ND	2.19	387.0	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0077 abs.lab	8/7/2003 17:14	ND	ND	ND	256.11	ND	2.19	388.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0078 abs.lab	8/7/2003 17:16	ND	ND	ND	279.30	ND	2.19	387.2	ND	ND	150.51	1.001

Scrubber Outlet 9s.1.1c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0079 abs.lab	8/7/2003 17:19	ND	ND	ND	321.53	ND	2.18	386.3	ND	ND	150.51	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0080 abs.lab	8/7/2003 17:22	ND	ND	ND	311.37	ND	2.18	387.1	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0081 abs.lab	8/7/2003 17:25	ND	ND	ND	292.85	ND	2.18	387.4	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0082 abs.lab	8/7/2003 17:28	ND	ND	ND	227.95	ND	2.18	387.7	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0083 abs.lab	8/7/2003 17:30	ND	ND	ND	217.08	ND	2.17	386.1	ND	ND	150.51	1.006
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0084 abs.lab	8/7/2003 17:33	ND	ND	ND	200.46	ND	2.19	388.9	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0085 abs.lab	8/7/2003 17:36	ND	ND	ND	206.70	ND	2.19	389.6	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0086 abs.lab	8/7/2003 17:39	ND	ND	ND	216.10	ND	2.20	390.8	ND	ND	151.25	1.001
9S_1_1C OUTLET 08 07 03 SASAMPLE R2_0087 abs.lab	8/7/2003 17:42	ND	ND	ND	221.48	ND	2.19	390.8	ND	ND	150.51	1.001

Average _{wet}	58.23	ND	ND	176.74	ND	1.82	321.51	ND	ND	150.83	1.002

Reference Method Calculations

Fab 11 West

9s.1.1.c

Run No.	Run 1	Run 2	
Date	8/7/2003	8/7/2003	
Start Time	9:17	13:41	AVERAGE
Stop Time	13:17	17:41	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.92	24.92	24.92
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	91.2	100.7	96.0
Volume Metered (acf)	163.048	165.674	164.361
Volume Metered (dscf)	131.263	131.120	131.192
Volume of Water Collected (g)	60.5	61.5	61.0
Volume of Water Collected (scf)	2.853	2.900	2.876
Average Delta H (in. H ₂ O)	1.18	1.19	1.19
AVG SQRT of dH (in. H ₂ O)	1.0877	1.0916	1.0896
Measured Moisture (%)	2.1%	2.2%	2.1%
Saturation Moisture (%)	2.6%	2.6%	2.6%
Moisture Used for Calculations (%)	2.2%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.61	28.61	28.61
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.52	-0.52	-0.52
Stack Pressure (in. Hg)	24.88	24.88	24.88
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.9857	0.9747	0.9802
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.8678	0.8556	0.8617
Stack Temperature Isokinetic Traverse (°F)	66.7	66.7	66.7
Stack Temperature Flow Traverse (°F)	67.5	69.6	68.5
Velocity (ft/sec) Isokinetic Traverse	60.89	60.21	60.55
Velocity (ft/sec) Flow Traverse	53.64	53.00	53.32
Nozzle Diameter (in.)	0.185	0.185	0.185
% Isokinetics	98.43	99.42	98.9
Stack Diameter (in.)	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	45,907	45,394	45,650
Stack Flow Rate Flow Traverse (acfm)	40,447	39,959	40,203
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	37,411	37,001	37,206
Stack Flow Rate Outlet Flow Traverse (dscfm)	32,912	32,392	32,652
Chlorine			
Collected Cl ₂ micrograms (ug)	61.2	40.0	50.6
Cl ₂ Concentration (ug/dscf)	0.47	0.31	0.39
Cl ₂ Concentration (ppb)	6	4	5
Cl ₂ Emission Rate (lbs/hr)	0.0020	0.0013	0.0017

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/7/2003
Unit Number: 9s.1.1.c	Stack Diameter (in.): 48.00
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.52
Run No.: 1	Operators: ST/BMB
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.92
Pitot Tube ID: HA-1	Pre Test PassFail Pitot Leak Check <u>Y</u> ____
Pitot Tube C_p: 0.84	
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	
Comments :	
	Post Test PassFail Pitot Leak Check <u>Y</u> ____
	Start: 7:40 End: 7:52

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.85	67
2	0.89	66
3	0.98	66
4	0.88	66
5	0.89	66
6	0.82	66
7	0.59	66
8	0.45	66
9	0.47	66
10	0.45	67
11	0.55	68
12	0.48	69

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.72	68
2	0.90	67
3	0.89	67
4	0.93	66
5	0.99	66
6	0.95	66
7	0.72	66
8	0.67	66
9	0.72	72
10	0.81	72
11	0.89	73
12	0.85	72
Total Average: sqrt dp = 0.8678		67.5

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/7/2003												
Unit Number: 9s.1.1.c	Stack Diameter (in.): 48.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.13												
Run No.: 2	Operators: ST/BMB												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.92												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 17:45 End: 18:00		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %													
Comments :													

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.90	70
2	0.92	70
3	0.93	70
4	0.96	70
5	0.89	70
6	0.88	70
7	0.56	70
8	0.45	70
9	0.40	70
10	0.41	70
11	0.41	70
12	0.36	70

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.70	70
2	0.91	70
3	0.88	69
4	0.89	69
5	0.86	68
6	0.94	68
7	0.82	68
8	0.74	68
9	0.66	68
10	0.80	68
11	0.85	68
12	0.82	76
Total Average: sqrt dp = 0.8556		69.6

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments				Sample Train No. AA		Filter No.: NA		Run No.: 1	
Plant Name:	Fab 11 West					Leak Check Initial: 0.009 cfm@ 15 (in. Hg)					
Plant Location:	Rio Rancho, NM					Leak Check Final: 0.001 cfm@ 2 (in. Hg)					
Project No.:	31397-1600-00000					Total Traverse Points		Impinger	Initial	Final	
Sampling Location:	9s.1.1.c					24		1	651.8	659.3	
Date:	8/7/2003							2	745.8	763.7	
Technicians:	ST/BMB							3	534.1	537.8	
Meter Box No.: 90401	Y_d: 1.006			4	639.2	640.6					
Probe/Pitot No 301 / HA-1	C_p: 0.84			5	643.8	643.6					
Nozzle No.: NA	dH₀: 1.725	Stack Dia. (in.): 48.00	Stack Area (ft²): 12.57	6	837.7	867.9					
Nozzle Dia: 0.185	0.185, 0.185, 0.186	Port Width (in.): 3.00	Port Length (in.): 2.50	Start Time: 9:17 Net Impinger Gain (g): 60.5							
Initial Meter Reading (ft³):	972.589	BP (in. Hg): 24.92	Static Pressure (in.): -0.52	End Time: 13:17 Theta 240							
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
1	10	67	75	74	0.960	1.10	978.970	242	234	57	1
1	20	67	82	74	0.960	1.10	985.420	241	250	57	1
1	30	67	87	82	0.950	1.10	992.090	247	255	56	1
1	40	67	89	78	0.960	1.20	998.940	248	256	55	1
1	50	67	90	79	0.970	1.20	1005.790	250	256	55	1
1	60	67	92	80	0.950	1.10	1012.430	248	256	54	1
1	70	66	93	82	0.980	1.20	1019.080	245	255	53	1
1	80	65	92	83	0.950	1.20	1025.950	245	254	53	1
1	90	54	94	85	0.970	1.20	1032.820	241	254	52	1
1	100	54	95	88	0.970	1.20	1039.680	246	257	51	1
1	110	61	95	88	0.960	1.20	1046.600	242	255	51	1
1	120	69	97	88	0.980	1.20	1053.590	246	257	50	1
1	130	69	97	89	0.980	1.20	1060.410	246	256	50	1
1	140	69	97	90	0.980	1.20	1067.310	244	257	51	1
1	150	69	98	91	0.970	1.20	1073.520	248	258	52	1
1	160	70	99	93	0.980	1.20	1080.510	246	255	52	1
1	170	70	100	93	0.990	1.20	1087.720	246	255	52	1
1	180	69	99	94	0.980	1.20	1094.540	246	254	53	1
1	190	69	101	94	0.980	1.20	1101.360	245	260	55	1
1	200	69	101	95	0.980	1.20	1108.220	245	258	55	1
1	210	69	101	95	0.980	1.20	1115.200	247	260	55	1
1	220	69	101	97	0.980	1.20	1122.150	247	259	55	1
1	230	69	100	96	0.980	1.20	1128.900	245	259	56	1
1	240	69	100	96	0.980	1.20	1135.637	245	259	56	1
Average / Net		66.7		91.2	1.0	1.2	163.048	245.5	255.4	53.6	1.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No. SF		Filter No.: NA		Run No.: 2		
Plant Name:	Fab 11 West						Leak Check Initial:		0.007	cfm@	15	(in. Hg)	
Plant Location:	Rio Rancho, NM						Leak Check Final:		0.004	cfm@	4	(in. Hg)	
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial		Final		
Sampling Location:	9s.1.1.c								1	584.7	595.9		
Date:	8/7/2003								2	624.6	635.6		
Technicians:	ST/BMB								3	643.8	647.7		
Meter Box No.:	90401						Y_d:	1.006	4	633.8	633.6		
Probe / Pitot No.:	301 / HA-1	C_p:	0.84	5	646.3	646.7							
Nozzle No.:	NA	dH_g:	1.725	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57	6	946.9	982.1			
Nozzle Dia:	0.185	0.185, 0.185, 0.186	Port Width (in.):	3.00	Port Length (in.):	2.50	Start Time:	13:41	Net Impinger Gain (g):	61.5			
Initial Meter Reading (ft³):	135.852	BP (in. Hg):	24.92	Static Pressure (in.):	-0.52	End Time:	17:41	Theta	240				
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)		
1	10	68	96	96	0.940	1.10	142.540	258	250	59	3.0		
1	20	68	98	96	0.930	1.10	149.290	261	279	58	3.0		
1	30	67	100	95	0.940	1.20	156.110	252	269	57	3.0		
1	40	67	102	97	0.960	1.20	162.910	258	263	56	3.0		
1	50	67	103	97	0.960	1.20	169.880	253	257	55	3.0		
1	60	68	102	97	0.940	1.20	176.860	252	256	55	3.0		
1	70	67	102	97	0.930	1.20	183.800	248	255	47	3.0		
1	80	68	103	98	0.950	1.20	190.720	256	257	40	3.0		
1	90	68	103	99	0.950	1.20	197.610	258	259	40	3.0		
1	100	67	103	99	0.940	1.20	204.500	257	258	42	3.0		
1	110	66	103	98	0.940	1.20	211.370	257	259	39	3.0		
1	120	66	105	100	0.970	1.20	218.230	256	258	45	3.0		
1	130	66	104	99	0.950	1.20	225.210	256	260	50	3.0		
1	140	66	104	100	0.950	1.20	232.200	255	259	55	3.0		
1	150	66	104	100	0.930	1.20	239.230	254	257	55	3.0		
1	160	66	104	99	0.950	1.20	246.230	260	260	55	3.0		
1	170	66	104	103	0.960	1.20	253.170	253	256	55	3		
1	180	66	105	100	0.960	1.20	260.090	252	256	55	3		
1	190	67	104	100	0.950	1.20	267.010	253	255	55	3		
1	200	66	104	100	0.960	1.20	274.100	251	255	56	3		
1	210	66	104	100	0.960	1.20	280.830	253	255	56	3		
1	220	66	104	98	0.960	1.20	287.720	254	256	56	3		
1	230	66	104	100	0.960	1.20	294.600	255	256	57	3		
1	240	66	104	98	0.960	1.20	301.526	257	256	58	3		
Average / Net		66.7		100.7	1.0	1.2	165.674	255.0	258.4	52.3	3.0		

EPA REFERENCE METHOD 1

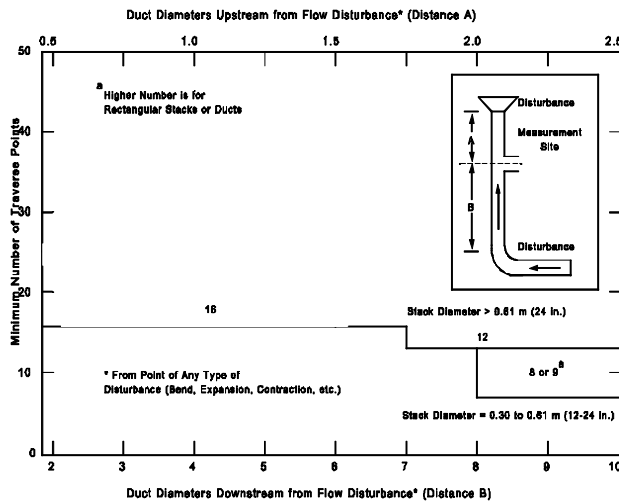
FIELD DATA SHEET

CIRCULAR STACKS

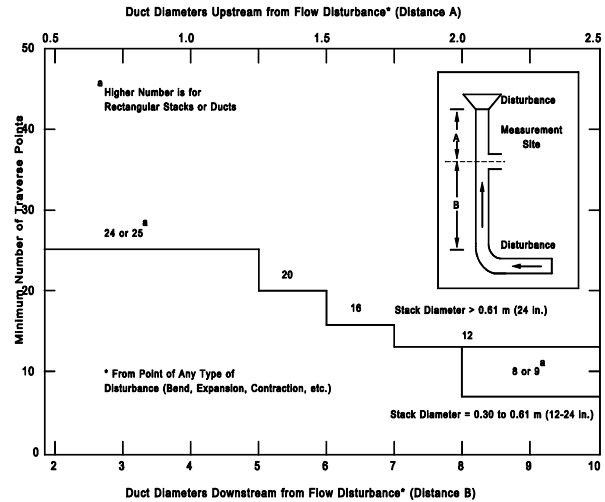
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 9s.1.1c
 TRC Project No.: 31397-1600-00000
 Date: 8/7/2003
 Technician: S. Thorpe
 Circular/Rectangular: C

Stack Diameter: 32.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 2.5
 Diameters Upstream: 2.1
 Diameters Downstream: 2.2
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	3 8/16
2	4 10/16
3	6 4/16
4	8 3/16
5	10 8/16
6	13 14/16
7	23 2/16
8	26 8/16
9	28 13/16
10	30 12/16
11	32 6/16
12	33 8/16
13	
14	
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16	
17	
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24	

Scrubber Outlet 9s.1.1d FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1D OUTLET 08 06 03 SAMPLE_0023 abs.lab	8/6/2003 8:20	12.34	ND	ND	651.88	ND	2.26	397.7	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0024 abs.lab	8/6/2003 8:23	6.30	ND	ND	662.36	ND	2.26	397.5	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0025 abs.lab	8/6/2003 8:25	ND	ND	ND	641.26	ND	2.24	395.3	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0026 abs.lab	8/6/2003 8:28	ND	ND	ND	656.83	ND	2.24	394.6	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0027 abs.lab	8/6/2003 8:31	ND	ND	ND	634.93	ND	2.25	397.0	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0028 abs.lab	8/6/2003 8:34	ND	ND	ND	596.27	ND	2.25	396.9	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0029 abs.lab	8/6/2003 8:37	ND	ND	ND	580.42	ND	2.24	394.2	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0030 abs.lab	8/6/2003 8:39	ND	ND	ND	598.67	ND	2.25	395.8	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0031 abs.lab	8/6/2003 8:42	ND	ND	ND	578.05	ND	2.24	393.4	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0032 abs.lab	8/6/2003 8:45	ND	ND	ND	584.66	ND	2.24	392.6	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0033 abs.lab	8/6/2003 8:48	ND	ND	ND	584.75	ND	2.26	393.2	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0034 abs.lab	8/6/2003 8:50	ND	ND	ND	568.17	ND	2.25	389.7	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0035 abs.lab	8/6/2003 8:53	ND	ND	ND	582.87	ND	2.25	389.4	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0036 abs.lab	8/6/2003 8:56	ND	ND	ND	561.04	ND	2.26	391.3	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0037 abs.lab	8/6/2003 8:59	ND	ND	ND	607.14	ND	2.25	389.6	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0038 abs.lab	8/6/2003 9:01	ND	ND	ND	603.45	ND	2.26	391.0	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0039 abs.lab	8/6/2003 9:04	ND	ND	ND	598.59	ND	2.25	387.9	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0040 abs.lab	8/6/2003 9:07	ND	ND	ND	577.03	ND	2.25	387.4	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0041 abs.lab	8/6/2003 9:10	ND	ND	ND	603.33	ND	2.27	389.4	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0042 abs.lab	8/6/2003 9:13	ND	ND	ND	596.02	ND	2.27	390.0	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0043 abs.lab	8/6/2003 9:15	ND	ND	ND	578.57	ND	2.27	390.5	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0044 abs.lab	8/6/2003 9:18	ND	ND	ND	551.79	ND	2.27	390.0	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0045 abs.lab	8/6/2003 9:21	ND	ND	ND	561.74	ND	2.26	389.7	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0046 abs.lab	8/6/2003 9:24	ND	ND	ND	604.88	ND	2.27	391.4	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0047 abs.lab	8/6/2003 9:26	ND	ND	ND	590.87	ND	2.27	392.1	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0048 abs.lab	8/6/2003 9:29	ND	ND	ND	585.85	ND	2.26	388.3	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0049 abs.lab	8/6/2003 9:32	ND	ND	ND	585.85	ND	2.28	388.2	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0050 abs.lab	8/6/2003 9:35	ND	ND	ND	580.68	ND	2.27	387.3	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0051 abs.lab	8/6/2003 9:38	ND	ND	ND	576.51	ND	2.27	386.3	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0052 abs.lab	8/6/2003 9:40	ND	ND	ND	556.73	ND	2.26	385.2	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0053 abs.lab	8/6/2003 9:43	173.73	ND	ND	342.05	ND	2.22	387.9	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0054 abs.lab	8/6/2003 9:46	167.61	ND	ND	376.29	ND	2.21	385.4	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0055 abs.lab	8/6/2003 9:49	159.01	ND	ND	328.98	ND	2.21	385.5	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0056 abs.lab	8/6/2003 9:51	159.81	ND	ND	341.15	ND	2.21	384.8	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0057 abs.lab	8/6/2003 9:54	147.49	ND	ND	342.51	ND	2.23	386.4	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0058 abs.lab	8/6/2003 9:57	137.58	ND	ND	318.26	ND	2.23	385.3	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0059 abs.lab	8/6/2003 10:00	145.66	ND	ND	328.55	ND	2.21	382.6	ND	ND	151.25	1.011
9S_1_1D OUTLET 08 06 03 SAMPLE_0060 abs.lab	8/6/2003 10:03	147.47	ND	ND	331.06	ND	2.23	387.0	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0061 abs.lab	8/6/2003 10:05	141.78	ND	ND	331.91	ND	2.23	387.0	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0062 abs.lab	8/6/2003 10:08	125.99	ND	ND	337.71	ND	2.23	387.5	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0063 abs.lab	8/6/2003 10:11	115.96	ND	ND	397.65	ND	2.22	385.0	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0064 abs.lab	8/6/2003 10:14	108.60	ND	ND	413.24	ND	2.22	386.7	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0065 abs.lab	8/6/2003 10:17	123.15	ND	ND	423.09	ND	2.23	389.0	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0066 abs.lab	8/6/2003 10:19	106.08	ND	ND	390.32	ND	2.22	390.0	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0067 abs.lab	8/6/2003 10:22	95.10	ND	ND	424.87	ND	2.22	390.1	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0068 abs.lab	8/6/2003 10:25	83.02	ND	ND	438.54	ND	2.20	385.4	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0069 abs.lab	8/6/2003 10:28	73.61	ND	ND	400.35	ND	2.21	385.1	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0070 abs.lab	8/6/2003 10:30	82.73	ND	ND	356.03	ND	2.23	386.4	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0071 abs.lab	8/6/2003 10:33	60.02	ND	ND	310.95	ND	2.23	389.2	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0072 abs.lab	8/6/2003 10:36	65.39	ND	ND	305.83	ND	2.23	389.6	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0073 abs.lab	8/6/2003 10:39	57.48	ND	ND	318.31	ND	2.22	389.8	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0074 abs.lab	8/6/2003 10:42	52.65	ND	ND	314.23	ND	2.22	389.3	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0075 abs.lab	8/6/2003 10:44	61.07	ND	ND	319.86	ND	2.20	383.9	ND	ND	150.51	1.006

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 9s.1.1d FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1D OUTLET 08 06 03 SAMPLE_0076 abs.lab	8/6/2003 10:47	48.90	ND	ND	315.12	ND	2.21	385.0	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0077 abs.lab	8/6/2003 10:50	48.02	ND	ND	320.56	ND	2.20	384.1	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0078 abs.lab	8/6/2003 10:53	52.67	ND	ND	310.41	ND	2.21	385.1	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0079 abs.lab	8/6/2003 10:56	56.40	ND	ND	298.75	ND	2.20	383.7	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0080 abs.lab	8/6/2003 10:58	56.13	ND	ND	283.27	ND	2.22	386.5	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0081 abs.lab	8/6/2003 11:01	47.94	ND	ND	244.09	ND	2.22	386.2	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0082 abs.lab	8/6/2003 11:04	46.65	ND	ND	399.37	ND	2.22	385.4	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0083 abs.lab	8/6/2003 11:07	46.57	ND	ND	410.73	ND	2.21	383.2	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0084 abs.lab	8/6/2003 11:09	34.81	ND	ND	393.53	ND	2.21	385.8	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0085 abs.lab	8/6/2003 11:12	34.79	ND	ND	474.37	ND	2.22	386.7	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0086 abs.lab	8/6/2003 11:15	41.13	ND	ND	446.37	ND	2.23	386.9	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0087 abs.lab	8/6/2003 11:18	29.79	ND	ND	423.72	ND	2.23	388.9	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0088 abs.lab	8/6/2003 11:21	32.10	ND	ND	380.65	ND	2.22	387.2	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0089 abs.lab	8/6/2003 11:23	56.35	ND	ND	365.13	ND	2.24	391.5	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0090 abs.lab	8/6/2003 11:26	32.79	ND	ND	350.05	ND	2.23	390.9	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0091 abs.lab	8/6/2003 11:29	28.43	ND	ND	316.07	ND	2.23	391.8	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0092 abs.lab	8/6/2003 11:32	28.57	ND	ND	362.23	ND	2.22	386.8	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0093 abs.lab	8/6/2003 11:35	23.69	ND	ND	440.51	ND	2.23	388.3	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0094 abs.lab	8/6/2003 11:37	28.76	ND	ND	478.50	ND	2.22	386.9	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0095 abs.lab	8/6/2003 11:40	25.42	ND	ND	404.47	ND	2.23	389.9	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0096 abs.lab	8/6/2003 11:43	24.31	ND	ND	355.03	ND	2.23	393.3	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0097 abs.lab	8/6/2003 11:46	35.19	ND	ND	346.57	ND	2.23	391.7	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0098 abs.lab	8/6/2003 11:48	47.98	ND	ND	331.63	ND	2.24	391.4	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0099 abs.lab	8/6/2003 11:51	50.46	ND	ND	293.33	ND	2.25	390.1	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0100 abs.lab	8/6/2003 11:54	26.54	ND	ND	246.37	ND	2.25	389.0	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0101 abs.lab	8/6/2003 11:57	29.19	ND	ND	281.33	ND	2.23	386.2	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0102 abs.lab	8/6/2003 12:00	29.79	ND	ND	281.82	ND	2.23	386.0	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0103 abs.lab	8/6/2003 12:02	40.05	ND	ND	297.34	ND	2.23	386.0	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0104 abs.lab	8/6/2003 12:05	25.03	ND	ND	280.43	ND	2.22	385.0	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0105 abs.lab	8/6/2003 12:08	22.47	ND	ND	289.98	ND	2.23	387.5	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0106 abs.lab	8/6/2003 12:11	22.29	ND	ND	296.68	ND	2.23	388.0	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0107 abs.lab	8/6/2003 12:14	21.23	ND	ND	325.96	ND	2.22	386.3	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0108 abs.lab	8/6/2003 12:16	22.52	ND	ND	298.77	ND	2.23	387.6	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0109 abs.lab	8/6/2003 12:19	11.14	ND	ND	265.92	ND	2.24	389.7	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0110 abs.lab	8/6/2003 12:22	15.94	ND	ND	286.67	ND	2.24	389.3	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0117 abs.lab	8/6/2003 13:05	9.45	ND	ND	276.92	ND	2.23	384.7	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0118 abs.lab	8/6/2003 13:08	24.15	ND	ND	272.99	ND	2.24	386.1	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0119 abs.lab	8/6/2003 13:11	20.75	ND	ND	279.50	ND	2.24	385.4	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0120 abs.lab	8/6/2003 13:14	18.84	ND	ND	286.27	ND	2.26	388.2	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0121 abs.lab	8/6/2003 13:17	20.06	ND	ND	294.75	ND	2.24	386.0	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0122 abs.lab	8/6/2003 13:19	26.49	ND	ND	315.16	ND	2.25	387.4	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0123 abs.lab	8/6/2003 13:22	17.60	ND	ND	313.34	ND	2.23	384.6	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0124 abs.lab	8/6/2003 13:25	16.62	ND	ND	282.35	ND	2.24	387.6	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0125 abs.lab	8/6/2003 13:28	14.25	ND	ND	259.97	ND	2.24	387.0	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0126 abs.lab	8/6/2003 13:30	12.18	ND	ND	260.82	ND	2.24	386.6	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0127 abs.lab	8/6/2003 13:33	5.58	ND	ND	243.23	ND	2.23	386.3	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0128 abs.lab	8/6/2003 13:36	10.94	ND	ND	269.90	ND	2.23	386.9	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0129 abs.lab	8/6/2003 13:39	8.36	ND	ND	276.66	ND	2.24	387.5	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0130 abs.lab	8/6/2003 13:42	5.32	ND	ND	267.66	ND	2.24	388.4	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0131 abs.lab	8/6/2003 13:44	ND	ND	ND	250.77	ND	2.24	389.1	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0132 abs.lab	8/6/2003 13:47	8.81	ND	ND	255.47	ND	2.27	393.0	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0133 abs.lab	8/6/2003 13:50	2.09	ND	ND	303.85	ND	2.26	388.8	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0134 abs.lab	8/6/2003 13:53	9.95	ND	ND	264.49	ND	2.28	392.4	ND	ND	151.25	1.001

Scrubber Outlet 9s.1.1d FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1D OUTLET 08 06 03 SAMPLE_0135 abs.lab	8/6/2003 13:56	13.49	ND	ND	256.86	ND	2.29	394.8	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0136 abs.lab	8/6/2003 13:58	12.62	ND	ND	239.69	ND	2.28	393.4	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0137 abs.lab	8/6/2003 14:01	9.64	ND	ND	242.49	ND	2.28	395.1	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0138 abs.lab	8/6/2003 14:04	12.37	ND	ND	229.48	ND	2.29	396.3	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0139 abs.lab	8/6/2003 14:07	18.39	ND	ND	215.43	ND	2.31	398.7	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0140 abs.lab	8/6/2003 14:10	15.55	ND	ND	233.48	ND	2.30	398.2	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0141 abs.lab	8/6/2003 14:12	12.24	ND	ND	206.28	ND	2.27	393.1	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0142 abs.lab	8/6/2003 14:15	13.27	ND	ND	183.92	ND	2.27	395.5	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0143 abs.lab	8/6/2003 14:18	15.53	ND	ND	180.05	ND	2.28	398.2	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0144 abs.lab	8/6/2003 14:21	7.70	ND	ND	197.37	ND	2.25	394.2	ND	ND	150.51	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0145 abs.lab	8/6/2003 14:24	3.29	ND	ND	205.87	ND	2.26	394.2	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0146 abs.lab	8/6/2003 14:26	8.04	ND	ND	204.16	ND	2.26	393.9	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0147 abs.lab	8/6/2003 14:29	20.10	ND	ND	176.48	ND	2.28	399.2	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0148 abs.lab	8/6/2003 14:32	15.77	ND	ND	168.72	ND	2.26	395.4	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0149 abs.lab	8/6/2003 14:35	6.40	ND	ND	192.82	ND	2.27	396.1	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0150 abs.lab	8/6/2003 14:38	14.93	ND	ND	151.13	ND	2.27	394.2	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0151 abs.lab	8/6/2003 14:40	7.51	ND	ND	148.52	ND	2.27	395.5	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0152 abs.lab	8/6/2003 14:43	12.11	ND	ND	160.50	ND	2.26	396.9	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0153 abs.lab	8/6/2003 14:46	8.71	ND	ND	164.03	ND	2.27	397.7	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0154 abs.lab	8/6/2003 14:49	ND	ND	ND	173.91	ND	2.26	396.7	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0155 abs.lab	8/6/2003 14:52	9.16	ND	ND	174.14	ND	2.25	393.9	ND	ND	151.25	1.006
9S_1_1D OUTLET 08 06 03 SAMPLE_0156 abs.lab	8/6/2003 14:54	ND	ND	ND	190.28	ND	2.25	393.2	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0157 abs.lab	8/6/2003 14:57	ND	ND	ND	152.70	ND	2.24	390.7	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0158 abs.lab	8/6/2003 15:00	ND	ND	ND	256.11	ND	2.24	390.4	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0159 abs.lab	8/6/2003 15:03	ND	ND	ND	288.55	ND	2.23	388.9	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0160 abs.lab	8/6/2003 15:06	ND	ND	ND	294.86	ND	2.23	388.8	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0161 abs.lab	8/6/2003 15:08	ND	ND	ND	276.21	ND	2.23	389.6	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0162 abs.lab	8/6/2003 15:11	1.41	ND	ND	253.64	ND	2.24	389.2	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0163 abs.lab	8/6/2003 15:14	11.86	ND	ND	250.36	ND	2.24	388.4	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0164 abs.lab	8/6/2003 15:17	12.88	ND	ND	276.55	ND	2.26	392.0	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0165 abs.lab	8/6/2003 15:19	13.32	ND	ND	336.99	ND	2.26	392.7	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0166 abs.lab	8/6/2003 15:22	12.19	ND	ND	312.91	ND	2.25	393.5	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0167 abs.lab	8/6/2003 15:25	9.78	ND	ND	296.28	ND	2.25	393.4	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0168 abs.lab	8/6/2003 15:28	6.59	ND	ND	293.87	ND	2.25	393.2	ND	ND	150.51	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0169 abs.lab	8/6/2003 15:31	15.43	ND	ND	299.45	ND	2.25	390.5	ND	ND	150.51	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0170 abs.lab	8/6/2003 15:33	13.61	ND	ND	284.28	ND	2.24	390.1	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0171 abs.lab	8/6/2003 15:36	10.96	ND	ND	227.01	ND	2.25	392.1	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0172 abs.lab	8/6/2003 15:39	9.20	ND	ND	235.67	ND	2.25	392.9	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0173 abs.lab	8/6/2003 15:42	6.37	ND	ND	259.42	ND	2.24	393.2	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0174 abs.lab	8/6/2003 15:45	ND	ND	ND	268.98	ND	2.24	392.2	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0175 abs.lab	8/6/2003 15:47	ND	ND	ND	273.93	ND	2.24	391.3	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0176 abs.lab	8/6/2003 15:50	ND	ND	ND	246.95	ND	2.24	393.7	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0177 abs.lab	8/6/2003 15:53	9.53	ND	ND	282.05	ND	2.24	393.3	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0178 abs.lab	8/6/2003 15:56	9.76	ND	ND	288.86	ND	2.24	393.1	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0179 abs.lab	8/6/2003 15:59	12.21	ND	ND	280.11	ND	2.25	391.4	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0180 abs.lab	8/6/2003 16:01	12.03	ND	ND	284.54	ND	2.24	390.4	ND	ND	150.51	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0181 abs.lab	8/6/2003 16:04	10.14	ND	ND	357.93	ND	2.25	392.6	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0182 abs.lab	8/6/2003 16:07	6.56	ND	ND	331.72	ND	2.23	389.8	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0183 abs.lab	8/6/2003 16:10	ND	ND	ND	327.18	ND	2.24	391.0	ND	ND	150.51	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0184 abs.lab	8/6/2003 16:13	0.60	ND	ND	322.26	ND	2.22	388.9	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0185 abs.lab	8/6/2003 16:15	4.34	ND	ND	320.38	ND	2.22	390.8	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0186 abs.lab	8/6/2003 16:18	3.44	ND	ND	319.42	ND	2.22	390.9	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0187 abs.lab	8/6/2003 16:21	8.35	ND	ND	312.64	ND	2.23	393.2	ND	ND	150.51	0.996

Scrubber Outlet 9s.1.1d FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1D OUTLET 08 06 03 SAMPLE_0188 abs.lab	8/6/2003 16:24	4.43	ND	ND	340.89	ND	2.24	393.9	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0189 abs.lab	8/6/2003 16:27	4.64	ND	ND	387.24	ND	2.23	392.6	ND	ND	150.51	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0190 abs.lab	8/6/2003 16:29	2.46	ND	ND	377.59	ND	2.24	393.3	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0191 abs.lab	8/6/2003 16:32	ND	ND	ND	332.84	ND	2.23	392.8	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0192 abs.lab	8/6/2003 16:35	6.82	ND	ND	326.64	ND	2.22	389.9	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0193 abs.lab	8/6/2003 16:38	ND	ND	ND	340.67	ND	2.22	389.2	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0194 abs.lab	8/6/2003 16:41	ND	ND	ND	363.66	ND	2.21	388.1	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0195 abs.lab	8/6/2003 16:43	ND	ND	ND	405.65	ND	2.21	388.6	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0196 abs.lab	8/6/2003 16:46	ND	ND	ND	319.66	ND	2.20	387.3	ND	ND	150.51	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0197 abs.lab	8/6/2003 16:49	2.54	ND	ND	273.75	ND	2.22	390.7	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0198 abs.lab	8/6/2003 16:52	2.95	ND	ND	170.10	ND	2.22	390.5	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0199 abs.lab	8/6/2003 16:55	10.47	ND	ND	119.46	ND	2.21	387.9	ND	ND	151.25	1.001
9S_1_1D OUTLET 08 06 03 SAMPLE_0200 abs.lab	8/6/2003 16:57	12.40	ND	ND	112.36	ND	2.23	393.6	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0201 abs.lab	8/6/2003 17:00	2.98	ND	ND	100.32	ND	2.23	393.8	ND	ND	150.51	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0202 abs.lab	8/6/2003 17:03	9.18	ND	ND	92.47	ND	2.22	392.3	ND	ND	151.25	0.996
9S_1_1D OUTLET 08 06 03 SAMPLE_0203 abs.lab	8/6/2003 17:06	0.78	ND	ND	118.69	ND	2.21	388.1	ND	ND	151.25	1.001

Average _{wet}	39.22	ND	ND	343.96	ND	2.24	390.14	ND	ND	150.91	1.001

Reference Method Calculations

Fab 11West

9s.1.1d

Run No.	Run 1	Run 2	
Date	8/6/2003	8/6/2003	
Start Time	8:16	13:05	AVERAGE
Stop Time	12:25	17:05	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	95.1	105.9	100.5
Volume Metered (acf)	170.892	177.478	174.185
Volume Metered (dscf)	136.488	139.075	137.781
Volume of Water Collected (g)	59.3	68.3	63.8
Volume of Water Collected (scf)	2.796	3.220	3.008
Average Delta H (in. H ₂ O)	1.27	1.36	1.31
AVG SQRT of dH (in. H ₂ O)	1.1262	1.1645	1.1453
Measured Moisture (%)	2.0%	2.3%	2.1%
Saturation Moisture (%)	2.7%	2.6%	2.7%
Moisture Used for Calculations (%)	2.2%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.62	28.60	28.61
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	
Stack Static Pressure (in. H ₂ O)	-0.23	-0.23	-0.23
Stack Pressure (in. Hg)	24.87	24.87	24.87
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.6831	0.6973	0.6902
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.6124	0.6281	0.6202
Stack Temperature Isokinetic Traverse (°F)	68.0	67.1	67.6
Stack Temperature Flow Traverse (°F)	70.3	67.0	68.6
Velocity (ft/sec) Isokinetic Traverse	42.24	43.11	42.67
Velocity (ft/sec) Flow Traverse	37.95	38.82	38.39
Nozzle Diameter (in.)	0.225	0.225	0.225
% Isokinetics	100.04	99.74	99.9
Stack Diameter (in.)	32.00	32.00	32.00
Stack Area (ft ²)	5.59	5.59	5.59
Stack Flow Rate Isokinetic Traverse (acfm)	14,156	14,445	14,300
Stack Flow Rate Flow Traverse (acfm)	12,718	13,010	12,864
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	11,500	11,754	11,627
Stack Flow Rate Outlet Flow Traverse (dscfm)	10,288	10,588	10,438
Chlorine			
Collected Cl ₂ micrograms (ug)	31.5	68.0	49.8
Cl ₂ Concentration (ug/dscf)	0.23	0.49	0.36
Cl ₂ Concentration (ppb)	3	6	4
Cl ₂ Emission Rate (lbs/hr)	0.0003	0.0007	0.0005

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/6/2003
Unit Number:	9s.1.1d	Stack Diameter (in.):	32.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.23
Run No.:	1	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.89
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	7:45
		End:	7:55

S Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.50	70
2	0.50	70
3	0.46	71
4	0.39	71
5	0.39	74
6	0.39	72
7	0.35	75
8	0.38	69
9	0.34	68
10	0.31	72
11	0.29	69
12	0.21	69

E Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.51	68
2	0.51	68
3	0.49	69
4	0.46	68
5	0.45	72
6	0.44	70
7	0.33	71
8	0.31	71
9	0.29	70
10	0.30	69
11	0.24	71
12	0.29	70
Total Average:	sqrt dp = 0.6124	70.3

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/6/2003
Unit Number: 9s.1.1d	Stack Diameter (in.): 32.00
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.2
Run No.: 2	Operators: PER/SCT
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.89
Pitot Tube ID: HA-1	Pre Test PassFail Pitot Leak Check <u>Y</u> —
Pitot Tube C_p: 0.84	
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	
Comments :	
	Post Test PassFail Pitot Leak Check <u>Y</u> —
	Start: 12:53 End: 13:00

S Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.49	66
2	0.49	66
3	0.49	66
4	0.46	66
5	0.44	66
6	0.41	66
7	0.36	66
8	0.37	66
9	0.36	66
10	0.38	66
11	0.39	67
12	0.34	68

E Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.49	71
2	0.53	70
3	0.48	67
4	0.46	68
5	0.46	68
6	0.36	67
7	0.39	67
8	0.34	67
9	0.31	67
10	0.29	67
11	0.25	67
12	0.23	67
Total Average:	sqrt dp = 0.6281	67.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments Additional run time due to multiple power losses during first 20 minutes of test				Sample Train No. AA		Filter No.: NA		Run No.: 1			
Plant Name:	Fab 11West					Leak Check Initial: PER		cfm@ 0.007		(in. Hg)		17	
Plant Location:	Rio Rancho, NM					Leak Check Final: PER		cfm@ 0.007		(in. Hg)		14	
Project No.:	31397-1600-00000					Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	9s.1.1d					24		1		659.9		666.5	
Date:	8/6/2003							2		738.3		755.4	
Technicians:	PER/SCT							3		533.7		537.1	
Meter Box No.: 90401	Y_d: 1.006			4		634.3		636.2					
Probe / Pitot No.: 315 / HA-1	C_p: 0.84			5		658.7		659.4					
Nozzle No.: NA	dH₀: 1.725	Stack Dia. (in.): 32.00		Stack Area (ft²): 5.59		6		836.9		866.5			
Nozzle Dia: 0.225	0.225, 0.225, 0.226	Port Width (in.): 3.00		Port Length (in.): 2.50		Start Time: 8:16		Net Impinger Gain (g): 59.3					
Initial Meter Reading (ft³):	621.237	BP (in. Hg): 24.89		Static Pressure (in.): -0.23		End Time: 12:25		Theta		240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)		
E3	10	72	77	73	0.480	1.30	628.480	236	240	55	1		
E3	20	68	79	73	0.480	1.20	635.370	233	244	51	1		
E3	30	68	84	74	0.460	1.20	642.200	232	243	52	1		
E3	40	73	88	76	0.480	1.20	649.300	238	241	55	1		
E3	50	73	93	80	0.460	1.20	656.380	242	241	56	1		
E3	60	68	93	80	0.470	1.20	663.240	243	241	57	1		
E3	70	68	95	83	0.460	1.30	670.230	241	242	57	1		
E3	80	68	97	84	0.450	1.20	677.230	244	241	58	1		
E3	90	68	98	85	0.460	1.25	684.270	243	243	58	1		
E3	100	68	100	87	0.460	1.25	691.270	252	243	59	1		
E3	110	68	102	89	0.450	1.20	698.100	248	245	60	1		
E3	120	68	103	91	0.460	1.25	705.080	251	244	62	1		
E3	130	67	105	93	0.460	1.30	712.400	249	244	61	1		
E3	140	67	104	94	0.470	1.30	719.590	253	243	60	1		
E3	150	67	105	95	0.470	1.30	726.720	249	241	60	1		
E3	160	66	105	97	0.470	1.30	733.840	248	244	44	1		
E3	170	67	106	107	0.470	1.30	741.150	250	246	35	1		
E3	180	66	108	100	0.480	1.35	748.470	251	245	50	1		
E3	190	67	107	101	0.490	1.35	755.890	252	244	55	1		
E3	200	67	106	101	0.460	1.30	763.070	248	243	52	1		
E3	210	67	107	100	0.470	1.30	770.320	246	248	48	1		
E3	220	67	110	103	0.470	1.30	777.600	248	243	45	1		
E3	230	67	110	103	0.460	1.30	784.870	248	245	54	1		
E3	240	67	110	104	0.460	1.30	792.129	249	246	51	1		
Average / Net		68.0		95.1	0.467	1.3	170.892	245.6	243.3	54.0	1.0		

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2
Plant Name:	Fab 11West						Leak Check Initial:	PER	cfm@	0.003	(in. Hg)	11
Plant Location:	Rio Rancho, NM						Leak Check Final:	PER	cfm@	0.002	(in. Hg)	10
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.1d							1	597.0	609.9		
Date:	8/6/2003						24	2	633.7	649.5		
Technicians:	PER/SCT							3	644.4	649.9		
Meter Box No.:	90401						Y_d:	1.006		4	647.0	651.9
Probe / Pitot No.:	315 / HA-1	C_p:	0.84		5	647.4	646.8					
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	32.00	Stack Area (ft²):	5.59		6	949.1	978.9	
Nozzle Dia:	0.225	0.225, 0.225, 0.226	Port Width (in.):	3.00	Port Length (in.):	2.50	Start Time:	13:05	Net Impinger Gain (g):	68.3		
Initial Meter Reading (ft³):	792.732	BP (in. Hg):	24.89	Static Pressure (in.):	-0.23	End Time:	17:05	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
E3	10	66	105	104	0.480	1.30	800.170	253	243	51	2.5	
E3	20	66	108	104	0.500	1.40	807.480	244	244	49	2.5	
E3	30	66	110	104	0.490	1.40	814.890	251	245	43	2.5	
E3	40	66	111	105	0.500	1.40	822.340	251	244	54	2.5	
E3	50	66	112	105	0.490	1.40	829.810	247	245	54	2.5	
E3	60	66	112	105	0.500	1.40	837.270	245	244	54	2.5	
E3	70	66	112	106	0.500	1.40	844.760	245	245	56	2.5	
E3	80	66	112	107	0.490	1.35	852.200	250	247	56	2.5	
E3	90	66	111	107	0.480	1.35	859.670	251	245	56	2.5	
E3	100	67	110	108	0.480	1.35	867.130	248	244	57	2.5	
E3	110	67	107	105	0.490	1.35	874.460	250	247	47	2.5	
E3	120	66	107	103	0.490	1.35	881.960	248	248	36	2.5	
E3	130	68	108	104	0.480	1.40	889.460	251	245	54	2.5	
E3	140	68	108	104	0.490	1.40	896.940	252	244	53	2.5	
E3	150	68	107	102	0.490	1.35	904.300	252	245	53	2.5	
E3	160	69	107	101	0.480	1.30	911.640	254	245	47	2.5	
E3	170	68	105	100	0.480	1.30	918.950	247	244	52	2.5	
E3	180	68	106	100	0.490	1.30	926.200	249	244	47	2.5	
E3	190	68	107	101	0.480	1.35	933.560	251	245	47	2.5	
E3	200	68	108	101	0.480	1.35	940.930	251	246	47	2.5	
E3	210	69	108	103	0.480	1.35	948.290	251	246	52	2.5	
E3	220	68	107	101	0.480	1.35	955.630	248	246	47	2.5	
E3	230	67	108	101	0.480	1.35	962.980	252	245	48	2.5	
E3	240	68	104	103	0.470	1.30	970.210	249	244	54	2.5	
Average / Net		67.1		105.9	0.5	1.4	177.478	249.6	245.0	50.6	2.5	

EPA REFERENCE METHOD 1

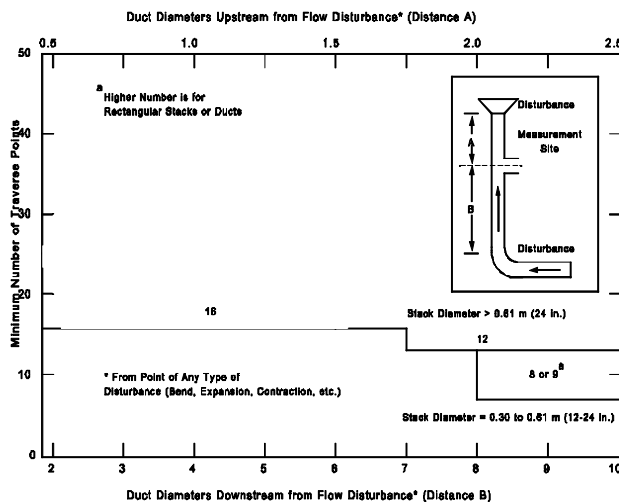
FIELD DATA SHEET

CIRCULAR STACKS

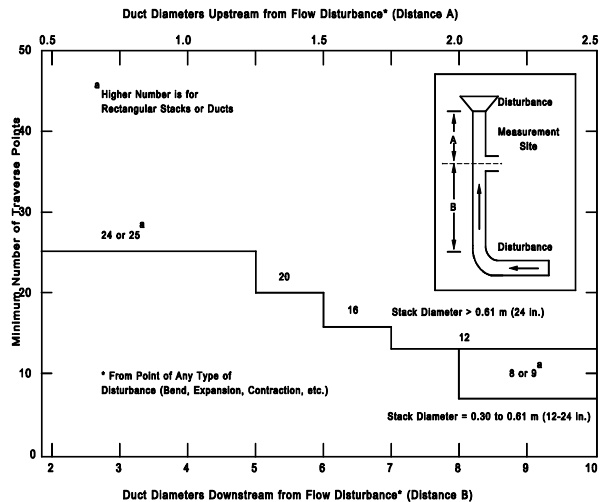
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 9s.1.1d
 TRC Project No.: 31397-1600-00000
 Date: 8/6/2003
 Technician: S. Thorpe
 Circular/Rectangular: C

Stack Diameter: 32.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 2.5
 Diameters Upstream: 2.1
 Diameters Downstream: 2.2
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	3 8/16
2	4 10/16
3	6 4/16
4	8 3/16
5	10 8/16
6	13 14/16
7	23 2/16
8	26 8/16
9	28 13/16
10	30 12/16
11	32 6/16
12	33 8/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 9s.1.1e FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1E OUTLET 08 05 03 SAMPLE_0004 abs.lab	8/5/2003 11:42	ND	ND	ND	1027.35	ND	2.23	394.0	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0005 abs.lab	8/5/2003 11:45	ND	26.64	ND	1061.28	ND	2.23	393.9	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0006 abs.lab	8/5/2003 11:48	ND	ND	ND	1122.59	ND	2.24	394.9	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0007 abs.lab	8/5/2003 11:51	ND	0.12	ND	1163.72	ND	2.24	395.1	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0008 abs.lab	8/5/2003 11:54	ND	32.25	ND	1159.95	ND	2.23	391.9	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0009 abs.lab	8/5/2003 11:56	ND	31.74	ND	1184.31	ND	2.24	394.0	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0010 abs.lab	8/5/2003 11:59	ND	57.29	ND	1175.56	ND	2.22	390.9	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0011 abs.lab	8/5/2003 12:02	ND	89.54	ND	1217.12	ND	2.22	391.2	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0012 abs.lab	8/5/2003 12:05	ND	79.73	ND	1283.42	ND	2.23	391.5	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0013 abs.lab	8/5/2003 12:08	ND	94.98	ND	1259.71	ND	2.21	389.0	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0014 abs.lab	8/5/2003 12:10	ND	115.47	ND	1266.01	ND	2.22	390.1	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0015 abs.lab	8/5/2003 12:13	ND	133.36	ND	1251.27	ND	2.21	388.4	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0016 abs.lab	8/5/2003 12:16	ND	146.70	ND	1224.56	ND	2.22	390.1	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0017 abs.lab	8/5/2003 12:19	ND	187.98	ND	1188.24	ND	2.21	389.9	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0018 abs.lab	8/5/2003 12:22	ND	190.68	ND	1196.96	ND	2.21	390.6	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0019 abs.lab	8/5/2003 12:24	ND	211.69	ND	1181.59	ND	2.21	387.6	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0020 abs.lab	8/5/2003 12:27	ND	181.00	ND	1149.03	ND	2.22	391.1	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0021 abs.lab	8/5/2003 12:30	ND	172.75	ND	1126.83	ND	2.22	391.6	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0022 abs.lab	8/5/2003 12:33	ND	188.57	ND	1100.33	ND	2.21	388.9	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0023 abs.lab	8/5/2003 12:36	ND	195.29	ND	1114.01	ND	2.22	390.1	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0024 abs.lab	8/5/2003 12:38	ND	173.61	ND	1174.82	ND	2.22	390.4	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0025 abs.lab	8/5/2003 12:41	ND	130.97	ND	1159.07	ND	2.22	390.9	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0026 abs.lab	8/5/2003 12:44	ND	107.67	ND	1150.79	ND	2.24	395.0	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0027 abs.lab	8/5/2003 12:47	ND	156.90	ND	1135.84	ND	2.24	396.3	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0028 abs.lab	8/5/2003 12:49	ND	117.50	ND	1082.91	ND	2.24	396.9	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0029 abs.lab	8/5/2003 12:52	ND	161.44	ND	1036.79	ND	2.24	396.8	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0030 abs.lab	8/5/2003 12:55	ND	178.94	ND	1055.71	ND	2.22	393.2	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0031 abs.lab	8/5/2003 12:58	ND	180.99	ND	1046.97	ND	2.23	395.3	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0032 abs.lab	8/5/2003 13:01	ND	156.33	ND	1002.55	ND	2.22	392.2	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0033 abs.lab	8/5/2003 13:03	ND	183.26	ND	1012.34	ND	2.22	392.6	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0034 abs.lab	8/5/2003 13:06	ND	176.75	ND	936.73	ND	2.22	394.4	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0035 abs.lab	8/5/2003 13:09	ND	159.89	ND	951.52	ND	2.24	397.3	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0036 abs.lab	8/5/2003 13:12	ND	139.52	ND	962.99	ND	2.24	397.4	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0037 abs.lab	8/5/2003 13:15	ND	142.54	ND	906.43	ND	2.22	394.7	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0038 abs.lab	8/5/2003 13:17	ND	ND	ND	497.11	ND	2.22	396.0	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0039 abs.lab	8/5/2003 13:20	ND	ND	ND	466.67	ND	2.21	394.3	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0040 abs.lab	8/5/2003 13:23	ND	ND	ND	447.03	ND	2.21	395.7	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0041 abs.lab	8/5/2003 13:26	ND	20.85	ND	463.73	ND	2.21	394.7	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0042 abs.lab	8/5/2003 13:29	ND	25.55	ND	418.74	ND	2.20	392.9	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0043 abs.lab	8/5/2003 13:31	ND	1.92	ND	400.84	ND	2.18	394.2	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0044 abs.lab	8/5/2003 13:34	ND	22.13	ND	410.01	ND	2.19	395.3	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0045 abs.lab	8/5/2003 13:37	ND	27.38	ND	428.52	ND	2.16	391.3	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0046 abs.lab	8/5/2003 13:40	ND	41.93	ND	454.11	ND	2.17	391.5	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0047 abs.lab	8/5/2003 13:43	ND	64.49	ND	480.81	ND	2.17	390.1	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0048 abs.lab	8/5/2003 13:45	ND	35.87	ND	468.17	ND	2.14	386.5	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0049 abs.lab	8/5/2003 13:48	ND	30.95	ND	480.45	ND	2.14	386.3	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0050 abs.lab	8/5/2003 13:51	ND	4.31	ND	512.68	ND	2.16	389.7	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0051 abs.lab	8/5/2003 13:54	ND	44.27	ND	501.85	ND	2.16	390.2	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0052 abs.lab	8/5/2003 13:57	ND	39.46	ND	491.36	ND	2.17	391.5	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0053 abs.lab	8/5/2003 13:59	ND	9.71	ND	496.01	ND	2.15	388.4	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0054 abs.lab	8/5/2003 14:02	ND	17.43	ND	460.78	ND	2.17	391.4	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0055 abs.lab	8/5/2003 14:05	ND	2.10	ND	440.03	ND	2.18	391.2	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0056 abs.lab	8/5/2003 14:08	ND	24.00	ND	483.16	ND	2.18	392.0	ND	ND	150.51	0.996

Scrubber Outlet 9s.1.1e FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1E OUTLET 08 05 03 SAMPLE_0057 abs.lab	8/5/2003 14:11	ND	13.48	ND	488.88	ND	2.19	393.9	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0058 abs.lab	8/5/2003 14:13	ND	18.70	ND	471.71	ND	2.19	396.3	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0059 abs.lab	8/5/2003 14:16	ND	39.51	ND	468.12	ND	2.19	395.6	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0060 abs.lab	8/5/2003 14:19	ND	ND	ND	504.67	ND	2.19	392.8	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0061 abs.lab	8/5/2003 14:22	ND	26.10	ND	499.03	ND	2.20	394.5	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0062 abs.lab	8/5/2003 14:25	ND	ND	ND	528.56	ND	2.19	393.3	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0063 abs.lab	8/5/2003 14:27	ND	10.81	ND	510.09	ND	2.18	392.1	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0064 abs.lab	8/5/2003 14:30	ND	ND	ND	507.06	ND	2.18	391.0	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0065 abs.lab	8/5/2003 14:33	ND	ND	ND	547.87	ND	2.19	392.1	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0066 abs.lab	8/5/2003 14:36	ND	ND	ND	550.69	ND	2.20	390.9	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0067 abs.lab	8/5/2003 14:38	ND	ND	ND	578.19	ND	2.21	391.8	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0068 abs.lab	8/5/2003 14:41	ND	ND	ND	613.27	ND	2.20	389.4	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0069 abs.lab	8/5/2003 14:44	ND	ND	ND	548.39	ND	2.19	387.8	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0070 abs.lab	8/5/2003 14:47	ND	ND	ND	482.04	ND	2.18	386.7	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0071 abs.lab	8/5/2003 14:50	ND	ND	ND	567.11	ND	2.20	391.3	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0072 abs.lab	8/5/2003 14:52	ND	ND	ND	539.90	ND	2.20	392.1	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0073 abs.lab	8/5/2003 14:55	ND	ND	ND	505.80	ND	2.18	392.0	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0074 abs.lab	8/5/2003 14:58	ND	ND	ND	447.01	ND	2.20	396.4	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0075 abs.lab	8/5/2003 15:01	ND	15.09	ND	433.43	ND	2.18	391.9	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0076 abs.lab	8/5/2003 15:04	ND	14.17	ND	370.35	ND	2.16	389.0	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0077 abs.lab	8/5/2003 15:06	ND	ND	ND	390.05	ND	2.17	392.3	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0078 abs.lab	8/5/2003 15:09	ND	30.37	ND	403.72	ND	2.16	389.9	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0079 abs.lab	8/5/2003 15:12	ND	36.18	ND	360.56	ND	2.15	388.0	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0080 abs.lab	8/5/2003 15:15	ND	ND	ND	347.20	ND	2.16	390.3	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0081 abs.lab	8/5/2003 15:18	ND	ND	ND	317.22	ND	2.16	391.1	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0082 abs.lab	8/5/2003 15:20	ND	ND	ND	299.24	ND	2.16	389.6	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0083 abs.lab	8/5/2003 15:23	ND	ND	ND	287.77	ND	2.15	391.2	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0084 abs.lab	8/5/2003 15:26	ND	ND	ND	203.67	ND	2.15	390.4	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0085 abs.lab	8/5/2003 15:29	ND	ND	ND	192.18	ND	2.17	395.3	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0086 abs.lab	8/5/2003 15:32	ND	ND	ND	178.91	ND	2.16	394.4	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0087 abs.lab	8/5/2003 15:34	ND	ND	ND	158.38	ND	2.16	395.1	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0088 abs.lab	8/5/2003 15:37	ND	ND	ND	213.70	ND	2.16	395.9	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0089 abs.lab	8/5/2003 15:40	ND	ND	ND	316.25	ND	2.16	393.9	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0100 abs.lab	8/5/2003 16:30	ND	ND	ND	661.61	ND	2.18	397.4	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0101 abs.lab	8/5/2003 16:33	ND	ND	ND	678.39	ND	2.19	398.7	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0102 abs.lab	8/5/2003 16:36	ND	ND	ND	705.59	ND	2.18	397.8	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0103 abs.lab	8/5/2003 16:39	ND	ND	ND	640.05	ND	2.16	394.9	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0104 abs.lab	8/5/2003 16:41	ND	ND	ND	662.06	ND	2.19	397.3	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0105 abs.lab	8/5/2003 16:44	ND	ND	ND	631.54	ND	2.19	396.2	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0106 abs.lab	8/5/2003 16:47	ND	ND	ND	735.00	ND	2.19	396.4	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0107 abs.lab	8/5/2003 16:50	ND	ND	ND	745.85	ND	2.20	396.7	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0108 abs.lab	8/5/2003 16:53	ND	ND	ND	788.76	ND	2.18	395.0	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0109 abs.lab	8/5/2003 16:55	ND	ND	ND	856.70	ND	2.20	396.8	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0110 abs.lab	8/5/2003 16:58	ND	ND	ND	589.61	ND	2.18	396.0	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0111 abs.lab	8/5/2003 17:01	ND	ND	ND	491.95	ND	2.18	398.6	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0112 abs.lab	8/5/2003 17:04	ND	ND	ND	404.33	ND	2.18	398.7	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0113 abs.lab	8/5/2003 17:07	ND	ND	ND	364.06	ND	2.17	391.7	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0114 abs.lab	8/5/2003 17:09	ND	ND	ND	423.73	ND	2.17	389.5	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0115 abs.lab	8/5/2003 17:12	ND	ND	ND	513.80	ND	2.17	390.5	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0116 abs.lab	8/5/2003 17:15	ND	ND	ND	551.77	ND	2.19	392.7	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0117 abs.lab	8/5/2003 17:18	ND	ND	ND	600.75	ND	2.18	394.0	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0118 abs.lab	8/5/2003 17:21	ND	ND	ND	567.53	ND	2.18	390.4	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0119 abs.lab	8/5/2003 17:23	ND	ND	ND	543.41	ND	2.19	391.5	ND	ND	151.25	0.990

Scrubber Outlet 9s.1.1e FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1E OUTLET 08 05 03 SAMPLE_0120 abs.lab	8/5/2003 17:26	ND	ND	ND	506.73	ND	2.18	394.3	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0121 abs.lab	8/5/2003 17:29	ND	ND	ND	517.21	ND	2.17	390.4	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0122 abs.lab	8/5/2003 17:32	ND	ND	ND	547.31	ND	2.18	397.4	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0123 abs.lab	8/5/2003 17:35	ND	ND	ND	575.89	ND	2.17	396.4	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0124 abs.lab	8/5/2003 17:37	ND	ND	ND	577.54	ND	2.18	396.9	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0125 abs.lab	8/5/2003 17:40	ND	ND	ND	699.18	ND	2.18	396.9	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0126 abs.lab	8/5/2003 17:43	ND	ND	ND	499.46	ND	2.18	396.1	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0127 abs.lab	8/5/2003 17:46	ND	ND	ND	420.87	ND	2.19	397.6	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0128 abs.lab	8/5/2003 17:49	ND	ND	ND	503.78	ND	2.18	397.1	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0129 abs.lab	8/5/2003 17:51	ND	ND	ND	608.57	ND	2.17	392.2	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0130 abs.lab	8/5/2003 17:54	ND	ND	ND	606.13	ND	2.17	390.9	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0131 abs.lab	8/5/2003 17:57	ND	ND	ND	580.83	ND	2.18	393.6	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0132 abs.lab	8/5/2003 18:00	ND	ND	ND	589.96	ND	2.17	389.4	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0133 abs.lab	8/5/2003 18:03	ND	ND	ND	661.96	ND	2.22	392.3	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0134 abs.lab	8/5/2003 18:05	ND	ND	ND	570.30	ND	2.20	390.9	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0135 abs.lab	8/5/2003 18:08	ND	ND	ND	550.45	ND	2.17	389.6	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0136 abs.lab	8/5/2003 18:11	ND	ND	ND	567.94	ND	2.18	390.8	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0137 abs.lab	8/5/2003 18:14	ND	ND	ND	543.55	ND	2.17	390.3	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0138 abs.lab	8/5/2003 18:17	ND	ND	ND	512.92	ND	2.16	388.3	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0139 abs.lab	8/5/2003 18:19	ND	ND	ND	499.54	ND	2.17	390.0	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0140 abs.lab	8/5/2003 18:22	ND	ND	ND	472.17	ND	2.16	390.9	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0141 abs.lab	8/5/2003 18:25	ND	92.28	ND	763.86	ND	2.16	381.3	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0142 abs.lab	8/5/2003 18:28	ND	127.21	ND	807.04	ND	2.17	383.7	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0143 abs.lab	8/5/2003 18:31	ND	140.15	ND	852.05	ND	2.15	380.5	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0144 abs.lab	8/5/2003 18:33	ND	195.18	ND	824.41	ND	2.17	384.6	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0145 abs.lab	8/5/2003 18:36	ND	155.50	ND	718.29	ND	2.15	382.2	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0146 abs.lab	8/5/2003 18:39	ND	125.04	ND	672.68	ND	2.17	383.9	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0147 abs.lab	8/5/2003 18:42	ND	134.14	ND	645.49	ND	2.16	382.8	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0148 abs.lab	8/5/2003 18:45	ND	124.15	ND	652.65	ND	2.18	384.5	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0149 abs.lab	8/5/2003 18:47	ND	158.87	ND	671.20	ND	2.18	383.8	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0150 abs.lab	8/5/2003 18:50	ND	118.53	ND	639.13	ND	2.20	385.9	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0151 abs.lab	8/5/2003 18:53	ND	107.83	ND	461.82	ND	2.24	387.8	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0152 abs.lab	8/5/2003 18:56	ND	88.84	ND	369.76	ND	2.25	385.8	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0153 abs.lab	8/5/2003 18:59	ND	29.69	ND	365.64	ND	2.25	387.3	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0154 abs.lab	8/5/2003 19:01	ND	ND	ND	387.69	ND	2.25	388.2	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0155 abs.lab	8/5/2003 19:04	ND	0.88	ND	427.48	ND	2.26	390.0	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0156 abs.lab	8/5/2003 19:07	ND	6.57	ND	467.27	ND	2.25	385.4	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0157 abs.lab	8/5/2003 19:10	ND	23.91	ND	506.89	ND	2.24	382.7	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0158 abs.lab	8/5/2003 19:13	ND	14.96	ND	545.69	ND	2.25	384.4	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0159 abs.lab	8/5/2003 19:15	ND	ND	ND	575.55	ND	2.25	384.8	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0160 abs.lab	8/5/2003 19:18	ND	16.86	ND	595.07	ND	2.22	380.1	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0161 abs.lab	8/5/2003 19:21	ND	30.26	ND	625.76	ND	2.24	382.8	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0162 abs.lab	8/5/2003 19:24	ND	31.39	ND	623.63	ND	2.22	380.8	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0163 abs.lab	8/5/2003 19:26	ND	19.02	ND	582.12	ND	2.22	381.5	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0164 abs.lab	8/5/2003 19:29	ND	62.74	ND	573.78	ND	2.21	381.3	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0165 abs.lab	8/5/2003 19:32	ND	52.51	ND	608.40	ND	2.21	382.2	ND	ND	151.25	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0166 abs.lab	8/5/2003 19:35	ND	42.91	ND	620.84	ND	2.21	384.9	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0167 abs.lab	8/5/2003 19:38	ND	ND	ND	636.32	ND	2.23	389.5	ND	ND	151.25	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0168 abs.lab	8/5/2003 19:40	ND	ND	ND	641.13	ND	2.21	386.5	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0169 abs.lab	8/5/2003 19:43	ND	ND	ND	671.76	ND	2.20	385.9	ND	ND	151.25	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0170 abs.lab	8/5/2003 19:46	ND	ND	ND	679.34	ND	2.22	388.0	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0171 abs.lab	8/5/2003 19:49	ND	ND	ND	678.38	ND	2.21	385.8	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0172 abs.lab	8/5/2003 19:52	ND	ND	ND	687.07	ND	2.20	383.2	ND	ND	150.51	1.001

Scrubber Outlet 9s.1.1e FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_1E OUTLET 08 05 03 SAMPLE_0173 abs.lab	8/5/2003 19:54	ND	ND	ND	725.07	ND	2.21	385.1	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0174 abs.lab	8/5/2003 19:57	ND	ND	ND	684.96	ND	2.21	385.3	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0175 abs.lab	8/5/2003 20:00	ND	ND	ND	662.69	ND	2.20	384.8	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0176 abs.lab	8/5/2003 20:03	ND	ND	ND	665.93	ND	2.19	383.5	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0177 abs.lab	8/5/2003 20:05	ND	36.43	ND	666.42	ND	2.21	387.3	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0178 abs.lab	8/5/2003 20:08	ND	19.96	ND	664.79	ND	2.21	387.5	ND	ND	150.51	0.990
9S_1_1E OUTLET 08 05 03 SAMPLE_0179 abs.lab	8/5/2003 20:11	ND	ND	ND	657.04	ND	2.20	385.4	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0180 abs.lab	8/5/2003 20:14	ND	ND	ND	648.68	ND	2.20	387.0	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0181 abs.lab	8/5/2003 20:17	ND	ND	ND	640.86	ND	2.19	385.6	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0182 abs.lab	8/5/2003 20:19	ND	ND	ND	658.10	ND	2.20	387.2	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0183 abs.lab	8/5/2003 20:22	ND	ND	ND	650.22	ND	2.18	383.0	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0184 abs.lab	8/5/2003 20:25	ND	ND	ND	645.81	ND	2.19	385.5	ND	ND	150.51	0.996
9S_1_1E OUTLET 08 05 03 SAMPLE_0185 abs.lab	8/5/2003 20:28	ND	ND	ND	630.09	ND	2.16	384.0	ND	ND	150.51	1.001
9S_1_1E OUTLET 08 05 03 SAMPLE_0186 abs.lab	8/5/2003 20:30	ND	ND	ND	608.08	ND	2.18	386.1	ND	ND	150.51	0.996

Average _{wet}	ND	135	ND	654.67	ND	2.19	390.65	ND	ND	150.89	0.995

Reference Method Calculations

Fab 11 West

9s.1.1e

Run No.	Run 1	Run 2	
Date	8/5/2003	8/5/2003	
Start Time	11:35	16:29	AVERAGE
Stop Time	15:35	20:29	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.86	24.86	24.86
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	102.9	99.7	101.3
Volume Metered (acf)	157.132	155.254	156.193
Volume Metered (dscf)	123.527	122.759	123.143
Volume of Water Collected (g)	56.5	71.9	64.2
Volume of Water Collected (scf)	2.664	3.390	3.027
Average Delta H (in. H ₂ O)	1.04	1.05	1.04
AVG SQRT of dH (in. H ₂ O)	1.0174	1.0228	1.0201
Measured Moisture (%)	2.1%	2.7%	2.4%
Saturation Moisture (%)	3.4%	3.2%	3.3%
Moisture Used for Calculations (%)	2.2%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.61	28.55	28.58
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	
Stack Static Pressure (in. H ₂ O)	0.11	0.11	0.11
Stack Pressure (in. Hg)	24.87	24.87	24.87
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.6262	0.6211	0.6236
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.4831	0.4689	0.4760
Stack Temperature Isokinetic Traverse (°F)	74.1	72.7	73.4
Stack Temperature Flow Traverse (°F)	74.5	74.7	74.6
Velocity (ft/sec) Isokinetic Traverse	38.96	38.64	38.80
Velocity (ft/sec) Flow Traverse	30.07	29.22	29.64
Nozzle Diameter (in.)	0.225	0.225	0.225
% Isokinetics	99.30	99.24	99.3
Stack Diameter (in.)	32.00	32.00	32.00
Stack Area (ft ²)	5.59	5.59	5.59
Stack Flow Rate Isokinetic Traverse (acfm)	13,054	12,947	13,001
Stack Flow Rate Flow Traverse (acfm)	10,075	9,792	9,934
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	10,487	10,428	10,457
Stack Flow Rate Outlet Flow Traverse (dscfm)	8,087	7,858	7,972
Chlorine			
Collected Cl ₂ micrograms (ug)	71.2	63.9	67.6
Cl ₂ Concentration (ug/dscf)	0.58	0.52	0.55
Cl ₂ Concentration (ppb)	7	6	7
Cl ₂ Emission Rate (lbs/hr)	0.0006	0.0005	0.0006

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/5/2003
Unit Number: 9s.1.1e	Stack Diameter (in.): 32.00
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): 0.12
Run No.: 1	Operators: PER/SCT
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.86
Pitot Tube ID: HA-1	Pre Test Pass Fail Pitot Leak Check <u>Y</u> —
Pitot Tube C_p: 0.84	
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	
Comments :	
	Post Test Pass Fail Pitot Leak Check <u>Y</u> —
	Start: 15:55 End: 16:11

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.31	74
2	0.29	74
3	0.27	74
4	0.22	75
5	0.24	74
6	0.19	73
7	0.19	73
8	0.19	73
9	0.23	73
10	0.24	73
11	0.24	74
12	0.19	76

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.34	76
2	0.36	76
3	0.41	77
4	0.32	75
5	0.27	74
6	0.19	75
7	0.17	74
8	0.18	73
9	0.16	74
10	0.15	75
11	0.17	76
12	0.19	78
Total Average:	sqrt dp = 0.4831	74.5

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/5/2003
Unit Number: 9s.1.1e	Stack Diameter (in.): 32.00
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.12
Run No.: 2	Operators: PER/SCT
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.86
Pitot Tube ID: HA-1	Pre Test Pass Fail Pitot Leak Check <u>Y</u> —
Pitot Tube C_p: 0.84	
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	
Comments :	
	Post Test Pass Fail Pitot Leak Check <u>Y</u> —
	Start: 20:39 End: 20:50

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.22	76
2	0.22	76
3	0.22	75
4	0.21	75
5	0.21	74
6	0.19	74
7	0.19	74
8	0.21	74
9	0.20	73
10	0.24	75
11	0.26	76
12	0.22	77

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.36	75
2	0.36	75
3	0.39	75
4	0.31	74
5	0.26	74
6	0.19	74
7	0.16	74
8	0.12	73
9	0.14	74
10	0.16	74
11	0.18	75
12	0.17	76
Total Average:	sqrt dp = 0.4689	74.7

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments				Sample Train No.	AA	Filter No.:	NA	Run No.:	1
Plant Name:	Fab 11 West					Leak Check Initial:	PER	cfm@	0.004	(in. Hg)	15
Plant Location:	Rio Rancho, NM					Leak Check Final:	PER	cfm@	0.001	(in. Hg)	12
Project No.:	31397-1600-00000					Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.1e					24	1	656.2	670.9		
Date:	8/5/2003						2	741.0	751.5		
Technicians:	PER/SCT						3	535.1	537.7		
Meter Box No.:	90401					Y_d:	1.006		4	638.0	638.9
Probe / Pitot No.:	315 / HA-1	C_p:	0.84		5	646.3	646.6				
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	32.00	Stack Area (ft²):	5.59		6	836.0	863.5
Nozzle Dia:	0.225	0.225, 0.226, 0.225	Port Width (in.):	3.00	Port Length (in.):	2.50	Start Time:	11:35	Net Impinger Gain (g):	56.5	
Initial Meter Reading (ft³):	307.279	BP (in. Hg):	24.86	Static Pressure (in.):	0.11	End Time:	15:35	Theta	240		
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
E3	10	72	95	94	0.390	1.00	313.860	242	254	53	1
E3	20	72	97	93	0.390	1.00	320.070	246	253	48	1
E3	30	72	99	94	0.390	1.00	326.400	244	257	49	1
E3	40	73	102	95	0.390	1.00	332.800	246	256	45	1
E3	50	75	104	97	0.390	1.00	339.240	241	257	46	1
E3	60	75	105	97	0.400	1.00	345.700	244	257	40	1
E3	70	75	106	98	0.390	1.00	352.180	244	257	51	1
E3	80	77	106	101	0.390	1.00	358.470	243	257	56	1
E3	90	77	103	101	0.410	1.10	365.450	243	255	61	1
E3	100	76	107	101	0.400	1.10	372.190	244	258	60	1
E3	110	76	107	101	0.390	1.00	378.810	243	255	56	1
E3	120	75	105	101	0.390	1.00	385.390	245	254	51	1
E3	130	72	105	101	0.390	1.00	391.760	245	253	46	1
E3	140	72	109	102	0.390	1.10	398.540	244	257	48	1
E3	150	72	109	103	0.390	1.10	405.030	246	255	51	1
E3	160	73	109	104	0.390	1.05	411.750	246	255	54	1
E3	170	73	108	104	0.400	1.05	418.610	246	256	53	1
E3	180	73	109	104	0.390	1.05	425.020	244	258	49	1
E3	190	74	109	104	0.390	1.05	431.640	248	257	49	1
E3	200	76	108	106	0.390	1.05	438.070	248	259	50	1
E3	210	75	108	105	0.390	1.05	444.710	246	257	51	1
E3	220	74	105	103	0.390	1.05	451.150	248	255	49	1
E3	230	75	105	103	0.390	1.05	457.770	244	256	58	1
E3	240	74	104	103	0.390	1.05	464.411	248	256	58	1
Average / Net		74.1		102.9	0.392	1.0	157.132	244.9	256.0	51.3	1.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2
Plant Name:	Fab 11 West						Leak Check Initial:	PER	cfm@	0.001	(in. Hg)	12
Plant Location:	Rio Rancho, NM						Leak Check Final:	cfm@ (in. Hg)				
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.1e						24	1	592.7	610.7		
Date:	8/5/2003							2	633.0	641.7		
Technicians:	PER/SCT							3	643.8	645.9		
Meter Box No.:	90401						Y_d:	1.006				4
Probe / Pitot No.:	315 / HA-1	C_p:	0.84				5	652.3	638.2			
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	32.00	Stack Area (ft²):	5.59	6	970.6	994.8		
Nozzle Dia:	0.225	0.225, 0.226, 0.225	Port Width (in.):	3.00	Port Length (in.):	2.50	Start Time:	16:29	Net Impinger Gain (g):	71.9		
Initial Meter Reading (ft³):	464.913	BP (in. Hg):	24.86	Static Pressure (in.):	0.11	End Time:	20:29	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
E3	10	73	99	100	0.370	1.05	471.330	238	247	53	2.0	
E3	20	74	102	100	0.370	1.00	477.750	233	251	31	2.0	
E3	30	73	105	100	0.390	1.05	484.130	246	251	31	2.0	
E3	40	72	106	100	0.370	1.00	490.510	241	251	30	2.0	
E3	50	73	104	100	0.390	1.05	496.860	240	252	54	2.0	
E3	60	72	106	100	0.400	1.08	503.340	246	248	35	2.0	
E3	70	72	108	100	0.380	1.03	509.810	245	251	47	2.0	
E3	80	71	108	100	0.380	1.03	516.280	246	251	32	2.0	
E3	90	72	109	101	0.390	1.06	522.760	248	255	45	2.0	
E3	100	73	111	103	0.380	1.03	529.170	243	254	54	2.0	
E3	110	73	110	103	0.390	1.06	535.780	246	251	58	2.0	
E3	120	72	108	102	0.390	1.06	542.300	242	251	57	2.0	
E3	130	72	107	102	0.380	1.03	548.800	243	248	54	2.0	
E3	140	73	107	102	0.380	1.05	555.300	241	253	54	2.0	
E3	150	73	106	100	0.390	1.05	561.910	246	250	55	2.0	
E3	160	73	101	102	0.380	1.05	568.290	245	251	59	2.0	
E3	170	75	96	97	0.390	1.05	574.740	245	251	56	2.0	
E3	180	73	94	94	0.390	1.05	581.190	248	245	55	2.0	
E3	190	73	94	91	0.390	1.05	587.630	246	250	54	2.0	
E3	200	73	93	91	0.400	1.10	594.410	247	252	54	2.0	
E3	210	73	93	89	0.390	1.05	600.860	246	246	53	2.0	
E3	220	73	93	88	0.390	1.03	607.310	247	248	54	2.0	
E3	230	72	92	88	0.390	1.05	613.740	245	247	55	2.0	
E3	240	72	92	87	0.390	1.05	620.167	246	246	58	2.0	
Average / Net		72.7		99.7	0.4	1.0	155.254	244.1	250.0	49.5	2.0	

EPA REFERENCE METHOD 1

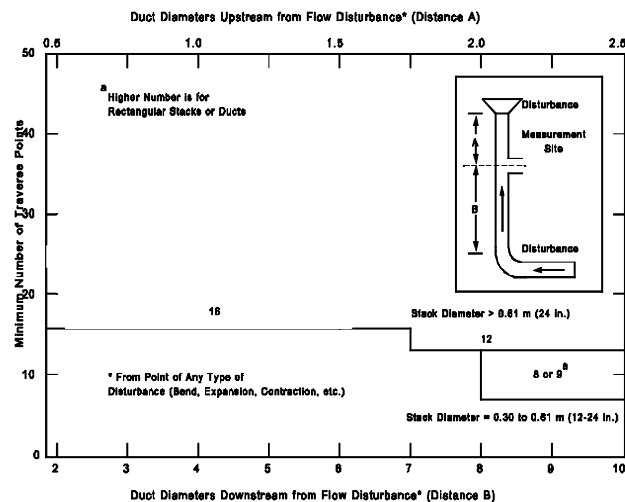
FIELD DATA SHEET

CIRCULAR STACKS

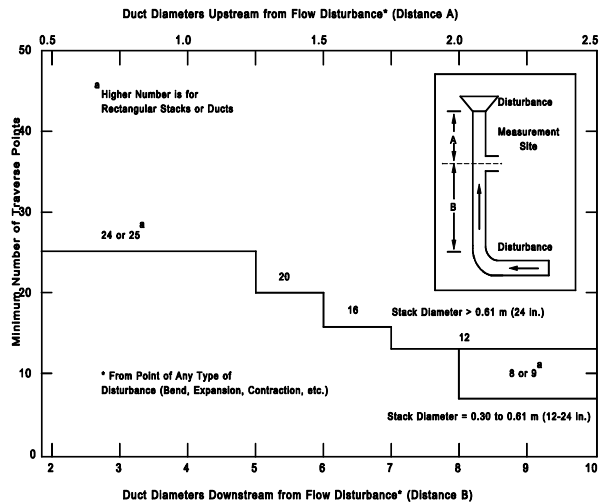
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 9s.1.1e
 TRC Project No.: 31397-1600-00000
 Date: 8/5/2003
 Technician: S. Thorpe
 Circular/Rectangular: C

Stack Diameter: 32.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 2.5
 Diameters Upstream: 2.1
 Diameters Downstream: 2.2
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	3 8/16
2	4 10/16
3	6 4/16
4	8 3/16
5	10 8/16
6	13 14/16
7	23 2/16
8	26 8/16
9	28 13/16
10	30 12/16
11	32 6/16
12	33 8/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 9s.1.2c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0009 abs.lab	8/11/2003 9:54	ND	ND	ND	975.54	ND	2.23	377.8	ND	89.505	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0010 abs.lab	8/11/2003 9:57	ND	ND	ND	992.65	ND	2.24	379.0	ND	91.980	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0011 abs.lab	8/11/2003 10:00	ND	ND	ND	996.01	ND	2.22	375.7	ND	54.085	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0012 abs.lab	8/11/2003 10:03	ND	ND	ND	959.63	ND	2.22	376.4	ND	111.550	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0013 abs.lab	8/11/2003 10:06	ND	ND	ND	973.36	ND	2.22	376.1	ND	83.817	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0014 abs.lab	8/11/2003 10:08	ND	ND	ND	980.39	ND	2.23	375.7	ND	128.513	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0015 abs.lab	8/11/2003 10:11	ND	ND	ND	981.68	ND	2.25	377.2	ND	64.880	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0016 abs.lab	8/11/2003 10:14	ND	ND	ND	986.52	ND	2.24	377.5	ND	99.233	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0017 abs.lab	8/11/2003 10:17	ND	ND	ND	1002.64	ND	2.24	377.9	ND	99.637	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0018 abs.lab	8/11/2003 10:19	ND	ND	ND	1000.56	ND	2.24	380.0	ND	107.490	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0019 abs.lab	8/11/2003 10:22	ND	ND	ND	1027.52	ND	2.24	379.2	ND	46.257	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0020 abs.lab	8/11/2003 10:25	ND	ND	ND	981.64	ND	2.24	377.8	ND	97.286	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0021 abs.lab	8/11/2003 10:28	ND	ND	ND	990.03	ND	2.24	378.1	ND	51.301	151.25	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0022 abs.lab	8/11/2003 10:31	ND	ND	ND	973.50	ND	2.24	378.3	ND	75.631	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0023 abs.lab	8/11/2003 10:33	ND	ND	ND	1004.92	ND	2.24	381.2	ND	85.024	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0024 abs.lab	8/11/2003 10:36	ND	ND	ND	984.68	ND	2.22	376.3	ND	95.864	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0025 abs.lab	8/11/2003 10:39	ND	ND	ND	999.44	ND	2.24	378.0	ND	67.289	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0026 abs.lab	8/11/2003 10:42	ND	ND	ND	1004.36	ND	2.23	377.7	ND	92.465	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0027 abs.lab	8/11/2003 10:45	ND	ND	ND	1020.56	ND	2.22	376.4	ND	91.779	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0028 abs.lab	8/11/2003 10:47	ND	ND	ND	994.08	ND	2.24	377.8	ND	88.727	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0029 abs.lab	8/11/2003 10:50	ND	ND	ND	1005.24	ND	2.24	377.2	ND	114.315	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0030 abs.lab	8/11/2003 10:53	ND	ND	ND	1065.71	ND	2.24	376.4	ND	66.859	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0031 abs.lab	8/11/2003 10:56	ND	ND	ND	1096.42	ND	2.23	374.9	ND	90.969	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0032 abs.lab	8/11/2003 10:58	ND	ND	ND	1136.11	ND	2.24	377.0	ND	108.250	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0033 abs.lab	8/11/2003 11:01	ND	ND	ND	1181.32	ND	2.24	376.2	ND	88.785	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0034 abs.lab	8/11/2003 11:04	ND	ND	ND	1204.87	ND	2.24	376.2	ND	73.622	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0035 abs.lab	8/11/2003 11:07	ND	ND	ND	1237.97	ND	2.23	374.4	ND	84.452	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0036 abs.lab	8/11/2003 11:10	ND	ND	ND	1286.83	ND	2.25	378.4	ND	83.139	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0037 abs.lab	8/11/2003 11:12	ND	ND	ND	1316.78	ND	2.24	376.1	ND	83.301	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0038 abs.lab	8/11/2003 11:15	ND	ND	ND	1331.68	ND	2.24	374.8	ND	79.871	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0039 abs.lab	8/11/2003 11:18	ND	ND	ND	1364.18	ND	2.25	376.9	ND	62.832	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0040 abs.lab	8/11/2003 11:21	ND	ND	ND	1392.99	ND	2.27	379.8	ND	66.199	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0041 abs.lab	8/11/2003 11:23	ND	ND	ND	1406.71	ND	2.25	377.8	ND	75.473	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0042 abs.lab	8/11/2003 11:26	ND	ND	ND	1411.36	ND	2.25	376.5	ND	77.948	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0043 abs.lab	8/11/2003 11:29	ND	ND	ND	1420.14	ND	2.24	374.2	ND	79.174	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0044 abs.lab	8/11/2003 11:32	ND	ND	ND	1452.49	ND	2.26	378.6	ND	61.875	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0045 abs.lab	8/11/2003 11:35	ND	ND	ND	1455.21	ND	2.25	377.2	ND	68.220	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0046 abs.lab	8/11/2003 11:37	ND	ND	ND	1441.52	ND	2.24	376.8	ND	91.685	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0047 abs.lab	8/11/2003 11:40	ND	ND	ND	1467.86	ND	2.25	377.2	ND	72.038	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0048 abs.lab	8/11/2003 11:43	ND	ND	ND	1487.81	ND	2.25	378.4	ND	66.314	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0049 abs.lab	8/11/2003 11:46	127.75	ND	ND	1254.19	ND	1.90	337.0	ND	41.772	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0050 abs.lab	8/11/2003 11:48	127.21	ND	ND	1234.38	ND	1.88	334.0	ND	28.647	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0051 abs.lab	8/11/2003 11:51	110.18	ND	ND	1246.97	ND	1.90	339.3	ND	34.073	151.25	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0052 abs.lab	8/11/2003 11:54	110.17	ND	ND	1269.91	ND	1.88	337.1	ND	56.248	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0053 abs.lab	8/11/2003 11:57	112.89	ND	ND	1239.31	ND	1.86	333.5	ND	60.970	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0054 abs.lab	8/11/2003 12:00	105.53	ND	ND	1308.13	ND	1.87	335.3	ND	43.850	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0055 abs.lab	8/11/2003 12:02	104.44	ND	ND	1315.43	ND	1.86	335.1	ND	40.023	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0056 abs.lab	8/11/2003 12:05	101.46	ND	ND	1258.23	ND	1.86	334.8	ND	69.384	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0057 abs.lab	8/11/2003 12:08	100.60	ND	ND	1245.54	ND	1.85	332.7	ND	48.253	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0058 abs.lab	8/11/2003 12:11	100.17	ND	ND	1277.93	ND	1.86	333.4	ND	63.070	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0059 abs.lab	8/11/2003 12:14	98.06	ND	ND	1284.54	ND	1.86	333.7	ND	74.717	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0060 abs.lab	8/11/2003 12:16	97.16	ND	ND	1287.25	ND	1.85	334.2	ND	49.776	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0061 abs.lab	8/11/2003 12:19	77.61	ND	ND	1256.64	ND	1.85	334.7	ND	53.870	150.51	1.001

Scrubber Outlet 9s.1.2c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0062 abs.lab	8/11/2003 12:22	93.64	ND	ND	1275.25	ND	1.85	333.9	ND	63.000	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0063 abs.lab	8/11/2003 12:25	83.57	ND	ND	1264.02	ND	1.84	332.5	ND	42.440	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0064 abs.lab	8/11/2003 12:27	76.49	ND	ND	1242.83	ND	1.84	332.2	ND	49.904	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0065 abs.lab	8/11/2003 12:30	85.78	ND	ND	1245.10	ND	1.83	332.4	ND	53.437	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0066 abs.lab	8/11/2003 12:33	84.93	ND	ND	1243.48	ND	1.82	331.0	ND	62.165	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0067 abs.lab	8/11/2003 12:36	69.38	ND	ND	1214.59	ND	1.82	330.3	ND	49.415	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0068 abs.lab	8/11/2003 12:39	73.32	ND	ND	1214.79	ND	1.84	332.9	ND	62.405	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0069 abs.lab	8/11/2003 12:41	66.17	ND	ND	1235.80	ND	1.84	332.3	ND	66.487	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0070 abs.lab	8/11/2003 12:44	67.96	ND	ND	1253.62	ND	1.84	332.4	ND	38.939	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0071 abs.lab	8/11/2003 12:47	69.78	ND	ND	1252.97	ND	1.84	333.9	ND	49.189	151.25	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0072 abs.lab	8/11/2003 12:50	62.49	ND	ND	1201.22	ND	1.84	332.5	ND	72.494	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0073 abs.lab	8/11/2003 12:53	62.87	ND	ND	1175.32	ND	1.85	334.3	ND	56.432	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0074 abs.lab	8/11/2003 12:55	54.65	ND	ND	1166.21	ND	1.86	336.3	ND	36.107	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0075 abs.lab	8/11/2003 12:58	61.08	ND	ND	1081.72	ND	1.84	332.9	ND	69.207	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0076 abs.lab	8/11/2003 13:01	59.04	ND	ND	1133.40	ND	1.84	333.6	ND	37.232	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0077 abs.lab	8/11/2003 13:04	48.01	ND	ND	1126.49	ND	1.84	331.8	ND	49.077	150.51	1.006
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0078 abs.lab	8/11/2003 13:06	51.09	ND	ND	1159.67	ND	1.85	333.8	ND	19.253	151.25	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0079 abs.lab	8/11/2003 13:09	33.12	ND	ND	1188.22	ND	1.85	335.0	ND	42.469	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0080 abs.lab	8/11/2003 13:12	44.79	ND	ND	1161.43	ND	1.86	336.0	ND	58.302	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0081 abs.lab	8/11/2003 13:15	37.55	ND	ND	1154.68	ND	1.85	335.5	ND	50.933	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0082 abs.lab	8/11/2003 13:18	34.60	ND	ND	1158.20	ND	1.87	336.3	ND	34.786	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0083 abs.lab	8/11/2003 13:20	30.70	ND	ND	1164.58	ND	1.86	335.9	ND	63.483	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0084 abs.lab	8/11/2003 13:23	25.36	ND	ND	1158.05	ND	1.86	335.7	ND	29.344	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0085 abs.lab	8/11/2003 13:26	20.61	ND	ND	1144.27	ND	1.87	337.3	ND	58.452	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0086 abs.lab	8/11/2003 13:29	16.95	ND	ND	1139.01	ND	1.87	336.6	ND	1.830	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0087 abs.lab	8/11/2003 13:32	36.07	ND	ND	1163.81	ND	1.88	339.1	ND	50.927	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0088 abs.lab	8/11/2003 13:34	26.50	ND	ND	1161.99	ND	1.87	339.5	ND	57.214	152.00	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0089 abs.lab	8/11/2003 13:37	26.95	ND	ND	1175.53	ND	1.87	338.6	ND	56.936	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0090 abs.lab	8/11/2003 13:40	29.63	ND	ND	1182.63	ND	1.86	338.4	ND	13.454	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0091 abs.lab	8/11/2003 13:43	23.12	ND	ND	1142.82	ND	1.87	338.1	ND	63.838	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0092 abs.lab	8/11/2003 13:46	15.81	ND	ND	1151.33	ND	1.86	337.6	ND	30.082	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0093 abs.lab	8/11/2003 13:48	23.90	ND	ND	1156.11	ND	1.87	338.0	ND	55.010	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R1_0094 abs.lab	8/11/2003 13:51	3.08	ND	ND	1126.52	ND	1.87	337.5	ND	18.908	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0003 abs.lab	8/11/2003 14:44	17.59	ND	ND	1360.25	ND	2.18	386.0	ND	72.753	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0004 abs.lab	8/11/2003 14:47	22.49	ND	ND	1338.96	ND	2.18	386.5	ND	45.872	151.25	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0005 abs.lab	8/11/2003 14:50	31.77	ND	ND	1316.83	ND	2.18	386.8	ND	66.673	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0006 abs.lab	8/11/2003 14:53	25.53	ND	ND	1327.34	ND	2.18	387.0	ND	50.315	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0007 abs.lab	8/11/2003 14:55	20.90	ND	ND	1317.68	ND	2.16	382.1	ND	94.497	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0008 abs.lab	8/11/2003 14:58	24.73	ND	ND	1292.43	ND	2.17	384.6	ND	38.808	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0009 abs.lab	8/11/2003 15:01	31.45	ND	ND	1261.64	ND	2.17	384.2	ND	35.491	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0010 abs.lab	8/11/2003 15:04	25.21	ND	ND	1224.70	ND	2.18	386.6	ND	94.292	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0011 abs.lab	8/11/2003 15:07	21.78	ND	ND	1231.43	ND	2.18	385.0	ND	69.566	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0012 abs.lab	8/11/2003 15:09	14.83	ND	ND	1197.74	ND	2.17	383.7	ND	52.815	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0013 abs.lab	8/11/2003 15:12	17.97	ND	ND	1196.93	ND	2.17	383.2	ND	49.153	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0014 abs.lab	8/11/2003 15:15	11.55	ND	ND	1199.03	ND	2.18	384.3	ND	54.944	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0015 abs.lab	8/11/2003 15:18	18.71	ND	ND	1167.97	ND	2.17	384.2	ND	77.908	151.25	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0016 abs.lab	8/11/2003 15:20	24.29	ND	ND	1174.96	ND	2.17	385.1	ND	46.439	151.25	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0017 abs.lab	8/11/2003 15:23	13.82	ND	ND	1172.28	ND	2.18	385.4	ND	30.957	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0018 abs.lab	8/11/2003 15:26	6.67	ND	ND	1145.75	ND	2.18	385.1	ND	103.419	151.25	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0019 abs.lab	8/11/2003 15:29	10.41	ND	ND	1162.22	ND	2.17	383.3	ND	60.152	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0020 abs.lab	8/11/2003 15:32	16.78	ND	ND	1142.43	ND	2.18	386.2	ND	52.019	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0021 abs.lab	8/11/2003 15:34	31.53	ND	ND	1133.20	ND	2.17	384.6	ND	59.633	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0022 abs.lab	8/11/2003 15:37	19.36	ND	ND	1151.13	ND	2.18	384.5	ND	47.905	150.51	0.996

Scrubber Outlet 9s.1.2c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0023 abs.lab	8/11/2003 15:40	21.84	ND	ND	1174.84	ND	2.18	384.2	ND	50.816	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0024 abs.lab	8/11/2003 15:43	16.26	ND	ND	1179.85	ND	2.19	386.1	ND	44.752	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0025 abs.lab	8/11/2003 15:46	30.02	ND	ND	1180.87	ND	2.18	385.0	ND	12.516	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0026 abs.lab	8/11/2003 15:48	24.08	ND	ND	1169.81	ND	2.18	385.8	ND	86.379	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0027 abs.lab	8/11/2003 15:51	28.64	ND	ND	1220.77	ND	2.19	386.5	ND	52.650	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0028 abs.lab	8/11/2003 15:54	10.89	ND	ND	1195.59	ND	2.17	382.3	ND	76.779	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0029 abs.lab	8/11/2003 15:57	12.45	ND	ND	1194.25	ND	2.16	381.4	ND	53.638	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0030 abs.lab	8/11/2003 15:59	15.17	ND	ND	1199.18	ND	2.17	382.9	ND	58.655	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0031 abs.lab	8/11/2003 16:02	9.94	ND	ND	1135.38	ND	2.15	380.4	ND	80.379	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0032 abs.lab	8/11/2003 16:05	4.41	ND	ND	1117.30	ND	2.15	380.2	ND	103.989	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0033 abs.lab	8/11/2003 16:08	22.60	ND	ND	1152.73	ND	2.16	381.1	ND	5.979	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0034 abs.lab	8/11/2003 16:11	18.33	ND	ND	1125.29	ND	2.15	377.3	ND	58.662	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0035 abs.lab	8/11/2003 16:13	8.46	ND	ND	1151.00	ND	2.15	377.4	ND	37.839	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0036 abs.lab	8/11/2003 16:16	7.78	ND	ND	1148.18	ND	2.14	378.0	ND	20.167	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0037 abs.lab	8/11/2003 16:19	9.13	ND	ND	1110.10	ND	2.15	380.4	ND	104.903	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0038 abs.lab	8/11/2003 16:22	16.86	ND	ND	1116.46	ND	2.14	379.1	ND	47.760	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0039 abs.lab	8/11/2003 16:25	24.24	ND	ND	1097.06	ND	2.16	383.2	ND	112.255	150.51	0.990
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0040 abs.lab	8/11/2003 16:27	22.85	ND	ND	1073.92	ND	2.14	380.2	ND	91.133	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0041 abs.lab	8/11/2003 16:30	19.74	ND	ND	1100.62	ND	2.15	382.6	ND	50.835	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0042 abs.lab	8/11/2003 16:33	18.62	ND	ND	1081.32	ND	2.15	382.9	ND	62.027	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0043 abs.lab	8/11/2003 16:36	27.24	ND	ND	1069.35	ND	2.15	383.4	ND	128.477	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0044 abs.lab	8/11/2003 16:38	28.42	ND	ND	1070.69	ND	2.14	381.7	ND	42.064	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0045 abs.lab	8/11/2003 16:41	26.62	ND	ND	1041.33	ND	2.14	381.7	ND	101.306	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0046 abs.lab	8/11/2003 16:44	28.98	ND	ND	1058.27	ND	2.15	383.1	ND	54.096	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0047 abs.lab	8/11/2003 16:47	22.50	ND	ND	1050.68	ND	2.14	382.7	ND	97.805	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0048 abs.lab	8/11/2003 16:50	ND	ND	ND	1131.94	ND	2.18	382.6	ND	57.417	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0049 abs.lab	8/11/2003 16:52	ND	ND	ND	1133.34	ND	2.18	382.2	ND	69.581	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0050 abs.lab	8/11/2003 16:55	ND	ND	ND	1140.33	ND	2.20	383.9	ND	37.243	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0051 abs.lab	8/11/2003 16:58	ND	ND	ND	1101.80	ND	2.19	383.8	ND	121.359	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0052 abs.lab	8/11/2003 17:01	ND	ND	ND	1107.04	ND	2.18	383.3	ND	54.657	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0053 abs.lab	8/11/2003 17:04	ND	ND	ND	1111.82	ND	2.19	385.3	ND	65.338	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0054 abs.lab	8/11/2003 17:06	ND	ND	ND	1181.28	ND	2.19	385.9	ND	41.205	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0055 abs.lab	8/11/2003 17:09	ND	ND	ND	1147.72	ND	2.18	384.7	ND	103.446	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0056 abs.lab	8/11/2003 17:12	ND	ND	ND	1147.16	ND	2.17	383.6	ND	80.485	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0057 abs.lab	8/11/2003 17:15	ND	ND	ND	1100.77	ND	2.17	383.4	ND	57.243	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0058 abs.lab	8/11/2003 17:17	ND	ND	ND	1108.14	ND	2.18	384.5	ND	76.035	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0059 abs.lab	8/11/2003 17:20	ND	ND	ND	1083.14	ND	2.19	384.8	ND	108.463	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0060 abs.lab	8/11/2003 17:23	ND	ND	ND	1128.58	ND	2.15	382.0	ND	64.056	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0061 abs.lab	8/11/2003 17:26	ND	ND	ND	1117.42	ND	2.16	383.8	ND	87.986	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0062 abs.lab	8/11/2003 17:29	ND	ND	ND	1097.66	ND	2.16	385.7	ND	42.747	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0063 abs.lab	8/11/2003 17:31	ND	ND	ND	1103.79	ND	2.15	384.9	ND	51.772	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0064 abs.lab	8/11/2003 17:34	ND	ND	ND	1121.60	ND	2.16	389.0	ND	39.941	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0065 abs.lab	8/11/2003 17:37	ND	ND	ND	1122.24	ND	2.16	385.8	ND	20.579	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0066 abs.lab	8/11/2003 17:40	ND	ND	ND	1094.52	ND	2.17	389.3	ND	33.069	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0067 abs.lab	8/11/2003 17:42	ND	ND	ND	1095.66	ND	2.18	392.0	ND	33.940	150.51	0.990
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0068 abs.lab	8/11/2003 17:45	ND	ND	ND	1110.35	ND	2.17	388.0	ND	19.68	150.51	0.990
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0069 abs.lab	8/11/2003 17:48	ND	ND	ND	1116.47	ND	2.16	387.7	ND	43.25	150.51	0.990
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0070 abs.lab	8/11/2003 17:51	ND	ND	ND	1085.25	ND	2.13	384.2	ND	15.04	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0071 abs.lab	8/11/2003 17:54	ND	ND	ND	1044.41	ND	2.14	384.1	ND	23.49	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0072 abs.lab	8/11/2003 17:56	ND	ND	ND	1069.63	ND	2.14	385.5	ND	24.66	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0073 abs.lab	8/11/2003 17:59	ND	ND	ND	1078.81	ND	2.14	384.9	ND	17.87	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0074 abs.lab	8/11/2003 18:02	ND	ND	ND	1097.66	ND	2.15	385.7	ND	20.39	150.51	0.990
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0075 abs.lab	8/11/2003 18:05	ND	ND	ND	1108.37	ND	2.15	388.4	ND	8.32	150.51	0.990

Scrubber Outlet 9s.1.2c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0076 abs.lab	8/11/2003 18:08	ND	ND	ND	1116.58	ND	2.15	390.0	ND	13.91	150.51	0.990
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0077 abs.lab	8/11/2003 18:10	ND	ND	ND	1090.57	ND	2.13	386.1	ND	ND	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0078 abs.lab	8/11/2003 18:13	ND	ND	ND	1083.17	ND	2.15	389.5	ND	ND	150.51	0.990
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0079 abs.lab	8/11/2003 18:16	ND	ND	ND	1066.87	ND	2.14	388.2	ND	ND	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0080 abs.lab	8/11/2003 18:19	ND	ND	ND	1065.87	ND	2.13	386.1	ND	ND	151.25	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0081 abs.lab	8/11/2003 18:21	ND	ND	ND	1069.12	ND	2.12	385.4	ND	24.72	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0082 abs.lab	8/11/2003 18:24	ND	ND	ND	1074.96	ND	2.13	386.3	ND	25.40	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0083 abs.lab	8/11/2003 18:27	ND	ND	ND	1083.87	ND	2.14	382.0	ND	3.92	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0084 abs.lab	8/11/2003 18:30	ND	ND	ND	1072.73	ND	2.17	380.2	ND	50.93	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0085 abs.lab	8/11/2003 18:33	ND	ND	ND	1068.24	ND	2.18	379.5	ND	42.11	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0086 abs.lab	8/11/2003 18:35	ND	ND	ND	1113.90	ND	2.18	379.5	ND	5.00	150.51	0.996
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0087 abs.lab	8/11/2003 18:38	ND	ND	ND	1105.59	ND	2.18	378.8	ND	57.07	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0088 abs.lab	8/11/2003 18:41	ND	ND	ND	1107.99	ND	2.18	378.5	ND	16.64	150.51	1.001
9S_1_2C OUTLET 08 11 03 SAMPLE R2_0089 abs.lab	8/11/2003 18:44	ND	ND	ND	1112.62	ND	2.18	379.7	ND	21.87	150.51	0.996
Average _{wet}		46.52	ND	ND	1159.17	ND	2.10	369.39	ND	59.56	150.56	0.999

Reference Method Calculations

Fab 11 West

9s.1.2c

Run No.	Run 1	Run 2	
Date	8/11/2003	8/11/2003	
Start Time	9:51	14:45	AVERAGE
Stop Time	13:51	18:45	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.95	24.95	24.95
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	98.6	96.0	97.3
Volume Metered (acf)	149.583	144.646	147.115
Volume Metered (dscf)	118.902	115.494	117.198
Volume of Water Collected (g)	53.5	50.6	52.1
Volume of Water Collected (scf)	2.523	2.386	2.454
Average Delta H (in. H ₂ O)	0.97	0.92	0.95
AVG SQRT of dH (in. H ₂ O)	0.9859	0.9594	0.9726
Measured Moisture (%)	2.1%	2.0%	2.1%
Saturation Moisture (%)	2.9%	2.9%	2.9%
Moisture Used for Calculations (%)	2.0%	2.2%	2.1%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.62	28.62	28.62
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.31	-0.31	-0.31
Stack Pressure (in. Hg)	24.93	24.93	24.93
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5996	0.5859	0.5928
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.5342	0.5273	0.5307
Stack Temperature Isokinetic Traverse (°F)	69.9	69.5	69.7
Stack Temperature Flow Traverse (°F)	69.0	69.0	69.0
Velocity (ft/sec) Isokinetic Traverse	37.11	36.25	36.68
Velocity (ft/sec) Flow Traverse	33.03	32.60	32.82
Nozzle Diameter (in.)	0.225	0.225	0.225
% Isokinetics	99.14	98.65	98.9
Stack Diameter (in.)	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	27,983	27,328	27,656
Stack Flow Rate Flow Traverse (acfm)	24,906	24,582	24,744
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	22,748	22,205	22,476
Stack Flow Rate Outlet Flow Traverse (dscfm)	20,282	19,991	20,136
Chlorine			
Collected Cl. micrograms (ug)	14.8	15.1	15.0
Cl ₂ Concentration (ug/dscf)	0.12	0.13	0.13
Cl ₂ Concentration (ppb)	1	2	2
Cl ₂ Emission Rate (lbs/hr)	0.0003	0.0003	0.0003

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/11/2003
Unit Number:	9s.1.2c	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.52
Run No.:	1	Operators:	BMB/ST
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.95
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	9:00
		End:	9:15

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.36	69
2	0.37	69
3	0.38	69
4	0.36	69
5	0.37	69
6	0.36	69
7	0.38	69
8	0.36	69
9	0.31	69
10	0.27	69
11	0.26	69
12	0.20	69

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.10	69
2	0.23	69
3	0.24	69
4	0.25	69
5	0.28	69
6	0.32	69
7	0.31	69
8	0.29	69
9	0.28	69
10	0.27	69
11	0.25	69
12	0.17	69
Total Average:	sqrt dp = 0.5342	69.0

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/11/2003												
Unit Number: 9s.1.2c	Stack Diameter (in.): 48.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.31												
Run No.: 2	Operators: BMB/ST												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.95												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 14:30 End: 14:45		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %													
Comments :													

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.37	69
2	0.37	69
3	0.37	69
4	0.36	69
5	0.36	69
6	0.35	69
7	0.35	69
8	0.34	69
9	0.31	69
10	0.28	69
11	0.26	69
12	0.23	69

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.21	69
2	0.23	69
3	0.23	69
4	0.24	69
5	0.24	69
6	0.27	69
7	0.28	69
8	0.29	69
9	0.27	69
10	0.24	69
11	0.20	69
12	0.12	69
Total Average: grrt dp = 0.527		69.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments				Sample Train No. AA		Filter No.: NA		Run No.: 1	
Plant Name:	Fab 11 West					Leak Check Initial: 0.005 cfm@ 15 (in. Hg)					
Plant Location:	Rio Rancho, NM					Leak Check Final: 0.002 cfm@ 2 (in. Hg)					
Project No.:	31397-1600-00000					Total Traverse Points		Impinger	Initial	Final	
Sampling Location:	9s.1.2c					24		1	668.8	675.3	
Date:	8/11/2003							2	715.0	727.1	
Technicians:	BMB/ST							3	534.9	538.2	
Meter Box No.: 90401	Y_d: 1.006			4	641.5	644.4					
Probe/Pitot No 301 / HA-1	C_p: 0.84			5	636.7	637.9					
Nozzle No.: NA	dH₀: 1.725	Stack Dia. (in.): 48.00	Stack Area (ft²): 12.57	6	843.6	871.1					
Nozzle Dia: 0.225	0.225, 0.225, 0.226	Port Width (in.): 3.00	Port Length (in.): 2.50	Start Time: 9:51 Net Impinger Gain (g): 53.5							
Initial Meter Reading (ft³):	635.237	BP (in. Hg): 24.95	Static Pressure (in.): -0.31	End Time: 13:51 Theta 240							
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
1	10	71	87	87	0.370	1.00	641.470	268	233	59	1
1	20	71	91	90	0.370	1.00	647.760	256	231	56	1
1	30	61	95	81	0.370	1.00	654.000	260	258	54	1
1	40	68	101	96	0.370	1.00	660.250	259	270	53	1
1	50	67	100	98	0.360	1.00	666.620	264	251	54	1
1	60	67	101	98	0.360	1.00	672.950	265	284	47	1
1	70	70	103	99	0.350	1.00	679.250	266	272	51	1
1	80	70	103	99	0.360	0.97	685.540	266	272	51	1
1	90	70	103	100	0.360	0.97	691.840	265	271	52	1
1	100	70	103	100	0.360	0.94	698.110	265	271	52	1
1	110	74	101	98	0.350	0.94	704.240	261	264	45	1
1	120	76	101	97	0.360	0.96	710.480	256	263	46	1
1	130	69	100	97	0.350	0.94	716.590	263	263	43	1
1	140	69	100	97	0.350	0.94	722.680	265	264	41	1
1	150	73	100	96	0.350	0.94	728.850	264	266	41	1
1	160	72	100	98	0.360	0.97	735.100	260	265	42	1
1	170	70	101	98	0.360	0.97	741.310	261	264	41	1
1	180	70	102	100	0.360	0.97	747.530	258	260	55	1
1	190	70	102	100	0.360	0.97	753.740	257	260	55	1
1	200	70	102	100	0.360	0.97	759.960	257	260	55	1
1	210	70	102	100	0.360	0.97	766.210	258	257	56	1
1	220	70	102	100	0.360	0.97	772.550	258	258	56	1
1	230	70	102	100	0.360	0.97	778.850	258	258	56	1
1	240	70	102	100	0.360	0.97	784.820	257	257	58	1
Average / Net		69.9	98.6	0.4	1.0	149.583	261.1	261.3	50.8	1.0	

ISOKINETIC
FIELD DATA SHEET

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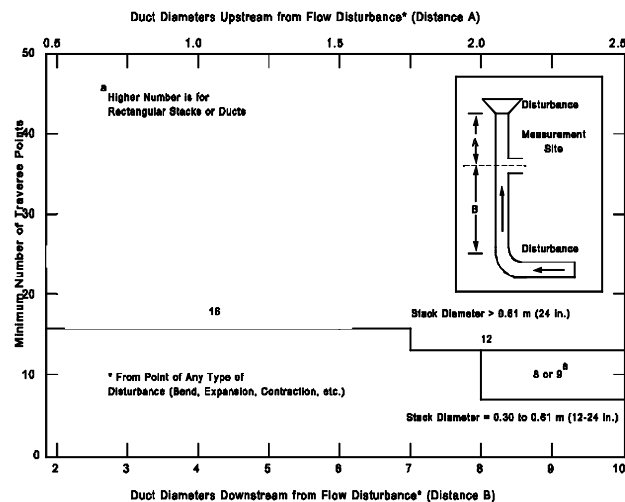
Client:	Intel	Test Location Schematic					Sample Train No. SF		Filter No.: NA		Run No.: 2			
Plant Name:	Fab 11 West						Leak Check Initial:		0.005	cfm@	15	(in. Hg)		
Plant Location:	Rio Rancho, NM						Leak Check Final:		0.001	cfm@	6	(in. Hg)		
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	9s.1.2c						24		1		598.1		605.9	
Date:	8/11/2003								2		627.3		635.0	
Technicians:	BMB/ST								3		645.1		648.6	
Meter Box No.: 90401	Y _d : 1.006								4		648.5		659.9	
Probe / Pitot No.: 301 / HA-1	C _p : 0.84			5		644.9		632.4						
Nozzle No.: NA	dH ₀ : 1.725	Stack Dia. (in.): 48.00		Stack Area (ft²): 12.57		6		912.8		945.5				
Nozzle Dia: 0.225	0.225, 0.225, 0.226	Port Width (in.): 3.00		Port Length (in.): 2.50		Start Time: 14:45		Net Impinger Gain (g): 50.6						
Initial Meter Reading (ft³):	784.949	BP (in. Hg): 24.95		Static Pressure (in.): -0.31		End Time: 18:45		Theta 240						
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
1	10	70	100	100	0.340	0.92	791.170	240	240	51	4.0			
1	20	70	99	99	0.340	0.91	797.220	253	256	51	4.0			
1	30	71	99	97	0.330	0.88	803.120	256	257	51	4.0			
1	40	70	100	98	0.340	0.91	809.170	255	258	55	4.0			
1	50	69	100	97	0.340	0.92	815.230	259	257	55	4.0			
1	60	69	100	98	0.340	0.92	821.340	260	259	55	4.0			
1	70	70	101	99	0.340	0.92	827.340	257	259	55	4.0			
1	80	71	102	99	0.340	0.92	833.460	260	260	55	4.0			
1	90	70	99	98	0.340	0.91	839.630	262	257	55	4.0			
1	100	70	99	97	0.330	0.91	845.630	256	256	55	4.0			
1	110	69	96	94	0.340	0.91	851.610	257	257	55	4.0			
1	120	69	96	93	0.340	0.91	857.580	264	258	55	4.0			
1	130	69	97	93	0.340	0.91	863.530	255	256	55	4.0			
1	140	68	97	92	0.340	0.91	869.530	260	256	55	4.0			
1	150	69	96	91	0.340	0.91	875.550	259	257	55	4.0			
1	160	69	96	91	0.350	0.93	881.560	263	256	55	4.0			
1	170	69	96	91	0.350	0.93	887.650	263	256	55	4			
1	180	69	97	92	0.350	0.94	893.420	263	256	55	4			
1	190	69	98	93	0.350	0.94	899.370	263	256	55	4			
1	200	69	98	91	0.350	0.94	905.310	260	258	56	4			
1	210	69	95	91	0.350	0.93	911.360	260	258	56	4			
1	220	69	95	91	0.350	0.93	917.380	255	256	57	4			
1	230	69	95	90	0.350	0.93	923.400	255	258	57	4			
1	240	71	91	92	0.360	0.95	929.595	256	257	56	4			
Average / Net		69.5		96.0	0.3	0.9	144.646	258.0	256.4	54.8	4.0			

EPA REFERENCE METHOD 1 FIELD DATA SHEET CIRCULAR STACKS

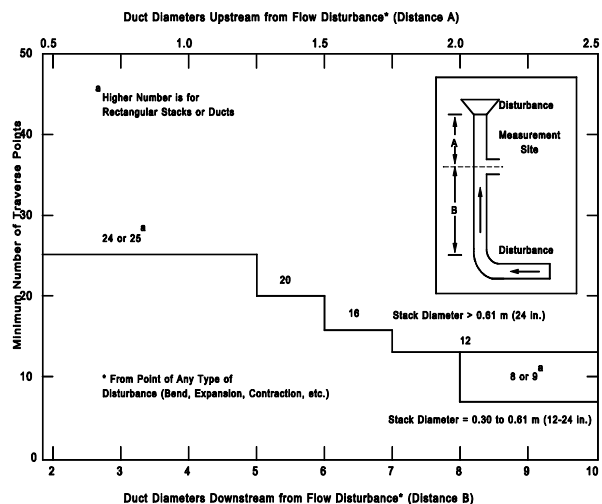
Firm Name: **INTEL**
 Plant Location: **Rio Rancho, NM**
 Sampling Location: **9s.1.2c**
 TRC Project No.: **31397-1600-00000**
 Date: **8/12/2003**
 Technician: **B. Sandstrom**
 Circular/Rectangular: **C**

Stack Diameter: **48.0**
 Sample Port Diameter: **3.0**
 Sample Port Depth: **2.00**
 Diameters Upstream: **0.6**
 Diameters Downstream: **2.2**
 Flow or Particulate Test: **F**
 Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	3
2	5 3/16
3	7 11/16
4	10 8/16
5	14
6	19 1/16
7	32 15/16
8	38
9	41 8/16
10	44 5/16
11	46 13/16
12	49
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Inlet 9s.1.2ef FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S1.2F INLET 08 15 03 SAMPLE R1_0009.LAB	8/15/2003 8:26	ND	ND	264.72	6618.63	ND	1.37	363.3	ND	39.356	149.76	1.008
9S1.2F INLET 08 15 03 SAMPLE R1_0010.LAB	8/15/2003 8:29	ND	ND	277.66	6828.69	ND	1.38	365.6	ND	11.932	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0011.LAB	8/15/2003 8:31	ND	ND	266.59	6845.27	ND	1.40	368.0	ND	3.835	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0012.LAB	8/15/2003 8:34	ND	ND	267.71	6885.36	ND	1.39	366.5	ND	0.792	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0013.LAB	8/15/2003 8:36	ND	ND	267.24	6788.05	ND	1.39	367.0	ND	4.093	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0014.LAB	8/15/2003 8:39	ND	ND	261.69	6729.65	ND	1.39	367.6	ND	175.895	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0015.LAB	8/15/2003 8:42	ND	ND	254.21	6658.91	ND	1.39	367.6	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0016.LAB	8/15/2003 8:44	ND	ND	250.41	6609.67	ND	1.39	367.3	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0017.LAB	8/15/2003 8:47	ND	ND	244.82	6654.33	ND	1.39	368.0	ND	0.495	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0018.LAB	8/15/2003 8:49	ND	ND	240.58	6606.68	ND	1.40	368.2	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0019.LAB	8/15/2003 8:52	ND	ND	240.23	6639.75	ND	1.40	369.1	ND	6.510	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0020.LAB	8/15/2003 8:55	ND	ND	243.65	6688.56	ND	1.40	369.7	ND	2.137	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0021.LAB	8/15/2003 8:57	ND	ND	241.52	6604.06	ND	1.41	369.8	ND	0.246	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0022.LAB	8/15/2003 9:00	ND	ND	241.57	6526.08	ND	1.41	370.2	ND	1.417	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0023.LAB	8/15/2003 9:02	ND	ND	251.59	6565.89	ND	1.42	372.2	ND	4.379	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0024.LAB	8/15/2003 9:05	ND	ND	231.60	6681.73	ND	1.42	370.7	ND	4.810	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0025.LAB	8/15/2003 9:08	ND	ND	231.42	6508.69	ND	1.43	373.3	ND	2.919	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0026.LAB	8/15/2003 9:10	ND	ND	238.79	6489.07	ND	1.43	373.7	ND	6.528	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0027.LAB	8/15/2003 9:13	ND	ND	223.62	6607.36	ND	1.42	371.3	ND	4.128	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0028.LAB	8/15/2003 9:15	ND	ND	233.41	6680.67	ND	1.42	372.0	ND	3.569	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0029.LAB	8/15/2003 9:18	ND	ND	218.19	6493.37	ND	1.41	372.9	ND	1.914	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0030.LAB	8/15/2003 9:21	ND	ND	224.25	6663.63	ND	1.42	373.8	ND	6.155	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0031.LAB	8/15/2003 9:23	ND	ND	220.28	6665.25	ND	1.41	371.3	ND	2.517	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0032.LAB	8/15/2003 9:26	ND	ND	217.04	6565.45	ND	1.41	370.5	ND	9.337	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0033.LAB	8/15/2003 9:28	ND	ND	212.14	6564.16	ND	1.41	370.8	ND	4.658	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0034.LAB	8/15/2003 9:31	ND	ND	204.99	6559.83	ND	1.40	367.7	ND	ND	149.76	1.008
9S1.2F INLET 08 15 03 SAMPLE R1_0035.LAB	8/15/2003 9:34	ND	ND	207.22	6720.36	ND	1.42	372.6	ND	4.121	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0036.LAB	8/15/2003 9:36	ND	ND	213.50	6571.22	ND	1.41	372.9	ND	6.705	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0037.LAB	8/15/2003 9:39	ND	ND	218.84	6569.09	ND	1.40	370.4	ND	11.524	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0038.LAB	8/15/2003 9:41	ND	ND	199.90	6846.23	ND	1.41	368.8	ND	6.657	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0039.LAB	8/15/2003 9:44	ND	ND	198.67	6673.28	ND	1.41	368.5	ND	10.556	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0040.LAB	8/15/2003 9:47	ND	ND	206.59	6677.88	ND	1.41	370.1	ND	19.458	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0041.LAB	8/15/2003 9:50	ND	ND	220.78	6840.94	ND	1.41	372.7	ND	0.067	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0042.LAB	8/15/2003 9:52	ND	ND	204.51	6785.64	ND	1.40	371.2	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0043.LAB	8/15/2003 9:55	ND	ND	209.53	6809.37	ND	1.40	370.9	ND	1.618	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0044.LAB	8/15/2003 9:58	ND	ND	203.88	6845.02	ND	1.40	370.6	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0045.LAB	8/15/2003 10:00	ND	ND	212.45	6641.05	ND	1.40	370.6	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0046.LAB	8/15/2003 10:03	ND	ND	201.19	6786.58	ND	1.41	370.7	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0047.LAB	8/15/2003 10:05	ND	ND	202.09	6926.98	ND	1.41	370.0	ND	1.801	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0048.LAB	8/15/2003 10:08	ND	ND	191.86	7021.60	ND	1.42	372.3	ND	3.580	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0049.LAB	8/15/2003 10:11	ND	ND	195.89	6903.94	ND	1.41	369.9	ND	6.742	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0050.LAB	8/15/2003 10:13	ND	ND	202.67	6976.98	ND	1.41	370.0	ND	0.867	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0051.LAB	8/15/2003 10:16	ND	ND	191.86	6988.11	ND	1.41	369.5	ND	5.260	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0052.LAB	8/15/2003 10:18	ND	ND	180.42	6951.11	ND	1.41	369.6	ND	12.881	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0053.LAB	8/15/2003 10:21	ND	ND	197.24	6749.26	ND	1.40	369.5	ND	0.360	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0054.LAB	8/15/2003 10:24	ND	ND	178.97	7006.12	ND	1.41	370.4	ND	15.284	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0055.LAB	8/15/2003 10:26	ND	ND	173.41	6827.63	ND	1.40	368.2	ND	11.301	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0056.LAB	8/15/2003 10:29	ND	ND	192.05	6718.67	ND	1.40	369.8	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0057.LAB	8/15/2003 10:31	ND	ND	191.03	6687.11	ND	1.40	370.5	ND	2.837	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0058.LAB	8/15/2003 10:34	ND	ND	181.95	6592.91	ND	1.40	369.6	ND	21.389	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0059.LAB	8/15/2003 10:37	ND	ND	189.03	6508.73	ND	1.41	371.6	ND	ND	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0060.LAB	8/15/2003 10:39	ND	ND	183.67	6414.40	ND	1.41	371.6	ND	5.403	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0061.LAB	8/15/2003 10:42	ND	ND	186.48	6347.90	ND	1.40	370.1	ND	ND	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Inlet 9s.1.2ef FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S1.2F INLET 08 15 03 SAMPLE R1_0062.LAB	8/15/2003 10:45	ND	ND	189.12	6346.08	ND	1.40	370.5	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0063.LAB	8/15/2003 10:47	ND	ND	186.69	6345.12	ND	1.39	370.0	ND	4.939	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0064.LAB	8/15/2003 10:50	ND	ND	185.71	6501.81	ND	1.40	371.8	ND	5.448	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0065.LAB	8/15/2003 10:52	ND	ND	190.94	6211.03	ND	1.40	372.0	ND	0.943	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0066.LAB	8/15/2003 10:55	ND	ND	185.93	6495.62	ND	1.40	369.3	ND	17.805	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0067.LAB	8/15/2003 10:58	ND	ND	183.25	6313.67	ND	1.40	369.5	ND	7.851	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0068.LAB	8/15/2003 11:00	ND	ND	177.86	6308.09	ND	1.39	369.3	ND	ND	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0069.LAB	8/15/2003 11:03	ND	ND	182.56	6265.40	ND	1.40	369.3	ND	3.213	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0070.LAB	8/15/2003 11:05	ND	ND	162.35	6364.12	ND	1.40	368.3	ND	15.580	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0071.LAB	8/15/2003 11:08	ND	ND	152.31	6449.02	ND	1.40	366.1	ND	10.783	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0072.LAB	8/15/2003 11:11	ND	ND	157.64	6348.43	ND	1.39	366.7	ND	13.586	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0073.LAB	8/15/2003 11:13	ND	ND	159.51	6330.09	ND	1.39	366.9	ND	11.608	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0074.LAB	8/15/2003 11:16	ND	ND	171.73	6465.68	ND	1.40	368.7	ND	9.421	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0075.LAB	8/15/2003 11:18	ND	ND	163.01	6524.99	ND	1.40	365.8	ND	13.835	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0076.LAB	8/15/2003 11:21	ND	ND	131.33	6536.21	ND	1.41	366.7	ND	14.609	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0077.LAB	8/15/2003 11:24	ND	ND	148.09	6561.20	ND	1.40	364.9	ND	9.674	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0078.LAB	8/15/2003 11:26	ND	ND	140.68	6542.44	ND	1.40	364.4	ND	10.884	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0079.LAB	8/15/2003 11:29	ND	ND	146.07	6573.13	ND	1.41	366.6	ND	17.599	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0080.LAB	8/15/2003 11:31	ND	ND	139.82	6601.31	ND	1.40	364.9	ND	12.783	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0081.LAB	8/15/2003 11:34	ND	ND	161.17	6620.31	ND	1.40	365.2	ND	16.829	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0082.LAB	8/15/2003 11:37	ND	ND	132.99	6583.82	ND	1.40	364.4	ND	21.078	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0083.LAB	8/15/2003 11:39	ND	ND	167.07	6604.61	ND	1.41	367.9	ND	4.712	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0084.LAB	8/15/2003 11:42	ND	ND	161.15	6607.46	ND	1.40	366.7	ND	8.932	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0085.LAB	8/15/2003 11:44	ND	ND	135.19	6417.75	ND	1.40	364.2	ND	20.445	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0086.LAB	8/15/2003 11:47	ND	ND	156.47	6810.63	ND	1.41	367.8	ND	9.663	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0087.LAB	8/15/2003 11:50	ND	ND	156.82	6617.98	ND	1.40	365.4	ND	22.460	149.02	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0088.LAB	8/15/2003 11:52	ND	ND	138.86	6513.63	ND	1.40	364.3	ND	21.124	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0089.LAB	8/15/2003 11:55	ND	ND	137.75	6566.41	ND	1.40	364.4	ND	16.721	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0090.LAB	8/15/2003 11:57	ND	ND	125.40	6616.44	ND	1.41	364.1	ND	16.941	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0091.LAB	8/15/2003 12:00	ND	ND	131.49	6613.01	ND	1.41	365.8	ND	18.178	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0092.LAB	8/15/2003 12:03	ND	ND	126.00	6515.85	ND	1.41	363.8	ND	11.847	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0093.LAB	8/15/2003 12:05	ND	ND	132.45	6494.04	ND	1.41	363.4	ND	17.493	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0094.LAB	8/15/2003 12:08	ND	ND	124.71	6738.74	ND	1.41	365.3	ND	25.616	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R1_0095.LAB	8/15/2003 12:10	ND	ND	137.88	6593.03	ND	1.40	363.7	ND	14.990	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0096.LAB	8/15/2003 12:13	ND	ND	138.60	6490.13	ND	1.40	364.6	ND	20.953	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0097.LAB	8/15/2003 12:16	ND	ND	135.93	6523.01	ND	1.40	364.8	ND	25.080	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0098.LAB	8/15/2003 12:18	ND	ND	139.57	6270.39	ND	1.40	364.9	ND	39.923	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R1_0099.LAB	8/15/2003 12:21	ND	ND	138.59	6473.81	ND	1.41	366.4	ND	100.811	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0010.LAB	8/15/2003 13:09	ND	ND	187.13	6334.46	ND	1.40	367.8	ND	25.188	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0011.LAB	8/15/2003 13:12	ND	ND	188.94	6567.75	ND	1.40	367.6	ND	8.333	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0012.LAB	8/15/2003 13:15	ND	ND	189.09	6291.46	ND	1.39	368.8	ND	76.609	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0013.LAB	8/15/2003 13:17	ND	ND	198.51	6401.77	ND	1.40	368.7	ND	86.535	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0014.LAB	8/15/2003 13:20	ND	ND	192.64	6533.86	ND	1.40	369.8	ND	19.698	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0015.LAB	8/15/2003 13:22	ND	ND	192.17	6345.99	ND	1.40	371.0	ND	11.443	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0016.LAB	8/15/2003 13:25	ND	ND	197.96	6421.85	ND	1.39	368.4	ND	41.079	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0017.LAB	8/15/2003 13:28	ND	ND	204.09	6239.27	ND	1.39	368.6	ND	120.823	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0018.LAB	8/15/2003 13:30	ND	ND	200.99	6400.15	ND	1.40	369.4	ND	22.562	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0019.LAB	8/15/2003 13:33	ND	ND	193.85	6435.56	ND	1.40	368.3	ND	27.201	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0020.LAB	8/15/2003 13:35	ND	ND	204.46	6535.20	ND	1.40	369.7	ND	23.287	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0021.LAB	8/15/2003 13:38	ND	ND	202.93	6356.04	ND	1.40	367.8	ND	110.172	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0022.LAB	8/15/2003 13:41	ND	ND	218.37	6558.23	ND	1.39	367.8	ND	71.465	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0023.LAB	8/15/2003 13:43	ND	ND	197.46	6634.31	ND	1.40	368.3	ND	24.451	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0024.LAB	8/15/2003 13:46	ND	ND	206.66	6606.54	ND	1.39	366.7	ND	22.741	149.76	1.003

Scrubber Inlet 9s.1.2ef FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S1.2F INLET 08 15 03 SAMPLE R2_0025.LAB	8/15/2003 13:48	ND	ND	203.79	6398.65	ND	1.40	366.9	ND	87.747	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0026.LAB	8/15/2003 13:51	ND	ND	207.45	6519.71	ND	1.39	366.5	ND	111.848	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0027.LAB	8/15/2003 13:54	ND	ND	221.55	6585.88	ND	1.40	368.5	ND	14.065	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0028.LAB	8/15/2003 13:56	ND	ND	216.17	6690.18	ND	1.40	370.4	ND	19.528	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0029.LAB	8/15/2003 13:59	ND	ND	219.99	6454.58	ND	1.39	369.2	ND	53.808	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0030.LAB	8/15/2003 14:02	ND	ND	221.83	6353.99	ND	1.39	370.9	ND	130.220	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0031.LAB	8/15/2003 14:04	ND	ND	221.52	6345.03	ND	1.40	372.0	ND	40.991	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0032.LAB	8/15/2003 14:07	ND	ND	219.57	6278.26	ND	1.39	370.0	ND	18.831	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0033.LAB	8/15/2003 14:09	ND	ND	224.18	6237.95	ND	1.39	367.8	ND	100.570	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0034.LAB	8/15/2003 14:12	ND	ND	238.39	6368.82	ND	1.39	370.4	ND	23.559	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0035.LAB	8/15/2003 14:15	ND	ND	230.35	6499.81	ND	1.38	368.4	ND	15.673	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0036.LAB	8/15/2003 14:17	ND	ND	236.59	6557.21	ND	1.39	370.4	ND	95.181	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0037.LAB	8/15/2003 14:20	ND	ND	242.96	6455.79	ND	1.39	370.2	ND	16.073	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0038.LAB	8/15/2003 14:22	ND	ND	239.44	6579.28	ND	1.39	370.0	ND	32.128	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0039.LAB	8/15/2003 14:25	ND	ND	232.22	6410.53	ND	1.38	368.1	ND	101.508	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0040.LAB	8/15/2003 14:28	ND	ND	248.42	6577.23	ND	1.38	370.2	ND	24.558	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0041.LAB	8/15/2003 14:30	ND	ND	237.92	6561.01	ND	1.38	368.6	ND	40.379	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0042.LAB	8/15/2003 14:33	ND	ND	237.48	6550.92	ND	1.37	368.0	ND	66.857	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0043.LAB	8/15/2003 14:35	ND	ND	252.87	6381.29	ND	1.37	367.9	ND	16.135	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0044.LAB	8/15/2003 14:38	ND	ND	249.39	6403.11	ND	1.37	367.5	ND	67.605	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0045.LAB	8/15/2003 14:41	ND	ND	254.53	6361.54	ND	1.38	369.6	ND	50.787	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0046.LAB	8/15/2003 14:43	ND	ND	249.61	6423.18	ND	1.37	367.3	ND	14.066	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0047.LAB	8/15/2003 14:46	ND	ND	263.15	6511.82	ND	1.38	370.1	ND	80.184	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0048.LAB	8/15/2003 14:48	ND	ND	260.23	6290.11	ND	1.37	367.7	ND	34.129	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0049.LAB	8/15/2003 14:51	ND	ND	258.32	6355.93	ND	1.38	370.2	ND	16.604	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0050.LAB	8/15/2003 14:54	ND	ND	254.98	6381.09	ND	1.38	367.9	ND	110.849	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0051.LAB	8/15/2003 14:56	ND	ND	270.91	6434.73	ND	1.38	367.5	ND	18.431	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0052.LAB	8/15/2003 14:59	ND	ND	266.25	6563.26	ND	1.38	369.5	ND	21.532	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0053.LAB	8/15/2003 15:01	ND	ND	273.68	6267.96	ND	1.38	367.5	ND	107.730	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0054.LAB	8/15/2003 15:04	ND	ND	273.74	6538.76	ND	1.38	368.7	ND	16.094	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0055.LAB	8/15/2003 15:07	ND	ND	280.45	6519.90	ND	1.37	368.4	ND	35.896	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0056.LAB	8/15/2003 15:09	ND	ND	269.41	6404.35	ND	1.36	368.2	ND	119.995	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0057.LAB	8/15/2003 15:12	ND	ND	277.44	6696.42	ND	1.37	369.0	ND	34.899	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0058.LAB	8/15/2003 15:15	ND	ND	282.97	6400.21	ND	1.36	366.9	ND	29.919	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0059.LAB	8/15/2003 15:17	ND	ND	264.26	6407.47	ND	1.35	366.6	ND	66.187	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0060.LAB	8/15/2003 15:20	ND	ND	278.85	6449.47	ND	1.35	367.7	ND	155.861	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0061.LAB	8/15/2003 15:22	ND	ND	270.65	6459.14	ND	1.34	367.1	ND	114.827	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0062.LAB	8/15/2003 15:25	ND	ND	274.58	6657.40	ND	1.32	365.7	ND	25.972	149.02	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0063.LAB	8/15/2003 15:28	ND	ND	281.67	6690.82	ND	1.32	366.2	ND	18.445	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0064.LAB	8/15/2003 15:30	ND	ND	278.97	6617.43	ND	1.32	366.1	ND	46.858	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0065.LAB	8/15/2003 15:33	ND	ND	279.99	6522.50	ND	1.32	366.0	ND	141.510	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0066.LAB	8/15/2003 15:35	ND	ND	272.88	6584.56	ND	1.32	365.6	ND	120.532	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0067.LAB	8/15/2003 15:38	ND	ND	276.48	6704.42	ND	1.32	366.1	ND	23.996	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0068.LAB	8/15/2003 15:41	ND	ND	270.66	6689.30	ND	1.31	365.0	ND	31.999	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0069.LAB	8/15/2003 15:43	ND	ND	279.86	6636.08	ND	1.33	367.1	ND	37.642	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0070.LAB	8/15/2003 15:46	ND	ND	277.54	6799.20	ND	1.32	366.7	ND	133.62	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0071.LAB	8/15/2003 15:48	ND	ND	286.99	6562.48	ND	1.32	364.7	ND	129.54	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0072.LAB	8/15/2003 15:51	ND	ND	283.08	6636.54	ND	1.32	366.7	ND	22.08	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0073.LAB	8/15/2003 15:54	ND	ND	285.61	6705.92	ND	1.31	366.9	ND	3.94	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0074.LAB	8/15/2003 15:56	ND	ND	285.27	6571.40	ND	1.30	367.6	ND	26.58	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0075.LAB	8/15/2003 15:59	ND	ND	274.53	6585.65	ND	1.30	365.2	ND	134.51	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0076.LAB	8/15/2003 16:01	ND	ND	278.55	6709.97	ND	1.30	366.9	ND	128.76	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0077.LAB	8/15/2003 16:04	ND	ND	290.13	6520.48	ND	1.30	366.9	ND	24.40	149.76	0.997

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Inlet 9s.1.2ef FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S1.2F INLET 08 15 03 SAMPLE R2_0078.LAB	8/15/2003 16:07	ND	ND	287.98	6621.83	ND	1.30	366.9	ND	9.97	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0079.LAB	8/15/2003 16:09	ND	ND	292.26	6745.63	ND	1.30	367.2	ND	20.77	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0080.LAB	8/15/2003 16:12	ND	ND	292.86	6525.63	ND	1.30	367.2	ND	136.39	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0081.LAB	8/15/2003 16:14	ND	ND	295.40	6345.19	ND	1.31	366.3	ND	133.18	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0082.LAB	8/15/2003 16:17	ND	ND	298.48	6569.08	ND	1.32	366.0	ND	10.36	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0083.LAB	8/15/2003 16:20	ND	ND	296.15	6353.95	ND	1.31	364.4	ND	19.04	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0084.LAB	8/15/2003 16:22	ND	ND	299.76	6346.07	ND	1.32	365.1	ND	11.35	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0085.LAB	8/15/2003 16:25	ND	ND	322.14	6430.45	ND	1.34	367.1	ND	125.19	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0086.LAB	8/15/2003 16:28	ND	ND	314.80	6515.56	ND	1.33	367.1	ND	138.06	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0087.LAB	8/15/2003 16:30	ND	ND	302.30	6472.75	ND	1.33	366.4	ND	22.80	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0088.LAB	8/15/2003 16:33	ND	ND	311.59	6511.52	ND	1.32	364.5	ND	6.37	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0089.LAB	8/15/2003 16:35	ND	ND	325.96	6443.57	ND	1.32	364.1	ND	8.92	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0090.LAB	8/15/2003 16:38	ND	ND	325.15	6478.96	ND	1.33	364.5	ND	125.88	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0091.LAB	8/15/2003 16:41	ND	ND	323.83	6502.46	ND	1.34	366.7	ND	121.12	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0092.LAB	8/15/2003 16:43	ND	ND	332.46	6651.56	ND	1.35	366.5	ND	40.73	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0093.LAB	8/15/2003 16:46	ND	ND	347.52	6599.23	ND	1.39	367.9	ND	9.87	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0094.LAB	8/15/2003 16:48	ND	ND	342.92	6615.80	ND	1.46	362.9	ND	17.47	149.76	1.003
9S1.2F INLET 08 15 03 SAMPLE R2_0095.LAB	8/15/2003 16:51	ND	ND	361.35	6575.91	ND	1.53	364.5	ND	120.75	149.76	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0096.LAB	8/15/2003 16:54	ND	ND	353.59	6537.90	ND	1.55	363.2	ND	130.550	149.020	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0097.LAB	8/15/2003 16:56	ND	ND	361.34	6379.08	ND	1.53	365.0	ND	35.294	149.765	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0098.LAB	8/15/2003 16:59	ND	ND	355.48	6430.11	ND	1.51	365.9	ND	13.174	149.765	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0099.LAB	8/15/2003 17:01	ND	ND	351.75	5818.21	ND	1.49	365.6	ND	13.692	149.765	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0100.LAB	8/15/2003 17:04	ND	ND	341.42	5416.12	ND	1.48	365.3	ND	1.375	149.765	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0101.LAB	8/15/2003 17:07	ND	ND	338.76	5341.61	ND	1.47	365.8	ND	4.299	149.765	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0102.LAB	8/15/2003 17:09	ND	ND	343.92	5220.54	ND	1.47	366.2	ND	3.394	149.765	0.997
9S1.2F INLET 08 15 03 SAMPLE R2_0103.LAB	8/15/2003 17:12	ND	ND	332.83	5152.49	ND	1.45	365.8	ND	ND	149.765	0.997
Average _{wet}		ND	ND	229.70	6524.34	ND	1.39	367.98	ND	36.18	149.75	1.000

Reference Method Calculations

Fab 11 West

9s.1.2e-f Inlet

Run No.	Run 1	Run 2	
Date	8/15/2003	8/15/2003	
Start Time	8:20	13:10	AVERAGE
Stop Time	12:20	17:10	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.733	1.733	1.733
Dry Gas Meter Calibration Factor	1.011	1.011	1.011
Average Meter Temperature (°F)	84.4	86.9	85.7
Volume Metered (acf)	150.752	151.490	151.121
Volume Metered (dscf)	123.288	123.311	123.299
Volume of Water Collected (g)	35.2	35.3	35.3
Volume of Water Collected (scf)	1.660	1.664	1.662
Average Delta H (in. H ₂ O)	1.00	1.00	1.00
Stack Flow Rate <u>Outlet</u> Flow Traverse (dscfm)	15,523	14,885	15,204
Chlorine			
Collected Cl. micrograms (ug)	14.2	12.2	13.2
Cl ₂ Concentration (ug/dscf)	0.12	0.10	0.11
Cl ₂ Concentration (ppb)	1	1	1
Cl ₂ Emission Rate (lbs/hr)	0.0002	0.0002	0.0002

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments		Sample Train No. B		Filter No.: NA		Run No.: 1	
Plant Name:	Fab 11 West			Leak Check Initial: 0.002 cfm@ 15 (in. Hg)					
Plant Location:	Rio Rancho, NM			Leak Check Final: 0.001 cfm@ 3 (in. Hg)					
Project No.:	31397-1600-00000			Total Traverse Points		Impinger	Initial	Final	
Sampling Location:	9s.1.2e-f Inlet			24		1	634.8	641.2	
Date:	8/15/2003					2	651.4	654.0	
Technicians:	JL/BDS					3	628.6	631.2	
Meter Box No.: 90394	Y_d: 1.011					4	767.1	764.6	
Probe / Pitot No.: NA / HA-1	C_p: NA			5	753.9	752.2			
Nozzle No.: NA	dH₀: 1.733	Stack Dia. (in.): 48.00	Stack Area (ft²): 12.57		6	821.8	849.6		
Nozzle Dia: NA		Port Width (in.): 0.75	Port Length (in.): 1.00		Start Time: 8:20		Net Impinger Gain (g): 35.2		
Initial Meter Reading (ft³): 307.182		BP (in. Hg): 24.89	Static Pressure (in.): -0.12		End Time: 12:20		Theta 240		
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)		
Center	10	72	72	1.00	313.370	57	1.5		
Center	20	76	72	1.00	319.520	50	1.5		
Center	30	81	73	1.00	325.740	53	1.5		
Center	40	84	74	1.00	331.990	59	1.5		
Center	50	86	75	1.00	338.250	57	1.5		
Center	60	87	77	1.00	344.530	53	1.5		
Center	70	88	78	1.00	350.810	49	1.5		
Center	80	89	79	1.00	357.090	47	1.5		
Center	90	89	80	1.00	363.370	47	1.5		
Center	100	90	81	1.00	369.650	47	1.5		
Center	110	90	81	1.00	375.940	47	1.5		
Center	120	91	82	1.00	382.230	48	1.5		
Center	130	91	83	1.00	388.540	45	1.5		
Center	140	91	83	1.00	394.830	45	1.5		
Center	150	91	83	1.00	401.150	45	1.5		
Center	160	91	84	1.00	407.470	46	1.5		
Center	170	91	84	1.00	413.780	46	1.5		
Center	180	91	84	1.00	420.090	46	1.5		
Center	190	92	84	1.00	426.390	46	1.5		
Center	200	92	84	1.00	432.700	46	1.5		
Center	210	92	84	1.00	439.020	46	1.5		
Center	220	92	84	1.00	445.330	48	1.5		
Center	230	92	84	1.00	451.630	47	1.5		
Center	240	92	84	1.00	457.934	47	1.5		
Average / Net		84.4		1.0	150.752	48.6	1.5		

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic				Sample Train No. C		Filter No.: NA		Run No.: 2		
Plant Name:	Fab 11 West					Leak Check Initial:		0.004	cfm@	15	(in. Hg)	
Plant Location:	Rio Rancho, NM					Leak Check Final:		0.001	cfm@	3.0	(in. Hg)	
Project No.:	31397-1600-00000					Total Traverse Points	Impinger	Initial	Final			
Sampling Location:	9s.1.2e-f Inlet									1	730.8	731.7
Date:	8/15/2003									2	646.4	643.4
Technicians:	JL/BDS									3	654.5	658.1
Meter Box No.:	90394									4	732.8	735.4
Probe / Pitot No.:	NA / HA-1	5	634.0	633.6								
Nozzle No.:	NA	dH₀:	1.733	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57	6	839.2	870.8		
Nozzle Dia:	NA	Port Width (in.):		0.75	Port Length (in.):		1.00	Start Time:	13:10	Net Impinger Gain (g):	35.3	
Initial Meter Reading (ft³):	458.408	BP (in. Hg):		24.89	Static Pressure (in.):		-0.13	End Time:	17:10	Theta	240	
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)					
Center	10	81	81	1.00	464.630	50	1.5					
Center	20	84	80	1.00	270.920	49	1.5					
Center	30	87	80	1.00	477.360	49	2.0					
Center	40	88	80	1.00	483.630	52	2.0					
Center	50	90	81	1.00	489.950	54	2.0					
Center	60	90	82	1.00	496.260	54	2.0					
Center	70	91	82	1.00	502.560	55	2.0					
Center	80	91	83	1.00	509.340	55	2.0					
Center	90	91	83	1.00	515.180	55	2.0					
Center	100	91	84	1.00	521.490	56	2.0					
Center	110	92	84	1.00	527.810	57	2.0					
Center	120	92	84	1.00	534.180	57	2.0					
Center	130	92	84	1.00	540.450	58	2.0					
Center	140	92	84	1.00	546.760	58	2.0					
Center	150	92	84	1.00	553.070	59	2.0					
Center	160	92	85	1.00	559.380	60	2.0					
Center	170	92	85	1.00	565.700	60	2.0					
Center	180	92	85	1.00	572.010	60	2.0					
Center	190	92	85	1.00	578.320	61	2.0					
Center	200	92	85	1.00	584.630	61	2.0					
Center	210	92	85	1.00	590.940	61	2.0					
Center	220	92	85	1.00	597.260	62	2.0					
Center	230	92	85	1.00	603.570	62	2.0					
Center	240	92	85	1.00	609.898	62	2.0					
Average / Net		86.9		1.0	151.490	57.0	2.0					

Scrubber Outlet 9s.1.2ef FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0010.LAB	8/15/2003 8:23	ND	ND	ND	7465.18	ND	2.23	376.6	ND	36.329	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0011.LAB	8/15/2003 8:26	ND	ND	ND	7331.58	ND	2.21	372.0	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0012.LAB	8/15/2003 8:29	ND	ND	ND	7409.11	ND	2.22	374.1	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0013.LAB	8/15/2003 8:32	ND	ND	ND	7333.97	ND	2.22	373.6	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0014.LAB	8/15/2003 8:34	ND	ND	ND	7278.06	ND	2.22	373.5	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0015.LAB	8/15/2003 8:37	ND	ND	ND	7235.92	ND	2.22	373.2	ND	105.674	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0016.LAB	8/15/2003 8:40	ND	ND	ND	7269.14	ND	2.23	374.4	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0017.LAB	8/15/2003 8:43	ND	ND	ND	7222.41	ND	2.23	372.5	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0018.LAB	8/15/2003 8:46	ND	ND	ND	7163.97	ND	2.22	372.8	ND	ND	149.76	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0019.LAB	8/15/2003 8:48	ND	ND	ND	7136.90	ND	2.21	371.2	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0020.LAB	8/15/2003 8:51	ND	ND	ND	7181.42	ND	2.21	372.2	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0021.LAB	8/15/2003 8:54	ND	ND	ND	7096.71	ND	2.20	369.2	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0022.LAB	8/15/2003 8:57	ND	ND	ND	7082.92	ND	2.21	370.4	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0023.LAB	8/15/2003 8:59	ND	ND	ND	6988.78	ND	2.19	366.3	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0024.LAB	8/15/2003 9:02	ND	ND	ND	6944.29	ND	2.19	366.3	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0025.LAB	8/15/2003 9:05	ND	ND	ND	7013.32	ND	2.23	372.6	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0026.LAB	8/15/2003 9:08	ND	ND	ND	6930.20	ND	2.21	371.0	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0027.LAB	8/15/2003 9:10	ND	ND	ND	6937.85	ND	2.22	372.1	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0028.LAB	8/15/2003 9:13	ND	ND	ND	6952.38	ND	2.22	371.3	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0029.LAB	8/15/2003 9:16	ND	ND	ND	6893.54	ND	2.22	370.3	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0030.LAB	8/15/2003 9:19	ND	ND	ND	6874.29	ND	2.23	370.3	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0031.LAB	8/15/2003 9:21	ND	ND	ND	6878.68	ND	2.22	369.0	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0032.LAB	8/15/2003 9:24	ND	ND	ND	6820.52	ND	2.22	367.8	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0033.LAB	8/15/2003 9:27	ND	ND	ND	6890.32	ND	2.24	371.8	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0034.LAB	8/15/2003 9:30	ND	ND	ND	6841.27	ND	2.22	368.4	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0035.LAB	8/15/2003 9:32	ND	ND	ND	6870.44	ND	2.23	368.3	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0036.LAB	8/15/2003 9:35	ND	ND	ND	6923.05	ND	2.24	370.1	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0037.LAB	8/15/2003 9:38	ND	ND	ND	6893.82	ND	2.23	368.8	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0038.LAB	8/15/2003 9:41	ND	ND	ND	6943.05	ND	2.23	368.6	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0039.LAB	8/15/2003 9:44	ND	ND	ND	6954.70	ND	2.24	371.3	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0040.LAB	8/15/2003 9:46	ND	ND	ND	6883.94	ND	2.22	366.9	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0041.LAB	8/15/2003 9:49	ND	ND	ND	6939.42	ND	2.23	368.3	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0042.LAB	8/15/2003 9:52	ND	ND	ND	6940.46	ND	2.24	368.8	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0043.LAB	8/15/2003 9:55	ND	ND	ND	6993.97	ND	2.25	370.3	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0044.LAB	8/15/2003 9:57	ND	ND	ND	6950.03	ND	2.23	366.1	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0045.LAB	8/15/2003 10:00	ND	ND	ND	6885.94	ND	2.23	366.0	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0046.LAB	8/15/2003 10:03	ND	ND	ND	6978.42	ND	2.24	368.2	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0047.LAB	8/15/2003 10:06	ND	ND	ND	7001.35	ND	2.24	368.3	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0048.LAB	8/15/2003 10:08	ND	ND	ND	7003.45	ND	2.24	368.6	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0049.LAB	8/15/2003 10:11	ND	ND	ND	6988.36	ND	2.23	366.3	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0050.LAB	8/15/2003 10:14	ND	ND	ND	7012.29	ND	2.24	368.0	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0051.LAB	8/15/2003 10:17	ND	ND	ND	7051.86	ND	2.25	370.0	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0052.LAB	8/15/2003 10:19	ND	ND	ND	6993.48	ND	2.24	368.5	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0053.LAB	8/15/2003 10:22	ND	ND	ND	6974.68	ND	2.23	368.0	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0054.LAB	8/15/2003 10:25	ND	ND	ND	6993.74	ND	2.24	369.5	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0055.LAB	8/15/2003 10:28	ND	ND	ND	7032.11	ND	2.25	371.4	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0056.LAB	8/15/2003 10:31	ND	ND	ND	6920.36	ND	2.23	367.0	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0057.LAB	8/15/2003 10:33	ND	ND	ND	6861.06	ND	2.24	369.9	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0058.LAB	8/15/2003 10:36	ND	ND	ND	6870.52	ND	2.25	370.8	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0059.LAB	8/15/2003 10:39	ND	ND	ND	6802.09	ND	2.24	369.4	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0060.LAB	8/15/2003 10:42	ND	ND	ND	6744.23	ND	2.24	369.3	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0061.LAB	8/15/2003 10:44	ND	ND	ND	6759.68	ND	2.24	370.4	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0062.LAB	8/15/2003 10:47	ND	ND	ND	6760.73	ND	2.24	370.2	ND	ND	150.51	1.006

Scrubber Outlet 9s.1.2ef FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0063.LAB	8/15/2003 10:50	ND	ND	ND	6720.83	ND	2.24	369.9	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0064.LAB	8/15/2003 10:53	ND	ND	ND	6677.00	ND	2.24	370.3	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0065.LAB	8/15/2003 10:55	ND	ND	ND	6718.78	ND	2.24	370.0	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0066.LAB	8/15/2003 10:58	ND	ND	ND	6755.23	ND	2.25	372.3	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0067.LAB	8/15/2003 11:01	ND	ND	ND	6663.82	ND	2.24	370.6	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0068.LAB	8/15/2003 11:04	ND	ND	ND	6674.21	ND	2.25	370.0	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0069.LAB	8/15/2003 11:07	ND	ND	ND	6727.05	ND	2.26	372.1	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0070.LAB	8/15/2003 11:09	ND	ND	ND	6754.35	ND	2.27	372.5	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0071.LAB	8/15/2003 11:12	ND	ND	ND	6670.67	ND	2.24	368.8	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0072.LAB	8/15/2003 11:15	ND	ND	ND	6763.59	ND	2.26	372.1	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0073.LAB	8/15/2003 11:18	ND	ND	ND	6723.81	ND	2.25	370.2	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0074.LAB	8/15/2003 11:20	ND	ND	ND	6733.57	ND	2.26	371.7	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0075.LAB	8/15/2003 11:23	ND	ND	ND	6725.10	ND	2.25	370.7	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0076.LAB	8/15/2003 11:26	ND	ND	ND	6786.50	ND	2.26	372.5	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0077.LAB	8/15/2003 11:29	ND	ND	ND	6769.89	ND	2.25	370.7	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0078.LAB	8/15/2003 11:31	ND	ND	ND	6851.09	ND	2.26	372.4	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0079.LAB	8/15/2003 11:34	ND	ND	ND	6816.03	ND	2.25	369.9	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0080.LAB	8/15/2003 11:37	ND	ND	ND	6879.20	ND	2.26	371.6	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0081.LAB	8/15/2003 11:40	ND	ND	ND	6895.47	ND	2.26	371.6	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0082.LAB	8/15/2003 11:43	ND	ND	ND	6862.08	ND	2.26	371.6	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0083.LAB	8/15/2003 11:45	ND	ND	ND	6914.47	ND	2.26	371.2	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0084.LAB	8/15/2003 11:48	ND	ND	ND	6976.65	ND	2.27	373.8	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0085.LAB	8/15/2003 11:51	ND	ND	ND	6943.91	ND	2.26	371.7	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0086.LAB	8/15/2003 11:54	ND	ND	ND	6901.21	ND	2.25	369.6	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0087.LAB	8/15/2003 11:56	ND	ND	ND	6987.17	ND	2.25	366.8	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0088.LAB	8/15/2003 11:59	ND	ND	ND	7078.44	ND	2.28	373.1	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0089.LAB	8/15/2003 12:02	ND	ND	ND	7063.66	ND	2.27	371.2	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0090.LAB	8/15/2003 12:05	ND	ND	ND	7004.47	ND	2.25	364.7	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0091.LAB	8/15/2003 12:07	ND	ND	ND	7147.31	ND	2.27	368.0	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0092.LAB	8/15/2003 12:10	ND	ND	ND	7163.76	ND	2.27	369.3	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0093.LAB	8/15/2003 12:13	ND	ND	ND	7032.45	ND	2.25	366.0	ND	ND	149.76	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0094.LAB	8/15/2003 12:16	ND	ND	ND	7059.63	ND	2.25	366.1	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0095.LAB	8/15/2003 12:19	ND	ND	ND	7005.75	ND	2.26	365.5	ND	41.611	150.51	1.006
9S.1.2F OUTLET 08 15 03 SAMPLE R!_0096.LAB	8/15/2003 12:21	ND	ND	ND	7030.00	ND	2.27	366.8	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0002.LAB	8/15/2003 13:07	ND	ND	ND	6757.72	ND	2.22	374.2	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0003.LAB	8/15/2003 13:10	ND	ND	ND	6843.63	ND	2.23	376.1	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0004.LAB	8/15/2003 13:13	ND	ND	ND	6795.27	ND	2.23	376.6	ND	38.132	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0005.LAB	8/15/2003 13:16	ND	ND	ND	6754.32	ND	2.24	378.6	ND	71.816	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0006.LAB	8/15/2003 13:18	ND	ND	ND	6787.94	ND	2.23	375.0	ND	18.273	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0007.LAB	8/15/2003 13:21	ND	ND	ND	6777.45	ND	2.21	370.5	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0008.LAB	8/15/2003 13:24	ND	ND	ND	6722.50	ND	2.20	368.2	ND	47.125	150.51	1.011
9S.1.2F OUTLET 08 15 03 R2_0009.LAB	8/15/2003 13:27	ND	ND	ND	6742.78	ND	2.22	372.5	ND	94.015	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0010.LAB	8/15/2003 13:29	ND	ND	ND	6772.88	ND	2.21	370.3	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0011.LAB	8/15/2003 13:32	ND	ND	ND	6788.77	ND	2.22	371.7	ND	24.559	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0012.LAB	8/15/2003 13:35	ND	ND	ND	6740.79	ND	2.21	369.7	ND	31.617	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0013.LAB	8/15/2003 13:38	ND	ND	ND	6747.97	ND	2.23	371.5	ND	94.848	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0014.LAB	8/15/2003 13:41	ND	ND	ND	6787.06	ND	2.23	371.9	ND	18.923	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0015.LAB	8/15/2003 13:43	ND	ND	ND	6792.09	ND	2.22	370.2	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0016.LAB	8/15/2003 13:46	ND	ND	ND	6770.72	ND	2.22	369.9	ND	29.481	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0017.LAB	8/15/2003 13:49	ND	ND	ND	6730.84	ND	2.22	369.7	ND	91.578	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0018.LAB	8/15/2003 13:52	ND	ND	ND	6771.71	ND	2.21	368.2	ND	21.926	150.51	1.011
9S.1.2F OUTLET 08 15 03 R2_0019.LAB	8/15/2003 13:54	ND	ND	ND	6898.83	ND	2.23	373.7	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0020.LAB	8/15/2003 13:57	ND	ND	ND	6876.88	ND	2.23	374.3	ND	23.948	150.51	1.006

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 9s.1.2ef FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S.1.2F OUTLET 08 15 03 R2_0021.LAB	8/15/2003 14:00	ND	ND	ND	6864.51	ND	2.24	375.8	ND	98.116	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0022.LAB	8/15/2003 14:03	ND	ND	ND	6771.58	ND	2.21	371.6	ND	33.933	150.51	1.011
9S.1.2F OUTLET 08 15 03 R2_0023.LAB	8/15/2003 14:06	ND	ND	ND	6782.17	ND	2.21	369.0	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 R2_0024.LAB	8/15/2003 14:08	ND	ND	ND	6750.51	ND	2.22	369.7	ND	65.238	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0025.LAB	8/15/2003 14:11	ND	ND	ND	6832.58	ND	2.23	371.0	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0026.LAB	8/15/2003 14:14	ND	ND	ND	6818.40	ND	2.23	370.5	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0027.LAB	8/15/2003 14:17	ND	ND	ND	6788.85	ND	2.21	369.6	ND	44.279	150.51	1.011
9S.1.2F OUTLET 08 15 03 R2_0028.LAB	8/15/2003 14:19	ND	ND	ND	6833.86	ND	2.22	371.6	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0029.LAB	8/15/2003 14:22	ND	ND	ND	6830.97	ND	2.23	373.8	ND	61.492	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0030.LAB	8/15/2003 14:25	ND	ND	ND	6793.57	ND	2.22	369.8	ND	32.183	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0031.LAB	8/15/2003 14:28	ND	ND	ND	6771.40	ND	2.21	366.3	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 R2_0032.LAB	8/15/2003 14:31	ND	ND	ND	6773.70	ND	2.21	368.0	ND	78.596	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0033.LAB	8/15/2003 14:33	ND	ND	ND	6776.75	ND	2.23	369.8	ND	17.660	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0034.LAB	8/15/2003 14:36	ND	ND	ND	6735.70	ND	2.21	368.5	ND	26.712	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0035.LAB	8/15/2003 14:39	ND	ND	ND	6704.48	ND	2.23	370.1	ND	54.232	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0036.LAB	8/15/2003 14:42	ND	ND	ND	6670.07	ND	2.20	366.8	ND	ND	150.51	1.011
9S.1.2F OUTLET 08 15 03 R2_0037.LAB	8/15/2003 14:44	ND	ND	ND	6696.64	ND	2.22	369.1	ND	54.745	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0038.LAB	8/15/2003 14:47	ND	ND	ND	6700.72	ND	2.23	371.0	ND	23.220	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0039.LAB	8/15/2003 14:50	ND	ND	ND	6621.48	ND	2.21	367.6	ND	18.367	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0040.LAB	8/15/2003 14:53	ND	ND	ND	6657.92	ND	2.23	369.7	ND	90.249	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0041.LAB	8/15/2003 14:55	ND	ND	ND	6705.26	ND	2.23	371.1	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0042.LAB	8/15/2003 14:58	ND	ND	ND	6714.28	ND	2.22	370.1	ND	29.317	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0043.LAB	8/15/2003 15:01	ND	ND	ND	6678.50	ND	2.22	369.4	ND	64.553	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0044.LAB	8/15/2003 15:04	ND	ND	ND	6791.48	ND	2.22	368.1	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0045.LAB	8/15/2003 15:07	ND	ND	ND	6843.23	ND	2.22	368.1	ND	73.979	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0046.LAB	8/15/2003 15:09	ND	ND	ND	6946.67	ND	2.23	373.2	ND	36.487	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0047.LAB	8/15/2003 15:12	ND	ND	ND	6958.74	ND	2.23	373.6	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0048.LAB	8/15/2003 15:15	ND	ND	ND	6915.11	ND	2.22	374.4	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0049.LAB	8/15/2003 15:18	ND	ND	ND	6846.48	ND	2.21	372.4	ND	113.150	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0050.LAB	8/15/2003 15:20	ND	ND	ND	6833.16	ND	2.21	372.1	ND	97.996	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0051.LAB	8/15/2003 15:23	ND	ND	ND	6939.71	ND	2.21	374.4	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0052.LAB	8/15/2003 15:26	ND	ND	ND	6935.41	ND	2.20	373.2	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0053.LAB	8/15/2003 15:29	ND	ND	ND	6924.33	ND	2.20	371.5	ND	25.878	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0054.LAB	8/15/2003 15:32	ND	ND	ND	6891.95	ND	2.21	374.5	ND	102.590	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0055.LAB	8/15/2003 15:34	ND	ND	ND	6891.14	ND	2.20	372.5	ND	75.800	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0056.LAB	8/15/2003 15:37	ND	ND	ND	6911.62	ND	2.20	371.6	ND	18.284	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0057.LAB	8/15/2003 15:40	ND	ND	ND	6905.03	ND	2.20	370.8	ND	33.739	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0058.LAB	8/15/2003 15:43	ND	ND	ND	6888.00	ND	2.21	372.2	ND	61.967	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0059.LAB	8/15/2003 15:45	ND	ND	ND	6903.57	ND	2.21	372.0	ND	113.814	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0060.LAB	8/15/2003 15:48	ND	ND	ND	6883.90	ND	2.21	372.0	ND	74.647	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0061.LAB	8/15/2003 15:51	ND	ND	ND	6923.44	ND	2.21	373.4	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0062.LAB	8/15/2003 15:54	ND	ND	ND	6890.47	ND	2.21	374.4	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0063.LAB	8/15/2003 15:57	ND	ND	ND	6860.25	ND	2.20	372.3	ND	75.595	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0064.LAB	8/15/2003 15:59	ND	ND	ND	6861.93	ND	2.19	371.4	ND	101.735	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0065.LAB	8/15/2003 16:02	ND	ND	ND	6828.64	ND	2.19	370.3	ND	48.666	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0066.LAB	8/15/2003 16:05	ND	ND	ND	6843.09	ND	2.19	370.1	ND	ND	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0067.LAB	8/15/2003 16:08	ND	ND	ND	6911.25	ND	2.20	372.9	ND	27.80	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0068.LAB	8/15/2003 16:10	ND	ND	ND	6820.93	ND	2.18	370.0	ND	102.81	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0069.LAB	8/15/2003 16:13	ND	ND	ND	6734.65	ND	2.18	369.4	ND	115.03	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0070.LAB	8/15/2003 16:16	ND	ND	ND	6848.32	ND	2.20	370.9	ND	21.65	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0071.LAB	8/15/2003 16:19	ND	ND	ND	6821.91	ND	2.20	372.0	ND	26.35	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0072.LAB	8/15/2003 16:21	ND	ND	ND	6751.61	ND	2.19	372.0	ND	25.61	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0073.LAB	8/15/2003 16:24	ND	ND	ND	6704.38	ND	2.19	370.9	ND	117.73	150.51	1.006

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 9s.1.2ef FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S.1.2F OUTLET 08 15 03 R2_0074.LAB	8/15/2003 16:27	ND	ND	ND	6794.93	ND	2.20	372.5	ND	90.27	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0075.LAB	8/15/2003 16:30	ND	ND	ND	6804.93	ND	2.20	372.3	ND	18.04	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0076.LAB	8/15/2003 16:33	ND	ND	ND	6794.46	ND	2.20	372.0	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0077.LAB	8/15/2003 16:37	ND	ND	ND	6771.68	ND	2.19	369.2	ND	115.65	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0078.LAB	8/15/2003 16:40	ND	ND	ND	6826.93	ND	2.20	370.9	ND	85.04	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0079.LAB	8/15/2003 16:43	ND	ND	ND	6820.16	ND	2.19	368.3	ND	22.93	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0080.LAB	8/15/2003 16:46	ND	ND	ND	6901.05	ND	2.23	371.3	ND	ND	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0081.LAB	8/15/2003 16:49	ND	ND	ND	6937.48	ND	2.26	374.1	ND	46.19	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0082.LAB	8/15/2003 16:51	ND	ND	ND	6924.14	ND	2.26	373.3	ND	113.38	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0083.LAB	8/15/2003 16:54	ND	ND	ND	6935.31	ND	2.28	372.3	ND	66.83	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0084.LAB	8/15/2003 16:57	ND	ND	ND	6917.89	ND	2.27	368.9	ND	24.35	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0085.LAB	8/15/2003 17:00	ND	ND	ND	6695.20	ND	2.26	368.1	ND	30.70	150.51	1.006
9S.1.2F OUTLET 08 15 03 R2_0086.LAB	8/15/2003 17:02	ND	ND	ND	6499.64	ND	2.27	370.7	ND	22.82	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0087.LAB	8/15/2003 17:05	ND	ND	ND	6316.51	ND	2.28	370.7	ND	23.32	150.51	1.001
9S.1.2F OUTLET 08 15 03 R2_0088.LAB	8/15/2003 17:08	ND	ND	ND	6152.91	ND	2.26	371.2	ND	19.81	150.51	1.006

Average _{wet}	ND	ND	ND	6872.50	ND	2.23	370.69	ND	32.30	150.50	1.005

Reference Method Calculations

Fab 11West

9s.1.2e-f Outlet

Run No.	Run 1	Run 2	
Date	8/15/2003	8/15/2003	
Start Time	8:20	13:10	AVERAGE
Stop Time	12:20	17:10	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	87.8	91.2	89.5
Volume Metered (acf)	125.969	126.656	126.313
Volume Metered (dscf)	101.785	101.709	101.747
Volume of Water Collected (g)	45.7	46.7	46.2
Volume of Water Collected (scf)	2.155	2.202	2.178
Average Delta H (in. H ₂ O)	0.70	0.70	0.70
AVG SQRT of dH (in. H ₂ O)	0.8373	0.8348	0.8361
Measured Moisture (%)	2.1%	2.1%	2.1%
Saturation Moisture (%)	2.7%	2.7%	2.7%
Moisture Used for Calculations (%)	2.2%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.62	28.61	28.61
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.12	-0.13	-0.13
Stack Pressure (in. Hg)	24.88	24.88	24.88
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.3947	0.3921	0.3934
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.4089	0.3931	0.4010
Stack Temperature Isokinetic Traverse (°F)	67.6	68.2	67.9
Stack Temperature Flow Traverse (°F)	66.0	69.0	67.5
Velocity (ft/sec) Isokinetic Traverse	24.40	24.25	24.33
Velocity (ft/sec) Flow Traverse	25.24	24.33	24.79
Nozzle Diameter (in.)	0.257	0.257	0.257
% Isokinetics	98.91	99.53	99.2
Stack Diameter (in.)	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	18,397	18,286	18,341
Stack Flow Rate Flow Traverse (acfm)	19,030	18,348	18,689
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	14,961	14,856	14,908
Stack Flow Rate Outlet Flow Traverse (dscfm)	15,523	14,885	15,204
Chlorine			
Collected Cl. micrograms (ug)	13.8	16.6	15.2
Cl ₂ Concentration (ug/dscf)	0.14	0.16	0.15
Cl ₂ Concentration (ppb)	2	2	2
Cl ₂ Emission Rate (lbs/hr)	0.0003	0.0003	0.0003

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/15/2003												
Unit Number: 9s.1.2e-f Outlet	Stack Diameter (in.): 48.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.12												
Run No.: 1	Operators: BMB/BDS												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.89												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 7:45 End: 8:00		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %													
Comments :													

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.15	66
2	0.17	66
3	0.14	66
4	0.17	66
5	0.14	66
6	0.16	66
7	0.16	66
8	0.17	66
9	0.16	66
10	0.17	66
11	0.17	66
12	0.17	66

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.24	66
2	0.23	66
3	0.21	66
4	0.22	66
5	0.17	66
6	0.15	66
7	0.14	66
8	0.14	66
9	0.14	66
10	0.18	66
11	0.15	66
12	0.14	66
Total Average: sqrt dp = 0.4089		66.0

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/15/2003												
Unit Number: 9s.1.2e-f Outlet	Stack Diameter (in.): 48.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.13												
Run No.: 2	Operators: BMB/BDS												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.89												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 12:30 End: 12:45		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %													
Comments :													

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.15	69
2	0.15	69
3	0.14	69
4	0.15	69
5	0.12	69
6	0.11	69
7	0.13	69
8	0.15	69
9	0.17	69
10	0.17	69
11	0.16	69
12	0.15	69

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.21	69
2	0.23	69
3	0.21	69
4	0.17	69
5	0.17	69
6	0.14	69
7	0.12	69
8	0.12	69
9	0.16	69
10	0.16	69
11	0.13	69
12	0.17	69
Total Average: sqrt dp = 0.3931		69.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments				Sample Train No. AA		Filter No.: NA		Run No.: 1	
Plant Name:	Fab 11West					Leak Check Initial: 0.010 cfm@ 15 (in. Hg)					
Plant Location:	Rio Rancho, NM					Leak Check Final: 0.004 cfm@ 4 (in. Hg)					
Project No.:	31397-1600-00000					Total Traverse Points		Impinger	Initial	Final	
Sampling Location:	9s.1.2e-f Outlet					24		1	667.1	679.7	
Date:	8/15/2003							2	743.8	752.1	
Technicians:	BMB/BDS							3	536.1	538.4	
Meter Box No.: 90401	Y_d: 1.006			4	648.0	650.6					
Probe/Pitot No 301 / HA-1	C_p: 0.84			5	656.9	655.9					
Nozzle No.: NA	dH₀: 1.725	Stack Dia. (in.): 48.00	Stack Area (ft²): 12.57	6	810.6	831.5					
Nozzle Dia: 0.257	0.257, 0.257, 0.256	Port Width (in.): 3.00	Port Length (in.): 2.50	Start Time: 8:20 Net Impinger Gain (g): 45.7							
Initial Meter Reading (ft³):	929.949	BP (in. Hg): 24.89	Static Pressure (in.): -0.12	End Time: 12:20 Theta 240							
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
1	10	67	74	75	0.160	0.71	935.040	244	244	50	1
1	20	68	79	76	0.160	0.71	940.060	241	245	50	1
1	30	68	82	78	0.160	0.71	945.270	242	245	50	1
1	40	68	85	81	0.150	0.67	950.400	248	245	51	1
1	50	68	86	82	0.150	0.67	955.340	248	245	51	1
1	60	68	88	85	0.160	0.71	960.600	248	245	51	1
1	70	68	89	84	0.160	0.72	965.980	248	245	51	1
1	80	68	90	86	0.150	0.68	971.020	248	246	52	1
1	90	68	92	87	0.160	0.72	976.430	246	245	52	1
1	100	68	92	86	0.160	0.72	981.870	245	247	52	1
1	110	68	91	87	0.160	0.72	987.220	248	248	52	1
1	120	68	90	87	0.160	0.72	992.550	249	245	52	1
1	130	68	90	87	0.160	0.72	997.900	248	248	52	1
1	140	67	90	88	0.160	0.72	1003.220	244	251	52	1
1	150	67	90	88	0.160	0.72	1008.600	241	251	53	1
1	160	67	90	88	0.160	0.72	1013.880	242	249	53	1
1	170	67	93	89	0.150	0.68	1019.140	242	249	53	1
1	180	67	93	90	0.160	0.73	1024.540	242	248	53	1
1	190	67	93	89	0.150	0.68	1029.780	244	248	53	1
1	200	67	93	89	0.150	0.68	1034.940	245	247	54	1
1	210	67	93	89	0.150	0.68	1040.240	245	247	54	1
1	220	68	95	91	0.150	0.68	1045.470	244	245	55	1
1	230	68	95	91	0.150	0.68	1050.750	245	244	55	1
1	240	68	95	92	0.150	0.68	1055.918	245	244	55	1
Average / Net		67.6		87.8	0.2	0.7	125.969	245.1	246.5	52.3	1.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No. SF		Filter No.: NA		Run No.: 2		
Plant Name:	Fab 11West						Leak Check Initial:		0.005	cfm@	14.5	(in. Hg)	
Plant Location:	Rio Rancho, NM						Leak Check Final:		0.001	cfm@	2.0	(in. Hg)	
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial		Final		
Sampling Location:	9s.1.2e-f Outlet								1	602.3	615.3		
Date:	8/15/2003								2	628.1	634.0		
Technicians:	BMB/BDS								3	645.4	646.6		
Meter Box No.: 90401	Y _d : 1.006								4	623.9	624.4		
Probe / Pitot No.: 301 / HA-1	C _p : 0.84	5	646.5	645.1									
Nozzle No.: NA	dH ₀ : 1.725	Stack Dia. (in.): 48.00		Stack Area (ft²): 12.57		6	935.9	963.4					
Nozzle Dia: 0.257	0.257, 0.257, 0.256	Port Width (in.): 3.00		Port Length (in.): 2.50		Start Time: 13:10		Net Impinger Gain (g): 46.7					
Initial Meter Reading (ft³):	56.449	BP (in. Hg): 24.89		Static Pressure (in.): -0.13		End Time: 17:10		Theta 240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)		
1	10	68	87	87	0.150	0.68	61.640	247	240	50	1		
1	20	68	88	87	0.160	0.72	66.950	247	266	50	1		
1	30	69	91	88	0.160	0.72	72.240	248	276	52	1		
1	40	68	93	89	0.160	0.73	77.560	251	251	52	1		
1	50	67	94	89	0.160	0.73	82.890	243	250	52	1		
1	60	69	94	91	0.160	0.73	88.220	250	254	52	1		
1	70	69	96	92	0.150	0.68	93.530	245	254	52	1		
1	80	69	96	92	0.150	0.68	98.700	245	254	52	1		
1	90	69	96	95	0.150	0.68	104.100	245	254	52	1		
1	100	69	93	92	0.150	0.68	109.440	245	253	53	1		
1	110	68	92	90	0.150	0.68	114.680	245	252	53	1		
1	120	68	92	90	0.150	0.68	119.910	245	251	53	1		
1	130	68	96	91	0.150	0.68	125.100	250	257	53	1		
1	140	68	96	91	0.150	0.68	130.330	250	257	53	1		
1	150	68	97	94	0.150	0.69	135.550	256	256	52	1		
1	160	68	96	93	0.150	0.69	140.790	255	255	53	1		
1	170	69	94	92	0.150	0.68	146.000	255	253	53	1		
1	180	68	91	89	0.150	0.68	151.200	251	249	53	1		
1	190	68	90	87	0.150	0.68	156.400	252	249	53	1		
1	200	68	90	87	0.150	0.68	161.610	251	249	53	1		
1	210	68	88	86	0.160	0.72	166.950	248	251	54	1		
1	220	68	88	86	0.160	0.72	172.230	249	251	54	1		
1	230	68	91	89	0.160	0.72	177.810	248	251	54	1		
1	240	68	91	89	0.160	0.72	183.105	250	253	55	1		
Average / Net		68.2		91.2	0.2	0.7	126.656	248.8	253.6	52.6	1.0		

EPA REFERENCE METHOD 1

FIELD DATA SHEET

CIRCULAR STACKS

Firm Name: **INTEL**

Plant Location: **Rio Rancho, NM**

Sampling Location: **9s.1.2e/2f**

TRC Project No.: **31397-1600-00000**

Date: **9/18/2003**

Technician: **B. Bauer**

Circular/Rectangular: **C**

Stack Diameter: **41.5**

Sample Port Diameter: **3.0**

Sample Port Depth: **2.0**

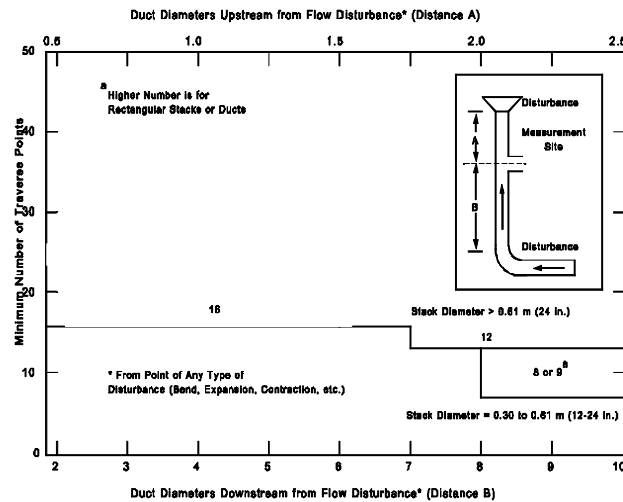
Diameters Upstream: **0.9**

Diameters Downstream: **3.1**

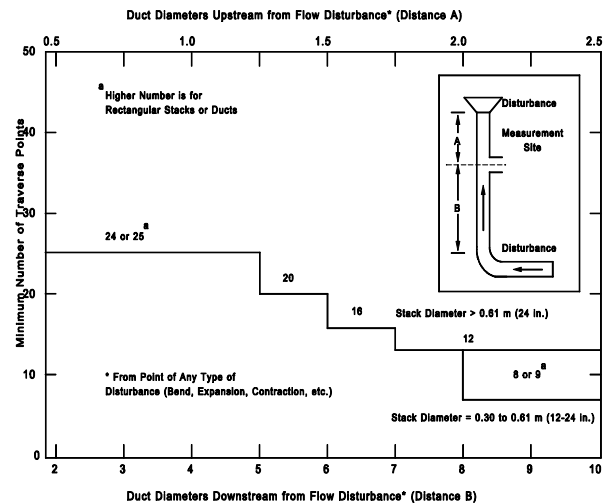
Flow or Particulate Test: **P**

Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	2 14/16
2	4 12/16
3	6 14/16
4	9 6/16
5	12 6/16
6	16 12/16
7	28 12/16
8	33 2/16
9	36 2/16
10	38 10/16
11	40 12/16
12	42 10/16
13	
14	
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INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER

FIELD AND SOURCE DOCUMENTATION

APPENDIX A
Field and Measurement Data

SECTION 3
Fab 11N Acid Scrubber Results

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

Scrubber Outlet 10s.1.1c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1C OUTLET 08 28 03 SAMPLE_0002.LAB	8/28/2003 9:49	ND	ND	450.05	ND	ND	2.31	392.1	1244.913	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0003.LAB	8/28/2003 9:51	ND	ND	479.39	ND	ND	2.32	393.3	1117.577	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0004.LAB	8/28/2003 9:54	ND	ND	507.14	ND	ND	2.31	391.3	1372.552	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0005.LAB	8/28/2003 9:57	ND	ND	521.24	ND	ND	2.32	394.0	1519.500	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0006.LAB	8/28/2003 9:59	ND	ND	526.04	ND	ND	2.32	393.9	1548.898	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0007.LAB	8/28/2003 10:02	ND	ND	529.23	ND	ND	2.32	395.1	1698.432	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0008.LAB	8/28/2003 10:05	ND	ND	529.00	ND	ND	2.32	394.3	1442.067	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0009.LAB	8/28/2003 10:07	ND	ND	532.54	ND	ND	2.32	393.8	1580.193	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0010.LAB	8/28/2003 10:10	ND	ND	522.87	ND	ND	2.31	392.2	1299.428	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0011.LAB	8/28/2003 10:12	ND	ND	524.87	ND	ND	2.32	394.4	1522.865	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0012.LAB	8/28/2003 10:15	ND	ND	513.30	ND	ND	2.31	392.1	1454.208	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0013.LAB	8/28/2003 10:18	ND	ND	514.71	ND	ND	2.32	394.1	1508.644	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0014.LAB	8/28/2003 10:20	ND	ND	499.29	ND	ND	2.32	393.9	1429.768	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0015.LAB	8/28/2003 10:23	ND	ND	484.53	ND	ND	2.31	394.0	1374.011	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0016.LAB	8/28/2003 10:25	ND	ND	484.68	ND	ND	2.31	393.5	1193.553	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0017.LAB	8/28/2003 10:28	ND	ND	476.65	ND	ND	2.31	392.0	1034.011	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0018.LAB	8/28/2003 10:31	ND	ND	471.72	ND	ND	2.33	396.8	1197.809	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0019.LAB	8/28/2003 10:33	ND	ND	482.04	ND	ND	2.31	392.2	966.982	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0020.LAB	8/28/2003 10:36	ND	ND	460.70	ND	ND	2.33	394.9	1015.503	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0021.LAB	8/28/2003 10:38	ND	ND	480.30	ND	ND	2.34	394.9	ND	30.392	149.02	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0022.LAB	8/28/2003 10:41	ND	ND	469.86	ND	ND	2.35	394.4	ND	32.521	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0023.LAB	8/28/2003 10:44	ND	ND	476.22	ND	ND	2.36	395.3	ND	37.037	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0024.LAB	8/28/2003 10:46	ND	ND	430.84	ND	ND	2.34	393.3	1071.849	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0025.LAB	8/28/2003 10:49	ND	ND	421.39	ND	ND	2.33	391.5	939.379	ND	149.02	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0026.LAB	8/28/2003 10:52	ND	ND	411.41	ND	ND	2.35	394.1	1071.469	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0027.LAB	8/28/2003 10:54	ND	ND	408.14	ND	ND	2.34	391.7	847.764	52.642	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0028.LAB	8/28/2003 10:57	ND	ND	399.26	ND	ND	2.34	391.1	1023.668	80.757	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0029.LAB	8/28/2003 10:59	ND	ND	394.90	ND	ND	2.35	391.1	ND	89.418	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0030.LAB	8/28/2003 11:02	ND	ND	395.33	ND	ND	2.35	390.0	795.445	59.042	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0031.LAB	8/28/2003 11:05	ND	ND	401.69	ND	ND	2.35	388.6	794.095	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0032.LAB	8/28/2003 11:07	ND	ND	388.11	ND	ND	2.35	388.2	814.811	17.495	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0033.LAB	8/28/2003 11:10	ND	ND	385.61	ND	ND	2.36	390.0	825.820	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0034.LAB	8/28/2003 11:12	ND	ND	392.44	ND	ND	2.34	387.3	987.114	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0035.LAB	8/28/2003 11:15	ND	ND	387.34	ND	ND	2.34	387.7	1137.853	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0036.LAB	8/28/2003 11:18	ND	ND	378.91	ND	ND	2.34	386.7	1101.644	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0037.LAB	8/28/2003 11:20	ND	ND	367.01	ND	ND	2.34	386.2	1003.532	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0038.LAB	8/28/2003 11:23	ND	ND	365.30	ND	ND	2.34	386.7	1101.389	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0039.LAB	8/28/2003 11:26	ND	ND	359.14	ND	ND	2.34	387.3	1041.848	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0040.LAB	8/28/2003 11:28	ND	ND	366.39	ND	ND	2.34	387.4	970.935	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0041.LAB	8/28/2003 11:31	ND	ND	360.28	ND	ND	2.34	386.9	975.448	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0042.LAB	8/28/2003 11:33	ND	ND	350.70	ND	ND	2.34	386.7	1087.154	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0043.LAB	8/28/2003 11:36	ND	ND	346.47	ND	ND	2.34	386.9	932.925	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0044.LAB	8/28/2003 11:39	ND	ND	ND	ND	ND	2.34	386.8	1041.524	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0045.LAB	8/28/2003 11:41	ND	ND	ND	ND	ND	2.34	386.4	946.197	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0046.LAB	8/28/2003 11:44	ND	ND	ND	ND	ND	2.34	386.7	1080.345	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0047.LAB	8/28/2003 11:46	ND	ND	ND	ND	ND	2.34	387.2	968.950	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0048.LAB	8/28/2003 11:49	ND	ND	ND	ND	ND	2.34	387.6	880.663	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0049.LAB	8/28/2003 11:52	ND	ND	ND	ND	ND	2.34	389.6	1063.920	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0050.LAB	8/28/2003 11:54	ND	ND	ND	ND	ND	2.33	391.4	992.581	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0051.LAB	8/28/2003 11:57	ND	ND	ND	ND	ND	2.33	392.1	881.705	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0052.LAB	8/28/2003 11:59	ND	ND	ND	ND	ND	2.33	391.9	770.148	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0053.LAB	8/28/2003 12:02	ND	ND	ND	ND	ND	2.33	390.8	765.817	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0054.LAB	8/28/2003 12:05	ND	ND	ND	ND	ND	2.33	391.8	868.492	ND	149.76	1.008

Scrubber Outlet 10s.1.1c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1C OUTLET 08 28 03 SAMPLE_0055.LAB	8/28/2003 12:07	ND	ND	ND	ND	ND	2.33	390.7	ND	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0056.LAB	8/28/2003 12:10	ND	ND	ND	ND	ND	2.33	390.6	780.233	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0057.LAB	8/28/2003 12:13	ND	ND	ND	ND	ND	2.33	389.5	1040.920	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0058.LAB	8/28/2003 12:15	ND	ND	ND	ND	ND	2.33	389.8	883.185	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0059.LAB	8/28/2003 12:18	ND	ND	ND	ND	ND	2.33	389.4	984.107	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0060.LAB	8/28/2003 12:20	ND	ND	ND	ND	ND	2.34	389.3	774.026	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0061.LAB	8/28/2003 12:23	ND	ND	ND	ND	ND	2.33	388.2	1048.615	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0062.LAB	8/28/2003 12:26	ND	ND	ND	ND	ND	2.34	387.8	859.526	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0063.LAB	8/28/2003 12:28	ND	ND	ND	ND	ND	2.34	388.1	866.776	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0064.LAB	8/28/2003 12:31	ND	ND	ND	ND	ND	2.33	387.7	767.074	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0065.LAB	8/28/2003 12:34	ND	ND	ND	ND	ND	2.35	390.9	883.167	19.229	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0066.LAB	8/28/2003 12:36	ND	ND	ND	ND	ND	2.35	391.1	ND	63.582	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0067.LAB	8/28/2003 12:39	ND	ND	348.09	ND	ND	2.35	391.0	ND	64.069	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0068.LAB	8/28/2003 12:41	ND	ND	346.24	ND	ND	2.34	390.8	ND	63.822	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0069.LAB	8/28/2003 12:44	ND	ND	355.72	ND	ND	2.35	391.6	ND	72.664	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0070.LAB	8/28/2003 12:47	ND	ND	ND	ND	ND	2.33	389.9	ND	31.112	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0071.LAB	8/28/2003 12:49	ND	ND	ND	ND	ND	2.32	387.7	ND	33.874	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0072.LAB	8/28/2003 12:52	ND	ND	ND	ND	ND	2.33	389.4	837.351	40.023	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0073.LAB	8/28/2003 12:54	ND	ND	ND	ND	ND	2.33	388.3	ND	41.381	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0074.LAB	8/28/2003 12:57	ND	ND	ND	ND	ND	2.32	385.2	890.094	47.438	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0075.LAB	8/28/2003 13:00	ND	ND	ND	ND	ND	2.32	384.8	1094.193	31.498	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0076.LAB	8/28/2003 13:02	ND	ND	ND	ND	ND	2.32	385.5	979.247	41.293	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0077.LAB	8/28/2003 13:05	ND	ND	ND	ND	ND	2.32	384.3	1143.356	36.746	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0078.LAB	8/28/2003 13:08	ND	ND	ND	ND	ND	2.32	384.2	1034.105	37.198	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0079.LAB	8/28/2003 13:10	ND	ND	ND	ND	ND	2.32	384.2	968.710	36.627	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0080.LAB	8/28/2003 13:13	ND	ND	ND	ND	ND	2.33	386.5	987.135	34.260	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0081.LAB	8/28/2003 13:15	ND	ND	ND	ND	ND	2.33	386.6	899.982	30.399	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0082.LAB	8/28/2003 13:18	ND	ND	ND	ND	ND	2.32	385.1	937.961	36.230	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0083.LAB	8/28/2003 13:21	ND	ND	ND	ND	ND	2.33	386.6	1006.944	29.635	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0084.LAB	8/28/2003 13:23	ND	ND	ND	ND	ND	2.32	383.3	906.648	32.712	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0085.LAB	8/28/2003 13:26	ND	ND	ND	ND	ND	2.33	385.8	903.517	31.823	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0086.LAB	8/28/2003 13:28	ND	ND	ND	ND	ND	2.32	384.3	832.059	30.161	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0087.LAB	8/28/2003 13:31	ND	ND	ND	ND	ND	2.33	386.5	1013.627	33.729	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0088.LAB	8/28/2003 13:34	ND	ND	ND	ND	ND	2.33	386.1	1000.512	39.035	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0089.LAB	8/28/2003 13:36	ND	ND	ND	ND	ND	2.33	386.3	926.142	33.820	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0090.LAB	8/28/2003 13:39	ND	ND	ND	ND	ND	2.32	383.9	920.901	33.062	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0091.LAB	8/28/2003 13:42	ND	ND	ND	ND	ND	2.32	383.8	917.460	29.239	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0092.LAB	8/28/2003 13:44	ND	ND	ND	ND	ND	2.32	383.4	912.516	31.787	149.02	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0093.LAB	8/28/2003 13:47	ND	ND	ND	ND	ND	2.32	384.3	942.247	35.503	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0122.LAB	8/28/2003 15:40	ND	ND	ND	281.94	ND	2.29	389.2	1073.704	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0123.LAB	8/28/2003 15:43	ND	ND	ND	293.22	ND	2.27	386.5	1118.450	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0124.LAB	8/28/2003 15:45	ND	ND	ND	275.36	ND	2.28	387.8	1096.217	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0125.LAB	8/28/2003 15:48	ND	ND	ND	250.42	ND	2.28	387.7	1001.108	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0126.LAB	8/28/2003 15:51	ND	ND	ND	194.25	ND	2.28	388.2	874.401	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0127.LAB	8/28/2003 15:53	ND	ND	ND	176.36	ND	2.26	386.0	1098.421	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0128.LAB	8/28/2003 15:56	ND	ND	ND	156.29	ND	2.28	389.6	958.026	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0129.LAB	8/28/2003 15:58	ND	ND	ND	ND	ND	2.27	388.6	1038.188	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0130.LAB	8/28/2003 16:01	ND	ND	ND	ND	ND	2.25	385.5	1065.119	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0131.LAB	8/28/2003 16:04	ND	ND	ND	ND	ND	2.27	389.1	977.574	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0132.LAB	8/28/2003 16:06	ND	ND	ND	ND	ND	2.27	390.2	976.273	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0133.LAB	8/28/2003 16:09	ND	ND	ND	ND	ND	2.27	391.1	905.204	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0134.LAB	8/28/2003 16:11	ND	ND	ND	ND	ND	2.27	391.6	1092.966	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0135.LAB	8/28/2003 16:14	ND	ND	ND	ND	ND	2.28	394.0	808.171	ND	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 10s.1.1c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1C OUTLET 08 28 03 SAMPLE_0136.LAB	8/28/2003 16:17	ND	ND	ND	ND	ND	2.28	395.2	802.049	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0137.LAB	8/28/2003 16:19	ND	ND	ND	ND	ND	2.29	394.9	ND	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0138.LAB	8/28/2003 16:22	ND	ND	ND	ND	ND	2.29	395.2	ND	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0139.LAB	8/28/2003 16:25	ND	ND	ND	ND	ND	2.30	394.7	ND	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0140.LAB	8/28/2003 16:27	ND	ND	ND	ND	ND	2.29	393.8	ND	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0141.LAB	8/28/2003 16:30	ND	ND	ND	ND	ND	2.27	391.7	ND	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0142.LAB	8/28/2003 16:32	ND	ND	ND	ND	ND	2.27	390.0	1015.280	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0143.LAB	8/28/2003 16:35	ND	ND	ND	ND	ND	2.28	392.2	1116.098	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0144.LAB	8/28/2003 16:38	ND	ND	ND	ND	ND	2.26	391.0	1305.914	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0145.LAB	8/28/2003 16:40	ND	ND	ND	ND	ND	2.28	391.7	1605.595	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0146.LAB	8/28/2003 16:43	ND	ND	ND	ND	ND	2.27	389.1	1732.023	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0147.LAB	8/28/2003 16:45	ND	ND	ND	158.02	ND	2.28	391.1	1846.356	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0148.LAB	8/28/2003 16:48	ND	ND	ND	ND	ND	2.31	392.8	1117.836	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0149.LAB	8/28/2003 16:51	ND	ND	ND	209.72	ND	2.30	390.7	1554.262	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0150.LAB	8/28/2003 16:53	ND	ND	ND	222.99	ND	2.29	388.1	1683.789	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0151.LAB	8/28/2003 16:56	ND	ND	ND	251.18	ND	2.30	390.4	1786.032	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0152.LAB	8/28/2003 16:58	ND	ND	ND	253.68	ND	2.28	388.4	1770.127	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0153.LAB	8/28/2003 17:01	ND	ND	ND	262.18	ND	2.28	388.8	1917.739	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0154.LAB	8/28/2003 17:04	ND	ND	ND	249.17	ND	2.28	388.4	1793.563	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0155.LAB	8/28/2003 17:06	ND	ND	ND	245.56	ND	2.28	390.5	1663.896	ND	149.02	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0156.LAB	8/28/2003 17:09	ND	ND	ND	227.80	ND	2.27	390.4	1479.571	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0157.LAB	8/28/2003 17:12	ND	ND	ND	193.42	ND	2.28	392.3	1433.770	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0158.LAB	8/28/2003 17:14	ND	ND	ND	175.65	ND	2.27	392.4	1266.488	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0159.LAB	8/28/2003 17:17	ND	ND	ND	158.04	ND	2.27	394.5	1210.954	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0160.LAB	8/28/2003 17:19	ND	ND	ND	ND	ND	2.26	395.5	1312.785	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0161.LAB	8/28/2003 17:22	ND	ND	ND	ND	ND	2.26	395.9	1376.737	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0162.LAB	8/28/2003 17:25	ND	ND	ND	ND	ND	2.26	395.9	1367.663	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0163.LAB	8/28/2003 17:27	ND	ND	ND	ND	ND	2.26	395.7	1144.760	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0164.LAB	8/28/2003 17:30	ND	ND	ND	ND	ND	2.27	396.3	1037.304	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0165.LAB	8/28/2003 17:32	ND	ND	ND	ND	ND	2.27	396.5	978.582	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0166.LAB	8/28/2003 17:35	ND	ND	ND	152.06	ND	2.27	396.2	980.095	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0167.LAB	8/28/2003 17:38	ND	ND	ND	176.90	ND	2.27	396.3	1035.492	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0168.LAB	8/28/2003 17:42	ND	ND	ND	188.94	ND	2.28	399.5	1050.146	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0169.LAB	8/28/2003 17:44	ND	ND	ND	165.10	ND	2.27	397.4	1020.802	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0170.LAB	8/28/2003 17:47	ND	ND	ND	171.16	ND	2.26	398.4	880.149	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0171.LAB	8/28/2003 17:49	ND	ND	ND	163.36	ND	2.26	399.2	897.181	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0172.LAB	8/28/2003 17:52	ND	ND	ND	ND	ND	2.25	398.9	921.541	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0173.LAB	8/28/2003 17:55	ND	ND	ND	ND	ND	2.25	398.7	980.907	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0174.LAB	8/28/2003 17:57	ND	ND	ND	155.54	ND	2.26	398.6	849.133	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0175.LAB	8/28/2003 18:00	ND	ND	ND	ND	ND	2.26	400.0	779.867	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0176.LAB	8/28/2003 18:03	ND	ND	ND	ND	ND	2.26	401.9	919.807	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0177.LAB	8/28/2003 18:05	ND	ND	ND	ND	ND	2.28	405.2	957.850	ND	149.76	1.003
10S_1_1C OUTLET 08 28 03 SAMPLE_0178.LAB	8/28/2003 18:08	ND	ND	ND	ND	ND	2.27	402.4	934.250	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0179.LAB	8/28/2003 18:10	ND	ND	ND	ND	ND	2.27	398.9	1103.336	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0180.LAB	8/28/2003 18:13	ND	ND	ND	ND	ND	2.27	394.3	1042.692	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0181.LAB	8/28/2003 18:16	ND	ND	ND	ND	ND	2.27	392.4	1098.25	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0182.LAB	8/28/2003 18:18	ND	ND	ND	ND	ND	2.26	390.4	1177.50	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0183.LAB	8/28/2003 18:21	ND	ND	ND	ND	ND	2.27	392.1	1238.45	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0184.LAB	8/28/2003 18:23	ND	ND	ND	ND	ND	2.27	391.9	1331.84	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0185.LAB	8/28/2003 18:26	ND	ND	ND	ND	ND	2.26	391.1	1130.67	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0186.LAB	8/28/2003 18:29	ND	ND	ND	ND	ND	2.27	392.4	1213.68	ND	149.02	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0187.LAB	8/28/2003 18:31	ND	ND	ND	ND	ND	2.28	394.0	1198.66	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0188.LAB	8/28/2003 18:34	ND	ND	ND	ND	ND	2.28	393.4	1205.05	ND	149.76	1.008

Scrubber Outlet 10s.1.1c FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1C OUTLET 08 28 03 SAMPLE_0189.LAB	8/28/2003 18:36	ND	ND	ND	ND	ND	2.28	392.9	1164.37	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0190.LAB	8/28/2003 18:39	ND	ND	ND	ND	ND	2.28	393.5	919.15	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0191.LAB	8/28/2003 18:42	ND	ND	ND	ND	ND	2.28	392.7	983.52	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0192.LAB	8/28/2003 18:44	ND	ND	ND	ND	ND	2.28	392.5	990.14	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0193.LAB	8/28/2003 18:47	ND	ND	ND	ND	ND	2.28	391.2	1126.53	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0194.LAB	8/28/2003 18:49	ND	ND	ND	ND	ND	2.28	390.9	1199.82	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0195.LAB	8/28/2003 18:52	ND	ND	ND	ND	ND	2.28	390.8	1473.48	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0196.LAB	8/28/2003 18:55	ND	ND	ND	ND	ND	2.27	388.7	1496.76	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0197.LAB	8/28/2003 18:57	ND	ND	ND	ND	ND	2.27	388.5	1455.93	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0198.LAB	8/28/2003 19:00	ND	ND	ND	ND	ND	2.27	388.8	1494.93	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0199.LAB	8/28/2003 19:02	ND	ND	ND	ND	ND	2.28	390.5	1589.03	ND	149.02	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0200.LAB	8/28/2003 19:05	ND	ND	ND	ND	ND	2.29	391.6	1578.35	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0201.LAB	8/28/2003 19:08	ND	ND	ND	ND	ND	2.29	391.9	1715.31	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0202.LAB	8/28/2003 19:10	ND	ND	ND	ND	ND	2.28	392.7	1794.72	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0203.LAB	8/28/2003 19:13	ND	ND	ND	ND	ND	2.27	391.2	1790.19	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0204.LAB	8/28/2003 19:16	ND	ND	ND	154.16	ND	2.28	394.1	1779.84	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0205.LAB	8/28/2003 19:18	ND	ND	ND	159.53	ND	2.27	392.8	1750.92	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0206.LAB	8/28/2003 19:21	ND	ND	ND	159.35	ND	2.26	392.9	1766.86	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0207.LAB	8/28/2003 19:23	ND	ND	ND	ND	ND	2.28	397.1	1572.82	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0208.LAB	8/28/2003 19:26	ND	ND	ND	ND	ND	2.29	403.4	1263.46	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0209.LAB	8/28/2003 19:29	ND	ND	ND	ND	ND	2.28	402.5	1245.90	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0210.LAB	8/28/2003 19:31	ND	ND	ND	240.83	ND	2.28	403.4	1393.27	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0211.LAB	8/28/2003 19:34	ND	ND	ND	475.81	ND	2.27	400.2	1410.81	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0212.LAB	8/28/2003 19:36	ND	ND	ND	713.53	ND	2.29	403.0	1405.26	ND	149.76	1.008
10S_1_1C OUTLET 08 28 03 SAMPLE_0213.LAB	8/28/2003 19:39	ND	ND	ND	821.82	ND	2.28	402.1	1198.31	ND	149.76	1.013
10S_1_1C OUTLET 08 28 03 SAMPLE_0214.LAB	8/28/2003 19:42	ND	ND	ND	829.70	ND	2.28	402.7	1713.53	ND	149.76	1.008
Average _{wet}		ND	ND	363.66	171.97	ND	2.30	391.53	1154.00	22.18	149.74	1.007

Reference Method Calculations

Fab 11 North

10s.1.1c

Run No.	Run 1	Run 2	
Date	8/28/2003	8/28/2003	
Start Time	9:45	15:40	AVERAGE
Stop Time	13:45	19:40	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.83	24.83	24.83
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Average Meter Temperature (°F)	89.0	88.8	88.9
Volume Metered (acf)	215.125	215.411	215.268
Volume Metered (dscf)	172.486	172.774	172.630
Volume of Water Collected (g)	82.7	76.9	79.8
Volume of Water Collected (scf)	3.899	3.626	3.763
Average Delta H (in. H ₂ O)	2.00	2.00	2.00
AVG SQRT of dH (in. H ₂ O)	1.4130	1.4130	1.4130
Measured Moisture (%)	2.2%	2.1%	2.1%
Saturation Moisture (%)	2.3%	2.3%	2.3%
Moisture Used for Calculations (%)	2.3%	2.3%	2.3%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.60	28.62	28.61
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.17	-0.17	-0.17
Stack Pressure (in. Hg)	24.82	24.82	24.82
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5553	0.5575	0.5564
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.5094	0.5112	0.5103
Stack Temperature Isokinetic Traverse (°F)	62.6	62.8	62.7
Stack Temperature Flow Traverse (°F)	62.5	65.1	63.8
Velocity (ft/sec) Isokinetic Traverse	34.21	34.35	34.28
Velocity (ft/sec) Flow Traverse	31.38	31.57	31.48
Nozzle Diameter (in.)	0.280	0.280	0.280
% Isokinetics	100.09	99.8	100.0
Stack Diameter (in.)	42.00	42.00	42.00
Stack Area (ft ²)	9.62	9.62	9.62
Stack Flow Rate Isokinetic Traverse (acfm)	19,750	19,828	19,789
Stack Flow Rate Flow Traverse (acfm)	18,117	18,222	18,170
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	16,179	16,263	16,221
Stack Flow Rate Outlet Flow Traverse (dscfm)	14,843	14,880	14,862
Chlorine			
Collected Cl ₂ micrograms (ug)	1160.0	305.0	732.5
Cl ₂ Concentration (ug/dscf)	6.73	1.77	4.25
Cl ₂ Concentration (ppb)	81	21	51
Cl ₂ Emission Rate (lbs/hr)	0.0132	0.0035	0.0083

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/28/2003
Unit Number:	10s.1.1c	Stack Diameter (in.):	42.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.18
Run No.:	1	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.92
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	7:45	
	End:	8:02	

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.21	63
2	0.25	63
3	0.27	63
4	0.27	63
5	0.27	63
6	0.27	62
7	0.32	62
8	0.32	62
9	0.31	62
10	0.32	63
11	0.29	63
12	0.23	63

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.20	63
2	0.21	62
3	0.22	62
4	0.22	62
5	0.24	62
6	0.25	62
7	0.27	62
8	0.29	62
9	0.29	63
10	0.27	63
11	0.27	63
12	0.20	63
Total Average:	sqrt dp = 0.5094	62.5

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/28/2003
Unit Number:	10s.1.1c	Stack Diameter (in.):	42.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.21
Run No.:	2	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.83
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	13:53	
	End:	14:21	

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.21	68
2	0.23	67
3	0.26	66
4	0.26	65
5	0.27	65
6	0.27	64
7	0.27	64
8	0.29	64
9	0.31	64
10	0.29	64
11	0.27	64
12	0.21	70

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.23	65
2	0.26	65
3	0.26	64
4	0.26	64
5	0.27	64
6	0.28	64
7	0.31	63
8	0.31	63
9	0.30	63
10	0.26	64
11	0.25	68
12	0.17	70
Total Average:	sqrt dp = 0.5112	65.1

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 North						Leak Check Initial:	0.004	cfm@	14	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.008	cfm@	9	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	10s.1.1c								1		651.4		642.2	
Date:	8/28/2003						24		2		732.1		770.0	
Technicians:	PER/SCT								3		535.3		543.5	
Meter Box No.:	90394						Y_d:	0.999			4		628.8	
Probe/Pitot No.:	502 / HA-1	C_p:	0.84			5		640.9		643.2				
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	42.00	Stack Area (ft²):	9.62	6		855.9		895.8		
Nozzle Dia:	0.280	0.280, 0.280, 0.281	Port Width (in.):	3.00	Port Length (in.):	3.50	Start Time:	9:45	Net Impinger Gain (g):	82.7				
Initial Meter Reading (ft³):	576.953	BP (in. Hg):	24.83	Static Pressure (in.):	-0.17	End Time:	13:45	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
S9	10	62	74	73	0.310	2.00	585.640	236	246	51	2.5			
S9	20	62	77	73	0.310	2.00	594.250	247	246	47	2.5			
S9	30	62	84	74	0.310	2.00	603.060	245	245	54	2.5			
S9	40	62	88	77	0.310	2.00	611.850	242	245	59	2.5			
S9	50	62	89	79	0.310	2.00	620.670	247	244	60	2.5			
S9	60	62	91	80	0.310	2.00	629.570	247	246	57	2.5			
S9	70	63	92	82	0.310	2.00	638.510	243	246	56	2.5			
S9	80	63	92	83	0.310	2.00	647.410	243	243	55	2.5			
S9	90	63	94	84	0.310	2.00	656.330	244	244	57	2.5			
S9	100	63	94	84	0.310	2.00	665.280	242	244	57	2.5			
S9	110	63	95	85	0.310	2.00	674.240	239	243	60	2.5			
S9	120	63	95	85	0.300	2.00	683.200	251	245	61	2.5			
S9	130	63	95	86	0.310	2.00	692.160	251	245	61	2.5			
S9	140	63	96	86	0.310	2.00	701.190	249	248	59	2.5			
S9	150	63	96	87	0.310	2.00	710.120	250	245	54	2.5			
S9	160	62	97	87	0.310	2.00	719.200	252	249	54	2.5			
S9	170	63	99	88	0.300	2.00	728.180	251	248	56	2.5			
S9	180	63	100	90	0.300	1.94	737.250	251	246	57	2.5			
S9	190	63	99	91	0.300	1.94	746.310	248	249	59	2.5			
S9	200	62	98	91	0.310	2.01	755.440	250	249	60	2.5			
S9	210	63	98	91	0.310	2.00	764.600	248	246	62	2.5			
S9	220	62	99	91	0.310	2.01	773.770	247	248	48	2.5			
S9	230	63	99	91	0.320	2.07	782.920	248	248	45	2.5			
S9	240	62	99	92	0.300	1.95	792.078	243	250	49	2.5			
Average / Net		62.6		89.0	0.308	2.0	215.125	246.4	246.2	55.8	2.5			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	SF	Filter No.:	NA	Run No.:	2		
Plant Name:	Fab 11 North						Leak Check Initial:	0.005	cfm@	12	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.013	cfm@	5	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	10s.1.1c								1		597.0		605.6	
Date:	8/28/2003						24		2		631.9		648.0	
Technicians:	PER/SCT								3		644.8		649.3	
Meter Box No.:	90394						Y_d:	0.999			4		649.9	
Probe/Pitot No.:	502 / HA-1	C_p:	0.84			5		647.0		645.4				
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	42.00	Stack Area (ft²):	9.62	6		900.3		947.7		
Nozzle Dia:	0.280	0.280, 0.280, 0.281	Port Width (in.):	3.00	Port Length (in.):	3.50	Start Time:	15:40	Net Impinger Gain (g):	76.9				
Initial Meter Reading (ft³):	792.915	BP (in. Hg):	24.83	Static Pressure (in.):	-0.17	End Time:	19:40	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
S9	10	62	88	89	0.310	2.00	801.860	247	242	52	3.5			
S9	20	63	91	87	0.320	2.00	810.880	240	241	53	3.5			
S9	30	62	93	87	0.310	2.00	819.800	250	252	55	3.5			
S9	40	63	97	87	0.310	2.00	828.780	249	254	57	3.5			
S9	50	62	95	87	0.310	2.00	837.750	250	257	57	3.5			
S9	60	63	96	87	0.310	2.00	846.670	249	256	56	3.5			
S9	70	63	93	86	0.310	2.00	855.720	243	252	57	4.0			
S9	80	63	93	86	0.310	2.00	864.630	240	252	57	4.0			
S9	90	63	93	85	0.310	2.00	873.510	244	254	58	4.0			
S9	100	63	94	85	0.310	2.00	882.460	249	254	60	4.0			
S9	110	63	94	85	0.310	2.00	891.380	249	252	60	4.0			
S9	120	63	94	84	0.310	2.00	900.340	254	253	58	4.0			
S9	130	63	94	84	0.310	2.00	909.310	253	255	54	4.0			
S9	140	63	95	85	0.310	2.00	918.270	258	255	53	4.0			
S9	150	63	94	84	0.310	2.00	927.250	249	247	52	4.0			
S9	160	63	93	84	0.320	2.00	936.310	249	245	53	4.0			
S9	170	63	93	83	0.310	2.00	945.370	248	245	52	4.0			
S9	180	63	93	83	0.310	2.00	954.390	249	245	54	4.0			
S9	190	63	93	84	0.310	2.00	963.400	247	246	55	4.0			
S9	200	63	92	83	0.310	2.00	972.390	248	245	54	4.0			
S9	210	63	91	81	0.310	1.98	981.380	248	244	55	4.0			
S9	220	62	91	81	0.310	1.98	990.370	249	244	57	4.0			
S9	230	62	91	81	0.310	1.98	999.350	250	245	59	4.0			
S9	240	63	91	81	0.310	1.98	1008.326	248	245	62	4.0			
Average / Net		62.8		88.8	0.3	2.0	215.411	248.3	249.2	55.8	3.9			

EPA REFERENCE METHOD 1

FIELD DATA SHEET

CIRCULAR STACKS

Firm Name: **INTEL**

Plant Location: **Rio Rancho, NM**

Sampling Location: **10.1.1c**

TRC Project No.: **31397-1600-00000**

Date: **8/28/2003**

Technician: **B. Guyton**

Circular/Rectangular: **C**

Stack Diameter: **42.0**

Sample Port Diameter: **3.0**

Sample Port Depth: **4.50**

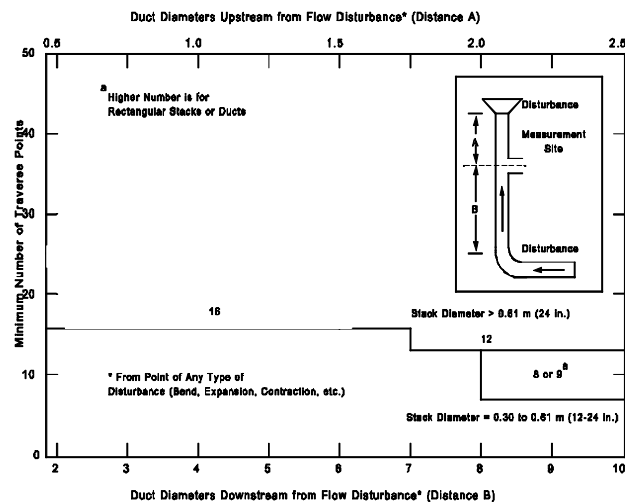
Diameters Upstream: **1.3**

Diameters Downstream: **3.1**

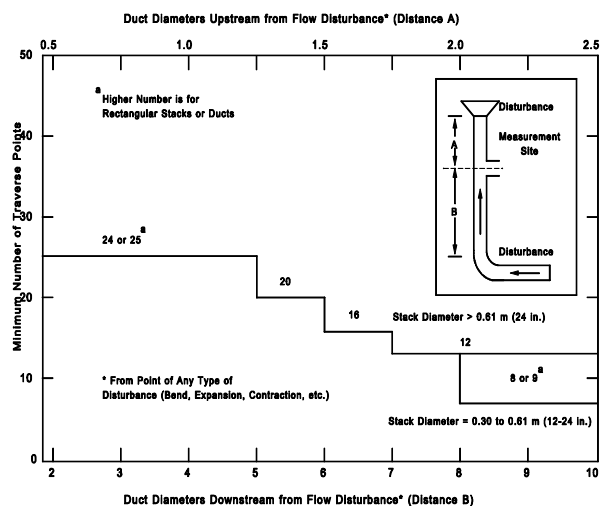
Flow or Particulate Test: **P**

Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	5 6/16
2	7 5/16
3	9 7/16
4	11 15/16
5	15
6	19 7/16
7	31 9/16
8	36
9	39 1/16
10	41 9/16
11	43 11/16
12	45 10/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 10s.1.1d FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1D 09 02 03 SAMPLE_0002 abs.lab	9/2/2003 7:04	ND	ND	364.62	ND	ND	2.27	387.5	775.366	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0003 abs.lab	9/2/2003 7:06	ND	ND	ND	ND	ND	2.27	386.5	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0004 abs.lab	9/2/2003 7:09	ND	ND	ND	ND	ND	2.28	388.4	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0005 abs.lab	9/2/2003 7:12	ND	ND	ND	ND	ND	2.27	387.2	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0006 abs.lab	9/2/2003 7:14	ND	ND	ND	ND	ND	2.28	389.7	ND	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0007 abs.lab	9/2/2003 7:17	ND	ND	ND	ND	ND	2.27	387.8	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0008 abs.lab	9/2/2003 7:19	ND	ND	ND	ND	ND	2.28	390.7	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0009 abs.lab	9/2/2003 7:22	ND	ND	ND	ND	ND	2.30	394.1	ND	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0010 abs.lab	9/2/2003 7:25	ND	ND	ND	ND	ND	2.29	391.0	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0011 abs.lab	9/2/2003 7:27	ND	ND	ND	ND	ND	2.30	391.5	ND	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0012 abs.lab	9/2/2003 7:30	ND	ND	ND	ND	ND	2.29	388.8	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0013 abs.lab	9/2/2003 7:32	ND	ND	ND	ND	ND	2.29	387.7	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0014 abs.lab	9/2/2003 7:35	ND	ND	ND	ND	ND	2.29	387.3	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0015 abs.lab	9/2/2003 7:38	ND	ND	ND	ND	ND	2.30	388.3	ND	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0016 abs.lab	9/2/2003 7:40	ND	ND	ND	ND	ND	2.29	386.5	ND	73.907	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0017 abs.lab	9/2/2003 7:43	ND	ND	ND	ND	ND	2.30	386.8	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0018 abs.lab	9/2/2003 7:45	ND	ND	ND	ND	ND	2.32	390.7	ND	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0019 abs.lab	9/2/2003 7:48	ND	ND	ND	ND	ND	2.30	389.0	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0020 abs.lab	9/2/2003 7:50	ND	ND	ND	ND	ND	2.30	389.1	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0021 abs.lab	9/2/2003 7:53	ND	ND	ND	ND	ND	2.30	387.4	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0022 abs.lab	9/2/2003 7:56	ND	ND	ND	ND	ND	2.30	388.2	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0023 abs.lab	9/2/2003 7:58	ND	ND	ND	ND	ND	2.30	387.1	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0024 abs.lab	9/2/2003 8:01	ND	ND	ND	ND	ND	2.29	386.9	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0025 abs.lab	9/2/2003 8:03	ND	ND	ND	ND	ND	2.30	387.5	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0026 abs.lab	9/2/2003 8:06	ND	ND	ND	ND	ND	2.29	387.4	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0027 abs.lab	9/2/2003 8:09	ND	ND	ND	ND	ND	2.29	387.0	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0028 abs.lab	9/2/2003 8:11	ND	ND	ND	ND	ND	2.29	387.8	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0029 abs.lab	9/2/2003 8:14	ND	ND	ND	ND	ND	2.29	388.4	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0030 abs.lab	9/2/2003 8:16	ND	ND	ND	ND	ND	2.29	388.6	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0031 abs.lab	9/2/2003 8:19	ND	ND	ND	ND	ND	2.29	389.0	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0032 abs.lab	9/2/2003 8:22	ND	ND	ND	ND	ND	2.30	390.8	ND	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0033 abs.lab	9/2/2003 8:24	ND	ND	ND	ND	ND	2.29	389.3	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0034 abs.lab	9/2/2003 8:27	ND	ND	ND	ND	ND	2.29	392.0	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0035 abs.lab	9/2/2003 8:29	ND	ND	ND	ND	ND	2.29	393.3	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0036 abs.lab	9/2/2003 8:32	ND	ND	ND	ND	ND	2.29	392.5	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0037 abs.lab	9/2/2003 8:35	ND	ND	ND	ND	ND	2.29	393.6	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0038 abs.lab	9/2/2003 8:37	ND	ND	ND	ND	ND	2.30	394.1	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0039 abs.lab	9/2/2003 8:40	ND	ND	ND	ND	ND	2.30	394.9	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0040 abs.lab	9/2/2003 8:42	ND	ND	ND	ND	ND	2.31	394.4	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0041 abs.lab	9/2/2003 8:45	ND	ND	ND	ND	ND	2.29	391.7	ND	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0042 abs.lab	9/2/2003 8:48	ND	ND	ND	ND	ND	2.30	392.5	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0043 abs.lab	9/2/2003 8:50	ND	ND	ND	ND	ND	2.28	391.3	ND	40.490	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0044 abs.lab	9/2/2003 8:53	ND	ND	ND	ND	ND	2.28	390.9	ND	33.766	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0045 abs.lab	9/2/2003 8:55	ND	ND	ND	ND	ND	2.28	390.8	ND	31.181	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0046 abs.lab	9/2/2003 8:58	ND	ND	ND	ND	ND	2.27	392.3	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0047 abs.lab	9/2/2003 9:01	ND	ND	ND	ND	ND	2.24	384.7	773.685	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0048 abs.lab	9/2/2003 9:03	ND	ND	ND	ND	ND	2.25	386.5	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0049 abs.lab	9/2/2003 9:06	ND	ND	ND	ND	ND	2.24	386.2	ND	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0050 abs.lab	9/2/2003 9:08	ND	ND	ND	ND	ND	2.25	387.5	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0051 abs.lab	9/2/2003 9:11	ND	ND	ND	ND	ND	2.26	388.1	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0052 abs.lab	9/2/2003 9:14	ND	ND	ND	ND	ND	2.25	386.0	771.189	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0053 abs.lab	9/2/2003 9:16	ND	ND	ND	ND	ND	2.26	385.9	ND	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0054 abs.lab	9/2/2003 9:19	ND	ND	ND	ND	ND	2.28	387.7	ND	ND	149.76	1.008

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 10s.1.1d FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1D 09 02 03 SAMPLE_0055 abs.lab	9/2/2003 9:21	ND	ND	ND	ND	ND	2.26	383.9	ND	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0056 abs.lab	9/2/2003 9:24	ND	ND	ND	ND	ND	2.26	381.6	802.015	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0057 abs.lab	9/2/2003 9:27	ND	ND	ND	ND	ND	2.26	381.3	788.892	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0058 abs.lab	9/2/2003 9:29	ND	ND	ND	ND	ND	2.27	382.0	864.266	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0059 abs.lab	9/2/2003 9:32	ND	ND	ND	ND	ND	2.27	380.5	882.785	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0060 abs.lab	9/2/2003 9:34	ND	ND	ND	ND	ND	2.26	378.1	926.799	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0061 abs.lab	9/2/2003 9:37	ND	ND	ND	ND	ND	2.27	380.4	802.832	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0062 abs.lab	9/2/2003 9:40	ND	ND	ND	ND	ND	2.26	379.5	1009.984	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0063 abs.lab	9/2/2003 9:42	ND	ND	ND	ND	ND	2.27	381.0	942.218	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0064 abs.lab	9/2/2003 9:45	ND	ND	ND	ND	ND	2.26	378.7	1091.908	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0065 abs.lab	9/2/2003 9:48	ND	ND	ND	ND	ND	2.27	379.0	1047.128	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0066 abs.lab	9/2/2003 9:50	ND	ND	ND	ND	ND	2.28	378.2	1115.927	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0067 abs.lab	9/2/2003 9:53	ND	ND	ND	ND	ND	2.28	380.2	1192.582	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0068 abs.lab	9/2/2003 9:55	ND	ND	ND	ND	ND	2.29	379.7	1199.902	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0069 abs.lab	9/2/2003 9:58	ND	ND	ND	ND	ND	2.28	380.0	1264.340	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0070 abs.lab	9/2/2003 10:01	ND	ND	ND	ND	ND	2.28	380.9	1164.967	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0071 abs.lab	9/2/2003 10:03	ND	ND	ND	ND	ND	2.27	379.0	1099.227	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0072 abs.lab	9/2/2003 10:07	ND	ND	ND	ND	ND	2.28	377.1	1138.281	ND	149.76	1.013
10S_1_1D 09 02 03 SAMPLE_0073 abs.lab	9/2/2003 10:10	ND	ND	ND	ND	ND	2.29	379.4	1126.711	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0074 abs.lab	9/2/2003 10:13	ND	ND	ND	ND	ND	2.28	378.1	1082.894	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0075 abs.lab	9/2/2003 10:15	ND	ND	ND	ND	ND	2.28	377.5	1004.480	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0076 abs.lab	9/2/2003 10:18	ND	ND	ND	ND	ND	2.28	379.1	1100.605	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0077 abs.lab	9/2/2003 10:20	ND	ND	ND	ND	ND	2.28	378.8	1135.389	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0078 abs.lab	9/2/2003 10:23	ND	ND	ND	ND	ND	2.27	377.5	1204.429	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0079 abs.lab	9/2/2003 10:26	ND	ND	ND	ND	ND	2.27	378.3	1151.091	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0080 abs.lab	9/2/2003 10:28	ND	ND	ND	ND	ND	2.27	378.3	1113.841	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0081 abs.lab	9/2/2003 10:31	ND	ND	ND	ND	ND	2.27	378.8	1210.809	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0082 abs.lab	9/2/2003 10:33	ND	ND	ND	ND	ND	2.27	379.2	1159.571	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0083 abs.lab	9/2/2003 10:36	ND	ND	ND	ND	ND	2.27	380.7	1050.382	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0084 abs.lab	9/2/2003 10:39	ND	ND	ND	ND	ND	2.26	379.6	1142.706	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0085 abs.lab	9/2/2003 10:41	ND	ND	ND	ND	ND	2.27	382.9	1186.890	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0086 abs.lab	9/2/2003 10:44	ND	ND	ND	ND	ND	2.27	383.6	1262.941	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0087 abs.lab	9/2/2003 10:46	ND	ND	ND	ND	ND	2.25	381.6	1169.759	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0088 abs.lab	9/2/2003 10:49	ND	ND	ND	ND	ND	2.25	382.3	957.017	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0089 abs.lab	9/2/2003 10:52	ND	ND	ND	ND	ND	2.26	385.8	978.102	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0090 abs.lab	9/2/2003 10:54	ND	ND	ND	ND	ND	2.25	384.7	1103.782	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0091 abs.lab	9/2/2003 10:57	ND	ND	ND	ND	ND	2.27	385.4	1164.972	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0092 abs.lab	9/2/2003 11:00	ND	ND	ND	ND	ND	2.26	381.7	1164.438	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0093 abs.lab	9/2/2003 11:23	ND	ND	ND	ND	ND	2.28	391.0	1247.381	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0094 abs.lab	9/2/2003 11:26	ND	ND	ND	ND	ND	2.30	397.8	963.698	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0095 abs.lab	9/2/2003 11:29	ND	ND	ND	ND	ND	2.31	401.6	1099.512	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0096 abs.lab	9/2/2003 11:31	ND	ND	ND	ND	ND	2.31	401.2	1103.580	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0097 abs.lab	9/2/2003 11:34	ND	ND	ND	ND	ND	2.32	404.5	1116.391	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0098 abs.lab	9/2/2003 11:36	ND	ND	ND	ND	ND	2.32	406.0	1119.487	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0099 abs.lab	9/2/2003 11:39	ND	ND	ND	ND	ND	2.31	404.7	1103.608	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0100 abs.lab	9/2/2003 11:42	ND	ND	ND	ND	ND	2.31	407.4	1127.743	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0101 abs.lab	9/2/2003 11:44	ND	ND	ND	ND	ND	2.32	407.9	1148.558	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0102 abs.lab	9/2/2003 11:47	ND	ND	ND	ND	ND	2.32	408.1	1106.928	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0103 abs.lab	9/2/2003 11:49	ND	ND	ND	ND	ND	2.31	407.9	1062.024	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0104 abs.lab	9/2/2003 11:52	ND	ND	ND	ND	ND	2.31	407.8	1190.691	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0105 abs.lab	9/2/2003 11:55	ND	ND	ND	ND	ND	2.31	407.4	1180.644	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0106 abs.lab	9/2/2003 11:57	ND	ND	ND	ND	ND	2.31	409.9	1096.096	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0107 abs.lab	9/2/2003 12:00	ND	ND	ND	ND	ND	2.31	409.6	1106.686	ND	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 10s.1.1d FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1D 09 02 03 SAMPLE_0108 abs.lab	9/2/2003 12:03	ND	ND	ND	ND	ND	2.30	409.3	1107.711	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0109 abs.lab	9/2/2003 12:05	ND	ND	ND	ND	ND	2.30	410.6	1065.574	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0110 abs.lab	9/2/2003 12:08	ND	ND	ND	ND	ND	2.30	413.7	975.521	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0111 abs.lab	9/2/2003 12:10	ND	ND	ND	ND	ND	2.30	413.8	1078.706	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0112 abs.lab	9/2/2003 12:13	ND	ND	ND	ND	ND	2.29	412.6	1086.141	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0113 abs.lab	9/2/2003 12:16	ND	ND	ND	ND	ND	2.30	416.2	1109.642	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0114 abs.lab	9/2/2003 12:18	ND	ND	ND	ND	ND	2.29	415.1	1160.517	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0115 abs.lab	9/2/2003 12:21	ND	ND	ND	ND	ND	2.30	416.5	1134.962	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0116 abs.lab	9/2/2003 12:23	ND	ND	ND	ND	ND	2.29	415.4	1030.757	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0117 abs.lab	9/2/2003 12:26	ND	ND	ND	ND	ND	2.29	415.9	1046.678	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0118 abs.lab	9/2/2003 12:29	ND	ND	ND	ND	ND	2.30	417.6	1149.422	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0119 abs.lab	9/2/2003 12:31	ND	ND	ND	ND	ND	2.28	413.8	1192.891	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0120 abs.lab	9/2/2003 12:34	ND	ND	ND	ND	ND	2.30	415.4	1106.051	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0121 abs.lab	9/2/2003 12:36	ND	ND	ND	ND	ND	2.29	415.3	1071.252	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0122 abs.lab	9/2/2003 12:39	ND	ND	ND	ND	ND	2.29	416.3	1218.908	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0123 abs.lab	9/2/2003 12:42	ND	ND	ND	ND	ND	2.28	415.4	1082.280	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0124 abs.lab	9/2/2003 12:44	ND	ND	ND	ND	ND	2.29	416.2	1019.514	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0125 abs.lab	9/2/2003 12:47	ND	ND	ND	ND	ND	2.29	415.3	1067.334	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0126 abs.lab	9/2/2003 12:50	ND	ND	ND	ND	ND	2.29	414.7	1183.209	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0127 abs.lab	9/2/2003 12:52	ND	ND	ND	ND	ND	2.29	414.0	1117.988	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0128 abs.lab	9/2/2003 12:55	ND	ND	ND	ND	ND	2.28	411.3	1053.647	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0129 abs.lab	9/2/2003 12:57	ND	ND	ND	ND	ND	2.29	412.8	1078.682	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0130 abs.lab	9/2/2003 13:00	ND	ND	ND	ND	ND	2.29	413.8	1058.902	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0131 abs.lab	9/2/2003 13:03	ND	ND	ND	ND	ND	2.29	417.4	1049.165	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0132 abs.lab	9/2/2003 13:05	ND	ND	ND	ND	ND	2.29	418.9	931.109	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0133 abs.lab	9/2/2003 13:08	ND	ND	ND	ND	ND	2.28	416.6	1102.736	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0134 abs.lab	9/2/2003 13:10	ND	ND	ND	ND	ND	2.28	419.3	990.086	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0135 abs.lab	9/2/2003 13:13	ND	ND	ND	ND	ND	2.30	423.2	1270.745	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0136 abs.lab	9/2/2003 13:16	ND	ND	ND	ND	ND	2.30	422.2	1060.015	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0137 abs.lab	9/2/2003 13:18	ND	ND	ND	ND	ND	2.30	420.0	1259.729	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0138 abs.lab	9/2/2003 13:21	ND	ND	ND	ND	ND	2.29	416.0	1119.895	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0139 abs.lab	9/2/2003 13:24	ND	ND	ND	ND	ND	2.30	415.7	1011.687	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0140 abs.lab	9/2/2003 13:26	ND	ND	ND	ND	ND	2.29	414.9	1314.468	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0141 abs.lab	9/2/2003 13:29	ND	ND	ND	ND	ND	2.28	412.5	1114.379	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0142 abs.lab	9/2/2003 13:31	ND	ND	ND	ND	ND	2.30	414.0	1134.189	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0143 abs.lab	9/2/2003 13:34	ND	ND	ND	ND	ND	2.23	384.8	2309.693	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0144 abs.lab	9/2/2003 13:37	ND	ND	ND	ND	ND	2.23	382.1	2158.587	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0145 abs.lab	9/2/2003 13:39	ND	ND	ND	ND	ND	2.23	380.5	2153.315	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0146 abs.lab	9/2/2003 13:42	ND	ND	ND	ND	ND	2.24	382.0	2253.904	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0147 abs.lab	9/2/2003 13:44	ND	ND	ND	ND	ND	2.26	383.1	1699.448	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0148 abs.lab	9/2/2003 13:47	ND	ND	ND	ND	ND	2.26	384.0	1774.101	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0149 abs.lab	9/2/2003 13:50	ND	ND	ND	ND	ND	2.25	380.5	1618.990	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0150 abs.lab	9/2/2003 13:52	ND	ND	ND	ND	ND	2.26	381.4	1556.453	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0151 abs.lab	9/2/2003 13:55	ND	ND	ND	ND	ND	2.25	381.8	1833.810	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0152 abs.lab	9/2/2003 13:58	ND	ND	ND	ND	ND	2.25	381.3	1662.438	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0153 abs.lab	9/2/2003 14:00	ND	ND	ND	ND	ND	2.23	379.6	1570.97	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0154 abs.lab	9/2/2003 14:03	ND	ND	ND	ND	ND	2.25	382.2	1511.67	ND	150.51	1.003
10S_1_1D 09 02 03 SAMPLE_0155 abs.lab	9/2/2003 14:05	ND	ND	ND	ND	ND	2.25	382.2	1496.54	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0156 abs.lab	9/2/2003 14:08	ND	ND	ND	ND	ND	2.25	382.1	1420.92	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0157 abs.lab	9/2/2003 14:11	ND	ND	ND	ND	ND	2.25	382.5	1275.17	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0158 abs.lab	9/2/2003 14:13	ND	ND	ND	ND	ND	2.26	383.9	1305.71	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0159 abs.lab	9/2/2003 14:16	ND	ND	ND	ND	ND	2.25	382.6	1276.96	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0160 abs.lab	9/2/2003 14:19	ND	ND	ND	ND	ND	2.25	382.2	1195.00	ND	149.76	1.008

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 10s.1.1d FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1D 09 02 03 SAMPLE_0161 abs.lab	9/2/2003 14:21	ND	ND	ND	ND	ND	2.26	384.0	1118.99	ND	150.51	1.008
10S_1_1D 09 02 03 SAMPLE_0162 abs.lab	9/2/2003 14:24	ND	ND	ND	ND	ND	2.26	385.3	1110.62	ND	150.51	1.008
10S_1_1D 09 02 03 SAMPLE_0163 abs.lab	9/2/2003 14:26	ND	ND	ND	ND	ND	2.26	387.1	1023.60	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0164 abs.lab	9/2/2003 14:29	ND	ND	ND	ND	ND	2.25	383.2	812.25	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0165 abs.lab	9/2/2003 14:32	ND	ND	ND	ND	ND	2.25	383.2	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0166 abs.lab	9/2/2003 14:34	ND	ND	ND	ND	ND	2.25	384.3	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0167 abs.lab	9/2/2003 14:37	ND	ND	ND	ND	ND	2.27	387.4	876.27	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0168 abs.lab	9/2/2003 14:40	ND	ND	ND	ND	ND	2.26	386.3	986.51	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0169 abs.lab	9/2/2003 14:42	ND	ND	ND	ND	ND	2.24	385.5	1220.69	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0170 abs.lab	9/2/2003 14:45	ND	ND	ND	ND	ND	2.23	380.7	1006.22	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0171 abs.lab	9/2/2003 14:47	ND	ND	ND	ND	ND	2.24	381.8	985.83	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0172 abs.lab	9/2/2003 14:50	ND	ND	ND	ND	ND	2.24	380.2	951.99	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0173 abs.lab	9/2/2003 14:53	ND	ND	ND	ND	ND	2.24	380.1	902.12	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0174 abs.lab	9/2/2003 14:55	ND	ND	ND	ND	ND	2.23	379.1	863.58	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0175 abs.lab	9/2/2003 14:58	ND	ND	ND	ND	ND	2.23	379.7	846.70	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0176 abs.lab	9/2/2003 15:00	ND	ND	ND	ND	ND	2.23	380.7	862.92	ND	150.51	1.008
10S_1_1D 09 02 03 SAMPLE_0177 abs.lab	9/2/2003 15:03	ND	ND	ND	ND	ND	2.23	379.9	930.65	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0178 abs.lab	9/2/2003 15:06	ND	ND	ND	ND	ND	2.23	381.5	787.08	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0179 abs.lab	9/2/2003 15:08	ND	ND	ND	ND	ND	2.23	382.2	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0180 abs.lab	9/2/2003 15:11	ND	ND	ND	ND	ND	2.23	383.6	ND	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0181 abs.lab	9/2/2003 15:14	ND	ND	ND	ND	ND	2.23	383.1	825.98	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0182 abs.lab	9/2/2003 15:16	ND	ND	ND	ND	ND	2.24	382.8	791.56	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0183 abs.lab	9/2/2003 15:19	ND	ND	ND	ND	ND	2.23	379.9	880.32	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0184 abs.lab	9/2/2003 15:21	ND	ND	ND	ND	ND	2.25	383.4	811.13	ND	149.76	1.003
10S_1_1D 09 02 03 SAMPLE_0185 abs.lab	9/2/2003 15:24	ND	ND	ND	ND	ND	2.23	380.6	795.88	ND	149.76	1.008
10S_1_1D 09 02 03 SAMPLE_0186 abs.lab	9/2/2003 15:27	ND	ND	ND	ND	ND	2.24	382.9	921.41	ND	149.76	1.003
Average _{wet}		ND	ND	339.98	ND	ND	2.28	392.04	1025.65	18.04	149.78	1.007

Reference Method Calculations

Fab 11 North

10s.1.1d

Run No.	Run 1	Run 2	
Date	9/2/2003	9/2/2003	
Start Time	7:00	11:25	AVERAGE
Stop Time	11:00	15:25	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.733	1.733	1.733
Dry Gas Meter Calibration Factor	1.011	1.011	1.011
Average Meter Temperature (°F)	77.4	94.0	85.7
Volume Metered (acf)	198.692	201.591	200.142
Volume Metered (dscf)	164.963	162.388	163.676
Volume of Water Collected (g)	61.0	78.7	69.9
Volume of Water Collected (scf)	2.876	3.711	3.293
Average Delta H (in. H ₂ O)	1.77	1.80	1.78
AVG SQRT of dH (in. H ₂ O)	1.3291	1.3408	1.3350
Measured Moisture (%)	1.7%	2.2%	2.0%
Saturation Moisture (%)	2.2%	2.2%	2.2%
Moisture Used for Calculations (%)	2.2%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.66	28.60	28.63
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.11	-0.13	-0.12
Stack Pressure (in. Hg)	24.88	24.88	24.88
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5292	0.5232	0.5262
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.4833	0.4884	0.4859
Stack Temperature Isokinetic Traverse (°F)	62.1	62.3	62.2
Stack Temperature Flow Traverse (°F)	62.1	63.4	62.8
Velocity (ft/sec) Isokinetic Traverse	32.52	32.19	32.35
Velocity (ft/sec) Flow Traverse	29.70	30.08	29.89
Nozzle Diameter (in.)	0.280	0.280	0.280
% Isokinetics	100.24	99.7	100.0
Stack Diameter (in.)	42.00	42.00	42.00
Stack Area (ft ²)	9.62	9.62	9.62
Stack Flow Rate Isokinetic Traverse (acfm)	18,771	18,581	18,676
Stack Flow Rate Flow Traverse (acfm)	17,145	17,364	17,255
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	15,431	15,267	15,349
Stack Flow Rate Outlet Flow Traverse (dscfm)	14,094	14,238	14,166
Chlorine			
Collected Cl. micrograms (ug)	23.8	146.0	84.9
Cl ₂ Concentration (ug/dscf)	0.14	0.90	0.52
Cl ₂ Concentration (ppb)	2	11	6
Cl ₂ Emission Rate (lbs/hr)	0.0003	0.0017	0.0010

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/2/2003
Unit Number:	10s.1.1d	Stack Diameter (in.):	42.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.11
Run No.:	1	Operators:	BDS/BG
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.89
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	6:43	
	End:	6:55	

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.24	63
2	0.27	62
3	0.27	62
4	0.27	62
5	0.26	62
6	0.25	62
7	0.23	62
8	0.24	62
9	0.24	62
10	0.23	62
11	0.20	62
12	0.18	62

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.27	62
2	0.28	62
3	0.27	62
4	0.26	62
5	0.24	62
6	0.22	62
7	0.20	62
8	0.20	61
9	0.21	62
10	0.22	62
11	0.20	63
12	0.18	64
Total Average:	sqrt dp = 0.4833	62.1

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/2/2003
Unit Number:	10s.1.1d	Stack Diameter (in.):	42.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.13
Run No.:	2	Operators:	BDS/BG
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.89
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	11:13	
	End:	11:23	

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.29	63
2	0.28	63
3	0.27	63
4	0.25	62
5	0.26	62
6	0.26	62
7	0.25	63
8	0.24	62
9	0.24	63
10	0.21	63
11	0.22	65
12	0.20	65

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.26	64
2	0.28	63
3	0.27	63
4	0.27	63
5	0.25	63
6	0.23	63
7	0.20	63
8	0.20	63
9	0.22	63
10	0.22	64
11	0.21	65
12	0.17	68
Total Average:	sqrt dp = 0.4884	63.4

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 North						Leak Check Initial:	0.002	cfm@	17	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.000	cfm@	3.25	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	10s.1.1d								1		656.5		636.8	
Date:	9/2/2003						24		2		742.3		770.6	
Technicians:	BDS/BG								3		536.2		543.6	
Meter Box No.:	90394						Y_d:	1.011			4		642.9	
Probe / Pitot No	501 / HA-1	C_p:	0.84			5		657.0		657.3				
Nozzle No.:	NA	dH_g:	1.733	Stack Dia. (in.):	42.00	Stack Area (ft²):	9.62	6		864.2		902.8		
Nozzle Dia:	0.280	0.280, 0.280, 0.279	Port Width (in.):	3.00	Port Length (in.):	0.00	Start Time:	7:00	Net Impinger Gain (g):	61.0				
Initial Meter Reading (ft³):	9.192	BP (in. Hg):	24.89	Static Pressure (in.):	-0.11	End Time:	11:00	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
S 4	10	62	61	61	0.280	1.75	17.240	235	241	42	2			
S 4	20	62	66	67	0.280	1.75	25.380	238	241	38	3			
S 4	30	62	72	62	0.280	1.75	33.440	237	241	42	3			
S 4	40	62	74	63	0.280	1.75	41.790	242	241	44	3			
S 4	50	62	76	65	0.280	1.75	49.870	243	242	50	3			
S 4	60	62	78	66	0.280	1.75	57.890	241	241	47	3			
S 4	70	62	79	67	0.280	1.75	66.130	240	240	48	3			
S 4	80	62	80	68	0.280	1.75	74.190	241	245	49	3			
S 4	90	62	81	69	0.280	1.75	82.470	243	247	50	3			
S 4	100	62	82	70	0.280	1.75	90.720	242	242	50	3			
S 4	110	62	83	71	0.280	1.75	98.950	243	241	50	3			
S 4	120	62	83	72	0.280	1.75	107.340	242	242	50	3			
S 4	130	62	84	73	0.280	1.75	115.680	241	243	51	3			
S 4	140	62	85	74	0.280	1.75	123.970	243	242	51	3			
S 4	150	62	86	75	0.280	1.75	132.230	243	251	52	3			
S 4	160	62	86	76	0.280	1.75	140.420	241	242	54	3			
S 4	170	62	87	77	0.280	1.80	148.740	242	243	54	3			
S 4	180	63	88	78	0.280	1.80	157.270	243	244	55	3			
S 4	190	63	89	79	0.280	1.80	165.620	244	243	57	3			
S 4	200	63	91	80	0.280	1.80	174.050	243	244	58	3			
S 4	210	62	92	81	0.280	1.80	182.610	245	242	60	3			
S 4	220	62	91	82	0.280	1.80	191.120	245	243	64	3			
S 4	230	62	91	83	0.280	1.80	199.530	243	243	55	3			
S 4	240	62	90	83	0.280	1.80	207.884	247	244	52	3			
Average / Net		62.1		77.4	0.3	1.8	198.692	242.0	242.8	51.0	2.5			

ISOKINETIC
FIELD DATA SHEET

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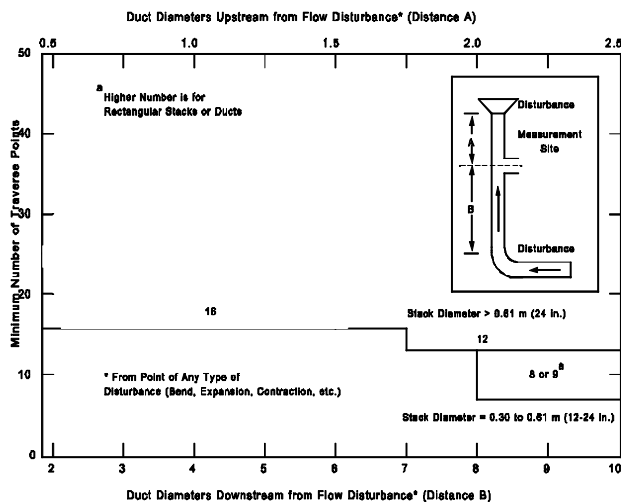
Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2		
Plant Name:	Fab 11 North						Leak Check Initial:	0.001	cfm@	16	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.000	cfm@	4.25	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	10s.1.1d								1		593.0		605.6	
Date:	9/2/2003						24		2		627.5		641.1	
Technicians:	BDS/BG								3		645.6		651.5	
Meter Box No.:	90394						Y_d:	1.011			4		653.3	
Probe/Pitot No.:	501 / HA-1	C_p:	0.84			5		638.8		627.3				
Nozzle No.:	NA	dH₀:	1.733	Stack Dia. (in.):	42.00	Stack Area (ft²):	9.62	6		944.9		986.7		
Nozzle Dia:	0.280	0.280, 0.280, 0.279	Port Width (in.):	3.00	Port Length (in.):	0.00	Start Time:	11:25	Net Impinger Gain (g):	78.7				
Initial Meter Reading (ft³):	208.223	BP (in. Hg):	24.89	Static Pressure (in.):	-0.13	End Time:	15:25	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
S 4	10	63	83	82	0.270	1.75	216.490	257	247	54	3.0			
S 4	20	63	87	82	0.280	1.80	224.800	240	248	49	3.0			
S 4	30	62	90	83	0.280	1.80	233.131	253	249	51	3.0			
S 4	40	62	92	85	0.280	1.80	241.490	251	249	53	3.0			
S 4	50	63	92	86	0.280	1.80	249.870	252	249	55	3.0			
S 4	60	62	93	87	0.280	1.85	258.372	249	247	57	3.0			
S 4	70	62	94	87	0.280	1.85	266.825	251	248	48	3.3			
S 4	80	62	95	88	0.280	1.85	275.287	250	247	47	3.3			
S 4	90	62	95	89	0.280	1.85	283.736	253	250	49	3.3			
S 4	100	63	94	89	0.280	1.85	292.181	254	249	50	3.3			
S 4	110	63	96	90	0.270	1.75	300.610	251	248	52	3.3			
S 4	120	62	97	91	0.270	1.75	308.870	253	250	48	3.0			
S 4	130	62	98	91	0.270	1.75	317.240	255	249	49	3.0			
S 4	140	63	100	93	0.270	1.75	325.570	254	249	52	3.0			
S 4	150	62	99	94	0.270	1.75	333.940	254	250	53	3.0			
S 4	160	62	101	95	0.270	1.80	342.360	253	248	54	3.5			
S 4	170	62	100	95	0.270	1.80	350.740	257	251	56	3.5			
S 4	180	62	103	95	0.270	1.80	359.130	253	250	57	3.5			
S 4	190	62	104	97	0.270	1.80	367.540	255	258	59	3.5			
S 4	200	62	104	98	0.270	1.80	375.980	255	254	63	3.5			
S 4	210	62	104	99	0.270	1.80	384.440	254	250	55	3.5			
S 4	220	63	102	98	0.270	1.80	393.000	254	250	57	3.5			
S 4	230	62	101	96	0.270	1.80	401.650	257	248	58	3.5			
S 4	240	62	102	95	0.270	1.80	409.814	256	249	58	3.5			
Average / Net		62.3		94.0	0.3	1.8	201.591	253.0	249.5	53.5	3.2			

EPA REFERENCE METHOD 1 FIELD DATA SHEET CIRCULAR STACKS

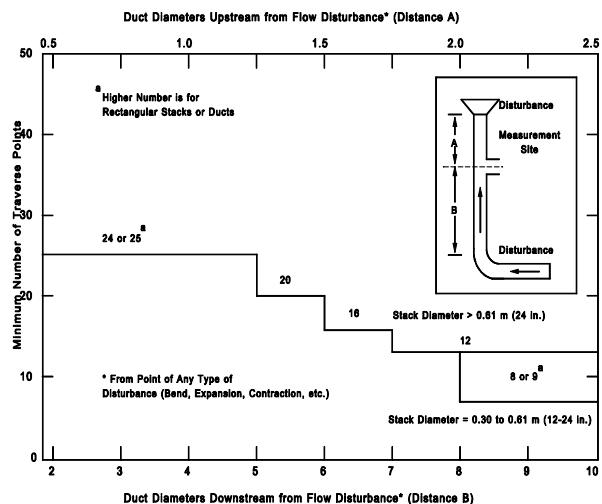
Firm Name: **INTEL**
 Plant Location: **Rio Rancho, NM**
 Sampling Location: **10.1.1d**
 TRC Project No.: **31397-1600-00000**
 Date: **9/2/2003**
 Technician: **B. Sandstrom/B. Guyton**
 Circular/Rectangular: **C**

Stack Diameter: **42.00**
 Sample Port Diameter: **3.0**
 Sample Port Depth: **0.00**
 Diameters Upstream: **1.8**
 Diameters Downstream: **2.6**
 Flow or Particulate Test: **P**
 Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	14/16
2	2 13/16
3	4 15/16
4	7 7/16
5	10 8/16
6	14 15/16
7	27 1/16
8	31 8/16
9	34 9/16
10	37 1/16
11	39 3/16
12	41 2/16
13	
14	
15	
16	
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19	
20	
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23	
24	

Scrubber Outlet 10s.1.1e FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1E 09 03 03 SAMPLE_0025 abs.lab	9/3/2003 7:52	ND	ND	ND	ND	ND	2.22	393.5	ND	ND	149.76	1.008
10S_1_1E 09 03 03 SAMPLE_0026 abs.lab	9/3/2003 7:54	ND	ND	ND	ND	ND	2.21	391.3	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0027 abs.lab	9/3/2003 7:57	ND	ND	ND	ND	ND	2.21	390.6	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0028 abs.lab	9/3/2003 8:00	ND	ND	ND	ND	ND	2.21	389.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0029 abs.lab	9/3/2003 8:02	ND	ND	ND	ND	ND	2.22	391.2	ND	ND	149.76	1.008
10S_1_1E 09 03 03 SAMPLE_0030 abs.lab	9/3/2003 8:05	ND	ND	ND	ND	ND	2.21	390.0	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0031 abs.lab	9/3/2003 8:07	ND	ND	ND	ND	ND	2.21	390.9	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0032 abs.lab	9/3/2003 8:10	ND	ND	ND	ND	ND	2.21	390.1	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0033 abs.lab	9/3/2003 8:13	ND	ND	ND	ND	ND	2.21	388.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0034 abs.lab	9/3/2003 8:15	ND	ND	ND	ND	ND	2.20	385.4	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE_0035 abs.lab	9/3/2003 8:18	ND	ND	ND	ND	ND	2.21	387.1	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0036 abs.lab	9/3/2003 8:22	ND	ND	ND	ND	ND	2.19	384.3	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0037 abs.lab	9/3/2003 8:25	ND	ND	ND	ND	ND	2.19	383.3	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0038 abs.lab	9/3/2003 8:28	ND	ND	ND	ND	ND	2.20	385.1	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0039 abs.lab	9/3/2003 8:30	ND	ND	ND	ND	ND	2.20	384.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0040 abs.lab	9/3/2003 8:33	ND	ND	ND	ND	ND	2.18	384.1	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE_0041 abs.lab	9/3/2003 8:35	ND	ND	ND	ND	ND	2.19	385.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0042 abs.lab	9/3/2003 8:38	ND	ND	ND	ND	ND	2.19	384.5	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0043 abs.lab	9/3/2003 8:41	ND	ND	ND	ND	ND	2.19	385.1	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0044 abs.lab	9/3/2003 8:43	ND	ND	ND	ND	ND	2.19	385.3	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0045 abs.lab	9/3/2003 8:46	ND	ND	ND	ND	ND	2.19	386.1	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0046 abs.lab	9/3/2003 8:48	ND	ND	ND	ND	ND	2.18	384.4	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE_0047 abs.lab	9/3/2003 8:51	ND	ND	ND	ND	ND	2.19	386.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0048 abs.lab	9/3/2003 8:54	ND	ND	ND	ND	ND	2.19	385.9	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0049 abs.lab	9/3/2003 8:56	ND	ND	ND	ND	ND	2.17	383.9	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE_0050 abs.lab	9/3/2003 8:59	ND	ND	ND	ND	ND	2.18	385.0	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0051 abs.lab	9/3/2003 9:01	ND	ND	ND	ND	ND	2.18	385.1	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0052 abs.lab	9/3/2003 9:04	ND	ND	ND	ND	ND	2.18	383.7	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0053 abs.lab	9/3/2003 9:07	ND	ND	ND	ND	ND	2.18	383.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0054 abs.lab	9/3/2003 9:09	ND	ND	ND	ND	ND	2.18	384.1	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0055 abs.lab	9/3/2003 9:12	ND	ND	ND	ND	ND	2.18	383.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0056 abs.lab	9/3/2003 9:14	ND	ND	ND	ND	ND	2.18	381.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0057 abs.lab	9/3/2003 9:17	ND	ND	ND	ND	ND	2.14	383.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0058 abs.lab	9/3/2003 9:20	ND	ND	ND	ND	ND	2.14	382.0	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0059 abs.lab	9/3/2003 9:22	ND	ND	ND	ND	ND	2.14	380.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0060 abs.lab	9/3/2003 9:25	ND	ND	ND	ND	ND	2.14	380.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0061 abs.lab	9/3/2003 9:27	ND	ND	ND	ND	ND	2.14	381.7	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0062 abs.lab	9/3/2003 9:30	ND	ND	ND	ND	ND	2.14	381.0	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE_0063 abs.lab	9/3/2003 9:33	ND	ND	ND	ND	ND	2.16	382.2	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0064 abs.lab	9/3/2003 9:35	ND	ND	ND	ND	ND	2.16	381.9	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0065 abs.lab	9/3/2003 9:38	ND	ND	ND	ND	ND	2.16	381.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0066 abs.lab	9/3/2003 9:41	ND	ND	ND	ND	ND	2.16	382.6	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0067 abs.lab	9/3/2003 9:43	ND	ND	ND	ND	ND	2.16	383.1	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0068 abs.lab	9/3/2003 9:46	ND	ND	ND	ND	ND	2.16	382.5	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0069 abs.lab	9/3/2003 9:48	ND	ND	ND	ND	ND	2.16	383.2	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0070 abs.lab	9/3/2003 9:51	ND	ND	ND	ND	ND	2.17	383.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0071 abs.lab	9/3/2003 9:54	ND	ND	ND	ND	ND	2.17	383.9	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0072 abs.lab	9/3/2003 9:56	ND	ND	ND	ND	ND	2.17	384.3	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0073 abs.lab	9/3/2003 9:59	ND	ND	ND	ND	ND	2.17	384.5	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0074 abs.lab	9/3/2003 10:01	ND	ND	ND	ND	ND	2.16	382.1	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE_0075 abs.lab	9/3/2003 10:04	ND	ND	ND	ND	ND	2.17	383.7	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0076 abs.lab	9/3/2003 10:07	ND	ND	ND	ND	ND	2.19	384.7	ND	ND	149.76	1.008
10S_1_1E 09 03 03 SAMPLE_0077 abs.lab	9/3/2003 10:09	ND	ND	ND	ND	ND	2.17	383.0	ND	ND	149.76	1.013

Scrubber Outlet 10s.1.1e FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1E 09 03 03 SAMPLE_0078 abs.lab	9/3/2003 10:12	ND	ND	ND	ND	ND	2.17	382.2	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0079 abs.lab	9/3/2003 10:14	ND	ND	ND	ND	ND	2.17	382.2	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0080 abs.lab	9/3/2003 10:17	ND	ND	ND	ND	ND	2.16	381.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0081 abs.lab	9/3/2003 10:20	ND	ND	ND	ND	ND	2.16	379.6	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0082 abs.lab	9/3/2003 10:22	ND	ND	ND	ND	ND	2.15	375.0	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE_0083 abs.lab	9/3/2003 10:25	ND	ND	ND	ND	ND	2.16	375.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0084 abs.lab	9/3/2003 10:27	ND	ND	ND	ND	ND	2.16	377.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0085 abs.lab	9/3/2003 10:30	ND	ND	ND	ND	ND	2.17	381.5	ND	ND	149.76	1.008
10S_1_1E 09 03 03 SAMPLE_0086 abs.lab	9/3/2003 10:33	ND	ND	ND	ND	ND	2.16	379.5	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0087 abs.lab	9/3/2003 10:35	ND	ND	ND	ND	ND	2.16	379.6	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0088 abs.lab	9/3/2003 10:38	ND	ND	ND	ND	ND	2.16	381.7	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0089 abs.lab	9/3/2003 10:41	ND	ND	ND	ND	ND	2.16	383.3	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0090 abs.lab	9/3/2003 10:43	ND	ND	ND	ND	ND	2.16	382.7	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0091 abs.lab	9/3/2003 10:46	ND	ND	ND	ND	ND	2.16	381.6	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0092 abs.lab	9/3/2003 10:48	ND	ND	ND	ND	ND	2.16	380.5	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0093 abs.lab	9/3/2003 10:51	ND	ND	ND	ND	ND	2.17	378.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0094 abs.lab	9/3/2003 10:54	ND	ND	ND	ND	ND	2.16	376.1	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE_0095 abs.lab	9/3/2003 10:56	ND	ND	ND	ND	ND	2.16	377.9	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0096 abs.lab	9/3/2003 10:59	ND	ND	ND	ND	ND	2.17	379.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0097 abs.lab	9/3/2003 11:01	ND	ND	ND	ND	ND	2.17	379.5	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0098 abs.lab	9/3/2003 11:04	ND	ND	ND	ND	ND	2.18	381.7	ND	ND	149.76	1.008
10S_1_1E 09 03 03 SAMPLE_0099 abs.lab	9/3/2003 11:07	ND	ND	ND	ND	ND	2.17	380.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0100 abs.lab	9/3/2003 11:09	ND	ND	ND	ND	ND	2.18	381.3	ND	ND	149.76	1.008
10S_1_1E 09 03 03 SAMPLE_0101 abs.lab	9/3/2003 11:12	ND	ND	ND	ND	ND	2.17	378.2	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0102 abs.lab	9/3/2003 11:14	ND	ND	ND	ND	ND	2.18	377.8	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0103 abs.lab	9/3/2003 11:17	ND	ND	ND	ND	ND	2.19	381.7	ND	ND	149.76	1.008
10S_1_1E 09 03 03 SAMPLE_0104 abs.lab	9/3/2003 11:20	ND	ND	ND	ND	ND	2.19	380.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0105 abs.lab	9/3/2003 11:22	ND	ND	ND	ND	ND	2.19	380.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0106 abs.lab	9/3/2003 11:25	ND	ND	ND	ND	ND	2.20	381.6	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0107 abs.lab	9/3/2003 11:28	ND	ND	ND	ND	ND	2.20	381.7	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0108 abs.lab	9/3/2003 11:30	ND	ND	ND	ND	ND	2.20	380.5	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0109 abs.lab	9/3/2003 11:33	ND	ND	ND	ND	ND	2.20	381.0	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0110 abs.lab	9/3/2003 11:35	ND	ND	ND	ND	ND	2.19	380.3	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE_0111 abs.lab	9/3/2003 11:38	ND	ND	ND	ND	ND	2.19	381.2	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0112 abs.lab	9/3/2003 11:41	ND	ND	ND	ND	ND	2.19	380.4	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0113 abs.lab	9/3/2003 11:43	ND	ND	ND	ND	ND	2.19	380.2	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0114 abs.lab	9/3/2003 11:46	ND	ND	ND	ND	ND	2.20	379.5	ND	ND	149.76	1.013
10S_1_1E 09 03 03 SAMPLE_0115 abs.lab	9/3/2003 11:48	ND	ND	ND	ND	ND	2.18	377.9	ND	ND	149.76	1.018
10S_1_1E 09 03 03 SAMPLE R2_0004 abs.lab	9/3/2003 12:20	ND	ND	ND	ND	ND	2.12	359.3	ND	ND	149.76	1.003
10S_1_1E 09 03 03 SAMPLE R2_0005 abs.lab	9/3/2003 12:22	ND	ND	ND	ND	ND	2.12	362.4	ND	ND	149.76	1.003
10S_1_1E 09 03 03 SAMPLE R2_0006 abs.lab	9/3/2003 12:25	ND	ND	ND	ND	ND	2.14	365.1	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0007 abs.lab	9/3/2003 12:27	ND	ND	ND	ND	ND	2.14	366.6	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0008 abs.lab	9/3/2003 12:30	ND	ND	ND	ND	ND	2.13	364.8	ND	ND	149.76	1.003
10S_1_1E 09 03 03 SAMPLE R2_0009 abs.lab	9/3/2003 12:33	ND	ND	ND	ND	ND	2.14	367.7	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0010 abs.lab	9/3/2003 12:35	ND	ND	ND	ND	ND	2.13	365.6	ND	ND	149.76	1.003
10S_1_1E 09 03 03 SAMPLE R2_0011 abs.lab	9/3/2003 12:38	ND	ND	ND	ND	ND	2.14	368.3	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0012 abs.lab	9/3/2003 12:41	ND	ND	ND	ND	ND	2.14	368.9	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0013 abs.lab	9/3/2003 12:43	ND	ND	ND	ND	ND	2.13	366.9	ND	ND	149.76	1.003
10S_1_1E 09 03 03 SAMPLE R2_0014 abs.lab	9/3/2003 12:46	ND	ND	ND	ND	ND	2.14	367.4	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0015 abs.lab	9/3/2003 12:48	ND	ND	ND	ND	ND	2.14	366.3	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0016 abs.lab	9/3/2003 12:51	ND	ND	ND	ND	ND	2.14	368.2	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0017 abs.lab	9/3/2003 12:54	ND	ND	ND	ND	ND	2.16	369.7	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0018 abs.lab	9/3/2003 12:56	ND	ND	ND	ND	ND	2.14	367.6	ND	ND	149.76	0.997

Scrubber Outlet 10s.1.1e FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1E 09 03 03 SAMPLE R2_0019 abs.lab	9/3/2003 12:59	ND	ND	ND	ND	ND	2.14	367.5	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0020 abs.lab	9/3/2003 13:01	ND	ND	ND	ND	ND	2.14	366.2	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0021 abs.lab	9/3/2003 13:04	ND	ND	ND	ND	ND	2.14	365.9	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0022 abs.lab	9/3/2003 13:07	ND	ND	ND	ND	ND	2.16	369.9	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0023 abs.lab	9/3/2003 13:09	ND	ND	ND	ND	ND	2.16	370.2	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0024 abs.lab	9/3/2003 13:12	ND	ND	ND	ND	ND	2.17	371.9	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0025 abs.lab	9/3/2003 13:15	ND	ND	ND	ND	ND	2.17	370.6	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0026 abs.lab	9/3/2003 13:17	ND	ND	ND	ND	ND	2.16	366.3	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0027 abs.lab	9/3/2003 13:20	ND	ND	ND	ND	ND	2.15	365.1	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0028 abs.lab	9/3/2003 13:22	ND	ND	ND	ND	ND	2.15	365.4	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0029 abs.lab	9/3/2003 13:25	ND	ND	ND	ND	ND	2.14	363.5	ND	ND	149.76	1.003
10S_1_1E 09 03 03 SAMPLE R2_0030 abs.lab	9/3/2003 13:28	ND	ND	ND	ND	ND	2.16	366.8	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0031 abs.lab	9/3/2003 13:30	ND	ND	ND	ND	ND	2.16	364.8	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0032 abs.lab	9/3/2003 13:33	ND	ND	ND	ND	ND	2.16	364.5	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0033 abs.lab	9/3/2003 13:36	ND	ND	ND	ND	ND	2.16	364.2	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0034 abs.lab	9/3/2003 13:38	ND	ND	ND	ND	ND	2.16	362.3	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0035 abs.lab	9/3/2003 13:41	ND	ND	ND	ND	ND	2.16	362.0	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0036 abs.lab	9/3/2003 13:43	ND	ND	ND	ND	ND	2.15	361.6	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0037 abs.lab	9/3/2003 13:46	ND	ND	ND	ND	ND	2.15	361.7	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0038 abs.lab	9/3/2003 13:49	ND	ND	ND	ND	ND	2.16	363.5	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0039 abs.lab	9/3/2003 13:51	ND	ND	ND	ND	ND	2.15	362.1	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0040 abs.lab	9/3/2003 13:54	ND	ND	ND	ND	ND	2.16	364.6	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0041 abs.lab	9/3/2003 13:57	ND	ND	ND	ND	ND	2.16	363.8	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0042 abs.lab	9/3/2003 13:59	ND	ND	ND	ND	ND	2.17	364.7	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0043 abs.lab	9/3/2003 14:02	ND	ND	ND	ND	ND	2.16	361.9	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0044 abs.lab	9/3/2003 14:04	ND	ND	ND	ND	ND	2.16	361.2	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0045 abs.lab	9/3/2003 14:07	ND	ND	ND	ND	ND	2.17	363.0	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0046 abs.lab	9/3/2003 14:10	ND	ND	ND	ND	ND	2.16	360.1	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0047 abs.lab	9/3/2003 14:12	ND	ND	ND	ND	ND	2.14	357.7	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0048 abs.lab	9/3/2003 14:15	ND	ND	ND	ND	ND	2.16	361.3	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0049 abs.lab	9/3/2003 14:18	ND	ND	ND	ND	ND	2.16	360.6	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0050 abs.lab	9/3/2003 14:20	ND	ND	ND	ND	ND	2.17	362.1	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0051 abs.lab	9/3/2003 14:23	ND	ND	ND	ND	ND	2.16	361.6	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0052 abs.lab	9/3/2003 14:25	ND	ND	ND	ND	ND	2.17	374.9	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0053 abs.lab	9/3/2003 14:28	ND	ND	ND	ND	ND	2.18	377.4	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0054 abs.lab	9/3/2003 14:31	ND	ND	ND	ND	ND	2.17	374.8	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0055 abs.lab	9/3/2003 14:33	ND	ND	ND	ND	ND	2.17	371.7	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0056 abs.lab	9/3/2003 14:36	ND	ND	ND	ND	ND	2.18	373.8	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0057 abs.lab	9/3/2003 14:39	ND	ND	ND	ND	ND	2.19	376.2	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0058 abs.lab	9/3/2003 14:41	ND	ND	ND	ND	ND	2.20	377.1	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0059 abs.lab	9/3/2003 14:44	ND	ND	ND	ND	ND	2.19	377.0	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0060 abs.lab	9/3/2003 14:46	ND	ND	ND	ND	ND	2.18	374.6	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0061 abs.lab	9/3/2003 14:49	ND	ND	ND	ND	ND	2.17	373.3	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0062 abs.lab	9/3/2003 14:52	ND	ND	ND	ND	ND	2.19	374.8	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0063 abs.lab	9/3/2003 14:54	ND	ND	ND	ND	ND	2.18	373.7	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0064 abs.lab	9/3/2003 14:57	ND	ND	ND	ND	ND	2.18	375.4	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0065 abs.lab	9/3/2003 15:00	ND	ND	ND	ND	ND	2.18	374.5	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0066 abs.lab	9/3/2003 15:02	ND	ND	ND	ND	ND	2.20	378.3	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0067 abs.lab	9/3/2003 15:05	ND	ND	ND	ND	ND	2.20	375.6	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0068 abs.lab	9/3/2003 15:07	ND	ND	ND	ND	ND	2.20	375.5	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0069 abs.lab	9/3/2003 15:10	ND	ND	ND	ND	ND	2.20	376.4	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0070 abs.lab	9/3/2003 15:13	ND	ND	ND	ND	ND	2.21	378.9	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0071 abs.lab	9/3/2003 15:15	ND	ND	ND	ND	ND	2.20	376.3	ND	ND	149.76	0.997

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 10s.1.1e FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1E 09 03 03 SAMPLE R2_0072 abs.lab	9/3/2003 15:18	ND	ND	ND	ND	ND	2.21	377.0	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0073 abs.lab	9/3/2003 15:21	ND	ND	ND	ND	ND	2.20	373.5	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0074 abs.lab	9/3/2003 15:23	ND	ND	ND	ND	ND	2.19	372.7	ND	ND	149.02	0.997
10S_1_1E 09 03 03 SAMPLE R2_0075 abs.lab	9/3/2003 15:26	ND	ND	ND	ND	ND	2.21	375.5	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0076 abs.lab	9/3/2003 15:28	ND	ND	ND	ND	ND	2.20	373.4	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0077 abs.lab	9/3/2003 15:31	ND	ND	ND	ND	ND	2.19	372.7	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0078 abs.lab	9/3/2003 15:34	ND	ND	ND	ND	ND	2.19	371.5	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0079 abs.lab	9/3/2003 15:36	ND	ND	ND	ND	ND	2.21	374.5	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0080 abs.lab	9/3/2003 15:39	ND	ND	ND	ND	ND	2.21	374.7	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0081 abs.lab	9/3/2003 15:42	ND	ND	ND	ND	ND	2.21	374.6	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0082 abs.lab	9/3/2003 15:44	ND	ND	ND	ND	ND	2.21	374.6	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0083 abs.lab	9/3/2003 15:47	ND	ND	ND	ND	ND	2.21	374.5	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0084 abs.lab	9/3/2003 15:49	ND	ND	ND	ND	ND	2.21	374.4	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0085 abs.lab	9/3/2003 15:52	ND	ND	ND	ND	ND	2.20	374.8	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0086 abs.lab	9/3/2003 15:55	ND	ND	ND	ND	ND	2.19	373.5	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0087 abs.lab	9/3/2003 15:57	ND	ND	ND	ND	ND	2.19	373.5	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0088 abs.lab	9/3/2003 16:00	ND	ND	ND	ND	ND	2.20	375.5	ND	ND	149.76	0.992
10S_1_1E 09 03 03 SAMPLE R2_0089 abs.lab	9/3/2003 16:03	ND	ND	ND	ND	ND	2.19	373.3	ND	ND	149.76	0.997
10S_1_1E 09 03 03 SAMPLE R2_0090 abs.lab	9/3/2003 16:05	ND	ND	ND	ND	ND	2.20	375.1	ND	ND	149.765	0.992
10S_1_1E 09 03 03 SAMPLE R2_0091 abs.lab	9/3/2003 16:08	ND	ND	ND	ND	ND	2.19	372.7	ND	ND	149.765	0.997
10S_1_1E 09 03 03 SAMPLE R2_0092 abs.lab	9/3/2003 16:10	ND	ND	ND	ND	ND	2.20	375.2	ND	ND	149.765	0.992
10S_1_1E 09 03 03 SAMPLE R2_0093 abs.lab	9/3/2003 16:13	ND	ND	ND	ND	ND	2.19	374.2	ND	ND	149.765	0.997
10S_1_1E 09 03 03 SAMPLE R2_0094 abs.lab	9/3/2003 16:16	ND	ND	ND	ND	ND	2.20	377.0	ND	ND	149.765	0.992
10S_1_1E 09 03 03 SAMPLE R2_0095 abs.lab	9/3/2003 16:18	ND	ND	ND	ND	ND	2.20	376.2	ND	ND	149.765	0.992
10S_1_1E 09 03 03 SAMPLE R2_0096 abs.lab	9/3/2003 16:21	ND	ND	ND	ND	ND	2.20	374.1	ND	ND	149.765	0.992
Average _{wet}		ND	ND	ND	ND	ND	2.17	376.22	ND	ND	149.76	1.004

Reference Method Calculations

Fab 11 North

10s.1.1e

Run No.	Run 1	Run 2	
Date	9/3/2003	9/3/2003	
Start Time	7:50	12:25	AVERAGE
Stop Time	11:50	16:25	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.95	24.95	24.95
Orifice calibration Factor	1.733	1.733	1.733
Dry Gas Meter Calibration Factor	1.011	1.011	1.011
Average Meter Temperature (°F)	85.3	97.8	91.6
Volume Metered (acf)	184.307	183.391	183.849
Volume Metered (dscf)	151.078	146.930	149.004
Volume of Water Collected (g)	67.5	60.9	64.2
Volume of Water Collected (scf)	3.183	2.871	3.027
Average Delta H (in. H ₂ O)	1.54	1.50	1.52
AVG SQRT of dH (in. H ₂ O)	1.2415	1.2247	1.2331
Measured Moisture (%)	2.1%	1.9%	2.0%
Saturation Moisture (%)	2.2%	2.2%	2.2%
Moisture Used for Calculations (%)	2.2%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.62	28.63	28.63
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.15	-0.17	-0.16
Stack Pressure (in. Hg)	24.94	24.94	24.94
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.4877	0.4756	0.4817
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.4852	0.4843	0.4847
Stack Temperature Isokinetic Traverse (°F)	62.0	62.0	62.0
Stack Temperature Flow Traverse (°F)	62.0	62.0	62.0
Velocity (ft/sec) Isokinetic Traverse	29.95	29.20	29.58
Velocity (ft/sec) Flow Traverse	29.79	29.74	29.77
Nozzle Diameter (in.)	0.280	0.280	0.280
% Isokinetics	99.37	99.1	99.3
Stack Diameter (in.)	42.25	42.25	42.25
Stack Area (ft ²)	9.74	9.74	9.74
Stack Flow Rate Isokinetic Traverse (acfm)	17,498	17,060	17,279
Stack Flow Rate Flow Traverse (acfm)	17,405	17,371	17,388
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	14,426	14,063	14,245
Stack Flow Rate Outlet Flow Traverse (dscfm)	14,350	14,321	14,335
Chlorine			
Collected Cl. micrograms (ug)	21.4	71.5	46.5
Cl ₂ Concentration (ug/dscf)	0.14	0.49	0.31
Cl ₂ Concentration (ppb)	2	6	4
Cl ₂ Emission Rate (lbs/hr)	0.0003	0.0009	0.0006

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/3/2003
Unit Number:	10s.1.1e	Stack Diameter (in.):	42.25
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.15
Run No.:	1	Operators:	BB, JL
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.95
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	7:20	
	End:	7:30	

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.29	62
2	0.30	62
3	0.31	62
4	0.31	62
5	0.31	62
6	0.30	62
7	0.17	62
8	0.18	62
9	0.11	62
10	0.13	62
11	0.11	62
12	0.11	61

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.28	62
2	0.30	62
3	0.30	62
4	0.31	62
5	0.31	62
6	0.26	62
7	0.24	62
8	0.28	62
9	0.27	62
10	0.23	62
11	0.22	62
12	0.17	62
Total Average:	sqrt dp = 0.4852	62.0

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/3/2003
Unit Number:	10s.1.1e	Stack Diameter (in.):	42.25
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.17
Run No.:	2	Operators:	BB, JL
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.95
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	12:00	
	End:	12:15	

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.29	62
2	0.31	62
3	0.32	62
4	0.31	62
5	0.32	62
6	0.31	62
7	0.23	62
8	0.15	62
9	0.15	62
10	0.12	62
11	0.10	62
12	0.06	62

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.25	62
2	0.30	62
3	0.31	62
4	0.30	62
5	0.28	62
6	0.26	62
7	0.26	62
8	0.25	62
9	0.28	62
10	0.26	62
11	0.22	62
12	0.17	62
Total Average:	sqrt dp = 0.4843	62.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 North						Leak Check Initial:	0.005	cfm@	15	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.001	cfm@	2	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	10s.1.1e								1		656.3		654.3	
Date:	9/3/2003						24		2		743.1		767.1	
Technicians:	BB, JL								3		536.5		542.9	
Meter Box No.:	90394						Y_d:	1.011			4		653.9	
Probe / Pitot No	501 / HA-1	C_p:	0.84			5		671.3		670.8				
Nozzle No.:	NA	dH_g:	1.733	Stack Dia. (in.):	42.25	Stack Area (ft²):	9.74	6		810.8		847.0		
Nozzle Dia:	0.280	0.280, 0.280, 0.279	Port Width (in.):	3.00	Port Length (in.):	4.25	Start Time:	7:50	Net Impinger Gain (g):	67.5				
Initial Meter Reading (ft³):	411.238	BP (in. Hg):	24.95	Static Pressure (in.):	-0.15	End Time:	11:50	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
	10	62	65	64	0.240	1.50	418.960	240	240	58	2			
	20	62	70	65	0.240	1.50	426.340	260	252	50	2			
	30	62	76	66	0.240	1.50	433.830	260	252	49	2			
	40	62	80	69	0.240	1.50	441.340	260	252	49	2			
	50	62	85	73	0.240	1.50	448.910	260	254	49	2			
	60	62	85	73	0.240	1.50	456.700	265	253	51	2			
	70	62	87	76	0.240	1.50	464.120	265	254	52	2			
	80	62	88	78	0.230	1.50	471.430	265	253	52	2			
	90	62	88	79	0.230	1.50	478.750	268	254	52	2			
	100	62	90	80	0.240	1.50	486.550	267	252	53	2			
	110	62	90	82	0.240	1.50	494.350	267	254	53	2			
	120	62	92	83	0.240	1.50	502.130	269	253	54	2			
	130	62	94	85	0.240	1.60	509.940	268	252	54	2			
	140	62	94	85	0.240	1.60	517.770	268	253	54	2			
	150	62	95	87	0.230	1.60	525.600	269	253	56	2			
	160	62	95	88	0.230	1.50	533.350	265	255	57	2			
	170	62	96	91	0.240	1.60	541.100	265	254	57	2			
	180	62	95	89	0.230	1.50	548.890	265	252	53	2			
	190	62	95	90	0.240	1.60	556.560	265	252	52	2			
	200	62	95	90	0.240	1.60	564.360	267	253	53	2			
	210	62	95	91	0.240	1.60	572.140	267	254	55	2			
	220	62	97	91	0.240	1.60	580.030	269	254	55	2			
	230	62	96	90	0.240	1.60	587.760	268	251	55	2			
	240	62	96	90	0.240	1.60	595.545	266	255	62	2			
Average / Net		62.0		85.3	0.2	1.5	184.307	264.5	252.5	53.5	2.0			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2	
Plant Name:	Fab 11 North						Leak Check Initial:	0.001	cfm@	15.5	(in. Hg)		
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.000	cfm@	3.0	(in. Hg)		
Project No.:	31397-1600-00000						Total Traverse Points		Impinger	Initial	Final		
Sampling Location:	10s.1.1e							1	586.9	584.6			
Date:	9/3/2003						24	2	636.0	655.9			
Technicians:	BB, JL							3	646.6	649.7			
Meter Box No.:	90394						Y_d:	1.011		4	621.5	626.1	
Probe/Pitot No.:	501 / HA-1	C_p:	0.84		5	663.8	672.8						
Nozzle No.:	NA	dH₀:	1.733	Stack Dia. (in.):	42.25	Stack Area (ft²):	9.74		6	966.6	993.2		
Nozzle Dia:	0.280	0.280, 0.280, 0.279	Port Width (in.):	3.00	Port Length (in.):	4.25	Start Time:	12:25	Net Impinger Gain (g):	60.9			
Initial Meter Reading (ft³):	596.121	BP (in. Hg):	24.95	Static Pressure (in.):	-0.17	End Time:	16:25	Theta	240				
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)		
	10	62	92	92	0.230	1.50	603.680	248	249	49	3.0		
	20	63	95	92	0.230	1.50	611.210	247	243	49	3.0		
	30	62	98	93	0.230	1.50	618.810	245	244	52	3.0		
	40	62	100	94	0.230	1.50	626.560	248	243	52	3.0		
	50	62	100	96	0.230	1.50	634.180	248	243	53	3.0		
	60	62	100	97	0.230	1.50	641.810	251	243	53	3.0		
	70	62	100	97	0.230	1.50	649.470	250	242	53	3.0		
	80	62	98	95	0.230	1.50	657.110	251	242	53	3.0		
	90	62	99	95	0.230	1.50	664.720	245	244	55	3.0		
	100	62	101	95	0.230	1.50	672.330	247	244	55	3.0		
	110	62	102	96	0.230	1.50	679.930	246	246	57	3.0		
	120	62	103	97	0.230	1.50	687.640	248	241	58	3.0		
	130	62	102	97	0.230	1.50	695.370	245	245	59	3.0		
	140	62	101	97	0.230	1.50	703.110	246	243	55	3.0		
	150	62	101	97	0.230	1.50	710.810	252	242	54	3.0		
	160	62	101	97	0.220	1.50	718.450	248	243	56	3.0		
	170	62	101	97	0.220	1.50	726.200	247	243	56	3.0		
	180	62	102	98	0.220	1.50	733.860	248	243	56	3.0		
	190	62	101	97	0.220	1.50	741.450	250	244	52	3.0		
	200	62	101	96	0.220	1.50	749.110	245	244	53	3.0		
	210	62	101	96	0.220	1.50	756.700	246	245	53	3.0		
	220	62	100	96	0.220	1.50	764.300	247	244	54	3.0		
	230	62	100	95	0.220	1.50	771.910	248	244	55	3.0		
	240	62	100	95	0.220	1.50	779.512	247	245	55	3.0		
Average / Net		62.0		97.8	0.2	1.5	183.391	247.6	243.7	54.0	3.0		

EPA REFERENCE METHOD 1

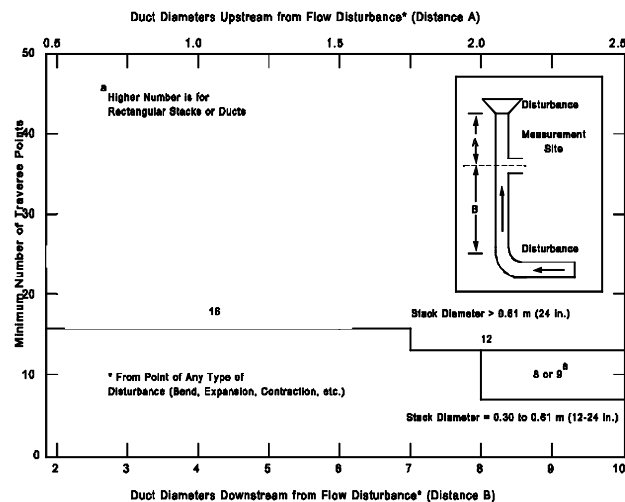
FIELD DATA SHEET

CIRCULAR STACKS

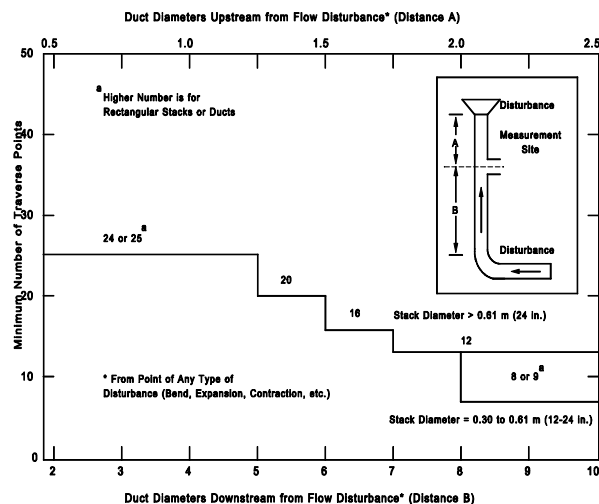
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 10.1.1e
 TRC Project No.: 31397-1600-00000
 Date: 9/3/2003
 Technician: B. Sandstrom, B. Bauer
 Circular/Rectangular: C

Stack Diameter: 42.3
 Sample Port Diameter: 3.0
 Sample Port Depth: 4.25
 Diameters Upstream: 1.8
 Diameters Downstream: 2.6
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	5 2/16
2	7 1/16
3	9 4/16
4	11 12/16
5	14 13/16
6	19 5/16
7	31 7/16
8	35 15/16
9	39
10	41 8/16
11	43 11/16
12	45 10/16
13	
14	
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23	
24	

Scrubber Outlet 10s.1.1f FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1F 09 04 03 SAMPLE R1_0006 abs.lab	9/4/2003 7:41	ND	ND	ND	ND	ND	2.22	383.3	ND	43.303	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0007 abs.lab	9/4/2003 7:44	ND	ND	ND	ND	ND	2.22	382.5	ND	53.680	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0008 abs.lab	9/4/2003 7:47	ND	ND	ND	ND	ND	2.23	384.4	ND	41.551	149.76	1.003
10S_1_1F 09 04 03 SAMPLE R1_0009 abs.lab	9/4/2003 7:49	ND	ND	ND	ND	ND	2.23	383.8	ND	42.432	149.76	1.003
10S_1_1F 09 04 03 SAMPLE R1_0010 abs.lab	9/4/2003 7:52	ND	ND	ND	ND	ND	2.22	381.7	ND	25.699	149.02	1.008
10S_1_1F 09 04 03 SAMPLE R1_0011 abs.lab	9/4/2003 7:54	ND	ND	ND	ND	ND	2.22	382.8	ND	38.876	149.02	1.008
10S_1_1F 09 04 03 SAMPLE R1_0012 abs.lab	9/4/2003 7:57	ND	ND	ND	ND	ND	2.22	383.4	ND	30.673	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0013 abs.lab	9/4/2003 8:00	ND	ND	ND	ND	ND	2.23	385.7	ND	37.003	149.76	1.003
10S_1_1F 09 04 03 SAMPLE R1_0014 abs.lab	9/4/2003 8:02	ND	ND	ND	ND	ND	2.22	382.5	ND	31.843	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0015 abs.lab	9/4/2003 8:05	ND	ND	ND	ND	ND	2.22	382.2	ND	35.007	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0016 abs.lab	9/4/2003 8:07	ND	ND	ND	ND	ND	2.21	381.9	ND	38.740	149.02	1.008
10S_1_1F 09 04 03 SAMPLE R1_0017 abs.lab	9/4/2003 8:10	ND	ND	ND	ND	ND	2.21	383.7	ND	35.707	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0018 abs.lab	9/4/2003 8:13	ND	ND	ND	ND	ND	2.21	386.6	ND	46.772	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0019 abs.lab	9/4/2003 8:15	ND	ND	ND	ND	ND	2.21	385.1	ND	38.239	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0020 abs.lab	9/4/2003 8:18	ND	ND	ND	ND	ND	2.23	387.5	ND	46.543	149.76	1.003
10S_1_1F 09 04 03 SAMPLE R1_0021 abs.lab	9/4/2003 8:20	ND	ND	ND	ND	ND	2.22	384.6	ND	36.377	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0022 abs.lab	9/4/2003 8:23	ND	ND	ND	ND	ND	2.21	385.3	ND	52.079	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0023 abs.lab	9/4/2003 8:26	ND	ND	ND	ND	ND	2.21	386.5	ND	42.368	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0024 abs.lab	9/4/2003 8:28	ND	ND	ND	ND	ND	2.23	386.8	ND	52.474	149.76	1.003
10S_1_1F 09 04 03 SAMPLE R1_0025 abs.lab	9/4/2003 8:31	ND	ND	ND	ND	ND	2.21	384.4	ND	45.022	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0026 abs.lab	9/4/2003 8:33	ND	ND	ND	ND	ND	2.22	387.1	ND	55.259	149.02	1.003
10S_1_1F 09 04 03 SAMPLE R1_0027 abs.lab	9/4/2003 8:36	ND	ND	ND	ND	ND	2.22	385.9	ND	45.718	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0028 abs.lab	9/4/2003 8:39	ND	ND	ND	ND	ND	2.23	387.3	ND	58.184	149.76	1.003
10S_1_1F 09 04 03 SAMPLE R1_0029 abs.lab	9/4/2003 8:41	ND	ND	ND	ND	ND	2.21	382.9	ND	44.898	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0030 abs.lab	9/4/2003 8:44	ND	ND	ND	ND	ND	2.22	385.4	ND	57.477	149.02	1.008
10S_1_1F 09 04 03 SAMPLE R1_0031 abs.lab	9/4/2003 8:46	ND	ND	ND	ND	ND	2.23	385.5	ND	47.795	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0032 abs.lab	9/4/2003 8:49	ND	ND	ND	ND	ND	2.23	385.4	ND	49.997	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0033 abs.lab	9/4/2003 8:51	ND	ND	ND	ND	ND	2.23	384.6	ND	50.408	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0034 abs.lab	9/4/2003 8:54	ND	ND	ND	ND	ND	2.23	383.8	ND	46.937	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0035 abs.lab	9/4/2003 8:57	ND	ND	ND	ND	ND	2.23	383.9	ND	49.546	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0036 abs.lab	9/4/2003 8:59	ND	ND	ND	ND	ND	2.23	384.1	ND	44.246	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0037 abs.lab	9/4/2003 9:02	ND	ND	ND	ND	ND	2.23	383.9	ND	44.360	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0038 abs.lab	9/4/2003 9:04	ND	ND	ND	ND	ND	2.23	383.4	ND	44.374	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0039 abs.lab	9/4/2003 9:07	ND	ND	ND	ND	ND	2.23	382.9	ND	42.813	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0040 abs.lab	9/4/2003 9:10	ND	ND	ND	ND	ND	2.23	382.7	ND	40.643	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0041 abs.lab	9/4/2003 9:12	ND	ND	ND	ND	ND	2.23	382.5	ND	40.745	149.02	1.008
10S_1_1F 09 04 03 SAMPLE R1_0042 abs.lab	9/4/2003 9:15	ND	ND	ND	ND	ND	2.24	382.9	ND	42.816	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0043 abs.lab	9/4/2003 9:17	ND	ND	ND	ND	ND	2.23	383.1	ND	42.797	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0044 abs.lab	9/4/2003 9:20	ND	ND	ND	ND	ND	2.23	383.3	ND	41.831	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0045 abs.lab	9/4/2003 9:23	ND	ND	ND	ND	ND	2.23	383.2	ND	46.593	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0046 abs.lab	9/4/2003 9:25	ND	ND	ND	ND	ND	2.18	381.8	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0047 abs.lab	9/4/2003 9:28	ND	ND	ND	ND	ND	2.17	380.0	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0048 abs.lab	9/4/2003 9:30	ND	ND	ND	ND	ND	2.17	379.8	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0049 abs.lab	9/4/2003 9:33	ND	ND	ND	ND	ND	2.18	382.4	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0050 abs.lab	9/4/2003 9:36	ND	ND	ND	ND	ND	2.17	380.9	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0051 abs.lab	9/4/2003 9:38	ND	ND	ND	ND	ND	2.18	383.4	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0052 abs.lab	9/4/2003 9:41	ND	ND	ND	ND	ND	2.16	378.3	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0053 abs.lab	9/4/2003 9:43	ND	ND	ND	ND	ND	2.16	379.1	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0054 abs.lab	9/4/2003 9:46	ND	ND	ND	ND	ND	2.17	381.5	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0055 abs.lab	9/4/2003 9:49	ND	ND	ND	ND	ND	2.17	381.8	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0056 abs.lab	9/4/2003 9:51	ND	ND	ND	ND	ND	2.16	378.8	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0057 abs.lab	9/4/2003 9:54	ND	ND	ND	ND	ND	2.16	378.6	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0058 abs.lab	9/4/2003 9:56	ND	ND	ND	ND	ND	2.16	378.2	ND	ND	149.76	1.013

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 10s.1.1f FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1F 09 04 03 SAMPLE R1_0059 abs.lab	9/4/2003 9:59	ND	ND	ND	ND	ND	2.16	378.0	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0060 abs.lab	9/4/2003 10:02	ND	ND	ND	ND	ND	2.16	378.8	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0061 abs.lab	9/4/2003 10:04	ND	ND	ND	ND	ND	2.16	378.9	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0062 abs.lab	9/4/2003 10:07	ND	ND	ND	ND	ND	2.17	381.5	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0063 abs.lab	9/4/2003 10:09	ND	ND	ND	ND	ND	2.15	378.5	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0064 abs.lab	9/4/2003 10:12	ND	ND	ND	ND	ND	2.15	377.5	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0065 abs.lab	9/4/2003 10:15	ND	ND	ND	ND	ND	2.16	379.0	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0066 abs.lab	9/4/2003 10:17	ND	ND	ND	ND	ND	2.15	377.3	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0067 abs.lab	9/4/2003 10:20	ND	ND	ND	ND	ND	2.15	377.9	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0068 abs.lab	9/4/2003 10:22	ND	ND	ND	ND	ND	2.15	376.7	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0069 abs.lab	9/4/2003 10:25	ND	ND	ND	ND	ND	2.15	376.2	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0070 abs.lab	9/4/2003 10:28	ND	ND	ND	ND	ND	2.17	378.3	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0071 abs.lab	9/4/2003 10:30	ND	ND	ND	ND	ND	2.17	378.5	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0072 abs.lab	9/4/2003 10:33	ND	ND	ND	ND	ND	2.16	376.8	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0073 abs.lab	9/4/2003 10:35	ND	ND	ND	ND	ND	2.15	376.9	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0074 abs.lab	9/4/2003 10:38	ND	ND	ND	ND	ND	2.15	377.0	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0075 abs.lab	9/4/2003 10:41	ND	ND	ND	ND	ND	2.16	376.3	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0076 abs.lab	9/4/2003 10:43	ND	ND	ND	ND	ND	2.16	375.0	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0077 abs.lab	9/4/2003 10:46	ND	ND	ND	ND	ND	2.16	375.1	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0078 abs.lab	9/4/2003 10:49	ND	ND	ND	ND	ND	2.18	377.5	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0079 abs.lab	9/4/2003 10:51	ND	ND	ND	ND	ND	2.18	377.3	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0080 abs.lab	9/4/2003 10:54	ND	ND	ND	ND	ND	2.17	375.2	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0081 abs.lab	9/4/2003 10:56	ND	ND	ND	ND	ND	2.17	375.1	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0082 abs.lab	9/4/2003 10:59	ND	ND	ND	ND	ND	2.17	375.7	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0083 abs.lab	9/4/2003 11:02	ND	ND	ND	ND	ND	2.17	375.3	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0084 abs.lab	9/4/2003 11:04	ND	ND	ND	ND	ND	2.17	375.6	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0085 abs.lab	9/4/2003 11:07	ND	ND	ND	ND	ND	2.17	377.2	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0086 abs.lab	9/4/2003 11:09	ND	ND	ND	ND	ND	2.16	374.5	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0087 abs.lab	9/4/2003 11:12	ND	ND	ND	ND	ND	2.17	375.8	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0088 abs.lab	9/4/2003 11:15	ND	ND	ND	ND	ND	2.16	373.2	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0089 abs.lab	9/4/2003 11:17	ND	ND	ND	ND	ND	2.17	375.1	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0090 abs.lab	9/4/2003 11:20	ND	ND	ND	ND	ND	2.16	373.6	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0091 abs.lab	9/4/2003 11:22	ND	ND	ND	ND	ND	2.17	375.0	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE R1_0092 abs.lab	9/4/2003 11:25	ND	ND	ND	ND	ND	2.16	373.6	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0093 abs.lab	9/4/2003 11:28	ND	ND	ND	ND	ND	2.15	373.7	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0094 abs.lab	9/4/2003 11:30	ND	ND	ND	ND	ND	2.15	376.8	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0095 abs.lab	9/4/2003 11:33	ND	ND	ND	ND	ND	2.14	378.1	ND	ND	149.02	1.013
10S_1_1F 09 04 03 SAMPLE R1_0096 abs.lab	9/4/2003 11:35	ND	ND	ND	ND	ND	2.14	379.2	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE R1_0097 abs.lab	9/4/2003 11:38	ND	ND	ND	ND	ND	2.15	379.4	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0000 abs.lab	9/4/2003 12:10	ND	ND	ND	ND	ND	2.18	375.9	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0001 abs.lab	9/4/2003 12:11	ND	ND	ND	ND	ND	2.20	377.6	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0002 abs.lab	9/4/2003 12:13	ND	ND	ND	ND	ND	2.19	376.3	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0003 abs.lab	9/4/2003 12:16	ND	ND	ND	ND	ND	2.19	376.8	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0004 abs.lab	9/4/2003 12:18	ND	ND	ND	ND	ND	2.19	378.7	ND	ND	149.02	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0005 abs.lab	9/4/2003 12:21	ND	ND	ND	ND	ND	2.18	377.4	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0006 abs.lab	9/4/2003 12:24	ND	ND	ND	ND	ND	2.19	379.3	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0007 abs.lab	9/4/2003 12:26	ND	ND	ND	ND	ND	2.19	379.9	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0008 abs.lab	9/4/2003 12:29	ND	ND	ND	ND	ND	2.18	377.5	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0009 abs.lab	9/4/2003 12:32	ND	ND	ND	ND	ND	2.18	377.5	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0010 abs.lab	9/4/2003 12:34	ND	ND	ND	ND	ND	2.19	377.5	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0011 abs.lab	9/4/2003 12:37	ND	ND	ND	ND	ND	2.19	376.6	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0012 abs.lab	9/4/2003 12:39	ND	ND	ND	ND	ND	2.19	376.1	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0013 abs.lab	9/4/2003 12:42	ND	ND	ND	ND	ND	2.19	376.5	ND	ND	149.76	1.013

Scrubber Outlet 10s.1.1f FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1F 09 04 03 SAMPLE RUN2_0014 abs.lab	9/4/2003 12:45	ND	ND	ND	ND	ND	2.20	379.1	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0015 abs.lab	9/4/2003 12:47	ND	ND	ND	ND	ND	2.19	377.0	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0016 abs.lab	9/4/2003 12:50	ND	ND	ND	ND	ND	2.19	376.7	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0017 abs.lab	9/4/2003 12:52	ND	ND	ND	ND	ND	2.21	378.4	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0018 abs.lab	9/4/2003 12:55	ND	ND	ND	ND	ND	2.19	376.6	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0019 abs.lab	9/4/2003 12:58	ND	ND	ND	ND	ND	2.19	375.3	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0020 abs.lab	9/4/2003 13:00	ND	ND	ND	ND	ND	2.21	376.8	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0021 abs.lab	9/4/2003 13:03	ND	ND	ND	ND	ND	2.21	378.0	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0022 abs.lab	9/4/2003 13:06	ND	ND	ND	ND	ND	2.22	378.8	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0023 abs.lab	9/4/2003 13:08	ND	ND	ND	ND	ND	2.21	376.4	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0024 abs.lab	9/4/2003 13:11	ND	ND	ND	ND	ND	2.22	377.1	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0025 abs.lab	9/4/2003 13:13	ND	ND	ND	ND	ND	2.22	376.7	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0026 abs.lab	9/4/2003 13:16	ND	ND	ND	ND	ND	2.21	375.6	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0027 abs.lab	9/4/2003 13:19	ND	ND	ND	ND	ND	2.21	376.4	ND	ND	149.76	1.013
10S_1_1F 09 04 03 SAMPLE RUN2_0028 abs.lab	9/4/2003 13:21	ND	ND	ND	ND	ND	2.22	377.3	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0029 abs.lab	9/4/2003 13:24	ND	ND	ND	ND	ND	2.23	380.5	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0030 abs.lab	9/4/2003 13:27	ND	ND	ND	ND	ND	2.24	381.7	ND	23.425	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0031 abs.lab	9/4/2003 13:29	ND	ND	ND	ND	ND	2.23	382.0	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0032 abs.lab	9/4/2003 13:32	ND	ND	ND	ND	ND	2.21	377.4	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0033 abs.lab	9/4/2003 13:34	ND	ND	ND	ND	ND	2.22	377.3	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0034 abs.lab	9/4/2003 13:37	ND	ND	ND	ND	ND	2.22	377.2	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0035 abs.lab	9/4/2003 13:40	ND	ND	ND	ND	ND	2.22	377.8	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0036 abs.lab	9/4/2003 13:42	ND	ND	ND	ND	ND	2.23	379.2	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0037 abs.lab	9/4/2003 13:45	ND	ND	ND	ND	ND	2.22	378.5	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0038 abs.lab	9/4/2003 13:47	ND	ND	ND	ND	ND	2.23	381.9	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0039 abs.lab	9/4/2003 13:50	ND	ND	ND	ND	ND	2.21	379.6	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0040 abs.lab	9/4/2003 13:53	ND	ND	ND	ND	ND	2.21	379.7	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0041 abs.lab	9/4/2003 13:55	ND	ND	ND	ND	ND	2.21	381.1	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0042 abs.lab	9/4/2003 13:58	ND	ND	ND	ND	ND	2.21	381.6	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0043 abs.lab	9/4/2003 14:01	ND	ND	ND	ND	ND	2.21	381.0	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0044 abs.lab	9/4/2003 14:03	ND	ND	ND	ND	ND	2.22	382.4	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0045 abs.lab	9/4/2003 14:06	ND	ND	ND	ND	ND	2.23	382.6	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0046 abs.lab	9/4/2003 14:08	ND	ND	ND	ND	ND	2.22	379.2	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0047 abs.lab	9/4/2003 14:11	ND	ND	ND	ND	ND	2.22	378.4	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0048 abs.lab	9/4/2003 14:14	ND	ND	ND	ND	ND	2.22	378.0	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0049 abs.lab	9/4/2003 14:16	ND	ND	ND	ND	ND	2.22	378.4	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0050 abs.lab	9/4/2003 14:19	ND	ND	ND	ND	ND	2.22	382.9	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0051 abs.lab	9/4/2003 14:21	ND	ND	ND	ND	ND	2.22	383.3	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0052 abs.lab	9/4/2003 14:24	ND	ND	ND	ND	ND	2.22	383.8	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0053 abs.lab	9/4/2003 14:27	ND	ND	ND	ND	ND	2.22	384.0	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0054 abs.lab	9/4/2003 14:29	ND	ND	ND	ND	ND	2.23	387.2	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0055 abs.lab	9/4/2003 14:32	ND	ND	ND	ND	ND	2.23	388.0	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0056 abs.lab	9/4/2003 14:35	ND	ND	ND	ND	ND	2.22	386.4	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0057 abs.lab	9/4/2003 14:37	ND	ND	ND	ND	ND	2.22	387.0	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0058 abs.lab	9/4/2003 14:40	ND	ND	ND	ND	ND	2.22	387.9	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0059 abs.lab	9/4/2003 14:42	ND	ND	ND	ND	ND	2.21	385.8	ND	ND	149.02	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0060 abs.lab	9/4/2003 14:45	ND	ND	ND	ND	ND	2.22	386.4	ND	ND	149.02	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0061 abs.lab	9/4/2003 14:48	ND	ND	ND	ND	ND	2.22	385.9	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0062 abs.lab	9/4/2003 14:50	ND	ND	ND	ND	ND	2.20	383.8	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0063 abs.lab	9/4/2003 14:53	ND	ND	ND	ND	ND	2.20	383.3	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0064 abs.lab	9/4/2003 14:55	ND	ND	ND	ND	ND	2.19	381.8	ND	ND	149.02	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0065 abs.lab	9/4/2003 14:58	ND	ND	ND	ND	ND	2.20	383.0	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0066 abs.lab	9/4/2003 15:01	ND	ND	ND	ND	ND	2.20	382.8	ND	ND	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 10s.1.1f FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1F 09 04 03 SAMPLE RUN2_0067 abs.lab	9/4/2003 15:03	ND	ND	ND	ND	ND	2.20	383.1	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0068 abs.lab	9/4/2003 15:06	ND	ND	ND	ND	ND	2.19	383.1	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0069 abs.lab	9/4/2003 15:09	ND	ND	ND	ND	ND	2.21	386.8	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0070 abs.lab	9/4/2003 15:11	ND	ND	ND	ND	ND	2.21	388.5	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0071 abs.lab	9/4/2003 15:14	ND	ND	ND	ND	ND	2.21	385.2	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0072 abs.lab	9/4/2003 15:16	ND	ND	ND	ND	ND	2.22	385.6	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0073 abs.lab	9/4/2003 15:19	ND	ND	ND	ND	ND	2.22	385.5	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0074 abs.lab	9/4/2003 15:22	ND	ND	ND	ND	ND	2.22	383.7	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0075 abs.lab	9/4/2003 15:24	ND	ND	ND	ND	ND	2.23	385.1	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0076 abs.lab	9/4/2003 15:27	ND	ND	ND	ND	ND	2.22	382.9	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0077 abs.lab	9/4/2003 15:30	ND	ND	ND	ND	ND	2.23	387.0	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0078 abs.lab	9/4/2003 15:32	ND	ND	ND	ND	ND	2.22	385.9	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0079 abs.lab	9/4/2003 15:35	ND	ND	ND	ND	ND	2.21	384.2	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0080 abs.lab	9/4/2003 15:37	ND	ND	ND	ND	ND	2.22	386.9	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0081 abs.lab	9/4/2003 15:40	ND	ND	ND	ND	ND	2.23	388.8	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0082 abs.lab	9/4/2003 15:43	ND	ND	ND	ND	ND	2.22	386.3	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0083 abs.lab	9/4/2003 15:45	ND	ND	ND	ND	ND	2.22	384.9	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0084 abs.lab	9/4/2003 15:48	ND	ND	ND	ND	ND	2.22	384.0	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0085 abs.lab	9/4/2003 15:50	ND	ND	ND	ND	ND	2.23	384.8	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0086 abs.lab	9/4/2003 15:53	ND	ND	ND	ND	ND	2.22	382.7	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0087 abs.lab	9/4/2003 15:56	ND	ND	ND	ND	ND	2.23	383.3	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0088 abs.lab	9/4/2003 15:58	ND	ND	ND	ND	ND	2.23	383.1	ND	ND	149.76	1.003
10S_1_1F 09 04 03 SAMPLE RUN2_0089 abs.lab	9/4/2003 16:01	ND	ND	ND	ND	ND	2.22	380.0	ND	ND	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0090 abs.lab	9/4/2003 16:04	ND	ND	ND	ND	ND	2.23	381.4	ND	17.82	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0091 abs.lab	9/4/2003 16:06	ND	ND	ND	ND	ND	2.22	380.5	ND	25.70	149.76	1.008
10S_1_1F 09 04 03 SAMPLE RUN2_0092 abs.lab	9/4/2003 16:09	ND	ND	ND	ND	ND	2.22	380.7	ND	17.78	149.76	1.008
Average _{wet}		ND	ND	ND	ND	ND	2.20	380.84	ND	23.22	149.72	1.009

Reference Method Calculations

Fab 11 North

10s.1.1f

Run No.	Run 1	Run 2	
Date	9/4/2003	9/4/2003	
Start Time	7:40	12:15	AVERAGE
Stop Time	11:40	16:15	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.95	24.95	24.95
Orifice calibration Factor	1.733	1.733	1.733
Dry Gas Meter Calibration Factor	1.011	1.011	1.011
Average Meter Temperature (°F)	80.9	93.0	87.0
Volume Metered (acf)	206.621	215.241	210.931
Volume Metered (dscf)	170.950	174.242	172.596
Volume of Water Collected (g)	65.9	62.8	64.3
Volume of Water Collected (scf)	3.107	2.961	3.034
Average Delta H (in. H ₂ O)	1.98	2.06	2.02
AVG SQRT of dH (in. H ₂ O)	1.4053	1.4360	1.4207
Measured Moisture (%)	1.8%	1.7%	1.7%
Saturation Moisture (%)	2.2%	2.2%	2.2%
Moisture Used for Calculations (%)	2.2%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.65	28.66	28.65
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.14	-0.14	-0.14
Stack Pressure (in. Hg)	24.94	24.94	24.94
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5272	0.5326	0.5299
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.4711	0.4677	0.4694
Stack Temperature Isokinetic Traverse (°F)	62.0	62.0	62.0
Stack Temperature Flow Traverse (°F)	62.0	62.0	62.0
Velocity (ft/sec) Isokinetic Traverse	32.36	32.69	32.52
Velocity (ft/sec) Flow Traverse	28.92	28.70	28.81
Nozzle Diameter (in.)	0.288	0.288	0.288
% Isokinetics	98.40	99.3	98.8
Stack Diameter (in.)	42.25	42.25	42.25
Stack Area (ft ²)	9.74	9.74	9.74
Stack Flow Rate Isokinetic Traverse (acfm)	18,902	19,095	18,998
Stack Flow Rate Flow Traverse (acfm)	16,893	16,767	16,830
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	15,582	15,739	15,661
Stack Flow Rate Outlet Flow Traverse (dscfm)	13,926	13,821	13,874
Chlorine			
Collected Cl. micrograms (ug)	79.7	90.6	85.2
Cl ₂ Concentration (ug/dscf)	0.47	0.52	0.49
Cl ₂ Concentration (ppb)	6	6	6
Cl ₂ Emission Rate (lbs/hr)	0.0009	0.0010	0.0009

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/4/2003
Unit Number:	10s.1.1f	Stack Diameter (in.):	42.25
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.15
Run No.:	1	Operators:	BMB/JL
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.95
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	7:15	
	End:	7:30	

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.29	62
2	0.30	62
3	0.31	62
4	0.31	62
5	0.28	62
6	0.28	62
7	0.26	62
8	0.28	62
9	0.19	62
10	0.18	62
11	0.15	62
12	0.05	62

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.18	62
2	0.18	62
3	0.19	62
4	0.19	62
5	0.21	62
6	0.22	62
7	0.23	62
8	0.24	62
9	0.25	62
10	0.26	62
11	0.25	62
12	0.17	62
Total Average:	sqrt dp = 0.4711	62.0

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/4/2003
Unit Number:	10s.1.1f	Stack Diameter (in.):	42.25
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.13
Run No.:	2	Operators:	BMB/JL
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.95
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	11:40	
	End:	11:55	

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.23	62
2	0.27	62
3	0.29	62
4	0.31	62
5	0.28	62
6	0.28	62
7	0.26	62
8	0.25	62
9	0.20	62
10	0.20	62
11	0.15	62
12	0.07	62

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.13	62
2	0.17	62
3	0.19	62
4	0.19	62
5	0.19	62
6	0.21	62
7	0.23	62
8	0.24	62
9	0.25	62
10	0.27	62
11	0.27	62
12	0.22	62
Total Average:	sqrt dp = 0.4677	62.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 North						Leak Check Initial:	0.008	cfm@	15.5	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.002	cfm@	4	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	10s.1.1f								1		646.3		643.8	
Date:	9/4/2003						24		2		743.2		768.1	
Technicians:	BMB/JL								3		536.7		543.0	
Meter Box No.:	90394						Y_d:	1.011			4		636.1	
Probe / Pitot No	301 / HA-1	C_p:	0.84			5		652.3		647.3				
Nozzle No.:	NA	dH₀:	1.733	Stack Dia. (in.):	42.25	Stack Area (ft²):	9.74	6		815.6		855.6		
Nozzle Dia:	0.288	0.288, 0.287, 0.288	Port Width (in.):	3.00	Port Length (in.):	4.25	Start Time:	7:40	Net Impinger Gain (g):	65.9				
Initial Meter Reading (ft³):	782.246	BP (in. Hg):	24.95	Static Pressure (in.):	-0.14	End Time:	11:40	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
1	10	62	62	62	0.280	1.90	790.250	259	246	49	2			
1	20	62	68	63	0.280	1.90	798.590	259	247	41	2			
1	30	62	74	54	0.280	1.90	806.960	257	245	43	2			
1	40	62	77	65	0.280	2.00	815.280	257	244	43	2			
1	50	62	79	67	0.280	2.00	823.620	257	245	44	2			
1	60	62	80	68	0.280	2.00	832.140	255	247	48	2			
1	70	62	81	70	0.280	2.00	840.650	255	248	48	2			
1	80	62	82	70	0.270	2.00	849.280	255	247	49	2			
1	90	62	82	71	0.280	2.00	857.920	261	246	49	2			
1	100	62	83	72	0.280	2.00	866.560	257	246	49	2			
1	110	62	83	73	0.280	2.00	875.180	257	249	50	2			
1	120	62	84	73	0.260	2.00	883.780	255	249	50	2			
1	130	62	86	75	0.270	1.90	892.360	255	247	51	2			
1	140	62	90	78	0.270	1.90	900.930	259	250	52	2			
1	150	62	91	81	0.280	1.90	909.620	256	249	53	2			
1	160	62	90	82	0.280	2.00	918.370	255	251	54	2			
1	170	62	92	83	0.280	2.00	927.170	257	247	54	2			
1	180	62	94	85	0.280	2.00	935.960	257	247	56	2			
1	190	62	97	87	0.280	2.00	944.760	257	248	56	2			
1	200	62	98	89	0.280	2.00	953.800	259	244	56	2			
1	210	62	95	88	0.280	2.00	962.560	259	245	56	2			
1	220	62	97	90	0.280	2.00	971.460	259	251	56	2			
1	230	62	97	90	0.280	2.00	980.210	261	249	56	2			
1	240	62	97	90	0.280	2.00	988.867	261	248	56	2			
Average / Net		62.0		80.9	0.3	2.0	206.621	257.5	247.3	50.8	2.0			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2.0
Plant Name:	Fab 11 North						Leak Check Initial:	0.005	cfm@	14	(in. Hg)	
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.004	cfm@	4.0	(in. Hg)	
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	10s.1.1f							1	591.2	592.7		
Date:	9/4/2003						24	2	603.3	615.3		
Technicians:	BMB/JL							3	645.7	649.2		
Meter Box No.:	90394						Y_d:	1.011		4	625.3	627.5
Probe/Pitot No.:	301 / HA-1	C_p:	0.84		5	656.1	657.1					
Nozzle No.:	NA	dH₀:	1.733	Stack Dia. (in.):	42.25	Stack Area (ft²):	9.74	6	971.7	1014.3		
Nozzle Dia:	0.288	0.288, 0.287, 0.288	Port Width (in.):	3.00	Port Length (in.):	4.25	Start Time:	12:15	Net Impinger Gain (g):	62.8		
Initial Meter Reading (ft³):	989.09	BP (in. Hg):	24.95	Static Pressure (in.):	-0.14	End Time:	16:15	Theta	240.0			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
1	10	62	92	92	0.290	2.00	997.870	268	247	50	3.5	
1	20	62	92	91	0.280	2.00	1006.640	248	244	50	3.5	
1	30	62	95	92	0.280	2.00	1015.340	239	246	46	3.5	
1	40	62	97	92	0.290	2.00	1024.270	238	246	45	3.5	
1	50	62	98	93	0.280	2.10	1033.190	238	247	47	3.5	
1	60	62	98	92	0.290	2.10	1042.100	238	247	47	3.5	
1	70	62	98	93	0.290	2.10	1051.090	235	248	49	3.5	
1	80	62	99	93	0.280	2.10	1060.080	235	248	51	3.5	
1	90	62	96	93	0.280	2.10	1069.130	237	245	52	3.5	
1	100	62	96	92	0.280	2.10	1078.140	233	244	54	3.5	
1	110	62	94	92	0.290	2.10	1087.270	235	247	56	3.5	
1	120	62	93	91	0.280	2.10	1096.430	238	245	58	3.5	
1	130	62	94	91	0.280	2.10	1105.560	238	248	60	3.5	
1	140	62	95	90	0.280	2.00	1114.610	237	248	52	3.5	
1	150	62	94	90	0.270	2.00	1123.690	233	245	51	3.5	
1	160	62	92	90	0.280	2.00	1132.610	237	247	52	3.5	
1	170	62	94	89	0.290	2.00	1141.620	233	247	53	3.5	
1	180	62	95	89	0.270	2.10	1150.610	237	247	55	3.5	
1	190	62	93	90	0.290	2.00	1159.540	230	244	57	3.5	
1	200	62	93	89	0.290	2.10	1168.470	238	246	59	3.5	
1	210	62	94	89	0.290	2.10	1177.410	236	246	62	3.5	
1	220	62	95	90	0.280	2.10	1186.400	240	246	54	3.5	
1	230	62	97	90	0.290	2.10	1195.670	233	246	55	3.5	
1	240	62	97	90	0.290	2.10	1204.331	240	245	55	3.5	
Average / Net		62.0		93.0	0.3	2.1	215.241	238.1	246.2	52.9	3.5	

EPA REFERENCE METHOD 1

FIELD DATA SHEET

CIRCULAR STACKS

Firm Name: **INTEL**

Plant Location: **Rio Rancho, NM**

Sampling Location: **10.1.1f**

TRC Project No.: **31397-1600-00000**

Date: **9/3/2003**

Technician: **B. Sandstrom, B. Bauer**

Circular/Rectangular: **C**

Stack Diameter: **42.3**

Sample Port Diameter: **3.0**

Sample Port Depth: **4.25**

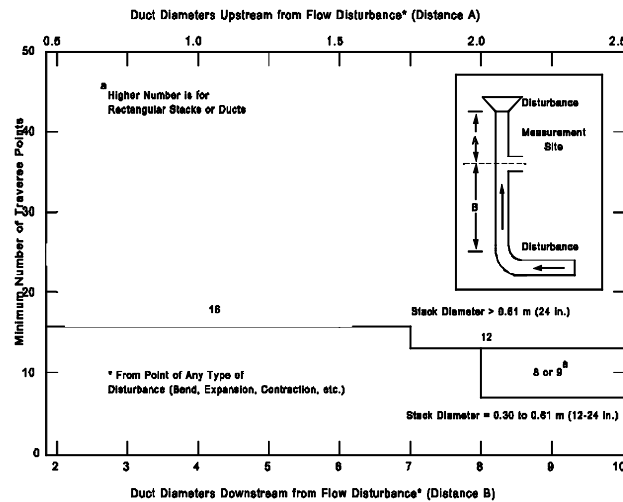
Diameters Upstream: **1.8**

Diameters Downstream: **2.6**

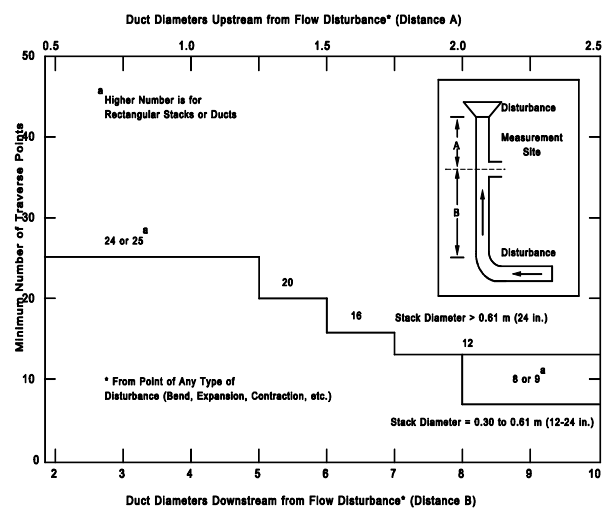
Flow or Particulate Test: **P**

Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	5 2/16
2	7 1/16
3	9 4/16
4	11 12/16
5	14 13/16
6	19 5/16
7	31 7/16
8	35 15/16
9	39
10	41 8/16
11	43 11/16
12	45 10/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 10s.1.1g FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0006 abs.lab	9/8/2003 7:50	ND	ND	ND	ND	ND	2.16	401.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0007 abs.lab	9/8/2003 7:53	ND	ND	ND	ND	ND	2.17	404.2	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0008 abs.lab	9/8/2003 7:55	ND	ND	ND	ND	ND	2.17	403.9	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0009 abs.lab	9/8/2003 7:58	ND	ND	ND	ND	ND	2.15	399.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0010 abs.lab	9/8/2003 8:01	ND	ND	ND	ND	ND	2.15	397.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0011 abs.lab	9/8/2003 8:03	ND	ND	ND	ND	ND	2.14	397.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0012 abs.lab	9/8/2003 8:06	ND	ND	ND	ND	ND	2.14	397.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0013 abs.lab	9/8/2003 8:08	ND	ND	ND	ND	ND	2.14	397.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0014 abs.lab	9/8/2003 8:11	ND	ND	ND	ND	ND	2.14	397.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0015 abs.lab	9/8/2003 8:14	ND	ND	ND	ND	ND	2.16	400.4	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0016 abs.lab	9/8/2003 8:16	ND	ND	ND	ND	ND	2.15	398.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0017 abs.lab	9/8/2003 8:19	ND	ND	ND	ND	ND	2.14	396.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0018 abs.lab	9/8/2003 8:21	ND	ND	ND	ND	ND	2.15	397.8	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0019 abs.lab	9/8/2003 8:24	ND	ND	ND	ND	ND	2.15	397.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0020 abs.lab	9/8/2003 8:26	ND	ND	ND	ND	ND	2.15	396.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0021 abs.lab	9/8/2003 8:29	ND	ND	ND	ND	ND	2.17	399.7	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0022 abs.lab	9/8/2003 8:32	ND	ND	ND	ND	ND	2.16	396.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0023 abs.lab	9/8/2003 8:34	ND	ND	ND	ND	ND	2.16	397.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0024 abs.lab	9/8/2003 8:37	ND	ND	ND	ND	ND	2.16	397.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0025 abs.lab	9/8/2003 8:39	ND	ND	ND	ND	ND	2.17	398.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0026 abs.lab	9/8/2003 8:42	ND	ND	ND	ND	ND	2.18	400.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0027 abs.lab	9/8/2003 8:45	ND	ND	ND	ND	ND	2.18	400.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0028 abs.lab	9/8/2003 8:47	ND	ND	ND	ND	ND	2.18	400.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0029 abs.lab	9/8/2003 8:50	ND	ND	ND	ND	ND	2.19	400.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0030 abs.lab	9/8/2003 8:52	ND	ND	ND	ND	ND	2.18	399.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0031 abs.lab	9/8/2003 8:55	ND	ND	ND	ND	ND	2.18	399.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0032 abs.lab	9/8/2003 8:58	ND	ND	ND	ND	ND	2.19	400.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0033 abs.lab	9/8/2003 9:00	ND	ND	ND	ND	ND	2.20	403.7	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0034 abs.lab	9/8/2003 9:03	ND	ND	ND	ND	ND	2.19	401.8	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0035 abs.lab	9/8/2003 9:05	ND	ND	ND	ND	ND	2.20	403.0	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0036 abs.lab	9/8/2003 9:08	ND	ND	ND	ND	ND	2.19	401.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0037 abs.lab	9/8/2003 9:10	ND	ND	ND	ND	ND	2.19	401.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0038 abs.lab	9/8/2003 9:13	ND	ND	ND	ND	ND	2.19	401.3	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0039 abs.lab	9/8/2003 9:16	ND	ND	ND	ND	ND	2.19	401.3	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0040 abs.lab	9/8/2003 9:18	ND	ND	ND	ND	ND	2.19	402.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0041 abs.lab	9/8/2003 9:21	ND	ND	ND	ND	ND	2.17	396.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0042 abs.lab	9/8/2003 9:23	ND	ND	ND	ND	ND	2.17	396.1	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0043 abs.lab	9/8/2003 9:26	ND	ND	ND	ND	ND	2.16	394.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0044 abs.lab	9/8/2003 9:29	ND	ND	ND	ND	ND	2.17	396.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0045 abs.lab	9/8/2003 9:31	ND	ND	ND	ND	ND	2.18	398.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0046 abs.lab	9/8/2003 9:34	ND	ND	ND	ND	ND	2.18	396.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0047 abs.lab	9/8/2003 9:36	ND	ND	ND	ND	ND	2.19	397.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0048 abs.lab	9/8/2003 9:39	ND	ND	ND	ND	ND	2.18	395.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0049 abs.lab	9/8/2003 9:42	ND	ND	ND	ND	ND	2.19	396.2	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0050 abs.lab	9/8/2003 9:44	ND	ND	ND	ND	ND	2.19	395.6	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0051 abs.lab	9/8/2003 9:47	ND	ND	ND	ND	ND	2.17	394.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0052 abs.lab	9/8/2003 9:49	ND	ND	ND	ND	ND	2.18	394.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0053 abs.lab	9/8/2003 9:52	ND	ND	ND	ND	ND	2.18	396.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0054 abs.lab	9/8/2003 9:55	ND	ND	ND	ND	ND	2.18	395.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0055 abs.lab	9/8/2003 9:57	ND	ND	ND	ND	ND	2.19	396.7	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0056 abs.lab	9/8/2003 10:00	ND	ND	ND	ND	ND	2.18	395.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0057 abs.lab	9/8/2003 10:02	ND	ND	ND	ND	ND	2.18	393.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0058 abs.lab	9/8/2003 10:05	ND	ND	ND	ND	ND	2.20	394.7	ND	ND	149.76	1.003

Scrubber Outlet 10s.1.1g FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0059 abs.lab	9/8/2003 10:08	ND	ND	ND	ND	ND	2.18	392.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0060 abs.lab	9/8/2003 10:10	ND	ND	ND	ND	ND	2.18	392.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0061 abs.lab	9/8/2003 10:13	ND	ND	ND	ND	ND	2.20	393.7	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0062 abs.lab	9/8/2003 10:15	ND	ND	ND	ND	ND	2.19	391.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0063 abs.lab	9/8/2003 10:18	ND	ND	ND	ND	ND	2.19	390.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0064 abs.lab	9/8/2003 10:20	ND	ND	ND	ND	ND	2.20	392.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0065 abs.lab	9/8/2003 10:23	ND	ND	ND	ND	ND	2.19	391.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0066 abs.lab	9/8/2003 10:26	ND	ND	ND	ND	ND	2.18	390.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0067 abs.lab	9/8/2003 10:28	ND	ND	ND	ND	ND	2.18	389.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0068 abs.lab	9/8/2003 10:31	ND	ND	ND	ND	ND	2.19	391.2	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0069 abs.lab	9/8/2003 10:33	ND	ND	ND	ND	ND	2.18	389.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0070 abs.lab	9/8/2003 10:36	ND	ND	ND	ND	ND	2.18	389.3	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0071 abs.lab	9/8/2003 10:39	ND	ND	ND	ND	ND	2.18	389.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0072 abs.lab	9/8/2003 10:41	ND	ND	ND	ND	ND	2.18	389.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0073 abs.lab	9/8/2003 10:44	ND	ND	ND	ND	ND	2.18	390.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0074 abs.lab	9/8/2003 10:46	ND	ND	ND	ND	ND	2.18	390.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0075 abs.lab	9/8/2003 10:49	ND	ND	ND	ND	ND	2.19	390.3	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0076 abs.lab	9/8/2003 10:52	ND	ND	ND	ND	ND	2.19	390.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0077 abs.lab	9/8/2003 10:54	ND	ND	ND	ND	ND	2.19	389.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0078 abs.lab	9/8/2003 10:57	ND	ND	ND	ND	ND	2.19	389.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0079 abs.lab	9/8/2003 10:59	ND	ND	ND	ND	ND	2.21	392.1	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0080 abs.lab	9/8/2003 11:02	ND	ND	ND	ND	ND	2.20	390.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0081 abs.lab	9/8/2003 11:05	ND	ND	ND	ND	ND	2.20	390.8	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0082 abs.lab	9/8/2003 11:07	ND	ND	ND	ND	ND	2.20	389.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0083 abs.lab	9/8/2003 11:10	ND	ND	ND	ND	ND	2.20	389.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0084 abs.lab	9/8/2003 11:13	ND	ND	ND	ND	ND	2.20	389.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0085 abs.lab	9/8/2003 11:15	ND	ND	ND	ND	ND	2.20	388.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0086 abs.lab	9/8/2003 11:18	ND	ND	ND	ND	ND	2.20	388.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0087 abs.lab	9/8/2003 11:20	ND	ND	ND	ND	ND	2.20	389.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0088 abs.lab	9/8/2003 11:23	ND	ND	ND	ND	ND	2.21	388.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0089 abs.lab	9/8/2003 11:26	ND	ND	ND	ND	ND	2.22	389.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0090 abs.lab	9/8/2003 11:28	ND	ND	ND	ND	ND	2.22	389.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0091 abs.lab	9/8/2003 11:31	ND	ND	ND	ND	ND	2.22	388.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0092 abs.lab	9/8/2003 11:33	ND	ND	ND	ND	ND	2.22	387.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0093 abs.lab	9/8/2003 11:36	ND	ND	ND	ND	ND	2.23	388.4	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0094 abs.lab	9/8/2003 11:39	ND	ND	ND	ND	ND	2.22	383.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0095 abs.lab	9/8/2003 11:41	ND	ND	ND	ND	ND	2.23	387.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0096 abs.lab	9/8/2003 11:44	ND	ND	ND	ND	ND	2.23	386.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R1_0097 abs.lab	9/8/2003 11:46	ND	ND	ND	ND	ND	2.23	385.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0000 abs.lab	9/8/2003 12:09	ND	ND	ND	ND	ND	2.18	381.8	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0001 abs.lab	9/8/2003 12:11	ND	ND	ND	ND	ND	2.20	386.8	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0002 abs.lab	9/8/2003 12:14	ND	ND	ND	ND	ND	2.20	384.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0003 abs.lab	9/8/2003 12:16	ND	ND	ND	ND	ND	2.20	384.0	ND	ND	149.76	1.013
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0004 abs.lab	9/8/2003 12:19	ND	ND	ND	ND	ND	2.21	384.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0005 abs.lab	9/8/2003 12:22	ND	ND	ND	ND	ND	2.21	383.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0006 abs.lab	9/8/2003 12:24	ND	ND	ND	ND	ND	2.22	384.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0007 abs.lab	9/8/2003 12:27	ND	ND	ND	ND	ND	2.22	385.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0008 abs.lab	9/8/2003 12:29	ND	ND	ND	ND	ND	2.22	385.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0009 abs.lab	9/8/2003 12:32	ND	ND	ND	ND	ND	2.22	385.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0010 abs.lab	9/8/2003 12:35	ND	ND	ND	ND	ND	2.23	387.2	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0011 abs.lab	9/8/2003 12:37	ND	ND	ND	ND	ND	2.24	388.7	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0012 abs.lab	9/8/2003 12:40	ND	ND	ND	ND	ND	2.23	388.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0013 abs.lab	9/8/2003 12:43	ND	ND	ND	ND	ND	2.23	386.0	ND	ND	149.76	1.008

Scrubber Outlet 10s.1.1g FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0014 abs.lab	9/8/2003 12:45	ND	ND	ND	ND	ND	2.23	385.8	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0015 abs.lab	9/8/2003 12:48	ND	ND	ND	ND	ND	2.25	387.5	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0016 abs.lab	9/8/2003 12:50	ND	ND	ND	ND	ND	2.24	385.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0017 abs.lab	9/8/2003 12:53	ND	ND	ND	ND	ND	2.24	385.3	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0018 abs.lab	9/8/2003 12:56	ND	ND	ND	ND	ND	2.24	379.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0019 abs.lab	9/8/2003 12:58	ND	ND	ND	ND	ND	2.23	376.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0020 abs.lab	9/8/2003 13:01	ND	ND	ND	ND	ND	2.25	375.3	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0021 abs.lab	9/8/2003 13:03	ND	ND	ND	ND	ND	2.25	374.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0022 abs.lab	9/8/2003 13:06	ND	ND	ND	ND	ND	2.26	374.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0023 abs.lab	9/8/2003 13:09	ND	ND	ND	ND	ND	2.24	368.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0024 abs.lab	9/8/2003 13:11	ND	ND	ND	ND	ND	2.23	369.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0025 abs.lab	9/8/2003 13:14	ND	ND	ND	ND	ND	2.24	373.7	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0026 abs.lab	9/8/2003 13:17	ND	ND	ND	ND	ND	2.25	376.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0027 abs.lab	9/8/2003 13:19	ND	ND	ND	ND	ND	2.25	377.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0028 abs.lab	9/8/2003 13:22	ND	ND	ND	ND	ND	2.25	377.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0029 abs.lab	9/8/2003 13:25	ND	ND	ND	ND	ND	2.25	377.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0030 abs.lab	9/8/2003 13:27	ND	ND	ND	ND	ND	2.25	379.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0031 abs.lab	9/8/2003 13:30	ND	ND	ND	ND	ND	2.27	382.3	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0032 abs.lab	9/8/2003 13:32	ND	ND	ND	ND	ND	2.26	380.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0033 abs.lab	9/8/2003 13:35	ND	ND	ND	ND	ND	2.25	377.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0034 abs.lab	9/8/2003 13:38	ND	ND	ND	ND	ND	2.26	380.0	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0035 abs.lab	9/8/2003 13:40	ND	ND	ND	ND	ND	2.27	380.3	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0036 abs.lab	9/8/2003 13:43	ND	ND	ND	ND	ND	2.26	378.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0037 abs.lab	9/8/2003 13:46	ND	ND	ND	ND	ND	2.28	383.2	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0038 abs.lab	9/8/2003 13:48	ND	ND	ND	ND	ND	2.26	379.4	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0039 abs.lab	9/8/2003 13:51	ND	ND	ND	ND	ND	2.27	380.6	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0040 abs.lab	9/8/2003 13:53	ND	ND	ND	ND	ND	2.27	379.9	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0041 abs.lab	9/8/2003 13:56	ND	ND	ND	ND	ND	2.27	380.9	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0042 abs.lab	9/8/2003 13:59	ND	ND	ND	ND	ND	2.26	378.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0043 abs.lab	9/8/2003 14:01	ND	ND	ND	ND	ND	2.27	380.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0044 abs.lab	9/8/2003 14:04	ND	ND	ND	ND	ND	2.27	381.4	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0045 abs.lab	9/8/2003 14:06	ND	ND	ND	ND	ND	2.26	379.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0046 abs.lab	9/8/2003 14:09	ND	ND	ND	ND	ND	2.26	378.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0047 abs.lab	9/8/2003 14:12	ND	ND	ND	ND	ND	2.26	378.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0048 abs.lab	9/8/2003 14:14	ND	ND	ND	ND	ND	2.26	378.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0049 abs.lab	9/8/2003 14:17	ND	ND	ND	ND	ND	2.23	381.2	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0050 abs.lab	9/8/2003 14:20	ND	ND	ND	ND	ND	2.24	379.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0051 abs.lab	9/8/2003 14:22	ND	ND	ND	ND	ND	2.24	382.0	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0052 abs.lab	9/8/2003 14:25	ND	ND	ND	ND	ND	2.25	380.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0053 abs.lab	9/8/2003 14:27	ND	ND	ND	ND	ND	2.23	378.9	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0054 abs.lab	9/8/2003 14:30	ND	ND	ND	ND	ND	2.25	382.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0055 abs.lab	9/8/2003 14:33	ND	ND	ND	ND	ND	2.25	381.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0056 abs.lab	9/8/2003 14:35	ND	ND	ND	ND	ND	2.24	379.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0057 abs.lab	9/8/2003 14:38	ND	ND	ND	ND	ND	2.24	378.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0058 abs.lab	9/8/2003 14:41	ND	ND	ND	ND	ND	2.24	379.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0059 abs.lab	9/8/2003 14:43	ND	ND	ND	ND	ND	2.25	379.3	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0060 abs.lab	9/8/2003 14:46	ND	ND	ND	ND	ND	2.25	378.5	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0061 abs.lab	9/8/2003 14:48	ND	ND	ND	ND	ND	2.24	378.0	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0062 abs.lab	9/8/2003 14:51	ND	ND	ND	ND	ND	2.23	375.6	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0063 abs.lab	9/8/2003 14:54	ND	ND	ND	ND	ND	2.24	377.3	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0064 abs.lab	9/8/2003 14:56	ND	ND	ND	ND	ND	2.24	376.5	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0065 abs.lab	9/8/2003 14:59	ND	ND	ND	ND	ND	2.24	376.1	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0066 abs.lab	9/8/2003 15:02	ND	ND	ND	ND	ND	2.23	376.4	ND	ND	149.76	1.003

Scrubber Outlet 10s.1.1g FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0067 abs.lab	9/8/2003 15:04	ND	ND	ND	ND	ND	2.23	376.6	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0068 abs.lab	9/8/2003 15:07	ND	ND	ND	ND	ND	2.23	376.4	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0069 abs.lab	9/8/2003 15:09	ND	ND	ND	ND	ND	2.22	374.5	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0070 abs.lab	9/8/2003 15:12	ND	ND	ND	ND	ND	2.23	377.0	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0071 abs.lab	9/8/2003 15:15	ND	ND	ND	ND	ND	2.23	378.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0072 abs.lab	9/8/2003 15:17	ND	ND	ND	ND	ND	2.23	379.3	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0073 abs.lab	9/8/2003 15:20	ND	ND	ND	ND	ND	2.22	377.3	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0074 abs.lab	9/8/2003 15:22	ND	ND	ND	ND	ND	2.22	374.9	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0075 abs.lab	9/8/2003 15:25	ND	ND	ND	ND	ND	2.22	374.4	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0076 abs.lab	9/8/2003 15:28	ND	ND	ND	ND	ND	2.22	374.5	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0077 abs.lab	9/8/2003 15:30	ND	ND	ND	ND	ND	2.22	375.6	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0078 abs.lab	9/8/2003 15:33	ND	ND	ND	ND	ND	2.23	375.4	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0079 abs.lab	9/8/2003 15:36	ND	ND	ND	ND	ND	2.24	375.7	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0080 abs.lab	9/8/2003 15:38	ND	ND	ND	ND	ND	2.23	376.3	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0081 abs.lab	9/8/2003 15:41	ND	ND	ND	ND	ND	2.27	382.1	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0082 abs.lab	9/8/2003 15:43	ND	ND	ND	ND	ND	2.26	379.3	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0083 abs.lab	9/8/2003 15:46	ND	ND	ND	ND	ND	2.27	380.3	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0084 abs.lab	9/8/2003 15:49	ND	ND	ND	ND	ND	2.27	380.9	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0085 abs.lab	9/8/2003 15:51	ND	ND	ND	ND	ND	2.25	379.1	ND	ND	149.76	1.008
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0086 abs.lab	9/8/2003 15:54	ND	ND	ND	ND	ND	2.26	380.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0087 abs.lab	9/8/2003 15:57	ND	ND	ND	ND	ND	2.25	380.4	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0088 abs.lab	9/8/2003 15:59	ND	ND	ND	ND	ND	2.26	380.6	ND	ND	149.76	0.997
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0089 abs.lab	9/8/2003 16:02	ND	ND	ND	ND	ND	2.24	378.1	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0090 abs.lab	9/8/2003 16:04	ND	ND	ND	ND	ND	2.24	377.8	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0091 abs.lab	9/8/2003 16:07	ND	ND	ND	ND	ND	2.24	376.9	ND	ND	149.76	1.003
10S_1_1G OUTLET 09 08 03 SAMPLE R2_0092 abs.lab	9/8/2003 16:10	ND	ND	ND	ND	ND	2.24	377.7	ND	ND	149.76	1.003
Average _{wet}		ND	ND	ND	ND	ND	2.21	387.10	ND	ND	149.76	1.006

Reference Method Calculations

Fab 11 North

10s.1.1g

Run No.	Run 1	Run 2	
Date	9/8/2003	9/8/2003	
Start Time	7:45	12:09	AVERAGE
Stop Time	11:45	16:09	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.90	24.90	24.90
Orifice calibration Factor	1.733	1.733	1.733
Dry Gas Meter Calibration Factor	1.011	1.011	1.011
Average Meter Temperature (°F)	76.5	92.1	84.3
Volume Metered (acf)	203.305	209.361	206.333
Volume Metered (dscf)	169.233	169.351	169.292
Volume of Water Collected (g)	76.2	84.6	80.4
Volume of Water Collected (scf)	3.593	3.989	3.791
Average Delta H (in. H ₂ O)	1.91	1.95	1.93
AVG SQRT of dH (in. H ₂ O)	1.3812	1.3971	1.3892
Measured Moisture (%)	2.1%	2.3%	2.2%
Saturation Moisture (%)	2.1%	2.2%	2.2%
Moisture Used for Calculations (%)	2.1%	2.2%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.62	28.61	28.61
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.15	-0.20	-0.18
Stack Pressure (in. Hg)	24.89	24.89	24.89
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5435	0.5442	0.5439
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.4793	0.4885	0.4839
Stack Temperature Isokinetic Traverse (°F)	61.0	61.8	61.4
Stack Temperature Flow Traverse (°F)	63.0	63.0	63.0
Velocity (ft/sec) Isokinetic Traverse	33.38	33.46	33.42
Velocity (ft/sec) Flow Traverse	29.50	30.07	29.78
Nozzle Diameter (in.)	0.280	0.280	0.280
% Isokinetics	99.8	99.9	99.8
Stack Diameter (in.)	41.50	41.50	41.50
Stack Area (ft ²)	9.39	9.39	9.39
Stack Flow Rate Isokinetic Traverse (acfm)	18,813	18,858	18,835
Stack Flow Rate Flow Traverse (acfm)	16,624	16,947	16,785
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	15,518	15,520	15,519
Stack Flow Rate Outlet Flow Traverse (dscfm)	13,659	13,914	13,787
Chlorine			
Collected Cl ₂ micrograms (ug)	859.0	1040.0	949.5
Cl ₂ Concentration (ug/dscf)	5.08	6.14	5.61
Cl ₂ Concentration (ppb)	61	74	67
Cl ₂ Emission Rate (lbs/hr)	0.0092	0.0113	0.0102

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/8/2003
Unit Number:	10s.1.1g	Stack Diameter (in.):	41.50
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.15
Run No.:	1	Operators:	BDS/JL
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.90
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.1 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	7:20	
	End:	7:30	

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.12	63
2	0.15	63
3	0.14	63
4	0.16	63
5	0.20	63
6	0.22	63
7	0.26	63
8	0.27	63
9	0.25	63
10	0.24	63
11	0.24	63
12	0.18	63

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.27	63
2	0.27	63
3	0.29	63
4	0.30	63
5	0.30	63
6	0.30	63
7	0.29	63
8	0.27	63
9	0.25	63
10	0.25	63
11	0.23	63
12	0.15	63
Total Average:	sqrt dp = 0.4793	63.0

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/8/2003
Unit Number:	10s.1.1g	Stack Diameter (in.):	41.50
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.2
Run No.:	2	Operators:	BDS/JL
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.90
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	11:52	
	End:	12:05	

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.16	63
2	0.15	63
3	0.19	63
4	0.20	63
5	0.20	63
6	0.26	63
7	0.28	63
8	0.26	63
9	0.26	63
10	0.25	63
11	0.25	63
12	0.21	63

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.25	63
2	0.27	63
3	0.28	63
4	0.28	63
5	0.29	63
6	0.28	63
7	0.26	63
8	0.26	63
9	0.26	63
10	0.24	63
11	0.25	63
12	0.18	63
Total Average:	sqrt dp = 0.4885	63.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 North						Leak Check Initial:	0.009	cfm@	15.5	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.001	cfm@	3	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	10s.1.1g								1		630.8		631.5	
Date:	9/8/2003						24		2		732.0		755.3	
Technicians:	BDS/JL								3		535.7		546.8	
Meter Box No.:	90394						Y_d:	1.011			4		621.9	
Probe/Pitot No.:	501 / HA-1	C_p:	0.84			5		656.9		659.2				
Nozzle No.:	NA	dH₀:	1.733	Stack Dia. (in.):	41.50	Stack Area (ft²):	9.39	6		800.0		836.0		
Nozzle Dia:	0.280	0.280, 0.279, 0.281	Port Width (in.):	3.00	Port Length (in.):	2.50	Start Time:	7:45	Net Impinger Gain (g):	76.2				
Initial Meter Reading (ft³):	728.811	BP (in. Hg):	24.90	Static Pressure (in.):	-0.15	End Time:	11:45	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
W8	10	61	53	52	0.290	1.75	736.720	251	238	38	2.0			
W8	20	60	61	54	0.300	1.75	744.680	249	236	38	2.0			
W8	30	60	68	58	0.300	1.80	752.810	253	241	40	2.0			
W8	40	60	73	60	0.310	1.85	761.240	251	241	42	2.0			
W8	50	60	75	63	0.300	1.95	769.660	251	239	44	2.0			
W8	60	60	78	65	0.300	1.95	778.070	254	241	46	2.0			
W8	70	60	80	67	0.290	1.95	786.540	254	240	47	2.0			
W8	80	60	81	69	0.300	1.95	795.000	255	240	48	2.5			
W8	90	61	82	72	0.300	1.95	803.520	250	240	49	2.5			
W8	100	60	82	72	0.300	1.95	812.080	248	240	48	2.5			
W8	110	61	83	73	0.300	1.95	820.670	249	240	48	2.5			
W8	120	61	82	73	0.300	1.95	829.300	252	241	48	2.5			
W8	130	61	82	74	0.290	1.95	837.910	249	240	48	2.5			
W8	140	61	84	75	0.290	1.95	846.510	248	247	48	2.5			
W8	150	61	84	76	0.300	1.95	855.150	252	241	49	2.5			
W8	160	62	84	77	0.290	1.90	863.690	251	240	51	2.5			
W8	170	62	84	77	0.290	1.90	872.250	248	242	51	2.5			
W8	180	62	85	77	0.300	1.90	880.780	254	243	52	2.5			
W8	190	62	88	79	0.280	1.90	889.260	253	241	53	2.5			
W8	200	61	89	81	0.300	1.85	897.830	249	239	54	2.5			
W8	210	61	90	82	0.290	1.95	906.410	257	238	55	2.5			
W8	220	62	90	83	0.290	1.95	915.010	254	243	57	2.5			
W8	230	62	92	85	0.290	1.95	923.560	248	242	59	2.5			
W8	240	62	92	85	0.290	1.90	932.116	254	243	59	2.5			
Average / Net		61.0		76.5	0.295	1.9	203.305	251.4	240.7	48.8	2.4			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2		
Plant Name:	Fab 11 North						Leak Check Initial:	0.002	cfm@	15.5	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.001	cfm@	5.0	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	10s.1.1g								1		590.2		597.5	
Date:	9/8/2003						24		2		614.3		632.6	
Technicians:	BDS/JL								3		646.4		655.3	
Meter Box No.:	90394	Y_d:	1.011			4		652.4		654.2				
Probe/Pitot No.:	501 / HA-1	C_p:	0.84			5		627.6		632.7				
Nozzle No.:	NA	dH₀:	1.733	Stack Dia. (in.):	41.50	Stack Area (ft²):	9.39	6		920.9		964.1		
Nozzle Dia:	0.280	0.280, 0.279, 0.281	Port Width (in.):	3.00	Port Length (in.):	2.50	Start Time:	12:09	Net Impinger Gain (g):	84.6				
Initial Meter Reading (ft³):	932.642	BP (in. Hg):	24.90	Static Pressure (in.):	-0.2	End Time:	16:09	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
W8	10	62	85	87	0.300	1.95	941.240	238	246	47	3.0			
W8	20	61	89	85	0.300	1.95	949.960	245	247	45	3.0			
W8	30	62	91	86	0.300	1.90	958.710	244	247	44	3.0			
W8	40	62	92	86	0.300	2.00	967.440	245	247	44	3.0			
W8	50	62	94	88	0.300	2.00	976.140	245	249	47	3.0			
W8	60	62	94	88	0.300	2.00	984.940	249	250	48	3.0			
W8	70	62	95	89	0.300	2.00	993.940	243	249	49	3.0			
W8	80	62	95	89	0.300	2.00	1002.440	245	248	50	3.0			
W8	90	62	95	89	0.300	2.00	1010.770	245	248	50	3.0			
W8	100	62	95	90	0.300	2.00	1019.660	245	248	53	3.0			
W8	110	62	95	90	0.290	2.00	1028.500	244	250	54	3.5			
W8	120	62	95	91	0.300	2.00	1037.340	241	251	57	3.5			
W8	130	62	94	89	0.280	1.90	1046.170	249	247	58	3.5			
W8	140	62	95	90	0.280	1.90	1054.820	244	249	62	3.5			
W8	150	61	95	89	0.290	1.90	1063.430	248	246	62	3.5			
W8	160	62	95	90	0.290	1.90	1072.030	251	249	48	3.5			
W8	170	61	97	90	0.290	1.90	1080.610	250	247	45	3.5			
W8	180	61	98	91	0.290	1.90	1089.180	245	251	48	3.5			
W8	190	62	98	91	0.300	1.90	1097.800	248	249	48	3.5			
W8	200	61	98	92	0.310	1.95	1106.490	243	250	50	3.5			
W8	210	62	98	93	0.280	1.95	1115.270	244	249	54	3.5			
W8	220	62	98	92	0.300	1.95	1124.080	243	248	54	3.5			
W8	230	62	97	92	0.310	1.95	1133.030	242	248	56	3.5			
W8	240	61	97	91	0.300	1.95	1142.003	249	247	58	3.5			
Average / Net		61.8		92.1	0.3	2.0	209.361	245.2	248.3	51.3	3.3			

EPA REFERENCE METHOD 1

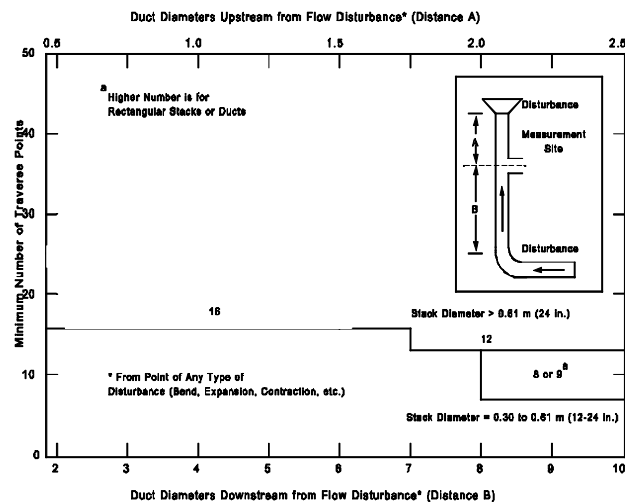
FIELD DATA SHEET

CIRCULAR STACKS

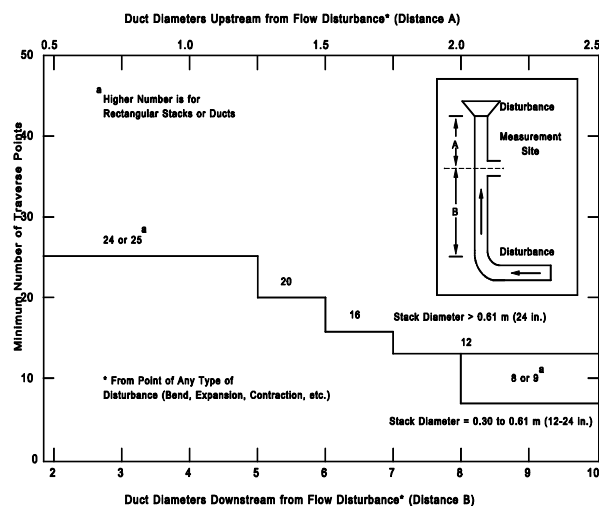
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 10s.1.1g
 TRC Project No.: 31397-1600-00000
 Date: 9/8/2003
 Technician: B. Bauer
 Circular/Rectangular: C

Stack Diameter: 41.5
 Sample Port Diameter: 3.0
 Sample Port Depth: 2.5
 Diameters Upstream: 2.2
 Diameters Downstream: 2.4
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	3 6/16
2	5 4/16
3	7 6/16
4	9 14/16
5	12 14/16
6	17 4/16
7	29 4/16
8	33 10/16
9	36 10/16
10	39 2/16
11	41 4/16
12	43 2/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Inlet 10s.2.4ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S.4.2AB INLET 09 05 03 SAMPLE R2_0002.LAB	9/5/2003 15:21	ND	ND	847.17	4818.60	ND	1.45	397.5	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0003.LAB	9/5/2003 15:24	ND	ND	856.09	4808.14	ND	1.46	400.2	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0004.LAB	9/5/2003 15:26	ND	ND	829.18	4737.42	ND	1.46	399.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0005.LAB	9/5/2003 15:29	ND	ND	817.88	4569.73	ND	1.47	402.2	ND	ND	150.51	0.985
10S.4.2AB INLET 09 05 03 SAMPLE R2_0006.LAB	9/5/2003 15:32	ND	ND	808.16	4419.51	ND	1.45	398.9	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0007.LAB	9/5/2003 15:35	ND	ND	797.01	4546.30	ND	1.46	401.4	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0008.LAB	9/5/2003 15:37	ND	ND	789.25	4420.79	ND	1.46	400.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0009.LAB	9/5/2003 15:40	ND	ND	803.96	4518.12	ND	1.46	400.7	ND	ND	151.25	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0010.LAB	9/5/2003 15:43	ND	ND	766.85	4526.32	ND	1.46	400.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0011.LAB	9/5/2003 15:46	ND	ND	775.98	4489.39	ND	1.46	401.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0012.LAB	9/5/2003 15:49	ND	ND	760.86	4493.78	ND	1.46	402.0	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0013.LAB	9/5/2003 15:51	ND	ND	772.25	4490.74	ND	1.47	401.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0014.LAB	9/5/2003 15:54	ND	ND	762.13	4537.28	ND	1.46	402.6	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0015.LAB	9/5/2003 15:57	ND	ND	743.01	4564.80	ND	1.44	401.9	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0016.LAB	9/5/2003 16:00	ND	ND	751.44	4525.36	ND	1.44	404.0	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0017.LAB	9/5/2003 16:02	ND	ND	752.25	4472.31	ND	1.44	402.3	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0018.LAB	9/5/2003 16:05	ND	ND	739.06	4518.97	ND	1.43	399.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0019.LAB	9/5/2003 16:08	ND	ND	755.53	4496.82	ND	1.42	397.6	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0020.LAB	9/5/2003 16:11	ND	ND	743.96	4579.52	ND	1.39	395.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0021.LAB	9/5/2003 16:14	ND	ND	738.15	4534.22	ND	1.38	392.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0022.LAB	9/5/2003 16:16	ND	ND	753.42	4715.72	ND	1.39	393.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0023.LAB	9/5/2003 16:19	ND	ND	754.18	4630.94	ND	1.40	395.4	ND	ND	150.51	0.985
10S.4.2AB INLET 09 05 03 SAMPLE R2_0024.LAB	9/5/2003 16:22	ND	ND	733.96	4706.48	ND	1.39	393.0	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0025.LAB	9/5/2003 16:25	ND	ND	743.57	4638.01	ND	1.38	390.2	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0026.LAB	9/5/2003 16:27	ND	ND	747.65	4640.62	ND	1.39	392.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0027.LAB	9/5/2003 16:30	ND	ND	745.18	4661.17	ND	1.40	394.7	ND	ND	150.51	0.985
10S.4.2AB INLET 09 05 03 SAMPLE R2_0028.LAB	9/5/2003 16:33	ND	ND	729.25	4735.25	ND	1.39	390.3	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0029.LAB	9/5/2003 16:36	ND	ND	746.13	4647.29	ND	1.39	391.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0030.LAB	9/5/2003 16:38	ND	ND	753.01	4868.90	ND	1.39	390.0	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0031.LAB	9/5/2003 16:41	ND	ND	750.34	4932.23	ND	1.39	392.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0032.LAB	9/5/2003 16:44	ND	ND	750.61	5098.87	ND	1.40	392.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0033.LAB	9/5/2003 16:47	ND	ND	741.46	5059.33	ND	1.39	388.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0034.LAB	9/5/2003 16:50	ND	ND	717.15	5157.49	ND	1.39	390.6	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0035.LAB	9/5/2003 16:52	ND	ND	731.70	5131.28	ND	1.38	388.3	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0036.LAB	9/5/2003 16:55	ND	ND	738.93	5188.14	ND	1.40	389.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0037.LAB	9/5/2003 16:58	ND	ND	770.77	4836.79	ND	1.40	390.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0038.LAB	9/5/2003 17:01	ND	ND	805.92	4833.85	ND	1.40	391.3	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0039.LAB	9/5/2003 17:03	ND	ND	828.71	4743.75	ND	1.40	391.1	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0040.LAB	9/5/2003 17:06	ND	ND	838.01	4741.10	ND	1.41	393.1	ND	ND	150.51	0.985
10S.4.2AB INLET 09 05 03 SAMPLE R2_0041.LAB	9/5/2003 17:09	ND	ND	838.24	4731.71	ND	1.40	390.6	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0042.LAB	9/5/2003 17:12	ND	ND	850.59	4782.75	ND	1.39	389.0	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0043.LAB	9/5/2003 17:15	ND	ND	829.94	4651.37	ND	1.40	390.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0044.LAB	9/5/2003 17:17	ND	ND	843.92	4537.67	ND	1.40	390.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0045.LAB	9/5/2003 17:20	ND	ND	833.41	4693.25	ND	1.40	391.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0046.LAB	9/5/2003 17:23	ND	ND	846.43	4550.60	ND	1.39	390.4	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0047.LAB	9/5/2003 17:26	ND	ND	870.78	4543.07	ND	1.39	391.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0048.LAB	9/5/2003 17:28	ND	ND	870.02	4544.94	ND	1.40	394.9	ND	ND	150.51	0.985
10S.4.2AB INLET 09 05 03 SAMPLE R2_0049.LAB	9/5/2003 17:31	ND	ND	853.65	4638.80	ND	1.40	393.0	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0050.LAB	9/5/2003 17:34	ND	ND	861.34	4510.74	ND	1.40	393.4	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0051.LAB	9/5/2003 17:37	ND	ND	876.93	4601.81	ND	1.41	392.4	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0052.LAB	9/5/2003 17:40	ND	ND	884.67	4561.52	ND	1.40	391.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0053.LAB	9/5/2003 17:42	ND	ND	870.08	4581.71	ND	1.40	389.2	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0054.LAB	9/5/2003 17:45	ND	ND	860.82	4510.77	ND	1.39	388.9	ND	ND	150.51	0.996

Scrubber Inlet 10s.2.4ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S.4.2AB INLET 09 05 03 SAMPLE R2_0055.LAB	9/5/2003 17:48	ND	ND	858.64	4657.10	ND	1.42	390.4	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0056.LAB	9/5/2003 17:51	ND	ND	848.34	4515.10	ND	1.41	390.1	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0057.LAB	9/5/2003 17:53	ND	ND	840.75	4724.55	ND	1.39	387.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0058.LAB	9/5/2003 17:56	ND	ND	851.48	4735.62	ND	1.38	387.7	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0059.LAB	9/5/2003 17:59	ND	ND	821.87	4783.81	ND	1.39	387.3	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0060.LAB	9/5/2003 18:02	ND	ND	825.68	4695.14	ND	1.40	389.1	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0061.LAB	9/5/2003 18:05	ND	ND	828.07	4825.00	ND	1.39	389.3	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0062.LAB	9/5/2003 18:07	ND	ND	829.06	4796.38	ND	1.38	389.1	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0063.LAB	9/5/2003 18:10	ND	ND	804.56	4648.16	ND	1.38	386.9	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0064.LAB	9/5/2003 18:13	ND	ND	804.81	4735.91	ND	1.38	389.4	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0065.LAB	9/5/2003 18:16	ND	ND	804.66	4615.87	ND	1.38	388.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0066.LAB	9/5/2003 18:18	ND	ND	816.65	4593.06	ND	1.38	388.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0067.LAB	9/5/2003 18:22	ND	ND	788.32	4533.42	ND	1.39	391.1	ND	ND	150.51	0.985
10S.4.2AB INLET 09 05 03 SAMPLE R2_0068.LAB	9/5/2003 18:24	ND	ND	803.42	4452.60	ND	1.38	388.6	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0069.LAB	9/5/2003 18:27	ND	ND	817.82	4588.61	ND	1.38	388.6	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0070.LAB	9/5/2003 18:30	ND	ND	768.65	4571.24	ND	1.37	387.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0071.LAB	9/5/2003 18:33	ND	ND	786.66	4553.46	ND	1.37	389.4	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0072.LAB	9/5/2003 18:35	ND	ND	754.18	4648.28	ND	1.36	385.7	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0073.LAB	9/5/2003 18:38	ND	ND	737.43	4638.45	ND	1.36	387.2	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0074.LAB	9/5/2003 18:41	ND	ND	729.34	4576.54	ND	1.36	387.2	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0075.LAB	9/5/2003 18:44	ND	ND	754.75	4685.40	ND	1.36	386.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0076.LAB	9/5/2003 18:47	ND	ND	757.49	4911.05	ND	1.36	385.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0077.LAB	9/5/2003 18:49	ND	ND	755.63	4934.56	ND	1.36	386.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0078.LAB	9/5/2003 18:52	ND	ND	763.15	4787.74	ND	1.36	386.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0079.LAB	9/5/2003 18:55	ND	ND	756.65	4803.21	ND	1.37	386.3	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0080.LAB	9/5/2003 18:58	ND	ND	767.15	4954.96	ND	1.36	386.0	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0081.LAB	9/5/2003 19:00	ND	ND	759.68	4777.69	ND	1.36	385.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0082.LAB	9/5/2003 19:03	ND	ND	740.06	4766.82	ND	1.36	384.0	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0083.LAB	9/5/2003 19:06	ND	ND	737.86	4525.30	ND	1.35	383.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 05 03 SAMPLE R2_0084.LAB	9/5/2003 19:09	ND	ND	746.34	4555.44	ND	1.36	385.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0085.LAB	9/5/2003 19:11	ND	ND	756.32	4557.44	ND	1.36	385.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 05 03 SAMPLE R2_0086.LAB	9/5/2003 19:14	ND	ND	725.79	4685.06	ND	1.36	387.9	ND	ND	150.51	0.985
10S.4.2AB INLET 09 05 03 SAMPLE R2_0087.LAB	9/5/2003 19:17	ND	ND	745.61	4590.46	ND	1.35	383.5	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0000.LAB	9/6/2003 8:20	ND	ND	1026.52	4535.40	ND	1.43	377.0	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0001.LAB	9/6/2003 8:22	ND	ND	925.52	4857.37	ND	1.43	377.6	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0002.LAB	9/6/2003 8:25	ND	ND	890.52	4929.19	ND	1.49	389.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0003.LAB	9/6/2003 8:28	ND	ND	842.94	4898.42	ND	1.48	386.3	ND	ND	150.51	1.001
10S.4.2AB INLET 09 06 03 SAMPLE R3_0004.LAB	9/6/2003 8:31	ND	ND	774.84	4971.11	ND	1.49	387.5	ND	ND	149.76	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0005.LAB	9/6/2003 8:33	ND	ND	771.09	4913.50	ND	1.49	388.3	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0006.LAB	9/6/2003 8:36	ND	ND	767.09	5011.86	ND	1.49	388.0	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0007.LAB	9/6/2003 8:39	ND	ND	743.74	4888.42	ND	1.49	387.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0008.LAB	9/6/2003 8:42	ND	ND	695.81	4774.57	ND	1.49	387.5	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0009.LAB	9/6/2003 8:44	ND	ND	682.46	4751.17	ND	1.50	388.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0010.LAB	9/6/2003 8:47	ND	ND	663.27	4760.29	ND	1.50	388.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0011.LAB	9/6/2003 8:50	ND	ND	654.21	4693.70	ND	1.49	385.5	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0012.LAB	9/6/2003 8:53	ND	ND	643.21	4814.13	ND	1.49	387.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0013.LAB	9/6/2003 8:55	ND	ND	631.56	4792.24	ND	1.49	386.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0014.LAB	9/6/2003 8:58	ND	ND	622.87	4868.22	ND	1.49	386.4	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0015.LAB	9/6/2003 9:01	ND	ND	624.44	4898.89	ND	1.49	384.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0016.LAB	9/6/2003 9:04	ND	ND	620.52	4915.83	ND	1.49	384.3	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0017.LAB	9/6/2003 9:07	ND	ND	613.77	4927.11	ND	1.49	385.4	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0018.LAB	9/6/2003 9:09	ND	ND	610.75	4961.11	ND	1.49	385.4	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0019.LAB	9/6/2003 9:12	ND	ND	625.83	5005.07	ND	1.49	387.3	ND	ND	150.51	0.990

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Inlet 10s.2.4ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S.4.2AB INLET 09 06 03 SAMPLE R3_0020.LAB	9/6/2003 9:15	ND	ND	636.44	4964.78	ND	1.49	385.6	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0021.LAB	9/6/2003 9:18	ND	ND	617.71	4866.66	ND	1.49	385.7	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0022.LAB	9/6/2003 9:20	ND	ND	603.03	4854.00	ND	1.49	386.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0023.LAB	9/6/2003 9:23	ND	ND	608.31	4808.75	ND	1.49	385.9	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0024.LAB	9/6/2003 9:26	ND	ND	630.15	4894.27	ND	1.51	387.1	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0025.LAB	9/6/2003 9:29	ND	ND	601.51	5125.46	ND	1.51	386.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0026.LAB	9/6/2003 9:31	ND	ND	609.80	5257.00	ND	1.50	384.2	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0027.LAB	9/6/2003 9:34	ND	ND	620.99	6094.60	ND	1.51	386.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0028.LAB	9/6/2003 9:37	ND	ND	626.46	5818.87	ND	1.52	388.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0029.LAB	9/6/2003 9:40	ND	ND	616.36	5855.55	ND	1.52	388.2	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0030.LAB	9/6/2003 9:42	ND	ND	625.98	5873.24	ND	1.52	388.6	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0031.LAB	9/6/2003 9:45	ND	ND	625.23	5890.39	ND	1.51	385.9	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0032.LAB	9/6/2003 9:48	ND	ND	642.77	5935.54	ND	1.52	389.2	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0033.LAB	9/6/2003 9:51	ND	ND	648.84	5756.56	ND	1.53	390.2	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0034.LAB	9/6/2003 9:54	ND	ND	655.54	5742.91	ND	1.52	389.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0035.LAB	9/6/2003 9:56	ND	ND	648.00	5792.32	ND	1.51	387.2	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0036.LAB	9/6/2003 9:59	ND	ND	673.33	5818.38	ND	1.52	389.1	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0037.LAB	9/6/2003 10:02	ND	ND	677.77	5838.22	ND	1.52	387.9	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0038.LAB	9/6/2003 10:05	ND	ND	684.66	5768.87	ND	1.53	388.6	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0039.LAB	9/6/2003 10:07	ND	ND	728.55	5819.26	ND	1.52	388.6	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0040.LAB	9/6/2003 10:10	ND	ND	731.38	5861.55	ND	1.52	387.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0041.LAB	9/6/2003 10:13	ND	ND	734.20	5875.19	ND	1.52	388.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0042.LAB	9/6/2003 10:16	ND	ND	757.70	5926.26	ND	1.51	388.5	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0043.LAB	9/6/2003 10:18	ND	ND	795.35	5962.39	ND	1.52	390.7	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0044.LAB	9/6/2003 10:21	ND	ND	823.47	5971.97	ND	1.52	389.2	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0045.LAB	9/6/2003 10:24	ND	ND	853.06	5908.60	ND	1.53	390.0	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0046.LAB	9/6/2003 10:27	ND	ND	850.23	5795.04	ND	1.52	389.9	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0047.LAB	9/6/2003 10:30	ND	ND	857.16	5874.64	ND	1.52	389.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0048.LAB	9/6/2003 10:32	ND	ND	862.43	5821.74	ND	1.51	386.7	ND	ND	150.51	1.001
10S.4.2AB INLET 09 06 03 SAMPLE R3_0049.LAB	9/6/2003 10:35	ND	ND	900.60	5841.40	ND	1.52	389.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0050.LAB	9/6/2003 10:38	ND	ND	931.71	5697.11	ND	1.51	388.2	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0051.LAB	9/6/2003 10:41	ND	ND	932.63	5560.81	ND	1.51	388.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0052.LAB	9/6/2003 10:43	ND	ND	935.65	5400.24	ND	1.50	384.7	ND	ND	150.51	1.001
10S.4.2AB INLET 09 06 03 SAMPLE R3_0053.LAB	9/6/2003 10:46	ND	ND	957.36	5256.31	ND	1.51	388.2	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0054.LAB	9/6/2003 10:49	ND	ND	967.88	5204.66	ND	1.50	389.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0055.LAB	9/6/2003 10:52	ND	ND	969.93	5321.74	ND	1.51	388.9	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0056.LAB	9/6/2003 10:55	ND	ND	972.18	5324.77	ND	1.52	389.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0057.LAB	9/6/2003 10:57	ND	ND	979.19	5220.84	ND	1.51	390.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0058.LAB	9/6/2003 11:00	ND	ND	998.49	5393.35	ND	1.52	392.4	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0059.LAB	9/6/2003 11:03	ND	ND	991.29	5321.78	ND	1.52	390.2	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0060.LAB	9/6/2003 11:06	ND	ND	988.15	5317.45	ND	1.52	389.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0061.LAB	9/6/2003 11:08	ND	ND	1018.88	5379.33	ND	1.51	388.4	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0062.LAB	9/6/2003 11:11	ND	ND	1006.58	5326.47	ND	1.51	386.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0063.LAB	9/6/2003 11:14	ND	ND	1021.14	5279.62	ND	1.50	385.7	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0064.LAB	9/6/2003 11:17	ND	ND	1032.58	5392.60	ND	1.52	387.5	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0065.LAB	9/6/2003 11:20	ND	ND	1058.17	5351.99	ND	1.52	389.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0066.LAB	9/6/2003 11:22	ND	ND	1046.31	5302.02	ND	1.52	390.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0067.LAB	9/6/2003 11:25	ND	ND	1054.65	5347.50	ND	1.52	389.1	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0068.LAB	9/6/2003 11:28	ND	ND	1067.65	5261.57	ND	1.52	387.0	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0069.LAB	9/6/2003 11:31	ND	ND	1076.06	5348.87	ND	1.52	387.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0070.LAB	9/6/2003 11:33	ND	ND	1091.42	5380.36	ND	1.52	389.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0071.LAB	9/6/2003 11:36	ND	ND	1089.70	5372.72	ND	1.51	388.9	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0072.LAB	9/6/2003 11:39	ND	ND	1099.60	5266.77	ND	1.51	390.0	ND	ND	150.51	0.996

Scrubber Inlet 10s.2.4ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S.4.2AB INLET 09 06 03 SAMPLE R3_0073.LAB	9/6/2003 11:42	ND	ND	1111.27	5505.86	ND	1.52	392.1	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0074.LAB	9/6/2003 11:45	ND	ND	1084.36	5503.49	ND	1.52	390.9	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0075.LAB	9/6/2003 11:47	ND	ND	1095.29	5502.30	ND	1.51	386.4	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0076.LAB	9/6/2003 11:50	ND	ND	1099.59	5518.99	ND	1.52	388.7	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0077.LAB	9/6/2003 11:53	ND	ND	1126.08	5335.31	ND	1.51	389.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0078.LAB	9/6/2003 11:56	ND	ND	1140.40	5559.35	ND	1.52	388.5	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0079.LAB	9/6/2003 11:58	ND	ND	1191.15	5728.74	ND	1.51	388.3	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0080.LAB	9/6/2003 12:01	ND	ND	1239.46	5813.55	ND	1.51	387.4	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0081.LAB	9/6/2003 12:04	ND	ND	1248.46	5725.15	ND	1.51	385.8	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0082.LAB	9/6/2003 12:07	ND	ND	1270.47	5638.82	ND	1.51	386.1	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0083.LAB	9/6/2003 12:10	ND	ND	1304.95	6412.45	ND	1.50	383.1	ND	ND	150.51	0.996
10S.4.2AB INLET 09 06 03 SAMPLE R3_0084.LAB	9/6/2003 12:12	ND	ND	1387.87	6260.90	ND	1.51	385.6	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0085.LAB	9/6/2003 12:15	ND	ND	1385.55	5922.17	ND	1.51	385.0	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0086.LAB	9/6/2003 12:18	ND	ND	1431.78	5823.30	ND	1.51	384.8	ND	ND	150.51	0.990
10S.4.2AB INLET 09 06 03 SAMPLE R3_0087.LAB	9/6/2003 12:21	ND	ND	1481.23	5860.03	ND	1.51	385.1	ND	ND	150.51	0.990

Average _{wet}	ND	ND	834.09	5044.95	ND	1.45	389.73	ND	ND	150.51	0.992

Reference Method Calculations

11 North

10s.4.2ab Inlet

Run No.	Void	Run 1	Run 2	
Date	9/5/2003	9/5/2003	9/6/2003	
Start Time	10:46	15:16	19:16	AVERAGE
Stop Time	14:46	19:16	19:16	
Test Elapsed time (min)	240	240	240	240
Barometric Pressure (in. Hg)	24.95	24.95	24.95	24.95
Orifice calibration Factor	1.725	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006	1.006
Average Meter Temperature (°F)	82.0	83.0	79.7	81.3
Volume Metered (acf)	131.084	136.404	135.068	135.736
Volume Metered (dscf)	107.390	111.555	111.136	111.346
Volume of Water Collected (g)	28.7	28.6	33.0	30.8
Volume of Water Collected (scf)	1.353	1.348	1.556	1.452
Average Delta H (in. H ₂ O)	1.00	1.00	1.00	1.00
Stack Flow Rate <u>Outlet</u> Flow Traverse (dscfm)	36,630	37,869	37,088	37,479
Chlorine				
Collected Cl ₂ micrograms (ug)		11.8	13.5	12.7
Cl ₂ Concentration (ug/dscf)		0.11	0.12	0.11
Cl ₂ Concentration (ug/dscm)		3.74	4.29	4.01
Cl ₂ Concentration (ppb)		1	1	1
Cl ₂ Emission Rate (lbs/hr)		0.0005	0.0006	0.0006

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic			Sample Train No.	C	Filter No.:	NA	Run No.:	1	
Plant Name:	11 North				Leak Check Initial:	0.002	cfm@	15	(in. Hg)		
Plant Location:	Rio Rancho, NM				Leak Check Final:	0.000	cfm@	2.0	(in. Hg)		
Project No.:	31397-1600-00000				Total Traverse Points		Impinger	Initial	Final		
Sampling Location:	10s.4.2ab Inlet						1	730.0	733.9		
Date:	9/5/2003				24		2	650.7	650.2		
Technicians:	JL/BDS/BMB						3	654.7	656.4		
Meter Box No.:	90401				Y_d:	1.006			4	731.0	731.2
Probe / Pitot No.:	NA / HA-1	C_p:	NA			5	627.9	626.7			
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57	6	875.1	899.6	
Nozzle Dia:	NA			Port Width (in.):	0.75	Port Length (in.):	1.00	Start Time:	15:16	Net Impinger Gain (g):	28.6
Initial Meter Reading (ft³):	27.759	BP (in. Hg):	24.95	Static Pressure (in.):	NA	End Time:	19:16	Theta	240		
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)				
Center	10	82	83	1.00	33.550	50	1.0				
Center	20	84	83	1.00	39.310	59	1.0				
Center	30	87	82	1.00	44.560	57	1.0				
Center	40	86	82	1.00	50.680	56	1.0				
Center	50	86	82	1.00	56.330	56	1.0				
Center	60	86	82	1.00	62.000	56	1.0				
Center	70	86	82	1.00	67.670	57	1.0				
Center	80	85	82	1.00	73.340	57	1.0				
Center	90	85	82	1.00	78.980	58	1.0				
Center	100	85	82	1.00	84.630	58	1.0				
Center	110	85	81	1.00	90.270	58	1.0				
Center	120	86	83	1.00	95.920	60	1.0				
Center	130	85	82	1.00	101.560	60	1.0				
Center	140	85	81	1.00	107.220	60	1.0				
Center	150	85	81	1.00	112.870	61	1.0				
Center	160	85	82	1.00	118.520	62	1.0				
Center	170	84	82	1.00	124.170	62	1.0				
Center	180	84	81	1.00	129.830	63	1.0				
Center	190	84	81	1.00	135.480	56	1.0				
Center	200	83	80	1.00	141.130	53	1.0				
Center	210	83	79	1.00	146.830	52	1.0				
Center	220	84	79	1.00	152.600	53	1.0				
Center	230	83	79	1.00	158.370	53	1.0				
Center	240	83	79	1.00	164.163	53	1.0				
Average / Net		83.0		1.00	136.404	57.1	1.0				

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Location Notes and Comments			Sample Train No.	B	Filter No.:	NA	Run No.:	2		
Plant Name:	11 North				Leak Check Initial:	0.001	cfm@	15	(in. Hg)			
Plant Location:	Rio Rancho, NM				Leak Check Final:	0.000	cfm@	2	(in. Hg)			
Project No.:	31397-1600-00000				Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	10s.4.3ab Inlet						1		622.8		630.8	
Date:	9/6/2003				24		2		632.2		634.7	
Technicians:	JL/BDS/BMB						3		633.2		633.5	
Meter Box No.:	90401				Y_d:	1.006			4		753.6	
Probe / Pitot No.:	NA / HA-1	C_p:	NA			5		757.1		756.9		
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57	6		816.8		839.9
Nozzle Dia:	NA	Port Width (in.):	0.75	Port Length (in.):	1.00	Start Time:	8:21	Net Impinger Gain (g):	33.0			
Initial Meter Reading (ft³):	165.181	BP (in. Hg):	24.95	Static Pressure (in.):	NA	End Time:	12:21	Theta	240			
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)					
Center	10	73	74	1.00	170.990	55	1.0					
Center	20	76	74	1.00	176.640	47	1.0					
Center	30	78	74	1.00	182.240	47	1.0					
Center	40	79	74	1.00	187.750	49	1.0					
Center	50	79	74	1.00	193.390	50	1.0					
Center	60	80	75	1.00	198.950	51	1.0					
Center	70	81	75	1.00	204.510	52	1.0					
Center	80	81	75	1.00	210.060	54	1.0					
Center	90	81	77	1.00	215.610	56	1.0					
Center	100	81	77	1.00	221.160	57	1.0					
Center	110	81	77	1.00	226.690	57	1.0					
Center	120	82	77	1.00	232.230	57	1.0					
Center	130	82	77	1.00	237.770	58	1.0					
Center	140	83	78	1.00	343.300	57	1.0					
Center	150	84	79	1.00	248.850	59	1.0					
Center	160	83	79	1.00	254.380	58	1.0					
Center	170	84	79	1.00	259.920	59	1.0					
Center	180	84	79	1.00	265.620	59	1.0					
Center	190	85	80	1.00	271.280	60	1.0					
Center	200	84	80	1.00	277.810	55	1.0					
Center	210	85	80	1.00	282.880	54	1.0					
Center	220	86	81	1.00	288.670	53	1.0					
Center	230	87	81	1.00	294.460	55	1.0					
Center	240	87	83	1.00	300.249	57	1.0					
Average / Net		79.7		1.00	135.068	54.8	1.0					

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Location Notes and Comments Impinger train compromised after collection. Run voided!		Sample Train No.	B	Filter No.:	NA	Run No.:	Void	
Plant Name:	11 North			Leak Check Initial:	0.002	cfm@	15	(in. Hg)		
Plant Location:	Rio Rancho, NM			Leak Check Final:	0.000	cfm@	2.5	(in. Hg)		
Project No.:	31397-1600-00000			Total Traverse Points		Impinger	Initial	Final		
Sampling Location:	10s.4.2ab Inlet				24	1	637.8	644.6		
Date:	9/5/2003					2	634.9	637.1		
Technicians:	JL/BDS/BMB					3	630.4	640.3		
Meter Box No.:	90401			Y_d:	1.006			4	763.7	818.4
Probe / Pitot No.:	NA / HA-1	C_p:	NA			5	730.4	663.5		
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57	6	843.2	
Nozzle Dia:	NA	Port Width (in.):	0.75	Port Length (in.):	1.00	Start Time:	10:46	Net Impinger Gain (g):	28.7	
Initial Meter Reading (ft³):	895.7	BP (in. Hg):	24.95	Static Pressure (in.):	NA	End Time:	14:46	Theta	240	
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
Center	10	75	75	1.00	901.290	55	1.0			
Center	20	78	74	1.00	906.840	55	1.0			
Center	30	82	76	1.00	912.360	55	1.0			
Center	40	83	77	1.00	917.850	55	1.0			
Center	50	84	78	1.00	923.340	57	1.0			
Center	60	84	79	1.00	928.810	58	1.0			
Center	70	86	81	1.00	934.300	59	1.0			
Center	80	87	81	1.00	939.790	61	1.0			
Center	90	86	82	1.00	945.270	61	1.0			
Center	100	86	81	1.00	950.760	54	1.0			
Center	110	86	82	1.00	955.450	54	1.0			
Center	120	86	82	1.00	961.750	54	1.0			
Center	130	86	82	1.00	967.230	54	1.0			
Center	140	87	82	1.00	972.720	54	1.0			
Center	150	87	85	1.00	978.030	55	1.0			
Center	160	87	85	1.00	983.670	55	1.0			
Center	170	88	84	1.00	989.140	56	1.0			
Center	180	89	84	1.00	994.600	56	1.0			
Center	190	89	85	1.00	1000.060	60	1.0			
Center	200	90	86	1.00	1005.520	60	1.0			
Center	210	90	87	1.00	1010.990	62	1.0			
Center	220	91	87	1.00	1016.050	63	1.0			
Center	230	91	87	1.00	1021.140	60	1.0			
Center	240	91	87	1.00	1026.784	61	1.0			
Average / Net		82.0		1.00	131.084	57.3	1.0			

Scrubber Outlet 10s.2.4ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0002.LAB	9/5/2003 15:21	ND	ND	ND	1543.65	ND	2.14	386.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0003.LAB	9/5/2003 15:23	ND	ND	ND	1577.94	ND	2.14	386.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0004.LAB	9/5/2003 15:26	ND	ND	ND	1592.43	ND	2.15	388.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0005.LAB	9/5/2003 15:29	ND	ND	ND	1600.45	ND	2.15	388.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0006.LAB	9/5/2003 15:31	ND	ND	ND	1625.21	ND	2.15	388.8	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0007.LAB	9/5/2003 15:34	ND	ND	ND	1637.12	ND	2.15	389.3	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0008.LAB	9/5/2003 15:36	ND	ND	ND	1603.18	ND	2.15	388.8	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0009.LAB	9/5/2003 15:39	ND	ND	ND	1549.95	ND	2.14	385.7	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0010.LAB	9/5/2003 15:42	ND	ND	ND	1533.85	ND	2.14	385.8	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0011.LAB	9/5/2003 15:44	ND	ND	ND	1532.98	ND	2.15	389.3	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0012.LAB	9/5/2003 15:47	ND	ND	ND	1501.41	ND	2.14	387.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0013.LAB	9/5/2003 15:50	ND	ND	ND	1497.16	ND	2.14	387.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0014.LAB	9/5/2003 15:52	ND	ND	ND	1467.64	ND	2.14	386.9	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0015.LAB	9/5/2003 15:55	ND	ND	ND	1484.63	ND	2.15	388.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0016.LAB	9/5/2003 15:58	ND	ND	ND	1466.14	ND	2.14	387.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0017.LAB	9/5/2003 16:00	ND	ND	ND	1483.74	ND	2.14	387.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0018.LAB	9/5/2003 16:03	ND	ND	ND	1461.46	ND	2.13	384.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0019.LAB	9/5/2003 16:06	ND	ND	ND	1425.50	ND	2.12	383.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0020.LAB	9/5/2003 16:08	ND	ND	ND	1413.26	ND	2.13	384.7	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0021.LAB	9/5/2003 16:11	ND	ND	ND	1395.05	ND	2.12	382.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0022.LAB	9/5/2003 16:13	ND	ND	ND	1369.78	ND	2.11	381.2	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0023.LAB	9/5/2003 16:16	ND	ND	ND	1393.28	ND	2.11	380.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0024.LAB	9/5/2003 16:19	ND	ND	ND	1410.06	ND	2.12	381.7	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0025.LAB	9/5/2003 16:21	ND	ND	ND	1412.75	ND	2.12	381.7	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0026.LAB	9/5/2003 16:24	ND	ND	ND	1404.27	ND	2.12	380.9	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0027.LAB	9/5/2003 16:26	ND	ND	ND	1384.62	ND	2.11	378.8	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0028.LAB	9/5/2003 16:29	ND	ND	ND	1413.86	ND	2.11	378.9	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0029.LAB	9/5/2003 16:32	ND	ND	ND	1440.12	ND	2.12	380.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0030.LAB	9/5/2003 16:34	ND	ND	ND	1434.23	ND	2.12	380.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0031.LAB	9/5/2003 16:37	ND	ND	ND	1418.93	ND	2.11	378.2	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0032.LAB	9/5/2003 16:39	ND	ND	ND	1425.12	ND	2.12	378.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0033.LAB	9/5/2003 16:42	ND	ND	ND	1442.24	ND	2.12	379.0	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0034.LAB	9/5/2003 16:45	ND	ND	ND	1473.12	ND	2.12	378.6	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0035.LAB	9/5/2003 16:47	ND	ND	ND	1525.42	ND	2.14	379.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0036.LAB	9/5/2003 16:50	ND	ND	ND	1549.52	ND	2.13	377.8	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0037.LAB	9/5/2003 16:53	ND	ND	ND	1545.05	ND	2.15	379.1	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0038.LAB	9/5/2003 16:55	ND	ND	ND	1564.28	ND	2.15	379.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0039.LAB	9/5/2003 16:58	ND	ND	ND	1607.04	ND	2.15	379.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0040.LAB	9/5/2003 17:00	ND	ND	ND	1579.87	ND	2.16	379.9	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0041.LAB	9/5/2003 17:03	ND	ND	ND	1456.03	ND	2.15	378.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0042.LAB	9/5/2003 17:06	ND	ND	ND	1432.03	ND	2.14	378.2	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0043.LAB	9/5/2003 17:08	ND	ND	ND	1435.56	ND	2.14	378.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0044.LAB	9/5/2003 17:11	ND	ND	ND	1429.54	ND	2.14	378.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0045.LAB	9/5/2003 17:13	ND	ND	ND	1416.03	ND	2.15	380.3	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0046.LAB	9/5/2003 17:16	ND	ND	ND	1427.45	ND	2.15	380.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0047.LAB	9/5/2003 17:19	ND	ND	ND	1424.59	ND	2.14	380.9	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0048.LAB	9/5/2003 17:21	ND	ND	ND	1406.02	ND	2.13	379.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0049.LAB	9/5/2003 17:24	ND	ND	ND	1441.92	ND	2.13	379.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0050.LAB	9/5/2003 17:26	ND	ND	ND	1401.99	ND	2.12	379.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0051.LAB	9/5/2003 17:29	ND	ND	ND	1374.41	ND	2.13	381.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0052.LAB	9/5/2003 17:32	ND	ND	ND	1358.40	ND	2.13	381.9	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0053.LAB	9/5/2003 17:34	ND	ND	ND	1391.85	ND	2.13	381.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0054.LAB	9/5/2003 17:37	ND	ND	ND	1368.57	ND	2.12	380.9	ND	ND	149.76	0.997

Scrubber Outlet 10s.2.4ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0055.LAB	9/5/2003 17:40	ND	ND	ND	1328.13	ND	2.12	380.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0056.LAB	9/5/2003 17:42	ND	ND	ND	1330.71	ND	2.12	380.1	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0057.LAB	9/5/2003 17:45	ND	ND	ND	1360.48	ND	2.12	379.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0058.LAB	9/5/2003 17:47	ND	ND	ND	1361.91	ND	2.11	376.8	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0059.LAB	9/5/2003 17:50	ND	ND	ND	1330.75	ND	2.12	378.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0060.LAB	9/5/2003 17:53	ND	ND	ND	1333.97	ND	2.12	378.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0061.LAB	9/5/2003 17:55	ND	ND	ND	1342.31	ND	2.12	377.7	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0062.LAB	9/5/2003 17:58	ND	ND	ND	1346.56	ND	2.10	375.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0063.LAB	9/5/2003 18:00	ND	ND	ND	1369.77	ND	2.12	378.2	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0064.LAB	9/5/2003 18:03	ND	ND	ND	1388.00	ND	2.11	377.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0065.LAB	9/5/2003 18:06	ND	ND	ND	1393.87	ND	2.10	374.4	ND	ND	149.02	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0066.LAB	9/5/2003 18:08	ND	ND	ND	1418.56	ND	2.11	377.1	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0067.LAB	9/5/2003 18:11	ND	ND	ND	1429.76	ND	2.10	375.7	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0068.LAB	9/5/2003 18:13	ND	ND	ND	1438.96	ND	2.11	377.7	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0069.LAB	9/5/2003 18:16	ND	ND	ND	1408.85	ND	2.09	375.6	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0070.LAB	9/5/2003 18:19	ND	ND	ND	1420.33	ND	2.10	377.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0071.LAB	9/5/2003 18:21	ND	ND	ND	1414.08	ND	2.10	377.8	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0072.LAB	9/5/2003 18:24	ND	ND	ND	1404.96	ND	2.10	378.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0073.LAB	9/5/2003 18:26	ND	ND	ND	1396.22	ND	2.10	377.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0074.LAB	9/5/2003 18:29	ND	ND	ND	1373.48	ND	2.09	375.9	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0075.LAB	9/5/2003 18:32	ND	ND	ND	1367.80	ND	2.10	378.8	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0076.LAB	9/5/2003 18:34	ND	ND	ND	1370.48	ND	2.10	379.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0077.LAB	9/5/2003 18:37	ND	ND	ND	1388.38	ND	2.09	378.2	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0078.LAB	9/5/2003 18:40	ND	ND	ND	1403.28	ND	2.10	379.2	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0079.LAB	9/5/2003 18:42	ND	ND	ND	1392.37	ND	2.08	376.8	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0080.LAB	9/5/2003 18:45	ND	ND	ND	1365.26	ND	2.09	378.8	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0081.LAB	9/5/2003 18:47	ND	ND	ND	1342.88	ND	2.09	378.9	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0082.LAB	9/5/2003 18:50	ND	ND	ND	1385.90	ND	2.09	378.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0083.LAB	9/5/2003 18:53	ND	ND	ND	1430.10	ND	2.09	378.7	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0084.LAB	9/5/2003 18:55	ND	ND	ND	1434.47	ND	2.09	377.9	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0085.LAB	9/5/2003 18:58	ND	ND	ND	1412.07	ND	2.08	376.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0086.LAB	9/5/2003 19:00	ND	ND	ND	1421.55	ND	2.09	378.3	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0087.LAB	9/5/2003 19:03	ND	ND	ND	1427.64	ND	2.08	376.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0088.LAB	9/5/2003 19:06	ND	ND	ND	1430.59	ND	2.08	376.7	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0089.LAB	9/5/2003 19:08	ND	ND	ND	1400.47	ND	2.07	376.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0090.LAB	9/5/2003 19:11	ND	ND	ND	1374.12	ND	2.07	375.6	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0091.LAB	9/5/2003 19:13	ND	ND	ND	1350.64	ND	2.08	377.9	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 05 03 SAMPLE R2_0092.LAB	9/5/2003 19:16	ND	ND	ND	1362.32	ND	2.08	377.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0000.LAB	9/6/2003 8:20	ND	ND	488.92	ND	ND	2.09	378.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0001.LAB	9/6/2003 8:22	ND	ND	438.28	340.12	ND	2.10	379.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0002.LAB	9/6/2003 8:25	ND	ND	400.98	877.67	ND	2.12	380.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0003.LAB	9/6/2003 8:28	ND	ND	383.91	1229.16	ND	2.11	378.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0004.LAB	9/6/2003 8:30	ND	ND	366.59	1563.57	ND	2.12	380.2	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0005.LAB	9/6/2003 8:33	ND	ND	352.98	1754.94	ND	2.11	378.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0006.LAB	9/6/2003 8:35	ND	ND	343.07	1820.16	ND	2.12	378.2	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0007.LAB	9/6/2003 8:38	ND	ND	ND	1859.30	ND	2.13	379.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0008.LAB	9/6/2003 8:40	ND	ND	ND	1871.58	ND	2.13	379.3	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0009.LAB	9/6/2003 8:43	ND	ND	ND	1870.09	ND	2.12	377.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0010.LAB	9/6/2003 8:46	ND	ND	ND	1869.26	ND	2.13	378.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0011.LAB	9/6/2003 8:48	ND	ND	ND	1850.97	ND	2.12	376.9	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0012.LAB	9/6/2003 8:51	ND	ND	ND	1832.21	ND	2.12	376.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0013.LAB	9/6/2003 8:53	ND	ND	ND	1817.65	ND	2.12	377.0	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0014.LAB	9/6/2003 8:56	ND	ND	ND	1814.79	ND	2.13	377.3	ND	ND	149.76	1.003

Scrubber Outlet 10s.2.4ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0015.LAB	9/6/2003 8:59	ND	ND	ND	1812.07	ND	2.13	377.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0016.LAB	9/6/2003 9:01	ND	ND	ND	1833.83	ND	2.14	378.8	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0017.LAB	9/6/2003 9:04	ND	ND	ND	1833.32	ND	2.14	378.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0018.LAB	9/6/2003 9:06	ND	ND	ND	1822.20	ND	2.13	377.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0019.LAB	9/6/2003 9:09	ND	ND	ND	1833.90	ND	2.13	376.2	ND	ND	149.02	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0020.LAB	9/6/2003 9:12	ND	ND	ND	1841.03	ND	2.13	375.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0021.LAB	9/6/2003 9:14	ND	ND	ND	1829.38	ND	2.12	373.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0022.LAB	9/6/2003 9:17	ND	ND	ND	1842.28	ND	2.14	375.7	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0023.LAB	9/6/2003 9:19	ND	ND	ND	1832.04	ND	2.13	373.0	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0024.LAB	9/6/2003 9:22	ND	ND	ND	1825.04	ND	2.13	372.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0025.LAB	9/6/2003 9:25	ND	ND	ND	1803.16	ND	2.13	372.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0026.LAB	9/6/2003 9:27	ND	ND	ND	1807.15	ND	2.14	373.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0027.LAB	9/6/2003 9:30	ND	ND	ND	1803.20	ND	2.13	371.9	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0028.LAB	9/6/2003 9:32	ND	ND	ND	1812.87	ND	2.14	373.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0029.LAB	9/6/2003 9:35	ND	ND	ND	1846.74	ND	2.13	372.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0030.LAB	9/6/2003 9:38	ND	ND	ND	1901.47	ND	2.15	373.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0031.LAB	9/6/2003 9:40	ND	ND	ND	1943.69	ND	2.14	371.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0032.LAB	9/6/2003 9:43	ND	ND	ND	1969.43	ND	2.14	370.4	ND	ND	149.02	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0033.LAB	9/6/2003 9:45	ND	ND	ND	2035.88	ND	2.17	376.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0034.LAB	9/6/2003 9:48	ND	ND	ND	2049.34	ND	2.18	376.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0035.LAB	9/6/2003 9:50	ND	ND	ND	2073.40	ND	2.18	377.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0036.LAB	9/6/2003 9:53	ND	ND	ND	2084.46	ND	2.18	376.9	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0037.LAB	9/6/2003 9:56	ND	ND	ND	2086.63	ND	2.17	375.0	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0038.LAB	9/6/2003 9:58	ND	ND	ND	2094.93	ND	2.17	374.2	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0039.LAB	9/6/2003 10:01	ND	ND	ND	2096.49	ND	2.18	374.9	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0040.LAB	9/6/2003 10:03	ND	ND	ND	2097.34	ND	2.17	375.1	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0041.LAB	9/6/2003 10:06	ND	ND	ND	2091.03	ND	2.18	374.9	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0042.LAB	9/6/2003 10:09	ND	ND	ND	2097.57	ND	2.17	373.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0043.LAB	9/6/2003 10:11	ND	ND	ND	2077.28	ND	2.16	371.0	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0044.LAB	9/6/2003 10:14	ND	ND	ND	2096.75	ND	2.17	372.8	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0045.LAB	9/6/2003 10:16	ND	ND	ND	2108.20	ND	2.17	373.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0046.LAB	9/6/2003 10:19	ND	ND	ND	2108.89	ND	2.16	371.6	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0047.LAB	9/6/2003 10:22	ND	ND	ND	2130.65	ND	2.18	373.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0048.LAB	9/6/2003 10:24	ND	ND	ND	2137.15	ND	2.17	370.8	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0049.LAB	9/6/2003 10:27	ND	ND	ND	2160.36	ND	2.18	373.1	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0050.LAB	9/6/2003 10:29	ND	ND	ND	2163.19	ND	2.18	372.8	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0051.LAB	9/6/2003 10:32	ND	ND	ND	2162.68	ND	2.19	372.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0052.LAB	9/6/2003 10:35	ND	ND	ND	2147.13	ND	2.18	370.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0053.LAB	9/6/2003 10:37	ND	ND	ND	2140.81	ND	2.18	370.5	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0054.LAB	9/6/2003 10:40	ND	ND	ND	2143.93	ND	2.19	372.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0055.LAB	9/6/2003 10:42	ND	ND	ND	2099.68	ND	2.18	370.8	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0056.LAB	9/6/2003 10:45	ND	ND	ND	2070.08	ND	2.18	370.8	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0057.LAB	9/6/2003 10:48	ND	ND	ND	2045.06	ND	2.17	370.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0058.LAB	9/6/2003 10:50	ND	ND	ND	2021.96	ND	2.16	370.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0059.LAB	9/6/2003 10:53	ND	ND	ND	2038.71	ND	2.18	372.3	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0060.LAB	9/6/2003 10:55	ND	ND	ND	1990.13	ND	2.16	370.6	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0061.LAB	9/6/2003 10:58	ND	ND	ND	1994.95	ND	2.18	372.7	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0062.LAB	9/6/2003 11:01	ND	ND	ND	1989.92	ND	2.18	372.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0063.LAB	9/6/2003 11:03	ND	ND	ND	1986.46	ND	2.18	372.9	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0064.LAB	9/6/2003 11:06	ND	ND	ND	1966.29	ND	2.18	371.3	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0065.LAB	9/6/2003 11:08	ND	ND	ND	1961.76	ND	2.18	370.6	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0066.LAB	9/6/2003 11:11	ND	ND	ND	1962.13	ND	2.18	371.2	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0067.LAB	9/6/2003 11:14	ND	ND	ND	1966.74	ND	2.19	370.3	ND	ND	149.76	1.003

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 10s.2.4ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0068.LAB	9/6/2003 11:16	ND	ND	ND	1973.41	ND	2.20	372.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0069.LAB	9/6/2003 11:19	ND	ND	ND	1971.84	ND	2.20	372.6	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0070.LAB	9/6/2003 11:22	ND	ND	ND	1959.65	ND	2.20	370.7	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0071.LAB	9/6/2003 11:24	ND	ND	ND	1951.13	ND	2.20	370.2	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0072.LAB	9/6/2003 11:27	ND	ND	ND	1952.94	ND	2.21	372.3	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0073.LAB	9/6/2003 11:29	ND	ND	ND	1941.11	ND	2.20	369.8	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0074.LAB	9/6/2003 11:32	ND	ND	ND	1946.46	ND	2.22	372.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0075.LAB	9/6/2003 11:35	ND	ND	ND	1936.76	ND	2.21	370.0	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0076.LAB	9/6/2003 11:37	ND	ND	ND	1935.74	ND	2.21	370.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0077.LAB	9/6/2003 11:40	ND	ND	ND	1953.83	ND	2.22	372.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0078.LAB	9/6/2003 11:42	ND	ND	ND	1958.55	ND	2.21	370.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0079.LAB	9/6/2003 11:45	ND	ND	ND	1985.79	ND	2.22	371.4	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0080.LAB	9/6/2003 11:48	ND	ND	ND	2000.80	ND	2.22	371.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0081.LAB	9/6/2003 11:50	ND	ND	ND	1998.65	ND	2.22	369.0	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0082.LAB	9/6/2003 11:53	ND	ND	ND	2002.11	ND	2.22	369.9	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0083.LAB	9/6/2003 11:55	ND	ND	ND	1991.24	ND	2.22	370.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0084.LAB	9/6/2003 11:58	ND	ND	ND	1932.79	ND	2.23	370.6	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0085.LAB	9/6/2003 12:01	ND	ND	ND	2289.95	ND	2.24	370.2	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0086.LAB	9/6/2003 12:03	ND	ND	ND	2058.09	ND	2.24	372.8	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0087.LAB	9/6/2003 12:06	ND	ND	ND	2005.40	ND	2.23	370.4	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0088.LAB	9/6/2003 12:08	ND	ND	ND	1990.12	ND	2.24	371.5	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0089.LAB	9/6/2003 12:11	ND	ND	ND	1989.30	ND	2.24	371.3	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0090.LAB	9/6/2003 12:14	ND	ND	ND	1998.56	ND	2.23	369.0	ND	ND	149.76	1.003
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0091.LAB	9/6/2003 12:16	ND	ND	ND	2057.84	ND	2.24	371.1	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0092.LAB	9/6/2003 12:19	ND	ND	ND	1992.81	ND	2.24	371.0	ND	ND	149.76	0.997
10S_4_3AB OUTLET 09 06 03 SAMPLE R3_0093.LAB	9/6/2003 12:21	ND	ND	ND	1961.55	ND	2.23	368.6	ND	ND	149.76	1.003
Average _{wet}		ND	ND	341.99	1686.86	ND	2.15	376.84	ND	ND	149.75	1.000

Reference Method Calculations

11 North

10s.4.2ab Outlet

Run No.	VOID	Run 1	Run 2	
Date	9/5/2003	9/5/2003	9/5/2003	
Start Time	10:45	15:15	19:15	AVERAGE
Stop Time	14:45	19:15	19:15	
Test Elapsed time (min)	240	240	240	240
Barometric Pressure (in. Hg)	24.95	24.95	24.95	24.95
Orifice calibration Factor	1.733	1.733	1.733	1.733
Dry Gas Meter Calibration Factor	1.011	1.011	1.011	1.011
Average Meter Temperature (°F)	82.4	80.7	76.3	78.5
Volume Metered (acf)	174.317	175.546	170.235	172.891
Volume Metered (dscf)	143.573	145.062	141.790	143.426
Volume of Water Collected (g)	93.6	101.3	83.8	92.6
Volume of Water Collected (scf)	4.413	4.776	3.951	4.364
Average Delta H (in. H ₂ O)	1.37	1.40	1.31	1.36
AVG SQRT of dH (in. H ₂ O)	1.1689	1.1832	1.1456	1.1644
Measured Moisture (%)	3.0%	3.2%	2.7%	2.9%
Saturation Moisture (%)	2.2%	2.1%	2.2%	2.1%
Moisture Used for Calculations (%)	2.2%	2.1%	2.2%	2.1%
Oxygen Concentration (%)	20.9	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.60	28.61	28.61	28.61
Pitot Coefficient	0.84	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.55	-0.53	-0.57	-0.55
Stack Pressure (in. Hg)	24.91	24.91	24.91	24.91
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.9868	0.9990	0.9772	0.9881
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.9713	0.9928	0.9736	0.9832
Stack Temperature Isokinetic Traverse (°F)	62.5	61.0	61.5	61.2
Stack Temperature Flow Traverse (°F)	74.0	63.0	64.0	63.5
Velocity (ft/sec) Isokinetic Traverse	60.68	61.33	60.03	60.68
Velocity (ft/sec) Flow Traverse	60.39	61.07	59.96	60.51
Nozzle Diameter (in.)	0.191	0.191	0.191	0.191
% Isokinetics	100.45	100.00	100.01	100.0
Stack Diameter (in.)	48.00	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	45,754	46,241	45,264	45,752
Stack Flow Rate Flow Traverse (acfm)	45,533	46,046	45,206	45,626
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	37,621	38,179	37,316	37,748
Stack Flow Rate Outlet Flow Traverse (dscfm)	36,630	37,869	37,088	37,479
Chlorine				
Collected Cl ₂ micrograms (ug)		42.9	13.2	28.1
Cl ₂ Concentration (ug/dscf)		0.30	0.09	0.19
Cl ₂ Concentration (ppb)		4	1	2
Cl ₂ Emission Rate (lbs/hr)		0.0015	0.0005	0.0010

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/5/2003
Unit Number:	10s.4.2ab Outlet	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.53
Run No.:	1	Operators:	BMB/JL/BDS
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.95
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.1 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	14:15
		End:	14:30

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.93	63
2	1.10	63
3	1.10	63
4	1.10	63
5	1.10	63
6	1.10	63
7	1.10	63
8	1.10	63
9	1.10	63
10	0.92	63
11	0.91	63
12	0.80	63

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.95	63
2	1.10	63
3	1.10	63
4	1.10	63
5	1.10	63
6	0.97	63
7	1.10	63
8	0.95	63
9	0.88	63
10	0.79	63
11	0.75	63
12	0.63	63
Total Average:	sqrt dp = 0.9928	63.0

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 9/6/2003												
Unit Number: 10s.4.2ab	Stack Diameter (in.): 48.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.57												
Run No.: 2	Operators: BMB/JL/BDS												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.95												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 12:15 End: 12:30		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %													
Comments :													

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.98	64
2	1.10	64
3	1.10	64
4	1.10	64
5	1.10	64
6	1.10	64
7	1.10	64
8	1.10	64
9	1.10	64
10	0.94	64
11	0.92	64
12	0.62	64

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.82	64
2	0.86	64
3	1.10	64
4	1.10	64
5	1.10	64
6	0.96	64
7	1.05	64
8	0.90	64
9	0.81	64
10	0.71	64
11	0.65	64
12	0.62	64
Total Average: sqrt dp = 0.9736		64.0

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 9/5/2003												
Unit Number: 10s.4.2ab Outlet	Stack Diameter (in.): 48.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.55												
Run No.: Void	Operators: BMB/JL/BDS												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.95												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 9:56 End: 10:08		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.2 %													
Comments :													

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.94	74
2	1.10	74
3	1.10	74
4	1.10	74
5	1.10	74
6	1.05	74
7	1.10	74
8	1.10	74
9	1.10	74
10	0.93	74
11	0.91	74
12	0.58	74

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.82	74
2	1.10	74
3	1.10	74
4	1.10	74
5	1.10	74
6	1.05	74
7	0.98	74
8	0.86	74
9	0.79	74
10	0.74	74
11	0.67	74
12	0.47	74
Total Average: sqrt dp = 0.9713		74.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	1
Plant Name:	11 North						Leak Check Initial:	0.001	cfm@	15	(in. Hg)	
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.000	cfm@	3.0	(in. Hg)	
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	10s.4.2ab Outlet						24	1	584.8	591.3		
Date:	9/5/2003							2	605.2	631.4		
Technicians:	BMB/JL/BDS							3	645.3	649.2		
Meter Box No.:	90394						Y_d:	1.011		4	639.6	653.1
Probe / Pitot No.:	501 / HA-1	C_p:	0.84		5	616.1	628.9					
Nozzle No.:	NA	dH₀:	1.733	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57		6	961.5	999.9	
Nozzle Dia:	0.191	0.191, 0.191, 0.190	Port Width (in.):	3.00	Port Length (in.):	2.00	Start Time:	15:15	Net Impinger Gain (g):	101.3		
Initial Meter Reading (ft³):	381.205	BP (in. Hg):	24.95	Static Pressure (in.):	-0.53	End Time:	19:15	Theta	240.0			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
1	10	61	80	80	0.990	1.40	388.500	238	244	50	2.5	
1	20	61	81	90	1.000	1.40	395.840	240	244	41	3.0	
1	30	61	83	79	1.000	1.40	403.120	243	242	42	3.0	
1	40	61	83	79	1.000	1.40	410.490	245	242	42	3.0	
1	50	61	83	78	1.000	1.40	417.800	243	241	43	3.0	
1	60	61	83	78	1.000	1.40	425.070	240	242	44	2.5	
1	70	61	83	78	1.000	1.40	432.440	241	241	45	2.5	
1	80	61	83	78	0.990	1.40	439.790	240	241	47	2.5	
1	90	61	83	78	1.000	1.40	447.130	239	243	48	2.5	
1	100	61	84	78	1.000	1.40	454.460	243	243	49	2.5	
1	110	62	84	79	1.000	1.40	461.790	241	242	50	2.5	
1	120	62	84	79	1.000	1.40	469.110	239	243	51	2.5	
1	130	62	84	79	1.000	1.40	476.480	241	243	53	2.5	
1	140	61	84	79	1.000	1.40	483.740	241	244	55	2.5	
1	150	61	83	79	1.000	1.40	491.040	238	242	58	2.5	
1	160	61	83	78	1.000	1.40	498.330	241	243	61	2.5	
1	170	61	83	78	0.990	1.40	505.630	234	241	63	2.5	
1	180	61	82	78	0.990	1.40	512.960	236	242	56	2.5	
1	190	61	81	77	0.990	1.40	520.270	236	243	53	2.5	
1	200	61	81	77	1.000	1.40	527.610	240	241	52	2.5	
1	210	60	82	77	1.000	1.40	534.910	241	243	52	2.5	
1	220	60	83	76	1.000	1.40	542.200	241	242	51	2.5	
1	230	60	84	76	1.000	1.40	549.480	243	241	53	2.5	
1	240	60	84	77	1.000	1.40	556.751	243	242	55	2.5	
Average / Net		61.0		80.7	1.0	1.4	175.546	240.3	242.3	50.6	2.6	

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments				Sample Train No. AA		Filter No.: NA		Run No.: 2	
Plant Name:	11 North					Leak Check Initial: 0.002 cfm@ 15 (in. Hg)					
Plant Location:	Rio Rancho, NM					Leak Check Final: 0.001 cfm@ 3 (in. Hg)					
Project No.:	31397-1600-00000					Total Traverse Points		Impinger	Initial	Final	
Sampling Location:	10s.4.2ab					24		1	667.8	673.2	
Date:	9/6/2003							2	743.4	763.7	
Technicians:	BMB/JL/BDS							3	526.1	539.7	
Meter Box No.: 90394	Y_d: 1.011							4	643.9	645.6	
Probe/Pitot No 501 / HA-1	C_p: 0.84			5	656.3	652.0					
Nozzle No.: NA	dH₀: 1.733	Stack Dia. (in.): 48.00	Stack Area (ft²): 12.57	6	812.8	859.9					
Nozzle Dia: 0.191	0.191, 0.191, 0.190	Port Width (in.): 3.00	Port Length (in.): 2.00	Start Time: 8:20 Net Impinger Gain (g): 83.8							
Initial Meter Reading (ft³):	557.738	BP (in. Hg): 24.95	Static Pressure (in.): -0.57	End Time: 12:20 Theta 240							
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
1	10	60	69	69	0.950	1.30	564.770	246	244	60	2.5
1	20	59	71	68	0.960	1.30	571.700	245	243	52	2.5
1	30	60	74	68	0.950	1.30	578.740	244	244	58	2.5
1	40	59	75	68	0.960	1.30	585.770	246	245	62	2.5
1	50	60	76	69	0.950	1.30	592.770	246	244	54	2.5
1	60	60	77	69	0.950	1.30	599.810	244	243	52	2.5
1	70	60	78	70	0.950	1.30	606.850	245	243	50	2.5
1	80	60	78	71	0.950	1.30	613.870	246	243	51	2.5
1	90	60	78	72	0.950	1.30	620.890	244	245	52	2.5
1	100	61	77	72	0.950	1.30	628.000	242	244	53	2.5
1	110	60	79	72	0.950	1.30	635.090	246	245	52	2.5
1	120	62	80	72	0.960	1.30	642.170	246	243	53	2.5
1	130	62	80	73	0.960	1.30	649.240	243	244	54	2.5
1	140	62	81	74	0.960	1.30	656.300	244	243	55	2.5
1	150	62	82	74	0.950	1.30	663.410	243	242	55	2.5
1	160	62	82	75	0.960	1.30	670.510	244	243	54	2.5
1	170	63	82	75	0.960	1.30	677.640	243	242	55	2.5
1	180	63	83	75	0.950	1.30	684.780	242	244	57	2.5
1	190	63	83	77	0.960	1.35	691.960	245	243	59	2.5
1	200	63	84	77	0.960	1.35	699.180	245	242	54	2.5
1	210	63	83	80	0.960	1.35	706.380	238	243	52	2.5
1	220	64	84	78	0.960	1.35	713.580	244	242	52	2.5
1	230	63	85	78	0.960	1.35	720.780	243	244	53	2.5
1	240	64	85	80	0.950	1.35	727.973	243	244	54	2.5
Average / Net		61.5		76.3	1.0	1.3	170.235	244.0	243.4	54.3	2.5

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments				Sample Train No. AA		Filter No.: NA		Run No.: Void																							
Plant Name:	11 North					Leak Check Initial: 0.001 cfm@ 16 (in. Hg)																											
Plant Location:	Rio Rancho, NM					Leak Check Final: 0.001 cfm@ 3 (in. Hg)																											
Project No.:	31397-1600-00000																																
Sampling Location:	10s.4.2ab Outlet																																
Date:	9/5/2003																																
Technicians:	BMB/JL/BDS																																
Meter Box No.: 90394	Y_d: 1.011									<table border="1"> <tr> <th>Total Traverse Points</th><th>Impinger</th><th>Initial</th><th>Final</th></tr> <tr> <td rowspan="5">24</td><td>1</td><td>651.2</td><td>656.7</td></tr> <tr> <td>2</td><td>725.8</td><td>746.0</td></tr> <tr> <td>3</td><td>535.8</td><td>539.7</td></tr> <tr> <td>4</td><td>640.6</td><td>548.1</td></tr> <tr> <td>5</td><td>624.8</td><td>572.5</td></tr> <tr> <td>6</td><td>778.7</td><td>987.5</td><td></td><td></td></tr> </table>	Total Traverse Points	Impinger	Initial	Final	24	1	651.2	656.7	2	725.8	746.0	3	535.8	539.7	4	640.6	548.1	5	624.8	572.5	6	778.7	987.5
Total Traverse Points	Impinger	Initial	Final																														
24	1	651.2	656.7																														
	2	725.8	746.0																														
	3	535.8	539.7																														
	4	640.6	548.1																														
	5	624.8	572.5																														
6	778.7	987.5																															
Probe/Pitot No 501 / HA-1	C_p: 0.84																																
Nozzle No.: NA	dH₀: 1.733	Stack Dia. (in.): 48.00		Stack Area (ft²): 12.57																													
Nozzle Dia: 0.191	0.191, 0.191, 0.190	Port Width (in.): 3.00		Port Length (in.): 2.00		Start Time: 10:45		Net Impinger Gain (g): 93.6																									
Initial Meter Reading (ft³):	206.607	BP (in. Hg): 24.95		Static Pressure (in.): -0.55		End Time: 14:45		Theta 240																									
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)																						
1	10	62	71	71	0.980	1.30	213.710	247	220	57	2																						
1	20	62	76	71	0.990	1.30	220.600	250	236	57	2																						
1	30	62	80	72	0.990	1.30	227.480	254	240	57	2																						
1	40	62	81	74	0.990	1.30	234.330	253	239	58	2																						
1	50	62	82	75	0.980	1.30	241.480	253	242	60	2																						
1	60	63	84	76	0.980	1.30	248.630	254	239	60	2																						
1	70	62	84	77	0.980	1.40	255.990	252	241	61	2																						
1	80	62	85	78	0.980	1.40	263.380	252	239	61	2																						
1	90	62	86	79	0.990	1.40	270.780	254	236	62	2																						
1	100	63	86	79	0.980	1.40	278.190	249	243	62	2																						
1	110	62	86	80	0.980	1.40	285.450	251	244	62	2																						
1	120	63	85	79	0.980	1.40	292.750	251	245	60	2																						
1	130	63	85	80	0.980	1.40	300.470	254	238	60	2																						
1	140	62	85	80	0.960	1.40	307.800	251	243	60	2																						
1	150	62	86	80	0.960	1.40	314.540	254	242	60	2																						
1	160	62	86	80	0.960	1.30	322.170	255	242	60	2																						
1	170	62	87	81	0.960	1.30	329.140	247	241	60	2																						
1	180	62	88	81	0.970	1.40	336.420	252	241	60	2																						
1	190	63	89	82	0.970	1.40	343.680	254	241	60	2																						
1	200	63	91	84	0.970	1.40	351.090	254	243	50	2																						
1	210	64	92	85	0.960	1.40	358.510	251	245	47	2																						
1	220	63	92	87	0.960	1.40	365.670	252	243	49	2																						
1	230	63	92	87	0.960	1.40	373.000	254	245	49	2																						
1	240	63	92	87	0.960	1.40	380.924	255	245	49	2																						
Average / Net		62.5		82.4	1.0	1.4	174.317	252.2	240.5	57.5	2.0																						

EPA REFERENCE METHOD 1

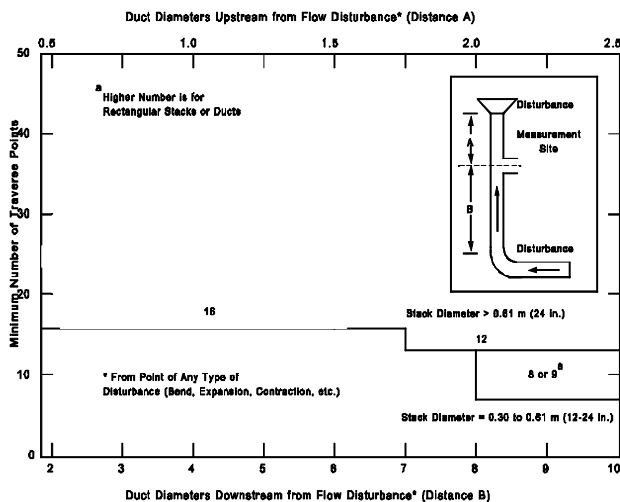
FIELD DATA SHEET

CIRCULAR STACKS

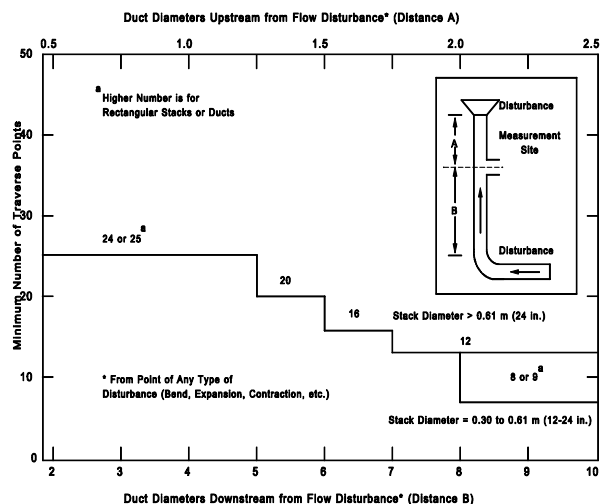
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 10.4.2ab Outlet
 TRC Project No.: 31397-1600-00000
 Date: 9/5/2003
 Technician: B. Bauer
 Circular/Rectangular: C

Stack Diameter: 48.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 2.00
 Diameters Upstream: 0.6
 Diameters Downstream: 2.2
 Flow or Particulate Test: F
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	3
2	5 3/16
3	7 11/16
4	10 8/16
5	14
6	19 1/16
7	32 15/16
8	38
9	41 8/16
10	44 5/16
11	46 13/16
12	49
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER

FIELD AND SOURCE DOCUMENTATION

APPENDIX A
Field and Measurement Data

SECTION 4
Fab 11S Acid Scrubber Results

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

Scrubber Outlet 11s.1.3 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_3 09 11 03 SAMPLE R1_0007.LAB	9/11/2003 8:13	ND	ND	ND	ND	ND	2.02	409.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0008.LAB	9/11/2003 8:15	ND	ND	ND	ND	ND	2.02	410.3	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0009.LAB	9/11/2003 8:18	ND	ND	ND	ND	ND	2.02	409.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0010.LAB	9/11/2003 8:20	ND	ND	ND	ND	ND	2.01	406.5	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0011.LAB	9/11/2003 8:23	ND	ND	ND	ND	ND	2.02	407.8	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0012.LAB	9/11/2003 8:26	ND	ND	ND	ND	ND	2.02	407.5	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0013.LAB	9/11/2003 8:28	ND	ND	ND	ND	ND	2.00	405.3	ND	20.241	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0014.LAB	9/11/2003 8:31	ND	ND	ND	ND	ND	2.01	406.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0015.LAB	9/11/2003 8:33	ND	ND	ND	ND	ND	2.00	403.8	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0016.LAB	9/11/2003 8:36	ND	ND	ND	ND	ND	2.00	403.3	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0017.LAB	9/11/2003 8:39	ND	ND	ND	ND	ND	2.01	404.7	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0018.LAB	9/11/2003 8:41	ND	ND	ND	ND	ND	2.02	404.0	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0019.LAB	9/11/2003 8:44	ND	ND	ND	ND	ND	2.02	403.0	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0020.LAB	9/11/2003 8:46	ND	ND	ND	ND	ND	2.02	401.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0021.LAB	9/11/2003 8:49	ND	ND	ND	ND	ND	2.02	401.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0022.LAB	9/11/2003 8:52	ND	ND	ND	ND	ND	2.02	400.3	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0023.LAB	9/11/2003 8:54	ND	ND	ND	ND	ND	2.02	399.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0024.LAB	9/11/2003 8:57	ND	ND	ND	ND	ND	2.02	398.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0025.LAB	9/11/2003 8:59	ND	ND	ND	ND	ND	2.01	396.1	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0026.LAB	9/11/2003 9:02	ND	ND	ND	ND	ND	2.03	397.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0027.LAB	9/11/2003 9:05	ND	ND	ND	ND	ND	2.03	396.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0028.LAB	9/11/2003 9:07	ND	ND	ND	ND	ND	2.02	394.0	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0029.LAB	9/11/2003 9:10	ND	ND	ND	ND	ND	2.01	393.3	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0030.LAB	9/11/2003 9:12	ND	ND	ND	ND	ND	2.02	393.1	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0031.LAB	9/11/2003 9:15	ND	ND	ND	ND	ND	2.03	394.8	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0032.LAB	9/11/2003 9:17	ND	ND	ND	ND	ND	2.02	394.5	ND	19.597	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0033.LAB	9/11/2003 9:20	ND	ND	ND	ND	ND	2.02	394.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0034.LAB	9/11/2003 9:23	ND	ND	ND	ND	ND	2.01	391.3	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0035.LAB	9/11/2003 9:25	ND	ND	ND	ND	ND	2.01	390.7	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0036.LAB	9/11/2003 9:28	ND	ND	ND	ND	ND	2.01	390.2	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0037.LAB	9/11/2003 9:30	ND	ND	ND	ND	ND	2.02	391.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0038.LAB	9/11/2003 9:33	ND	ND	ND	ND	ND	2.02	391.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0039.LAB	9/11/2003 9:36	ND	ND	ND	ND	ND	2.02	391.8	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0040.LAB	9/11/2003 9:38	ND	ND	ND	ND	ND	2.02	391.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0041.LAB	9/11/2003 9:41	ND	ND	ND	ND	ND	2.02	390.5	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0042.LAB	9/11/2003 9:43	ND	ND	ND	ND	ND	2.02	390.3	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0043.LAB	9/11/2003 9:46	ND	ND	ND	ND	ND	2.02	388.3	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0044.LAB	9/11/2003 9:49	ND	ND	ND	ND	ND	2.01	387.4	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0045.LAB	9/11/2003 9:51	ND	ND	ND	ND	ND	2.03	389.5	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0046.LAB	9/11/2003 9:54	ND	ND	ND	ND	ND	2.03	389.0	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0047.LAB	9/11/2003 9:56	ND	ND	ND	ND	ND	2.02	386.6	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0048.LAB	9/11/2003 9:59	ND	ND	ND	ND	ND	2.03	388.7	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0049.LAB	9/11/2003 10:02	ND	ND	ND	ND	ND	2.02	386.4	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0050.LAB	9/11/2003 10:04	ND	ND	ND	ND	ND	2.03	388.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0051.LAB	9/11/2003 10:07	ND	ND	ND	ND	ND	2.03	388.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0052.LAB	9/11/2003 10:09	ND	ND	ND	ND	ND	2.03	388.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0053.LAB	9/11/2003 10:12	ND	ND	ND	ND	ND	2.02	386.8	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0054.LAB	9/11/2003 10:15	ND	ND	ND	ND	ND	2.02	386.1	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0055.LAB	9/11/2003 10:17	ND	ND	ND	ND	ND	2.02	388.1	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0056.LAB	9/11/2003 10:20	ND	ND	ND	ND	ND	2.03	387.8	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0057.LAB	9/11/2003 10:22	ND	ND	ND	ND	ND	2.03	387.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0058.LAB	9/11/2003 10:25	ND	ND	ND	ND	ND	2.03	387.5	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0059.LAB	9/11/2003 10:28	ND	ND	ND	ND	ND	2.03	386.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0060.LAB	9/11/2003 10:30	ND	ND	ND	ND	ND	2.02	385.8	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0061.LAB	9/11/2003 10:33	ND	ND	ND	ND	ND	2.03	387.7	ND	ND	149.76	1.008

TRC Environmental Corporaiton
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.3 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_3 09 11 03 SAMPLE R1_0062.LAB	9/11/2003 10:35	ND	ND	ND	ND	ND	2.03	387.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0063.LAB	9/11/2003 10:38	ND	ND	ND	ND	ND	2.02	386.4	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0064.LAB	9/11/2003 10:41	ND	ND	ND	ND	ND	2.02	386.6	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0065.LAB	9/11/2003 10:43	ND	ND	ND	ND	ND	2.04	388.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0066.LAB	9/11/2003 10:46	ND	ND	ND	ND	ND	2.04	388.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0067.LAB	9/11/2003 10:48	ND	ND	ND	ND	ND	2.03	386.4	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0068.LAB	9/11/2003 10:51	ND	ND	ND	ND	ND	2.04	388.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0069.LAB	9/11/2003 10:54	ND	ND	ND	ND	ND	2.02	387.0	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0070.LAB	9/11/2003 10:56	ND	ND	ND	ND	ND	2.03	386.1	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0071.LAB	9/11/2003 10:59	ND	ND	ND	ND	ND	2.02	386.6	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0072.LAB	9/11/2003 11:01	ND	ND	ND	ND	ND	2.05	389.1	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0073.LAB	9/11/2003 11:04	ND	ND	ND	ND	ND	2.04	388.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0074.LAB	9/11/2003 11:07	ND	ND	ND	ND	ND	2.03	385.8	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0075.LAB	9/11/2003 11:09	ND	ND	ND	ND	ND	2.04	387.5	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0076.LAB	9/11/2003 11:12	ND	ND	ND	ND	ND	2.04	388.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0077.LAB	9/11/2003 11:14	ND	ND	ND	ND	ND	2.04	387.0	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0078.LAB	9/11/2003 11:17	ND	ND	ND	ND	ND	2.04	386.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0079.LAB	9/11/2003 11:20	ND	ND	ND	ND	ND	2.03	386.0	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0080.LAB	9/11/2003 11:22	ND	ND	ND	ND	ND	2.03	385.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0081.LAB	9/11/2003 11:25	ND	ND	ND	ND	ND	2.12	386.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0082.LAB	9/11/2003 11:27	ND	ND	ND	ND	ND	2.17	387.9	ND	130.868	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0083.LAB	9/11/2003 11:30	ND	ND	ND	ND	ND	2.16	385.6	ND	71.149	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0084.LAB	9/11/2003 11:33	ND	ND	ND	ND	ND	2.16	387.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0085.LAB	9/11/2003 11:35	ND	ND	ND	ND	ND	2.15	385.2	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0086.LAB	9/11/2003 11:38	ND	ND	ND	ND	ND	2.17	387.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0087.LAB	9/11/2003 11:40	ND	ND	ND	ND	ND	2.15	386.1	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0088.LAB	9/11/2003 11:43	ND	ND	ND	ND	ND	2.16	388.1	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0089.LAB	9/11/2003 11:46	ND	ND	ND	ND	ND	2.16	388.3	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0090.LAB	9/11/2003 11:48	ND	ND	ND	ND	ND	2.15	388.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0091.LAB	9/11/2003 11:51	ND	ND	ND	ND	ND	2.14	384.5	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0092.LAB	9/11/2003 11:53	ND	ND	ND	ND	ND	2.13	383.9	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0093.LAB	9/11/2003 11:56	ND	ND	ND	ND	ND	2.11	382.8	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0094.LAB	9/11/2003 11:59	ND	ND	ND	169.36	ND	2.10	383.5	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0095.LAB	9/11/2003 12:01	ND	ND	ND	196.60	ND	2.08	382.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R1_0096.LAB	9/11/2003 12:04	ND	ND	ND	216.83	ND	2.04	380.0	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0097.LAB	9/11/2003 12:06	ND	ND	ND	238.03	ND	2.04	379.4	ND	ND	149.76	1.013
11S_1_3 09 11 03 SAMPLE R1_0098.LAB	9/11/2003 12:09	ND	ND	ND	222.52	ND	2.05	379.5	ND	77.634	149.76	1.013
11S_1_3 09 11 03 SAMPLE R2_0000.LAB	9/11/2003 12:34	ND	ND	ND	ND	ND	1.96	381.8	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0001.LAB	9/11/2003 12:37	ND	ND	ND	ND	ND	1.96	381.8	ND	48.022	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0002.LAB	9/11/2003 12:39	ND	ND	ND	ND	ND	1.96	382.0	ND	42.024	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0003.LAB	9/11/2003 12:42	ND	ND	ND	ND	ND	1.96	382.3	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0004.LAB	9/11/2003 12:44	ND	ND	ND	ND	ND	1.96	382.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0005.LAB	9/11/2003 12:47	ND	ND	ND	ND	ND	1.96	382.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0006.LAB	9/11/2003 12:50	ND	ND	ND	ND	ND	1.95	382.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0007.LAB	9/11/2003 12:52	ND	ND	ND	ND	ND	1.95	381.8	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0008.LAB	9/11/2003 12:55	ND	ND	ND	ND	ND	1.96	383.7	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0009.LAB	9/11/2003 12:57	ND	ND	ND	ND	ND	1.96	383.9	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0010.LAB	9/11/2003 13:00	ND	ND	ND	ND	ND	1.96	383.4	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0011.LAB	9/11/2003 13:03	ND	ND	ND	ND	ND	1.95	381.3	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0012.LAB	9/11/2003 13:05	ND	ND	ND	ND	ND	1.96	383.1	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0013.LAB	9/11/2003 13:08	ND	ND	ND	ND	ND	1.95	381.5	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0014.LAB	9/11/2003 13:10	ND	ND	ND	167.49	ND	1.96	383.2	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0015.LAB	9/11/2003 13:13	ND	ND	ND	182.07	ND	1.95	380.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0016.LAB	9/11/2003 13:16	ND	ND	ND	172.16	ND	1.95	380.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0017.LAB	9/11/2003 13:18	ND	ND	ND	164.42	ND	1.96	383.1	ND	ND	149.76	1.003

Scrubber Outlet 11s.1.3 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_3 09 11 03 SAMPLE R2_0018.LAB	9/11/2003 13:21	ND	ND	ND	ND	ND	1.96	383.4	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0019.LAB	9/11/2003 13:23	ND	ND	ND	ND	ND	1.96	383.3	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0020.LAB	9/11/2003 13:26	ND	ND	ND	ND	ND	1.96	383.3	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0021.LAB	9/11/2003 13:29	ND	ND	ND	ND	ND	1.97	382.7	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0022.LAB	9/11/2003 13:31	ND	ND	ND	ND	ND	1.96	381.0	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0023.LAB	9/11/2003 13:34	ND	ND	ND	ND	ND	1.97	384.1	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0024.LAB	9/11/2003 13:36	ND	ND	ND	ND	ND	1.97	384.6	ND	19.078	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0025.LAB	9/11/2003 13:39	ND	ND	ND	ND	ND	1.98	384.4	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0026.LAB	9/11/2003 13:42	ND	ND	ND	ND	ND	1.97	383.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0027.LAB	9/11/2003 13:44	ND	ND	ND	ND	ND	1.98	385.9	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0028.LAB	9/11/2003 13:47	ND	ND	ND	ND	ND	1.97	383.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0029.LAB	9/11/2003 13:49	ND	ND	ND	ND	ND	1.98	384.9	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0030.LAB	9/11/2003 13:52	ND	ND	ND	ND	ND	1.98	384.8	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0031.LAB	9/11/2003 13:55	ND	ND	ND	ND	ND	1.98	384.5	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0032.LAB	9/11/2003 13:57	ND	ND	ND	ND	ND	1.97	382.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0033.LAB	9/11/2003 14:00	ND	ND	ND	ND	ND	1.97	382.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0034.LAB	9/11/2003 14:02	ND	ND	ND	ND	ND	1.98	385.7	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0035.LAB	9/11/2003 14:05	ND	ND	ND	ND	ND	1.98	386.3	ND	23.103	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0036.LAB	9/11/2003 14:08	ND	ND	ND	ND	ND	1.98	385.2	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0037.LAB	9/11/2003 14:10	ND	ND	ND	ND	ND	1.97	383.8	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0038.LAB	9/11/2003 14:13	ND	ND	ND	ND	ND	1.98	386.8	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0039.LAB	9/11/2003 14:15	ND	ND	ND	ND	ND	1.98	387.5	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0040.LAB	9/11/2003 14:18	ND	ND	ND	ND	ND	1.96	385.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0041.LAB	9/11/2003 14:21	ND	ND	ND	ND	ND	1.98	388.4	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0042.LAB	9/11/2003 14:23	ND	ND	ND	ND	ND	1.96	386.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0043.LAB	9/11/2003 14:26	ND	ND	ND	ND	ND	1.96	385.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0044.LAB	9/11/2003 14:28	ND	ND	ND	ND	ND	1.96	385.5	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0045.LAB	9/11/2003 14:31	ND	ND	ND	161.25	ND	1.96	386.9	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0046.LAB	9/11/2003 14:34	ND	ND	ND	ND	ND	1.97	390.3	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0047.LAB	9/11/2003 14:36	ND	ND	ND	ND	ND	1.96	388.0	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0048.LAB	9/11/2003 14:39	ND	ND	ND	ND	ND	1.97	387.5	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0049.LAB	9/11/2003 14:41	ND	ND	ND	ND	ND	1.97	387.5	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0050.LAB	9/11/2003 14:44	ND	ND	ND	ND	ND	2.04	387.6	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0051.LAB	9/11/2003 14:47	ND	ND	ND	ND	ND	2.23	386.0	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0052.LAB	9/11/2003 14:49	ND	ND	ND	ND	ND	2.21	384.7	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0053.LAB	9/11/2003 14:52	ND	ND	ND	ND	ND	2.19	382.2	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0054.LAB	9/11/2003 14:54	ND	ND	ND	ND	ND	2.19	382.1	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0055.LAB	9/11/2003 14:57	ND	ND	ND	ND	ND	2.19	384.0	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0056.LAB	9/11/2003 14:59	ND	ND	ND	ND	ND	2.18	382.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0057.LAB	9/11/2003 15:02	ND	ND	ND	ND	ND	2.19	384.6	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0058.LAB	9/11/2003 15:05	ND	ND	ND	ND	ND	2.19	385.1	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0059.LAB	9/11/2003 15:07	ND	ND	ND	ND	ND	2.19	384.1	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0060.LAB	9/11/2003 15:10	ND	ND	ND	ND	ND	2.19	383.8	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0061.LAB	9/11/2003 15:12	ND	ND	ND	ND	ND	2.19	383.9	ND	43.54	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0062.LAB	9/11/2003 15:15	ND	ND	ND	ND	ND	2.17	383.3	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0063.LAB	9/11/2003 15:18	ND	ND	ND	ND	ND	2.16	383.7	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0064.LAB	9/11/2003 15:20	ND	ND	ND	ND	ND	2.15	382.4	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0065.LAB	9/11/2003 15:23	ND	ND	ND	ND	ND	2.13	381.7	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0066.LAB	9/11/2003 15:25	ND	ND	ND	ND	ND	2.10	383.8	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0067.LAB	9/11/2003 15:28	ND	ND	ND	ND	ND	2.05	383.8	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0068.LAB	9/11/2003 15:31	ND	ND	ND	ND	ND	2.05	381.6	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0069.LAB	9/11/2003 15:33	ND	ND	ND	ND	ND	2.03	383.1	ND	23.19	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0070.LAB	9/11/2003 15:36	ND	ND	ND	ND	ND	2.00	382.5	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0071.LAB	9/11/2003 15:38	ND	ND	ND	ND	ND	2.00	382.4	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0072.LAB	9/11/2003 15:41	ND	ND	ND	ND	ND	2.00	381.7	ND	ND	149.76	1.003

Scrubber Outlet 11s.1.3 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_3 09 11 03 SAMPLE R2_0073.LAB	9/11/2003 15:44	ND	ND	ND	ND	ND	2.00	381.4	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0074.LAB	9/11/2003 15:46	ND	ND	ND	ND	ND	2.00	380.9	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0075.LAB	9/11/2003 15:49	ND	ND	ND	ND	ND	1.99	379.3	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0076.LAB	9/11/2003 15:51	ND	ND	ND	ND	ND	2.00	381.7	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0077.LAB	9/11/2003 15:54	ND	ND	ND	ND	ND	1.99	382.6	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0078.LAB	9/11/2003 15:57	ND	ND	ND	ND	ND	1.98	382.6	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0079.LAB	9/11/2003 15:59	ND	ND	ND	ND	ND	1.99	382.0	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0080.LAB	9/11/2003 16:02	ND	ND	ND	ND	ND	1.99	381.4	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0081.LAB	9/11/2003 16:04	ND	ND	ND	ND	ND	1.99	381.6	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0082.LAB	9/11/2003 16:07	ND	ND	ND	ND	ND	1.98	381.0	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0083.LAB	9/11/2003 16:10	ND	ND	ND	ND	ND	1.97	380.5	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0084.LAB	9/11/2003 16:12	ND	ND	ND	ND	ND	1.96	378.0	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0085.LAB	9/11/2003 16:15	ND	ND	ND	ND	ND	1.97	379.8	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0086.LAB	9/11/2003 16:17	ND	ND	ND	ND	ND	1.96	377.7	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0087.LAB	9/11/2003 16:20	ND	ND	ND	ND	ND	1.97	378.5	ND	ND	149.02	1.003
11S_1_3 09 11 03 SAMPLE R2_0088.LAB	9/11/2003 16:23	ND	ND	ND	ND	ND	1.97	379.7	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0089.LAB	9/11/2003 16:25	ND	ND	ND	ND	ND	1.96	376.8	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0090.LAB	9/11/2003 16:28	ND	ND	ND	ND	ND	1.97	379.4	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0091.LAB	9/11/2003 16:30	ND	ND	ND	ND	ND	1.96	377.1	ND	ND	149.76	1.008
11S_1_3 09 11 03 SAMPLE R2_0092.LAB	9/11/2003 16:33	ND	ND	ND	ND	ND	1.97	379.7	ND	ND	149.76	1.003
11S_1_3 09 11 03 SAMPLE R2_0093.LAB	9/11/2003 16:36	ND	ND	ND	ND	ND	1.95	376.9	ND	ND	149.76	1.008
Average _{wet}		ND	ND	ND	153.37	ND	2.03	387.17	ND	19.20	149.76	1.007

Reference Method Calculations

Fab 11 South

11s.1.3

Run No.	Run 1	Run 2	
Date	9/11/2003	9/11/2003	
Start Time	8:08	12:37	AVERAGE
Stop Time	12:08	16:37	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	25.00	25.00	25.00
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	84.8	85.8	85.3
Volume Metered (acf)	205.102	199.594	202.348
Volume Metered (dscf)	167.943	163.098	165.520
Volume of Water Collected (g)	57.4	53.7	55.6
Volume of Water Collected (scf)	2.706	2.532	2.619
Average Delta H (in. H ₂ O)	1.90	1.80	1.85
AVG SQRT of dH (in. H ₂ O)	1.3779	1.3407	1.3593
Measured Moisture (%)	1.6%	1.5%	1.6%
Saturation Moisture (%)	1.9%	1.8%	1.8%
Moisture Used for Calculations (%)	1.9%	1.8%	1.8%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.67	28.68	28.67
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-5.70	-5.70	-5.70
Stack Pressure (in. Hg)	24.58	24.58	24.58
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.6426	0.6204	0.6315
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.5826	0.5665	0.5746
Stack Temperature Isokinetic Traverse (°F)	57.0	55.5	56.2
Stack Temperature Flow Traverse (°F)	57.0	56.5	56.7
Velocity (ft/sec) Isokinetic Traverse	39.52	38.10	38.81
Velocity (ft/sec) Flow Traverse	35.84	34.82	35.33
Nozzle Diameter (in.)	0.256	0.256	0.256
% Isokinetics	100.31	100.66	100.5
Stack Diameter (in.)	64.75	64.75	64.75
Stack Area (ft ²)	22.87	22.87	22.87
Stack Flow Rate Isokinetic Traverse (acfm)	54,224	52,276	53,250
Stack Flow Rate Flow Traverse (acfm)	49,168	47,777	48,473
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	44,637	43,197	43,917
Stack Flow Rate Outlet Flow Traverse (dscfm)	40,472	39,406	39,939
Chlorine			
Collected Cl. micrograms (ug)	27.6	499.0	263.3
Cl ₂ Concentration (ug/dscf)	0.16	3.06	1.61
Cl ₂ Concentration (ppb)	2	37	19
Cl ₂ Emission Rate (lbs/hr)	0.0009	0.0159	0.0084

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/11/2003
Unit Number:	11s.1.3	Stack Diameter (in.):	64.75
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.7
Run No.:	1	Operators:	PER/BDS
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	25.00
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.9 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	7:54	
	End:	8:03	

Northwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.30	57
2	0.33	57
3	0.33	57
4	0.34	57
5	0.34	57
6	0.37	57
7	0.41	57
8	0.37	57
9	0.33	57
10	0.30	57
11	0.26	57
12	0.23	57

Southwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.33	57
2	0.38	57
3	0.39	57
4	0.39	57
5	0.36	57
6	0.36	57
7	0.37	57
8	0.36	57
9	0.36	57
10	0.35	57
11	0.34	57
12	0.28	57
Total Average:	sqrt dp = 0.5826	57.0

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/11/2003
Unit Number:	11s.1.3	Stack Diameter (in.):	64.75
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	5.68
Run No.:	2	Operators:	PER/BDS
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	25.00
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.8 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	12:17	
	End:	12:32	

Northwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.27	56
2	0.29	56
3	0.29	56
4	0.33	56
5	0.35	56
6	0.34	56
7	0.37	56
8	0.28	56
9	0.21	57
10	0.23	56
11	0.24	56
12	0.23	57

Southwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.38	58
2	0.40	57
3	0.38	56
4	0.36	56
5	0.35	56
6	0.35	56
7	0.34	57
8	0.37	56
9	0.34	56
10	0.37	56
11	0.36	57
12	0.33	60
Total Average:	sqrt dp = 0.5665	56.5

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 South						Leak Check Initial:	0.002	cfm@	15.5	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.001	cfm@	3	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points	24	Impinger	1	Initial	540.8	Final	598.1
Sampling Location:	11s.1.3								2		731.2		758.3	
Date:	9/11/2003								3		536.6		513.6	
Technicians:	PER/BDS								4		650.5		654.6	
Meter Box No.:	90401						Y_d:	1.006			5		665.0	663.4
Probe / Pitot No	301 / HA-1	C_p:	0.84			6		834.6	828.1					
Nozzle No.:	NA	dH_g:	1.725	Stack Dia. (in.):	64.75	Stack Area (ft²):	22.87	Start Time:	8:08	Net Impinger Gain (g):	57.4			
Nozzle Dia:	0.256	0.256, 0.257, 0.256		Port Width (in.):	4.00	Port Length (in.):	4.00	End Time:	12:08	Theta	240			
Initial Meter Reading (ft³):	301.35	BP (in. Hg):	25.00	Static Pressure (in.):	-5.7									
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
NW 7	10	57	72	71	0.420	1.75	309.500	238	254	51	2			
NW 7	20	57	86	72	0.420	1.90	317.870	236	256	52	2			
NW 7	30	57	88	73	0.420	1.95	326.440	237	255	49	2			
NW 7	40	57	90	74	0.420	1.95	334.980	238	255	49	2			
NW 7	50	57	92	76	0.410	1.90	343.500	240	255	47	2			
NW 7	60	57	94	79	0.410	1.90	352.010	240	256	48	2			
NW 7	70	57	94	80	0.410	1.90	360.490	248	256	48	2			
NW 7	80	57	92	80	0.410	1.90	369.320	249	255	48	2			
NW 7	90	57	92	80	0.420	1.95	377.930	248	255	49	2			
NW 7	100	57	92	80	0.410	1.90	386.490	248	246	50	2			
NW 7	110	57	91	92	0.410	1.90	395.140	248	246	51	2			
NW 7	120	57	92	79	0.410	1.90	403.630	247	248	51	2			
NW 7	130	57	92	79	0.410	1.90	412.190	248	247	52	2			
NW 7	140	57	92	80	0.410	1.90	420.770	248	247	53	2			
NW 7	150	57	92	80	0.410	1.90	429.310	248	248	51	2			
NW 7	160	57	92	80	0.410	1.90	437.860	248	247	51	2			
NW 7	170	57	92	79	0.410	1.90	446.420	248	247	50	2			
NW 7	180	57	92	79	0.410	1.90	454.980	248	247	47	2			
NW 7	190	57	92	79	0.410	1.90	463.540	247	247	47	2			
NW 7	200	57	92	80	0.410	1.90	472.090	248	247	47	2			
NW 7	210	57	92	80	0.410	1.90	480.630	248	247	47	2			
NW 7	220	57	92	80	0.420	1.90	489.180	247	247	48	2			
NW 7	230	57	93	79	0.420	1.90	497.810	249	248	48	2			
NW 7	240	56	93	80	0.410	1.87	506.452	247	247	48	2			
Average / Net		57.0		84.8	0.4	1.9	205.102	245.5	250.1	49.3	2.0			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2		
Plant Name:	Fab 11 South						Leak Check Initial:	0.002	cfm@	15	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.001	cfm@	5.0	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	11s.1.3								1		585.0		584.1	
Date:	9/11/2003						24		2		627.1		652.8	
Technicians:	PER/BDS								3		644.1		652.0	
Meter Box No.:	90401						Y_d:	1.006			4		644.3	
Probe/Pitot No.:	301 / HA-1	C_p:	0.84			5		639.7						
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	64.75	Stack Area (ft²):	22.87	6		906.6		927.3		
Nozzle Dia:	0.256	0.256, 0.257, 0.256	Port Width (in.):	4.00	Port Length (in.):	4.00	Start Time:	12:37	Net Impinger Gain (g):	53.7				
Initial Meter Reading (ft³):	506.724	BP (in. Hg):	25.00	Static Pressure (in.):	-5.7	End Time:	16:37	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
NW 7	10	57	80	79	0.400	1.80	515.110	228	240	61	3.0			
NW 7	20	56	83	77	0.400	1.80	523.440	233	239	56	3.0			
NW 7	30	56	90	77	0.400	1.81	531.770	233	239	53	3.0			
NW 7	40	55	90	77	0.400	1.82	540.170	233	238	51	3.0			
NW 7	50	56	92	78	0.400	1.85	548.560	235	241	48	3.0			
NW 7	60	56	93	79	0.390	1.85	556.950	243	240	47	3.0			
NW 7	70	56	92	79	0.390	1.85	565.370	241	247	47	3.0			
NW 7	80	56	93	79	0.390	1.85	573.710	246	247	46	3.0			
NW 7	90	56	94	80	0.380	1.85	582.070	247	248	48	3.0			
NW 7	100	56	93	81	0.390	1.85	590.430	246	248	47	3.0			
NW 7	110	56	93	80	0.390	1.85	598.850	247	247	49	3.0			
NW 7	120	55	94	80	0.370	1.80	607.130	247	247	49	3.0			
NW 7	130	56	93	80	0.370	1.70	615.360	242	247	50	3.0			
NW 7	140	55	93	80	0.380	1.70	623.580	247	248	51	3.0			
NW 7	150	55	93	81	0.380	1.75	631.800	247	247	51	3.0			
NW 7	160	55	93	81	0.380	1.85	640.240	247	247	52	3.0			
NW 7	170	55	93	81	0.380	1.80	648.480	247	247	50	3.0			
NW 7	180	55	93	81	0.370	1.75	656.730	247	248	49	3.0			
NW 7	190	55	93	81	0.380	1.80	664.970	247	248	49	3.0			
NW 7	200	55	93	80	0.380	1.80	673.300	247	248	49	3.0			
NW 7	210	55	93	81	0.380	1.80	681.430	247	248	49	3.0			
NW 7	220	55	93	81	0.380	1.74	689.800	247	248	50	3.0			
NW 7	230	55	93	81	0.370	1.69	698.110	247	246	50	3.0			
NW 7	240	55	93	81	0.390	1.79	706.318	247	247	50	3.0			
Average / Net		55.5		85.8	0.4	1.8	199.594	243.3	245.4	50.1	3.0			

EPA REFERENCE METHOD 1

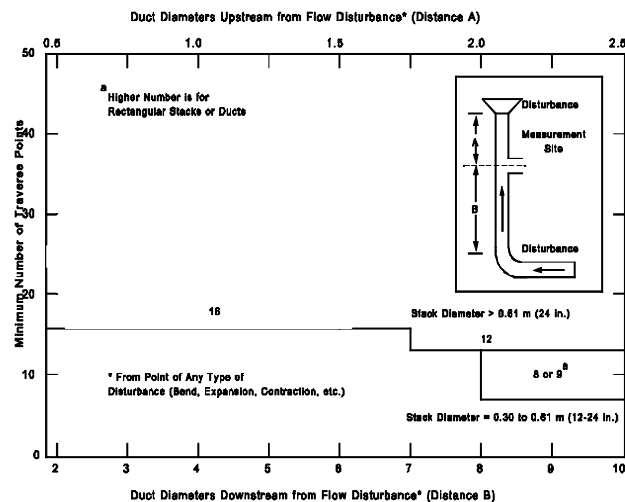
FIELD DATA SHEET

CIRCULAR STACKS

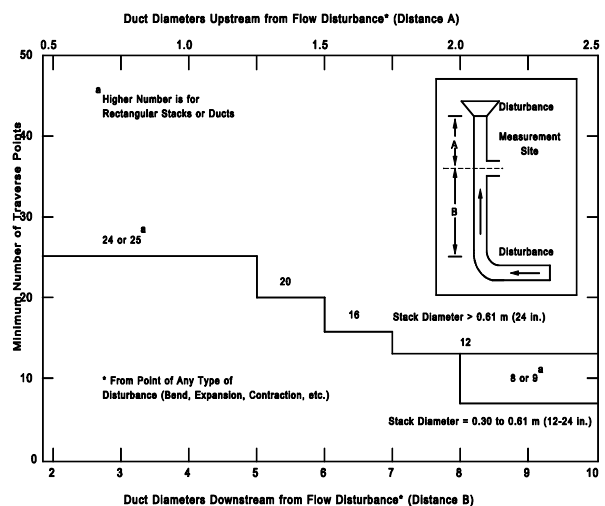
Firm Name: **INTEL**
 Plant Location: **Rio Rancho, NM**
 Sampling Location: **11s.1.3**
 TRC Project No.: **31397-1600-00000**
 Date: **9/11/2003**
 Technician: **B. Bauer**
 Circular/Rectangular: **C**

Stack Diameter: **59.0**
 Sample Port Diameter: **3.0**
 Sample Port Depth: **4.5**
 Diameters Upstream: **4.4**
 Diameters Downstream: **4.9**
 Flow or Particulate Test: **P**
 Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	5 12/16
2	8 7/16
3	11 7/16
4	14 15/16
5	19 4/16
6	25 8/16
7	42 8/16
8	48 12/16
9	53 1/16
10	56 9/16
11	59 9/16
12	62 4/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 11s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_5 09 12 03 SAMPLE RUN1_0003.LAB	9/12/2003 7:48	ND	ND	ND	ND	ND	2.03	382.36	ND	ND	149.76	1.09
11S_1_5 09 12 03 SAMPLE RUN1_0004.LAB	9/12/2003 7:51	ND	ND	ND	ND	ND	2.04	382.58	ND	ND	149.76	1.09
11S_1_5 09 12 03 SAMPLE RUN1_0005.LAB	9/12/2003 7:53	ND	ND	ND	ND	ND	2.04	381.84	ND	ND	149.76	1.08
11S_1_5 09 12 03 SAMPLE RUN1_0006.LAB	9/12/2003 7:56	ND	ND	ND	ND	ND	2.03	381.08	ND	ND	149.76	1.08
11S_1_5 09 12 03 SAMPLE RUN1_0007.LAB	9/12/2003 7:59	ND	ND	ND	ND	ND	2.03	380.86	ND	ND	149.76	1.08
11S_1_5 09 12 03 SAMPLE RUN1_0008.LAB	9/12/2003 8:01	ND	ND	ND	ND	ND	2.18	410.70	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0009.LAB	9/12/2003 8:04	ND	ND	ND	ND	ND	2.07	392.08	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0010.LAB	9/12/2003 8:06	ND	ND	ND	ND	ND	2.06	390.97	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0011.LAB	9/12/2003 8:09	ND	ND	ND	ND	ND	2.06	391.26	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0012.LAB	9/12/2003 8:12	ND	ND	ND	ND	ND	2.05	388.52	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0013.LAB	9/12/2003 8:14	ND	ND	ND	ND	ND	2.04	386.83	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0014.LAB	9/12/2003 8:17	ND	ND	ND	ND	ND	2.03	384.11	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0015.LAB	9/12/2003 8:19	ND	ND	ND	ND	ND	2.04	386.93	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0016.LAB	9/12/2003 8:22	ND	ND	ND	ND	ND	2.04	388.14	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0017.LAB	9/12/2003 8:25	ND	ND	ND	ND	ND	2.04	388.57	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0018.LAB	9/12/2003 8:27	ND	ND	ND	ND	ND	2.04	388.98	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0019.LAB	9/12/2003 8:30	ND	ND	ND	ND	ND	2.04	389.68	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0020.LAB	9/12/2003 8:32	ND	ND	ND	ND	ND	2.04	390.02	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0021.LAB	9/12/2003 8:35	ND	ND	ND	ND	ND	2.04	388.97	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0022.LAB	9/12/2003 8:38	ND	ND	ND	ND	ND	2.04	388.95	ND	ND	149.76	0.98
11S_1_5 09 12 03 SAMPLE RUN1_0023.LAB	9/12/2003 8:40	ND	ND	ND	ND	ND	2.03	391.72	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0024.LAB	9/12/2003 8:43	ND	ND	ND	ND	ND	2.04	395.12	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0025.LAB	9/12/2003 8:45	ND	ND	ND	ND	ND	2.06	400.08	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0026.LAB	9/12/2003 8:48	ND	ND	ND	ND	ND	2.08	406.33	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0027.LAB	9/12/2003 8:51	ND	ND	ND	ND	ND	2.07	405.76	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0028.LAB	9/12/2003 8:53	ND	ND	ND	ND	ND	2.08	407.06	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0029.LAB	9/12/2003 8:56	ND	ND	ND	ND	ND	2.07	406.29	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0030.LAB	9/12/2003 8:58	ND	ND	371.13	ND	ND	2.73	409.19	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0031.LAB	9/12/2003 9:01	ND	ND	443.52	ND	ND	3.46	403.14	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0032.LAB	9/12/2003 9:04	ND	ND	ND	ND	ND	2.22	409.68	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0033.LAB	9/12/2003 9:06	ND	ND	ND	ND	ND	2.10	408.27	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0034.LAB	9/12/2003 9:09	ND	ND	ND	ND	ND	2.13	411.96	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0035.LAB	9/12/2003 9:11	ND	ND	ND	ND	ND	2.14	410.22	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0036.LAB	9/12/2003 9:14	ND	ND	ND	ND	ND	2.15	410.05	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0037.LAB	9/12/2003 9:17	ND	ND	ND	ND	ND	2.16	410.52	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0038.LAB	9/12/2003 9:19	ND	ND	ND	ND	ND	2.17	412.45	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0039.LAB	9/12/2003 9:22	ND	ND	ND	ND	ND	2.18	413.36	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0040.LAB	9/12/2003 9:24	ND	ND	363.65	ND	ND	2.18	413.25	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0041.LAB	9/12/2003 9:27	ND	ND	383.43	ND	ND	2.19	412.55	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0042.LAB	9/12/2003 9:30	ND	ND	387.35	ND	ND	2.20	411.43	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0043.LAB	9/12/2003 9:32	ND	ND	392.48	ND	ND	2.20	409.67	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0044.LAB	9/12/2003 9:35	ND	ND	380.35	ND	ND	2.21	407.47	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0045.LAB	9/12/2003 9:37	ND	ND	485.18	ND	ND	2.91	403.15	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0046.LAB	9/12/2003 9:40	ND	ND	389.17	ND	ND	2.29	404.44	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0047.LAB	9/12/2003 9:43	ND	ND	366.05	ND	ND	2.14	403.16	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0048.LAB	9/12/2003 9:45	ND	ND	360.43	ND	ND	2.17	408.29	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0049.LAB	9/12/2003 9:48	ND	ND	363.83	ND	ND	2.15	405.10	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0050.LAB	9/12/2003 9:50	ND	ND	352.28	ND	ND	2.15	404.63	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0051.LAB	9/12/2003 9:53	ND	ND	355.77	ND	ND	2.14	402.07	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0052.LAB	9/12/2003 9:56	ND	ND	345.64	ND	ND	2.16	405.37	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0053.LAB	9/12/2003 9:58	ND	ND	351.99	ND	ND	2.16	404.12	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0054.LAB	9/12/2003 10:01	ND	ND	349.70	ND	ND	2.15	401.45	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0055.LAB	9/12/2003 10:03	ND	ND	ND	ND	ND	2.13	384.59	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0056.LAB	9/12/2003 10:06	ND	ND	354.93	ND	ND	2.14	386.39	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0057.LAB	9/12/2003 10:09	ND	ND	ND	ND	ND	2.13	388.62	ND	ND	149.76	1.00

TRC Environmental Corporaiton
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_5 09 12 03 SAMPLE RUN1_0058.LAB	9/12/2003 10:11	ND	ND	ND	ND	ND	2.14	391.46	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0059.LAB	9/12/2003 10:14	ND	ND	ND	ND	ND	2.31	394.92	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0060.LAB	9/12/2003 10:16	ND	ND	454.24	ND	ND	3.33	392.54	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0061.LAB	9/12/2003 10:19	ND	ND	ND	ND	ND	2.26	394.93	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0062.LAB	9/12/2003 10:22	ND	ND	ND	ND	ND	2.13	396.15	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0063.LAB	9/12/2003 10:24	ND	ND	ND	ND	ND	2.13	396.02	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0064.LAB	9/12/2003 10:27	ND	ND	ND	ND	ND	2.16	400.61	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0065.LAB	9/12/2003 10:29	ND	ND	ND	ND	ND	2.16	401.08	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0066.LAB	9/12/2003 10:32	ND	ND	ND	ND	ND	2.14	397.84	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0067.LAB	9/12/2003 10:35	ND	ND	ND	ND	ND	2.13	395.49	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0068.LAB	9/12/2003 10:37	ND	ND	ND	ND	ND	2.11	393.13	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0069.LAB	9/12/2003 10:40	ND	ND	ND	ND	ND	2.11	393.42	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0070.LAB	9/12/2003 10:42	ND	ND	ND	ND	ND	2.12	395.71	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0071.LAB	9/12/2003 10:45	ND	ND	ND	ND	ND	2.12	396.47	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0072.LAB	9/12/2003 10:48	ND	ND	ND	ND	ND	2.12	395.90	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0073.LAB	9/12/2003 10:50	ND	ND	ND	ND	ND	2.12	396.53	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0074.LAB	9/12/2003 10:53	ND	ND	ND	ND	ND	2.13	399.65	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0075.LAB	9/12/2003 10:55	ND	ND	ND	ND	ND	2.11	397.78	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0076.LAB	9/12/2003 10:58	ND	ND	ND	ND	ND	2.11	397.26	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0077.LAB	9/12/2003 11:01	ND	ND	ND	ND	ND	2.11	397.28	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0078.LAB	9/12/2003 11:03	ND	ND	ND	ND	ND	2.10	395.81	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0079.LAB	9/12/2003 11:06	ND	ND	ND	ND	ND	2.11	397.21	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0080.LAB	9/12/2003 11:08	ND	ND	ND	ND	ND	2.11	396.71	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0081.LAB	9/12/2003 11:11	ND	ND	ND	ND	ND	2.11	396.13	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0082.LAB	9/12/2003 11:14	ND	ND	ND	ND	ND	2.12	397.16	ND	ND	151.25	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0083.LAB	9/12/2003 11:16	ND	ND	ND	ND	ND	2.12	398.00	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN1_0084.LAB	9/12/2003 11:19	ND	ND	ND	ND	ND	2.11	395.58	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0085.LAB	9/12/2003 11:21	ND	ND	ND	ND	ND	2.11	395.97	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0086.LAB	9/12/2003 11:24	ND	ND	ND	ND	ND	2.10	394.40	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0087.LAB	9/12/2003 11:27	ND	ND	ND	ND	ND	2.11	396.02	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0088.LAB	9/12/2003 11:29	ND	ND	ND	ND	ND	2.11	395.82	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0089.LAB	9/12/2003 11:32	ND	ND	ND	ND	ND	2.10	393.25	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0090.LAB	9/12/2003 11:34	ND	ND	ND	ND	ND	2.11	395.04	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0091.LAB	9/12/2003 11:37	ND	ND	ND	ND	ND	2.11	394.80	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0092.LAB	9/12/2003 11:40	ND	ND	ND	ND	ND	2.11	394.74	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN1_0093.LAB	9/12/2003 11:42	ND	ND	ND	ND	ND	2.10	393.89	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0010.LAB	9/12/2003 12:32	ND	ND	ND	ND	ND	2.08	390.44	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0011.LAB	9/12/2003 12:35	ND	ND	ND	ND	ND	2.08	391.52	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0012.LAB	9/12/2003 12:37	ND	ND	ND	ND	ND	2.08	393.51	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0013.LAB	9/12/2003 12:40	ND	ND	ND	ND	ND	2.09	394.54	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0014.LAB	9/12/2003 12:42	ND	ND	ND	ND	ND	2.09	395.72	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0015.LAB	9/12/2003 12:45	ND	ND	ND	ND	ND	2.09	396.57	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0016.LAB	9/12/2003 12:48	ND	ND	ND	ND	ND	2.09	396.70	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0017.LAB	9/12/2003 12:50	ND	ND	ND	ND	ND	2.11	396.30	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0018.LAB	9/12/2003 12:53	ND	ND	ND	ND	ND	2.14	396.26	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0019.LAB	9/12/2003 12:55	ND	ND	ND	ND	ND	2.98	391.93	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0020.LAB	9/12/2003 12:58	ND	ND	ND	ND	ND	2.76	392.85	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0021.LAB	9/12/2003 13:01	ND	ND	ND	ND	ND	2.19	396.32	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0022.LAB	9/12/2003 13:03	ND	ND	ND	ND	ND	2.17	394.41	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0023.LAB	9/12/2003 13:06	ND	ND	ND	ND	ND	2.19	396.47	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0024.LAB	9/12/2003 13:08	ND	ND	ND	ND	ND	2.19	396.08	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0025.LAB	9/12/2003 13:11	ND	ND	ND	ND	ND	2.18	394.19	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0026.LAB	9/12/2003 13:14	ND	ND	ND	ND	ND	2.18	394.31	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0027.LAB	9/12/2003 13:16	ND	ND	ND	ND	ND	2.20	395.72	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0028.LAB	9/12/2003 13:19	ND	ND	ND	ND	ND	2.20	395.21	ND	ND	149.76	0.99

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Scrubber Outlet 11s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_5 09 12 03 SAMPLE RUN 2_0029.LAB	9/12/2003 13:21	ND	ND	ND	ND	ND	2.19	392.52	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0030.LAB	9/12/2003 13:24	ND	ND	ND	ND	ND	2.20	394.18	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0031.LAB	9/12/2003 13:27	ND	ND	ND	ND	ND	2.21	394.40	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0032.LAB	9/12/2003 13:29	ND	ND	ND	ND	ND	2.22	395.58	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0033.LAB	9/12/2003 13:32	ND	ND	ND	ND	ND	2.24	395.34	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0034.LAB	9/12/2003 13:34	ND	ND	ND	ND	ND	2.25	393.03	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0035.LAB	9/12/2003 13:37	ND	ND	ND	ND	ND	2.26	393.34	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0036.LAB	9/12/2003 13:40	ND	ND	ND	ND	ND	2.27	393.92	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0037.LAB	9/12/2003 13:42	ND	ND	ND	ND	ND	2.29	396.43	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0038.LAB	9/12/2003 13:45	ND	ND	ND	ND	ND	2.28	395.61	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0039.LAB	9/12/2003 13:47	ND	ND	ND	ND	ND	2.27	394.92	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0040.LAB	9/12/2003 13:50	ND	ND	ND	ND	ND	2.27	394.99	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0041.LAB	9/12/2003 13:53	ND	ND	ND	ND	ND	2.28	396.13	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0042.LAB	9/12/2003 13:55	ND	ND	ND	ND	ND	2.28	395.02	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0043.LAB	9/12/2003 13:58	ND	ND	ND	ND	ND	2.29	397.04	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0044.LAB	9/12/2003 14:00	ND	ND	ND	ND	ND	2.29	396.42	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0045.LAB	9/12/2003 14:03	ND	ND	ND	ND	ND	2.28	395.00	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0046.LAB	9/12/2003 14:06	ND	ND	ND	ND	ND	2.28	394.84	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0047.LAB	9/12/2003 14:08	ND	ND	ND	ND	ND	2.29	396.95	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0048.LAB	9/12/2003 14:11	ND	ND	ND	ND	ND	2.29	396.96	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0049.LAB	9/12/2003 14:13	ND	ND	ND	ND	ND	2.28	394.53	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0050.LAB	9/12/2003 14:16	ND	ND	ND	ND	ND	2.29	396.17	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0051.LAB	9/12/2003 14:19	ND	ND	ND	ND	ND	2.28	394.06	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0052.LAB	9/12/2003 14:21	ND	ND	ND	ND	ND	2.28	393.97	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0053.LAB	9/12/2003 14:24	ND	ND	ND	ND	ND	2.27	392.60	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0054.LAB	9/12/2003 14:26	ND	ND	ND	ND	ND	2.28	393.94	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0055.LAB	9/12/2003 14:29	ND	ND	ND	ND	ND	2.28	393.19	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0056.LAB	9/12/2003 14:32	ND	ND	ND	ND	ND	2.26	390.16	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0057.LAB	9/12/2003 14:34	ND	ND	ND	ND	ND	2.26	390.11	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0058.LAB	9/12/2003 14:37	ND	ND	ND	ND	ND	2.27	393.48	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0059.LAB	9/12/2003 14:39	ND	ND	ND	ND	ND	2.27	393.57	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0060.LAB	9/12/2003 14:42	ND	ND	ND	ND	ND	2.27	393.75	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0061.LAB	9/12/2003 14:45	ND	ND	ND	ND	ND	2.26	393.07	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0062.LAB	9/12/2003 14:47	ND	ND	ND	ND	ND	2.23	389.84	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0063.LAB	9/12/2003 14:50	ND	ND	ND	ND	ND	2.26	392.40	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0064.LAB	9/12/2003 14:52	ND	ND	ND	ND	ND	2.25	392.89	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0065.LAB	9/12/2003 14:55	ND	ND	ND	ND	ND	2.25	390.72	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0066.LAB	9/12/2003 14:58	ND	ND	359.84	ND	ND	2.25	391.56	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0067.LAB	9/12/2003 15:00	ND	ND	395.51	ND	ND	2.21	390.29	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0068.LAB	9/12/2003 15:03	ND	ND	430.77	ND	ND	2.22	392.23	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0069.LAB	9/12/2003 15:05	ND	ND	469.76	ND	ND	2.27	392.22	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0070.LAB	9/12/2003 15:08	ND	ND	503.99	ND	ND	2.25	389.38	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0071.LAB	9/12/2003 15:11	ND	ND	547.12	ND	ND	2.26	391.26	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0072.LAB	9/12/2003 15:13	ND	ND	578.97	ND	ND	2.25	390.28	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0073.LAB	9/12/2003 15:16	ND	ND	604.49	ND	ND	2.24	387.67	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0074.LAB	9/12/2003 15:19	ND	ND	641.03	ND	ND	2.25	390.93	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0075.LAB	9/12/2003 15:21	ND	ND	658.88	ND	ND	2.24	391.07	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0076.LAB	9/12/2003 15:24	ND	ND	695.61	ND	ND	2.25	393.35	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0077.LAB	9/12/2003 15:26	ND	ND	724.86	ND	ND	2.25	392.63	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0078.LAB	9/12/2003 15:29	ND	ND	748.42	ND	ND	2.25	391.92	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0079.LAB	9/12/2003 15:32	ND	ND	769.39	ND	ND	2.24	389.32	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0080.LAB	9/12/2003 15:35	ND	ND	758.68	ND	ND	2.25	391.31	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0081.LAB	9/12/2003 15:37	ND	ND	714.84	ND	ND	2.25	391.51	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0082.LAB	9/12/2003 15:40	ND	ND	666.24	ND	ND	2.26	392.88	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0083.LAB	9/12/2003 15:43	ND	ND	629.30	ND	ND	2.23	389.04	ND	ND	149.76	1.00

Scrubber Outlet 11s.1.5 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_5 09 12 03 SAMPLE RUN 2_0084.LAB	9/12/2003 15:45	ND	ND	602.47	ND	ND	2.26	385.11	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0085.LAB	9/12/2003 15:48	ND	ND	592.94	ND	ND	2.25	383.97	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0086.LAB	9/12/2003 15:50	ND	ND	567.99	ND	ND	2.25	383.68	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0087.LAB	9/12/2003 15:53	ND	ND	553.90	ND	ND	2.24	386.68	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0088.LAB	9/12/2003 15:56	ND	ND	521.87	ND	ND	2.24	388.39	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0089.LAB	9/12/2003 15:58	ND	ND	511.25	ND	ND	2.26	388.63	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0090.LAB	9/12/2003 16:01	ND	ND	490.08	ND	ND	2.22	388.71	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0091.LAB	9/12/2003 16:03	ND	ND	484.70	ND	ND	2.27	390.55	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0092.LAB	9/12/2003 16:06	ND	ND	486.59	ND	ND	2.25	390.24	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0093.LAB	9/12/2003 16:09	ND	ND	479.18	ND	ND	2.25	390.58	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0094.LAB	9/12/2003 16:11	ND	ND	485.83	ND	ND	2.25	390.47	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0095.LAB	9/12/2003 16:14	ND	ND	479.37	ND	ND	2.27	392.36	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0096.LAB	9/12/2003 16:16	ND	ND	469.46	ND	ND	2.27	392.16	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0097.LAB	9/12/2003 16:19	ND	ND	453.39	ND	ND	2.22	390.35	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0098.LAB	9/12/2003 16:22	ND	ND	457.02	ND	ND	2.23	392.13	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0099.LAB	9/12/2003 16:24	ND	ND	469.95	ND	ND	2.28	392.43	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0100.LAB	9/12/2003 16:27	ND	ND	433.95	ND	ND	2.22	391.05	ND	ND	149.76	1.00
11S_1_5 09 12 03 SAMPLE RUN 2_0101.LAB	9/12/2003 16:29	ND	ND	439.41	ND	ND	2.24	393.98	ND	ND	149.76	0.99
11S_1_5 09 12 03 SAMPLE RUN 2_0102.LAB	9/12/2003 16:32	ND	ND	450.55	ND	ND	2.27	393.74	ND	ND	149.76	1.00
Average _{wet}		ND	ND	386.30	ND	ND	2.20	395.16	ND	ND	149.77	0.997

Reference Method Calculations

Fab 11 South

11s.1.5

Run No.	Run 1	Run 2	
Date	9/12/2003	9/12/2003	
Start Time	7:48	12:21	AVERAGE
Stop Time	11:48	16:42	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	25.00	25.00	25.00
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Average Meter Temperature (°F)	86.2	88.0	87.1
Volume Metered (acf)	191.087	191.692	191.390
Volume Metered (dscf)	154.856	154.842	154.849
Volume of Water Collected (g)	54.2	53.5	53.9
Volume of Water Collected (scf)	2.556	2.523	2.539
Average Delta H (in. H ₂ O)	1.58	1.59	1.59
AVG SQRT of dH (in. H ₂ O)	1.2581	1.2616	1.2598
Measured Moisture (%)	1.6%	1.6%	1.6%
Saturation Moisture (%)	1.7%	1.7%	1.7%
Moisture Used for Calculations (%)	1.7%	1.7%	1.7%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.67	28.67	28.67
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-5.70	-5.70	-5.70
Stack Pressure (in. Hg)	24.58	24.58	24.58
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5888	0.5852	0.5870
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.5746	0.5659	0.5703
Stack Temperature Isokinetic Traverse (°F)	53.9	53.9	53.9
Stack Temperature Flow Traverse (°F)	56.7	55.4	56.1
Velocity (ft/sec) Isokinetic Traverse	36.11	35.89	36.00
Velocity (ft/sec) Flow Traverse	35.34	34.76	35.05
Nozzle Diameter (in.)	0.256	0.256	0.256
% Isokinetics	100.43	101.04	100.7
Stack Diameter (in.)	64.75	64.75	64.75
Stack Area (ft ²)	22.87	22.87	22.87
Stack Flow Rate Isokinetic Traverse (acfm)	49,538	49,238	49,388
Stack Flow Rate Flow Traverse (acfm)	48,481	47,684	48,083
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	41,107	40,858	40,983
Stack Flow Rate Outlet Flow Traverse (dscfm)	40,010	39,451	39,730
Chlorine			
Collected Cl. micrograms (ug)	2030.0	740.0	1385.0
Cl ₂ Concentration (ug/dscf)	13.11	4.78	8.94
Cl ₂ Concentration (ppb)	157	57	107
Cl ₂ Emission Rate (lbs/hr)	0.0694	0.0249	0.0472

TRC Environmental Corporation
Measurement Division
Littleton, Colorado
Project No. 31397-1600-00000

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/12/2003
Unit Number:	11s.1.5	Stack Diameter (in.):	64.75
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.8
Run No.:	1	Operators:	PER/BDS
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	25.00
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.7 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	7:25	
	End:	7:38	

NorthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.26	57
2	0.31	57
3	0.34	56
4	0.35	56
5	0.34	56
6	0.32	55
7	0.35	55
8	0.38	55
9	0.38	55
10	0.34	55
11	0.32	57
12	0.37	61

SouthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.38	58
2	0.41	57
3	0.39	56
4	0.38	56
5	0.31	55
6	0.29	55
7	0.29	55
8	0.28	55
9	0.28	55
10	0.26	54
11	0.36	62
12	0.27	68
Total Average:	sqrt dp = 0.5746	56.7

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/12/2003
Unit Number:	11s.1.5	Stack Diameter (in.):	64.75
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.7
Run No.:	2	Operators:	PER/BDS
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	25.00
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.7 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
	Pass	Fail	
	Pitot Leak Check	<u>Y</u>	___
	Start:	12:02	
	End:	12:14	

NorthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.25	60
2	0.28	57
3	0.29	56
4	0.30	55
5	0.31	55
6	0.30	55
7	0.34	55
8	0.35	55
9	0.36	55
10	0.34	55
11	0.29	55
12	0.29	55

SouthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.39	57
2	0.36	55
3	0.43	55
4	0.43	55
5	0.39	55
6	0.30	55
7	0.31	55
8	0.30	55
9	0.30	55
10	0.31	55
11	0.25	55
12	0.26	55
Total Average:	sqrt dp = 0.5659	55.4

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 South						Leak Check Initial:	0.006	cfm@	15	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.004	cfm@	5	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points	24	Impinger	1	Initial	634.5	Final	646.9
Sampling Location:	11s.1.5								2	742.9		760.5		
Date:	9/12/2003								3	537.8		544.3		
Technicians:	SCT/BMB								4	630.2		634.3		
Meter Box No.:	90394						Y_d:	0.999			5	665.2		665.9
Probe / Pitot No	401 / HA-1	C_p:	0.84			6	800.1		813.0					
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	64.75	Stack Area (ft²):	22.87	Start Time:	7:48	Net Impinger Gain (g):	54.2			
Nozzle Dia:	0.256	0.256, 0.257, 0.256	Port Width (in.):	4.00	Port Length (in.):	4.00	End Time:	11:48	Theta	240				
Initial Meter Reading (ft³):	142.432	BP (in. Hg):	25.00	Static Pressure (in.):	-5.7									
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
NW4	10	55	72	72	0.360	1.60	150.320	244	229	60	3			
NW4	20	54	76	72	0.350	1.56	158.160	235	231	56	2			
NW4	30	54	83	73	0.350	1.57	165.970	234	229	54	2			
NW4	40	54	86	75	0.350	1.58	173.750	234	229	50	2			
NW4	50	53	88	77	0.350	1.59	181.680	234	228	48	2			
NW4	60	53	90	78	0.350	1.60	189.610	234	234	48	2			
NW4	70	53	91	80	0.350	1.60	197.590	234	235	48	2			
NW4	80	53	92	81	0.350	1.60	205.580	235	236	48	2			
NW4	90	54	93	82	0.350	1.60	213.690	234	234	48	2			
NW4	100	54	93	83	0.350	1.60	221.780	235	233	48	2			
NW4	110	54	94	83	0.340	1.56	229.870	235	235	48	2			
NW4	120	54	94	84	0.340	1.56	237.750	235	234	48	2			
NW4	130	54	94	84	0.340	1.56	245.620	235	234	49	2			
NW4	140	54	94	84	0.340	1.56	253.510	235	234	49	2			
NW4	150	54	94	84	0.350	1.61	261.390	235	235	50	2			
NW4	160	54	94	84	0.340	1.56	269.350	235	236	51	2			
NW4	170	54	94	85	0.350	1.61	277.430	235	234	53	2			
NW4	180	54	94	85	0.350	1.61	285.430	236	234	49	2			
NW4	190	54	94	85	0.350	1.61	293.430	235	235	44	2			
NW4	200	54	94	85	0.350	1.61	301.440	235	234	43	2			
NW4	210	54	94	85	0.340	1.56	309.490	236	235	43	2			
NW4	220	54	94	85	0.340	1.56	317.500	235	234	44	2			
NW4	230	54	94	85	0.340	1.56	325.500	235	235	44	2			
NW4	240	54	94	85	0.340	1.56	333.519	235	234	44	2			
Average / Net		53.9		86.2	0.3	1.6	191.087	235.2	233.4	48.6	2.0			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic loss of 1min due to GFI cicuit tripped					Sample Train No.	SF	Filter No.:	NA	Run No.:	2
Plant Name:	Fab 11 South						Leak Check Initial:	0.006	cfm@	15	(in. Hg)	
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.008	cfm@	10.0	(in. Hg)	
Project No.:	31397-1600-00000						Total Traverse Points	24	Impinger	Initial	Final	
Sampling Location:	11s.1.5								1	597.9	598.8	
Date:	9/12/2003								2	642.5	664.8	
Technicians:	SCT/BMB								3	645.6	650.3	
Meter Box No.:	90394						Y_d:	0.999			4	643.1
Probe/Pitot No.:	401 / HA-1	C_p:	0.84			5	650.4	654.7				
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	64.75	Stack Area (ft²):	22.87	6	913.9	936.6		
Nozzle Dia:	0.256	0.256, 0.257, 0.256	Port Width (in.):	4.00	Port Length (in.):	4.00	Start Time:	12:21	Net Impinger Gain (g):	53.5		
Initial Meter Reading (ft³):	334.992	BP (in. Hg):	25.00	Static Pressure (in.):	-5.7	End Time:	16:42	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
NW4	10	54	82	82	0.340	1.60	342.700	230	240	55	3.0	
NW4	20	54	85	81	0.350	1.60	350.700	243	239	51	3.0	
NW4	30	54	90	81	0.350	1.65	358.900	243	238	48	3.0	
NW4	40	54	91	81	0.350	1.65	367.070	248	247	45	3.0	
NW4	50	54	92	82	0.350	1.60	375.230	248	247	44	3.0	
NW4	60	54	93	82	0.340	1.60	383.260	248	247	44	3.0	
NW4	70	54	93	83	0.340	1.60	391.310	247	247	43	3.0	
NW4	80	54	93	83	0.340	1.60	399.330	247	248	43	3.0	
NW4	90	54	93	84	0.340	1.60	407.330	248	247	44	3.0	
NW4	100	54	93	84	0.350	1.61	415.310	247	247	44	3.0	
NW4	110	54	93	84	0.340	1.56	423.290	248	248	45	3.0	
NW4	120	54	93	84	0.350	1.61	431.270	247	248	45	3.0	
NW4	130	54	94	84	0.340	1.56	439.240	247	247	46	3.0	
NW4	140	54	94	84	0.340	1.56	447.210	248	247	47	3.0	
NW4	150	54	94	84	0.340	1.56	455.180	248	249	47	3.0	
NW4	160	54	94	84	0.340	1.56	463.240	248	247	49	3.0	
NW4	170	54	94	85	0.340	1.57	471.110	248	247	50	3.0	
NW4	180	54	94	85	0.340	1.57	479.070	248	247	50	3.0	
NW4	190	54	94	85	0.340	1.57	487.020	248	247	51	3.0	
NW4	200	54	94	85	0.340	1.57	494.350	248	248	52	3.0	
NW4	210	53	93	85	0.340	1.60	502.460	248	246	53	3.0	
NW4	220	54	92	85	0.340	1.60	510.560	249	248	55	3.0	
NW4	230	53	93	85	0.340	1.60	518.640	248	248	55	3.0	
NW4	240	53	94	85	0.340	1.60	526.684	247	247	57	3.0	
Average / Net		53.9		88.0	0.3	1.6	191.692	246.6	246.3	48.5	3.0	

EPA REFERENCE METHOD 1

FIELD DATA SHEET

CIRCULAR STACKS

Firm Name: **INTEL**

Plant Location: **Rio Rancho, NM**

Sampling Location: **11s.1.5**

TRC Project No.: **31397-1600-00000**

Date: **9/12/2003**

Technician: **B. Bauer**

Circular/Rectangular: **C**

Stack Diameter: **59.0**

Sample Port Diameter: **3.0**

Sample Port Depth: **4.5**

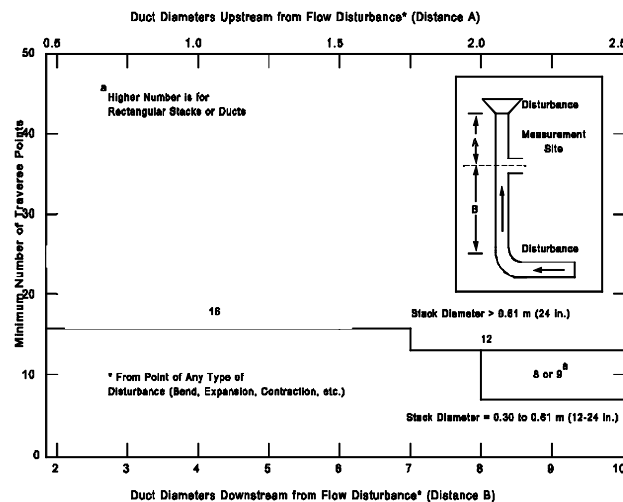
Diameters Upstream: **4.4**

Diameters Downstream: **4.8**

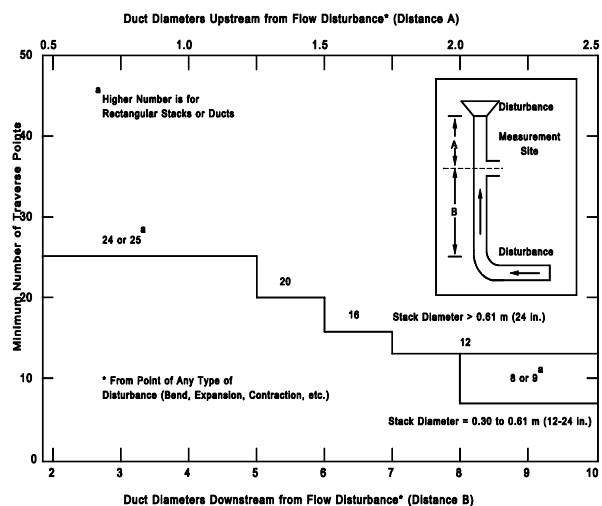
Flow or Particulate Test: **P**

Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	5 12/16
2	8 7/16
3	11 7/16
4	14 15/16
5	19 4/16
6	25 8/16
7	42 8/16
8	48 12/16
9	53 1/16
10	56 9/16
11	59 9/16
12	62 4/16
13	
14	
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16	
17	
18	
19	
20	
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23	
24	

Scrubber Outlet 11s.1.7 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_7 09 15 03 RUN 1 SAMPLE_0007.LAB	9/15/2003 7:52	ND	ND	821.91	552.13	ND	2.13	386.13	ND	36.804	149.76	0.997
11S_1_7 09 15 03 RUN 1 SAMPLE_0008.LAB	9/15/2003 7:55	ND	ND	797.75	427.16	ND	2.15	387.52	ND	67.332	149.76	0.992
11S_1_7 09 15 03 RUN 1 SAMPLE_0009.LAB	9/15/2003 7:57	ND	ND	755.99	360.08	ND	2.15	387.79	ND	62.181	149.76	0.992
11S_1_7 09 15 03 RUN 1 SAMPLE_0010.LAB	9/15/2003 8:00	ND	ND	730.14	306.48	ND	2.16	391.18	ND	ND	149.76	0.987
11S_1_7 09 15 03 RUN 1 SAMPLE_0011.LAB	9/15/2003 8:03	ND	ND	682.29	256.42	ND	2.14	385.41	ND	59.901	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0012.LAB	9/15/2003 8:05	ND	ND	670.38	205.31	ND	2.15	389.33	ND	24.176	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0013.LAB	9/15/2003 8:08	ND	ND	637.36	190.97	ND	2.14	388.42	ND	32.129	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0014.LAB	9/15/2003 8:10	ND	ND	642.73	185.44	ND	2.15	390.73	ND	47.473	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0015.LAB	9/15/2003 8:13	ND	ND	630.89	199.79	ND	2.15	390.64	ND	40.306	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0016.LAB	9/15/2003 8:16	ND	ND	604.67	ND	ND	2.15	389.50	ND	41.694	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0017.LAB	9/15/2003 8:18	ND	ND	598.33	ND	ND	2.14	386.75	ND	59.667	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0018.LAB	9/15/2003 8:21	ND	ND	588.04	ND	ND	2.15	386.90	ND	46.207	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0019.LAB	9/15/2003 8:23	ND	ND	579.78	ND	ND	2.16	388.29	ND	45.831	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0020.LAB	9/15/2003 8:26	ND	ND	580.78	ND	ND	2.16	388.12	ND	43.678	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0021.LAB	9/15/2003 8:29	ND	ND	567.27	ND	ND	2.16	388.08	ND	35.015	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0022.LAB	9/15/2003 8:31	ND	ND	557.36	ND	ND	2.16	386.91	ND	18.715	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0023.LAB	9/15/2003 8:34	ND	ND	541.71	ND	ND	2.15	385.54	ND	54.395	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0024.LAB	9/15/2003 8:36	ND	ND	567.36	ND	ND	2.15	386.22	ND	73.895	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0025.LAB	9/15/2003 8:39	ND	ND	537.04	ND	ND	2.15	385.37	ND	28.888	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0026.LAB	9/15/2003 8:42	ND	ND	549.55	ND	ND	2.15	387.60	ND	33.512	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0027.LAB	9/15/2003 8:44	ND	ND	530.73	ND	ND	2.14	385.58	ND	58.523	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0028.LAB	9/15/2003 8:47	ND	ND	552.20	ND	ND	2.16	388.77	ND	53.225	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0029.LAB	9/15/2003 8:49	ND	ND	558.08	ND	ND	2.17	387.94	ND	81.763	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0030.LAB	9/15/2003 8:52	ND	ND	546.49	ND	ND	2.16	387.02	ND	52.825	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0031.LAB	9/15/2003 8:55	ND	ND	551.71	ND	ND	2.17	386.79	ND	48.304	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0032.LAB	9/15/2003 8:57	ND	ND	543.99	ND	ND	2.17	388.96	ND	47.865	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0033.LAB	9/15/2003 9:00	ND	ND	551.68	ND	ND	2.19	390.98	ND	79.925	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0034.LAB	9/15/2003 9:02	ND	ND	545.45	ND	ND	2.19	391.02	ND	69.417	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0035.LAB	9/15/2003 9:05	ND	ND	531.85	ND	ND	2.18	389.51	ND	47.718	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0036.LAB	9/15/2003 9:08	ND	ND	541.73	ND	ND	2.19	391.83	ND	42.882	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0037.LAB	9/15/2003 9:10	ND	ND	518.81	ND	ND	2.18	391.86	ND	42.539	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0038.LAB	9/15/2003 9:13	ND	ND	538.34	ND	ND	2.18	392.31	ND	42.079	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0039.LAB	9/15/2003 9:15	ND	ND	518.68	ND	ND	2.18	392.06	ND	59.300	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0040.LAB	9/15/2003 9:18	ND	ND	519.34	ND	ND	2.18	392.23	ND	44.829	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0041.LAB	9/15/2003 9:21	ND	ND	511.45	ND	ND	2.17	390.12	ND	ND	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0042.LAB	9/15/2003 9:23	ND	ND	512.15	ND	ND	2.17	390.70	ND	43.549	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0043.LAB	9/15/2003 9:26	ND	ND	515.08	ND	ND	2.18	391.73	ND	29.548	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0044.LAB	9/15/2003 9:28	ND	ND	512.87	ND	ND	2.17	389.51	ND	38.473	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0045.LAB	9/15/2003 9:31	ND	ND	513.54	ND	ND	2.17	388.09	ND	79.433	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0046.LAB	9/15/2003 9:34	ND	ND	511.93	ND	ND	2.17	388.22	ND	ND	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0047.LAB	9/15/2003 9:36	ND	ND	516.22	ND	ND	2.17	386.64	ND	51.936	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0048.LAB	9/15/2003 9:39	ND	ND	495.56	ND	ND	2.17	387.24	ND	33.065	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0049.LAB	9/15/2003 9:41	ND	ND	504.17	ND	ND	2.17	384.85	ND	66.612	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0050.LAB	9/15/2003 9:44	ND	ND	520.05	ND	ND	2.17	383.54	ND	88.734	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0051.LAB	9/15/2003 9:47	ND	ND	518.13	ND	ND	2.17	384.90	ND	56.665	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0052.LAB	9/15/2003 9:49	ND	ND	508.48	ND	ND	2.17	382.63	ND	18.093	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0053.LAB	9/15/2003 9:52	ND	ND	504.74	ND	ND	2.17	382.30	ND	29.224	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0054.LAB	9/15/2003 9:54	ND	ND	498.61	ND	ND	2.17	382.86	ND	24.318	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0055.LAB	9/15/2003 9:57	ND	ND	488.84	ND	ND	2.18	383.12	ND	17.867	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0056.LAB	9/15/2003 10:00	ND	ND	491.96	ND	ND	2.18	383.65	ND	48.839	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0057.LAB	9/15/2003 10:03	ND	ND	477.76	ND	ND	2.16	381.39	ND	ND	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0058.LAB	9/15/2003 10:05	ND	ND	472.91	ND	ND	2.17	381.56	ND	79.623	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0059.LAB	9/15/2003 10:08	ND	ND	491.45	ND	ND	2.18	384.88	ND	89.903	149.76	1.003

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.7 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_7 09 15 03 RUN 1 SAMPLE_0060.LAB	9/15/2003 10:11	ND	ND	483.09	ND	ND	2.18	384.64	ND	65.005	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0061.LAB	9/15/2003 10:13	ND	ND	486.80	ND	ND	2.19	383.89	ND	65.388	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0062.LAB	9/15/2003 10:16	ND	ND	480.26	ND	ND	2.19	383.86	ND	59.005	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0063.LAB	9/15/2003 10:18	ND	ND	482.16	ND	ND	2.19	384.28	ND	56.883	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0064.LAB	9/15/2003 10:21	ND	ND	479.29	ND	ND	2.19	383.77	ND	82.377	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0065.LAB	9/15/2003 10:24	ND	ND	491.39	ND	ND	2.19	384.51	ND	81.521	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0066.LAB	9/15/2003 10:26	ND	ND	486.15	ND	ND	2.18	383.25	ND	105.672	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0067.LAB	9/15/2003 10:29	ND	ND	494.43	ND	ND	2.18	382.57	ND	35.609	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0068.LAB	9/15/2003 10:31	ND	ND	478.79	ND	ND	2.18	381.42	ND	49.301	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0069.LAB	9/15/2003 10:34	ND	ND	479.93	ND	ND	2.17	379.91	ND	63.233	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0070.LAB	9/15/2003 10:37	ND	ND	471.20	ND	ND	2.18	381.03	ND	30.707	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0071.LAB	9/15/2003 10:39	ND	ND	479.79	ND	ND	2.17	379.26	ND	50.402	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0072.LAB	9/15/2003 10:42	ND	ND	488.08	ND	ND	2.17	377.88	ND	57.358	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0073.LAB	9/15/2003 10:44	ND	ND	474.08	ND	ND	2.18	380.00	ND	51.466	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0074.LAB	9/15/2003 10:47	ND	ND	483.40	ND	ND	2.18	379.84	ND	45.861	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0075.LAB	9/15/2003 10:50	ND	ND	489.57	ND	ND	2.17	378.86	ND	61.656	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0076.LAB	9/15/2003 10:52	ND	ND	466.82	ND	ND	2.17	377.67	ND	ND	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0077.LAB	9/15/2003 10:55	ND	ND	476.76	ND	ND	2.17	377.75	ND	84.194	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0078.LAB	9/15/2003 10:57	ND	ND	480.67	ND	ND	2.17	378.18	ND	47.695	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0079.LAB	9/15/2003 11:00	ND	ND	471.76	ND	ND	2.18	379.53	ND	ND	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0080.LAB	9/15/2003 11:03	ND	ND	472.90	ND	ND	2.18	378.36	ND	43.306	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0081.LAB	9/15/2003 11:05	ND	ND	461.71	ND	ND	2.18	377.60	ND	ND	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0082.LAB	9/15/2003 11:08	ND	ND	452.18	ND	ND	2.17	375.06	ND	40.506	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0083.LAB	9/15/2003 11:10	ND	ND	458.02	ND	ND	2.17	375.38	ND	64.762	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0084.LAB	9/15/2003 11:13	ND	ND	453.89	ND	ND	2.19	377.32	ND	26.312	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0085.LAB	9/15/2003 11:16	ND	ND	479.92	ND	ND	2.19	377.68	ND	56.382	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0086.LAB	9/15/2003 11:18	ND	ND	494.13	ND	ND	2.19	377.30	ND	27.755	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0087.LAB	9/15/2003 11:21	ND	ND	499.13	ND	ND	2.19	376.71	ND	36.026	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0088.LAB	9/15/2003 11:23	ND	ND	511.77	ND	ND	2.19	376.54	ND	73.546	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0089.LAB	9/15/2003 11:26	ND	ND	504.84	ND	ND	2.18	375.02	ND	27.908	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0090.LAB	9/15/2003 11:29	ND	ND	510.05	ND	ND	2.19	376.87	ND	48.487	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0091.LAB	9/15/2003 11:31	ND	ND	499.63	ND	ND	2.18	375.48	ND	22.012	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0092.LAB	9/15/2003 11:34	ND	ND	516.69	ND	ND	2.19	376.81	ND	56.105	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0093.LAB	9/15/2003 11:36	ND	ND	526.47	ND	ND	2.19	376.72	ND	41.059	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0094.LAB	9/15/2003 11:39	ND	ND	522.20	ND	ND	2.19	376.78	ND	ND	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0095.LAB	9/15/2003 11:42	ND	ND	523.97	ND	ND	2.19	376.05	ND	37.891	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0096.LAB	9/15/2003 11:44	ND	ND	530.80	ND	ND	2.19	374.86	ND	ND	149.76	1.008
11S_1_7 09 15 03 RUN 1 SAMPLE_0097.LAB	9/15/2003 11:47	ND	ND	509.20	ND	ND	2.19	375.89	ND	38.734	149.76	1.003
11S_1_7 09 15 03 RUN 1 SAMPLE_0098.LAB	9/15/2003 11:49	ND	ND	532.40	ND	ND	2.18	374.82	ND	ND	149.76	1.008
11S_1_7 09 15 03 RUN 2 SAMPLE_0005.LAB	9/15/2003 12:18	ND	ND	476.70	ND	ND	2.17	372.69	ND	ND	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0006.LAB	9/15/2003 12:21	ND	ND	449.57	ND	ND	2.16	370.51	ND	ND	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0007.LAB	9/15/2003 12:23	ND	ND	433.04	ND	ND	2.16	371.52	ND	37.643	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0008.LAB	9/15/2003 12:26	ND	ND	428.80	ND	ND	2.16	372.67	ND	ND	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0009.LAB	9/15/2003 12:29	ND	ND	431.34	ND	ND	2.16	373.49	ND	ND	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0010.LAB	9/15/2003 12:31	ND	ND	439.47	ND	ND	2.16	375.12	ND	32.796	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0011.LAB	9/15/2003 12:34	ND	ND	436.97	ND	ND	2.16	375.66	ND	ND	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0012.LAB	9/15/2003 12:37	ND	ND	466.07	ND	ND	2.17	376.15	ND	85.670	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0013.LAB	9/15/2003 12:39	ND	ND	458.32	ND	ND	2.15	372.55	ND	ND	149.76	1.008
11S_1_7 09 15 03 RUN 2 SAMPLE_0014.LAB	9/15/2003 12:42	ND	ND	463.42	ND	ND	2.16	375.36	ND	18.405	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0015.LAB	9/15/2003 12:44	ND	ND	461.37	ND	ND	2.16	375.00	ND	19.103	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0016.LAB	9/15/2003 12:47	ND	ND	466.03	ND	ND	2.17	378.79	ND	37.215	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0017.LAB	9/15/2003 12:50	ND	ND	475.07	ND	ND	2.16	377.73	ND	100.309	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0018.LAB	9/15/2003 12:52	ND	ND	494.50	ND	ND	2.15	376.56	ND	77.022	149.76	1.008

Scrubber Outlet 11s.1.7 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_7_09_15_03_RUN_2_SAMPLE_0019.LAB	9/15/2003 12:55	ND	ND	490.65	ND	ND	2.16	379.16	ND	102.326	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0020.LAB	9/15/2003 12:57	ND	ND	513.98	ND	ND	2.18	380.72	ND	51.278	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0021.LAB	9/15/2003 13:00	ND	ND	495.32	ND	ND	2.16	379.01	ND	44.907	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0022.LAB	9/15/2003 13:03	ND	ND	510.73	ND	ND	2.16	378.97	ND	69.335	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0023.LAB	9/15/2003 13:05	ND	ND	492.92	ND	ND	2.16	377.58	ND	ND	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0024.LAB	9/15/2003 13:08	ND	ND	480.79	ND	ND	2.17	380.18	ND	54.425	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0025.LAB	9/15/2003 13:10	ND	ND	495.02	ND	ND	2.16	378.23	ND	30.074	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0026.LAB	9/15/2003 13:13	ND	ND	498.04	ND	ND	2.15	378.25	ND	106.375	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0027.LAB	9/15/2003 13:16	ND	ND	522.42	ND	ND	2.16	379.45	ND	38.673	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0028.LAB	9/15/2003 13:18	ND	ND	507.32	ND	ND	2.16	379.29	ND	ND	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0029.LAB	9/15/2003 13:21	ND	ND	516.48	ND	ND	2.16	379.53	ND	85.880	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0030.LAB	9/15/2003 13:23	ND	ND	529.91	ND	ND	2.17	383.94	ND	28.070	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0031.LAB	9/15/2003 13:26	ND	ND	539.40	ND	ND	2.15	379.43	ND	165.153	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0032.LAB	9/15/2003 13:29	ND	ND	563.46	ND	ND	2.16	379.87	ND	27.117	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0033.LAB	9/15/2003 13:31	ND	ND	535.67	ND	ND	2.15	379.10	ND	ND	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0034.LAB	9/15/2003 13:34	ND	ND	533.15	ND	ND	2.15	379.98	ND	62.641	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0035.LAB	9/15/2003 13:36	ND	ND	526.52	ND	ND	2.15	380.70	ND	40.152	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0036.LAB	9/15/2003 13:39	ND	ND	550.43	ND	ND	2.16	381.77	ND	104.598	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0037.LAB	9/15/2003 13:42	ND	ND	545.25	ND	ND	2.16	382.26	ND	50.164	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0038.LAB	9/15/2003 13:44	ND	ND	537.47	ND	ND	2.15	379.09	ND	26.264	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0039.LAB	9/15/2003 13:47	ND	ND	530.49	ND	ND	2.16	380.55	ND	18.076	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0040.LAB	9/15/2003 13:49	ND	ND	536.96	ND	ND	2.15	380.09	ND	36.952	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0041.LAB	9/15/2003 13:52	ND	ND	530.12	ND	ND	2.15	376.94	ND	35.338	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0042.LAB	9/15/2003 13:55	ND	ND	538.55	ND	ND	2.16	380.62	ND	29.854	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0043.LAB	9/15/2003 13:57	ND	ND	530.70	ND	ND	2.16	378.84	ND	ND	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0044.LAB	9/15/2003 14:00	ND	ND	515.19	ND	ND	2.16	378.35	ND	ND	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0045.LAB	9/15/2003 14:02	ND	ND	532.53	ND	ND	2.16	377.99	ND	ND	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0046.LAB	9/15/2003 14:05	ND	ND	514.85	ND	ND	2.15	376.49	ND	ND	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0047.LAB	9/15/2003 14:08	ND	ND	504.14	ND	ND	2.14	374.99	ND	29.504	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0048.LAB	9/15/2003 14:10	ND	ND	492.46	ND	ND	2.14	375.44	ND	29.508	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0049.LAB	9/15/2003 14:13	ND	ND	503.82	ND	ND	2.15	375.77	ND	69.807	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0050.LAB	9/15/2003 14:15	ND	ND	513.72	ND	ND	2.15	375.46	ND	54.648	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0051.LAB	9/15/2003 14:18	ND	ND	521.99	ND	ND	2.15	374.72	ND	50.259	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0052.LAB	9/15/2003 14:21	ND	ND	527.26	ND	ND	2.16	376.82	ND	43.696	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0053.LAB	9/15/2003 14:23	ND	ND	532.80	ND	ND	2.15	374.32	ND	40.144	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0054.LAB	9/15/2003 14:26	ND	ND	534.62	ND	ND	2.14	374.01	ND	62.166	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0055.LAB	9/15/2003 14:28	ND	ND	559.13	ND	ND	2.15	377.22	ND	ND	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0056.LAB	9/15/2003 14:31	ND	ND	568.12	ND	ND	2.15	377.27	ND	32.838	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0057.LAB	9/15/2003 14:34	ND	ND	578.44	ND	ND	2.15	376.27	ND	77.333	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0058.LAB	9/15/2003 14:36	ND	ND	589.44	ND	ND	2.15	378.80	ND	133.606	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0059.LAB	9/15/2003 14:39	ND	ND	598.07	ND	ND	2.14	375.28	ND	51.397	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0060.LAB	9/15/2003 14:41	ND	ND	613.47	ND	ND	2.14	376.53	ND	74.015	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0061.LAB	9/15/2003 14:44	ND	ND	614.16	ND	ND	2.13	373.77	ND	77.843	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0062.LAB	9/15/2003 14:47	ND	ND	629.84	ND	ND	2.14	376.74	ND	91.685	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0063.LAB	9/15/2003 14:49	ND	ND	651.89	ND	ND	2.13	375.29	ND	131.057	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0064.LAB	9/15/2003 14:52	ND	ND	661.96	ND	ND	2.13	375.71	ND	50.71	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0065.LAB	9/15/2003 14:54	ND	ND	664.31	ND	ND	2.13	374.57	ND	94.88	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0066.LAB	9/15/2003 14:57	ND	ND	665.74	ND	ND	2.14	377.11	ND	43.81	149.76	0.997
11S_1_7_09_15_03_RUN_2_SAMPLE_0067.LAB	9/15/2003 15:00	ND	ND	663.51	ND	ND	2.13	376.14	ND	118.43	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0068.LAB	9/15/2003 15:02	ND	ND	703.26	ND	ND	2.13	377.67	ND	67.97	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0069.LAB	9/15/2003 15:05	ND	ND	689.33	ND	ND	2.13	378.08	ND	65.65	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0070.LAB	9/15/2003 15:07	ND	ND	680.76	ND	ND	2.13	377.22	ND	64.99	149.76	1.003
11S_1_7_09_15_03_RUN_2_SAMPLE_0071.LAB	9/15/2003 15:10	ND	ND	676.83	ND	ND	2.13	376.78	ND	42.96	149.76	0.997

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.7 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_7 09 15 03 RUN 2 SAMPLE_0072.LAB	9/15/2003 15:13	ND	ND	671.95	ND	ND	2.12	374.60	ND	110.11	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0073.LAB	9/15/2003 15:15	ND	ND	681.70	164.40	ND	2.13	375.68	ND	116.22	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0074.LAB	9/15/2003 15:18	ND	ND	677.25	ND	ND	2.11	374.18	ND	71.74	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0075.LAB	9/15/2003 15:20	ND	ND	672.04	ND	ND	2.12	373.55	ND	112.25	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0076.LAB	9/15/2003 15:23	ND	ND	680.11	ND	ND	2.12	373.95	ND	43.65	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0077.LAB	9/15/2003 15:26	ND	ND	689.15	ND	ND	2.13	375.49	ND	102.82	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0078.LAB	9/15/2003 15:28	ND	ND	695.06	ND	ND	2.11	372.70	ND	83.56	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0079.LAB	9/15/2003 15:31	ND	ND	690.49	ND	ND	2.11	374.07	ND	94.84	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0080.LAB	9/15/2003 15:33	ND	ND	682.05	ND	ND	2.12	375.30	ND	125.35	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0081.LAB	9/15/2003 15:36	ND	ND	683.54	ND	ND	2.12	375.66	ND	52.13	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0082.LAB	9/15/2003 15:39	ND	ND	700.86	ND	ND	2.11	374.02	ND	116.45	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0083.LAB	9/15/2003 15:41	ND	ND	689.32	162.08	ND	2.11	373.80	ND	55.65	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0084.LAB	9/15/2003 15:44	ND	ND	703.06	ND	ND	2.12	376.74	ND	65.75	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0085.LAB	9/15/2003 15:46	ND	ND	700.45	ND	ND	2.11	374.70	ND	75.03	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0086.LAB	9/15/2003 15:49	ND	ND	687.25	ND	ND	2.10	371.76	ND	102.99	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0087.LAB	9/15/2003 15:52	ND	ND	702.56	ND	ND	2.11	373.51	ND	127.76	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0088.LAB	9/15/2003 15:54	ND	ND	700.93	ND	ND	2.10	370.49	ND	74.75	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0089.LAB	9/15/2003 15:57	ND	ND	697.65	ND	ND	2.10	372.80	ND	33.63	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0090.LAB	9/15/2003 15:59	ND	ND	691.58	ND	ND	2.11	373.65	ND	69.00	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0091.LAB	9/15/2003 16:02	ND	ND	681.73	ND	ND	2.11	372.62	ND	68.22	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0092.LAB	9/15/2003 16:05	ND	ND	691.42	ND	ND	2.10	370.52	ND	47.80	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0093.LAB	9/15/2003 16:07	ND	ND	682.55	ND	ND	2.09	370.52	ND	76.37	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0094.LAB	9/15/2003 16:10	ND	ND	667.29	ND	ND	2.11	372.57	ND	50.07	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0095.LAB	9/15/2003 16:12	ND	ND	696.23	ND	ND	2.11	374.78	ND	165.49	149.76	0.997
11S_1_7 09 15 03 RUN 2 SAMPLE_0096.LAB	9/15/2003 16:15	ND	ND	718.57	ND	ND	2.11	373.70	ND	121.18	149.76	1.003
11S_1_7 09 15 03 RUN 2 SAMPLE_0097.LAB	9/15/2003 16:18	ND	ND	722.26	ND	ND	2.10	372.72	ND	118.22	149.76	1.003
Average _{wet}		ND	ND	555.31	158.61	ND	2.16	380.00	ND	54.42	149.76	1.003

Reference Method Calculations

Fab 11 South

11s.1.7

Run No.	Run 1	Run 2	
Date	9/15/2003	9/15/2003	
Start Time	7:50	12:18	AVERAGE
Stop Time	11:50	16:18	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.92	24.92	24.92
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	82.8	84.0	83.4
Volume Metered (acf)	179.622	179.610	179.616
Volume Metered (dscf)	146.959	146.631	146.795
Volume of Water Collected (g)	53.1	125.0	89.1
Volume of Water Collected (scf)	2.504	5.894	4.199
Average Delta H (in. H ₂ O)	1.40	1.42	1.41
AVG SQRT of dH (in. H ₂ O)	1.1834	1.1920	1.1877
Measured Moisture (%)	1.7%	3.9%	2.8%
Saturation Moisture (%)	2.1%	2.0%	2.1%
Moisture Used for Calculations (%)	2.1%	2.0%	2.1%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.66	28.62	28.64
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-5.70	-5.70	-5.70
Stack Pressure (in. Hg)	24.50	24.50	24.50
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5638	0.5649	0.5644
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.4942	0.4875	0.4909
Stack Temperature Isokinetic Traverse (°F)	60.0	59.5	59.8
Stack Temperature Flow Traverse (°F)	59.8	62.9	61.4
Velocity (ft/sec) Isokinetic Traverse	34.84	34.92	34.88
Velocity (ft/sec) Flow Traverse	30.54	30.23	30.38
Nozzle Diameter (in.)	0.256	0.256	0.256
% Isokinetics	100.70	100.13	100.4
Stack Diameter (in.)	64.75	64.75	64.75
Stack Area (ft ²)	22.87	22.87	22.87
Stack Flow Rate Isokinetic Traverse (acfm)	47,804	47,911	47,858
Stack Flow Rate Flow Traverse (acfm)	41,897	41,477	41,687
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	38,906	39,041	38,973
Stack Flow Rate Outlet Flow Traverse (dscfm)	34,109	33,579	33,844
Chlorine			
Collected Cl. micrograms (ug)	16.2	16.8	16.5
Cl ₂ Concentration (ug/dscf)	0.11	0.11	0.11
Cl ₂ Concentration (ppb)	1	1	1
Cl ₂ Emission Rate (lbs/hr)	0.0005	0.0005	0.0005

TRC Environmental Corporation
Measurements Division
Littleton, Colorado
Project No. 31397-1600-00000

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/15/2003
Unit Number:	11s.1.7	Stack Diameter (in.):	64.75
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.5
Run No.:	1	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.92
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.1 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
	Pass	Fail	
	Pitot Leak Check	<u>Y</u>	___
	Start:	7:17	
	End:	7:32	

Northwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.20	59
2	0.22	59
3	0.23	59
4	0.25	59
5	0.24	59
6	0.27	59
7	0.30	59
8	0.33	59
9	0.33	59
10	0.29	59
11	0.26	59
12	0.23	59

Southwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.24	62
2	0.25	61
3	0.23	60
4	0.23	60
5	0.24	59
6	0.24	60
7	0.22	60
8	0.21	59
9	0.22	60
10	0.20	60
11	0.23	61
12	0.23	66
Total Average:	sqrt dp = 0.4942	59.8

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/15/2003
Unit Number:	11s.1.7	Stack Diameter (in.):	64.75
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.5
Run No.:	2	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.92
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	12:03
		End:	12:14

Northwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.20	63
2	0.22	62
3	0.23	62
4	0.24	63
5	0.25	62
6	0.26	62
7	0.29	62
8	0.32	61
9	0.32	62
10	0.31	62
11	0.26	63
12	0.21	64

Southwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.21	64
2	0.25	65
3	0.24	64
4	0.24	63
5	0.25	63
6	0.24	63
7	0.22	62
8	0.20	62
9	0.20	62
10	0.17	63
11	0.21	65
12	0.20	66
Total Average:	sqrt dp = 0.4875	62.9

TRC Environmental Corporation
Measurements Division
Littleton, Colorado
Project No. 31397-1600-00000

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 South						Leak Check Initial:	0.007	cfm@	11	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.004	cfm@	6	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points	24	Impinger	1	Initial	620.9	Final	623.7
Sampling Location:	11s.1.7								2	730.3	750.4			
Date:	9/15/2003								3	536.5	540.4			
Technicians:	PER/SCT								4	625.7	625.6			
Meter Box No.:	90401	Y_d:	1.006			5	653.3	660.1						
Probe / Pitot No:	401 / HA-1	C_p:	0.84			6	790.9	810.5						
Nozzle No.:	NA	dH_g:	1.725	Stack Dia. (in.):	64.75	Stack Area (ft²):	22.87	Start Time:	7:50	Net Impinger Gain (g):	53.1			
Nozzle Dia:	0.256	0.256, 0.257, 0.256		Port Width (in.):	4.00	Port Length (in.):	4.00	End Time:	11:50	Theta	240			
Initial Meter Reading (ft³):	706.62	BP (in. Hg):	24.92	Static Pressure (in.):	-5.7									
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
NW 8	10	60	75	74	0.320	1.40	714.120	244	240	59	1			
NW 8	20	60	78	74	0.320	1.41	721.480	244	239	50	1			
NW 8	30	60	83	75	0.320	1.40	728.770	242	239	57	1			
NW 8	40	60	85	75	0.320	1.40	736.280	242	240	57	1			
NW 8	50	60	67	76	0.320	1.40	743.790	242	253	57	1			
NW 8	60	60	88	77	0.320	1.40	751.260	243	258	56	1			
NW 8	70	60	89	78	0.320	1.40	758.750	244	253	56	1			
NW 8	80	60	90	78	0.310	1.40	766.240	243	255	57	1			
NW 8	90	60	89	78	0.310	1.40	773.690	242	255	57	1			
NW 8	100	60	89	79	0.320	1.40	781.200	243	256	57	1			
NW 8	110	60	89	80	0.310	1.40	788.630	248	241	58	1			
NW 8	120	60	89	80	0.310	1.40	795.980	249	241	58	1			
NW 8	130	60	89	79	0.320	1.40	803.580	249	245	58	1			
NW 8	140	60	90	80	0.320	1.40	811.190	249	244	58	1			
NW 8	150	60	90	80	0.320	1.40	818.700	249	244	58	1			
NW 8	160	60	90	80	0.320	1.40	826.200	249	244	58	1			
NW 8	170	60	90	80	0.310	1.40	833.740	249	244	59	1			
NW 8	180	60	89	80	0.320	1.40	841.170	248	243	59	1			
NW 8	190	60	90	80	0.320	1.40	848.700	248	244	59	1			
NW 8	200	60	90	80	0.320	1.40	856.140	248	243	58	1			
NW 8	210	60	90	80	0.320	1.40	863.610	249	245	58	1			
NW 8	220	60	90	80	0.320	1.40	871.100	248	244	52	1			
NW 8	230	60	90	80	0.320	1.40	878.540	248	243	51	1			
NW 8	240	60	90	80	0.320	1.40	886.242	248	245	51	1			
Average / Net		60.0		82.8	0.3	1.4	179.622	246.2	245.8	56.6	1.0			

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2		
Plant Name:	Fab 11 South						Leak Check Initial:	0.002	cfm@	12	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.001	cfm@	6.0	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	11s.1.7								1		585.2		598.0	
Date:	9/15/2003						24		2		620.6		646.1	
Technicians:	PER/SCT								3		643.1		652.3	
Meter Box No.:	90401	Y_d:	1.006			4		630.2		633.7				
Probe/Pitot No.:	401 / HA-1	C_p:	0.84			5		654.6		658.6				
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	64.75	Stack Area (ft²):	22.87	6		936.6		1006.6		
Nozzle Dia:	0.256	0.256, 0.257, 0.256	Port Width (in.):	4.00	Port Length (in.):	4.00	Start Time:	12:18	Net Impinger Gain (g):	125.0				
Initial Meter Reading (ft³):	886.559	BP (in. Hg):	24.92	Static Pressure (in.):	-5.7	End Time:	16:18	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
NW 8	10	61	78	78	0.320	1.40	897.040	249	243	60	2.0			
NW 8	20	60	85	77	0.320	1.43	904.120	248	243	59	2.0			
NW 8	30	59	87	78	0.310	1.39	911.080	248	243	58	2.0			
NW 8	40	60	88	78	0.320	1.44	917.980	249	244	58	2.0			
NW 8	50	60	88	78	0.320	1.44	925.090	248	243	57	2.0			
NW 8	60	60	89	79	0.320	1.44	932.210	249	243	53	2.0			
NW 8	70	59	89	79	0.320	1.44	939.470	249	244	52	2.0			
NW 8	80	60	89	79	0.320	1.44	946.720	248	242	52	2.0			
NW 8	90	59	89	79	0.320	1.44	954.040	248	246	53	2.0			
NW 8	100	59	89	79	0.310	1.40	961.360	248	244	54	2.0			
NW 8	110	59	90	80	0.320	1.44	968.670	248	244	53	2.0			
NW 8	120	59	90	80	0.320	1.44	976.040	248	244	54	2.0			
NW 8	130	60	90	80	0.320	1.44	983.470	249	243	55	2.0			
NW 8	140	60	90	80	0.320	1.44	990.930	248	244	56	2.0			
NW 8	150	60	89	80	0.320	1.44	998.390	249	244	56	2.0			
NW 8	160	59	89	80	0.320	1.44	1005.830	248	244	56	2.0			
NW 8	170	60	90	80	0.320	1.40	1013.300	249	244	57	2.0			
NW 8	180	60	89	80	0.320	1.40	1020.810	249	244	53	2.0			
NW 8	190	60	89	80	0.320	1.40	1028.300	248	244	51	2.0			
NW 8	200	59	89	80	0.320	1.40	1035.900	249	245	52	2.0			
NW 8	210	59	90	80	0.320	1.40	1043.380	248	242	51	2.0			
NW 8	220	59	90	80	0.320	1.40	1051.050	248	244	52	2.0			
NW 8	230	59	90	80	0.320	1.40	1058.610	248	243	52	2.0			
NW 8	240	59	90	80	0.320	1.40	1066.169	249	244	52	2.0			
Average / Net		59.5		84.0	0.3	1.4	179.610	248.4	243.7	54.4	2.0			

TRC Environmental Corporation
Measurements Division
Littleton, Colorado
Project No. 31397-1600-00000

EPA REFERENCE METHOD 1

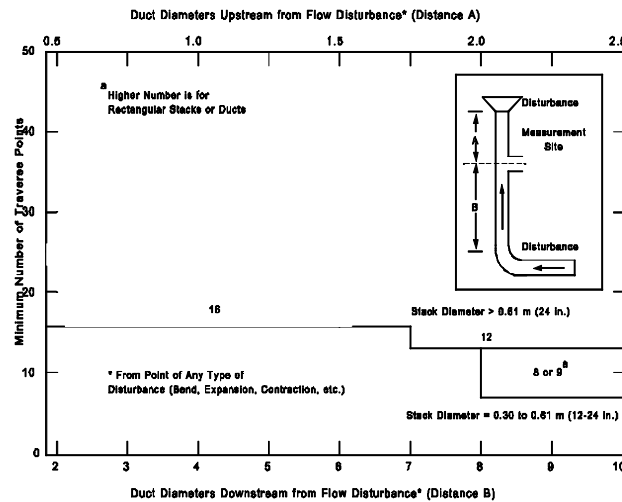
FIELD DATA SHEET

CIRCULAR STACKS

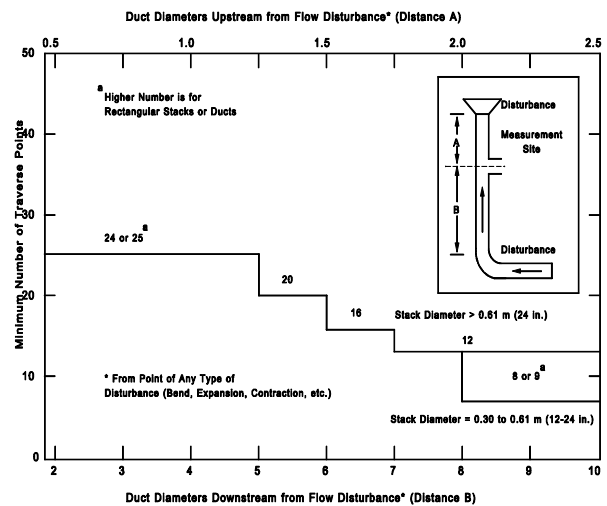
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 11S.1.7
 TRC Project No.: 31397-1600-00000
 Date: 9/15/2003
 Technician: B.Bauer
 Circular/Rectangular: C

Stack Diameter: 59.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 4.50
 Diameters Upstream: 4.7
 Diameters Downstream: 4.7
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	5 12/16
2	8 7/16
3	11 7/16
4	14 15/16
5	19 4/16
6	25 8/16
7	42 8/16
8	48 12/16
9	53 1/16
10	56 9/16
11	59 9/16
12	62 4/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 11s.1.9 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_9 09 16 03 RUN1 SAMPLE_0004.LAB	9/16/2003 8:51	ND	ND	678.12	857.11	ND	2.14	391.2	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0005.LAB	9/16/2003 8:54	ND	ND	663.28	933.43	ND	2.16	391.8	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0006.LAB	9/16/2003 8:57	ND	ND	652.03	912.85	ND	2.14	389.6	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0007.LAB	9/16/2003 8:59	ND	ND	638.93	871.55	ND	2.16	391.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0008.LAB	9/16/2003 9:02	ND	ND	631.25	789.94	ND	2.16	391.8	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0009.LAB	9/16/2003 9:04	ND	ND	607.53	722.95	ND	2.15	390.3	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0010.LAB	9/16/2003 9:07	ND	ND	586.72	719.29	ND	2.15	390.6	ND	ND	150.51	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0011.LAB	9/16/2003 9:10	ND	ND	574.90	734.66	ND	2.15	390.7	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0012.LAB	9/16/2003 9:12	ND	ND	562.18	776.44	ND	2.16	383.4	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0013.LAB	9/16/2003 9:15	ND	ND	549.49	764.55	ND	2.13	375.7	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0014.LAB	9/16/2003 9:17	ND	ND	534.31	695.16	ND	2.13	376.9	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0015.LAB	9/16/2003 9:20	ND	ND	534.90	699.91	ND	2.16	382.0	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0016.LAB	9/16/2003 9:22	ND	ND	515.29	665.77	ND	2.16	385.2	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0017.LAB	9/16/2003 9:25	ND	ND	492.16	700.42	ND	2.15	382.7	ND	44.648	150.51	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0018.LAB	9/16/2003 9:28	ND	ND	489.63	635.74	ND	2.14	382.1	ND	31.995	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0019.LAB	9/16/2003 9:30	ND	ND	465.91	632.36	ND	2.14	381.6	ND	20.302	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0020.LAB	9/16/2003 9:33	ND	ND	478.78	585.36	ND	2.16	386.2	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0021.LAB	9/16/2003 9:35	ND	ND	466.71	607.85	ND	2.16	384.7	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0022.LAB	9/16/2003 9:38	ND	ND	456.59	541.43	ND	2.16	385.8	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0023.LAB	9/16/2003 9:41	ND	ND	451.30	735.17	ND	2.17	386.0	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0024.LAB	9/16/2003 9:43	ND	ND	444.09	703.17	ND	2.16	385.8	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0025.LAB	9/16/2003 9:46	ND	ND	410.80	694.79	ND	2.14	381.5	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0026.LAB	9/16/2003 9:48	ND	ND	426.79	670.87	ND	2.14	383.5	ND	ND	149.02	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0027.LAB	9/16/2003 9:51	ND	ND	409.56	689.79	ND	2.16	385.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0028.LAB	9/16/2003 9:54	ND	ND	397.21	694.87	ND	2.16	385.8	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0029.LAB	9/16/2003 9:56	ND	ND	384.86	699.73	ND	2.16	385.7	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0030.LAB	9/16/2003 9:59	ND	ND	374.23	716.44	ND	2.17	388.0	ND	ND	150.51	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0031.LAB	9/16/2003 10:01	ND	ND	357.00	722.98	ND	2.15	383.3	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0032.LAB	9/16/2003 10:04	ND	ND	340.50	741.59	ND	2.15	383.6	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0033.LAB	9/16/2003 10:07	ND	ND	341.20	743.01	ND	2.16	385.7	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0034.LAB	9/16/2003 10:09	ND	ND	ND	717.85	ND	2.15	383.4	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0035.LAB	9/16/2003 10:12	ND	ND	ND	715.54	ND	2.15	383.3	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0036.LAB	9/16/2003 10:14	ND	ND	ND	733.15	ND	2.16	385.3	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0037.LAB	9/16/2003 10:17	ND	ND	ND	746.03	ND	2.17	385.4	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0038.LAB	9/16/2003 10:20	ND	ND	ND	755.42	ND	2.16	384.5	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0039.LAB	9/16/2003 10:22	ND	ND	ND	802.37	ND	2.16	382.2	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0040.LAB	9/16/2003 10:25	ND	ND	ND	821.94	ND	2.17	383.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0041.LAB	9/16/2003 10:27	ND	ND	ND	774.90	ND	2.15	384.2	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0042.LAB	9/16/2003 10:30	ND	ND	ND	678.39	ND	2.15	382.1	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0043.LAB	9/16/2003 10:33	ND	ND	ND	675.11	ND	2.15	381.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0044.LAB	9/16/2003 10:35	ND	ND	ND	673.85	ND	2.16	381.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0045.LAB	9/16/2003 10:38	ND	ND	ND	667.95	ND	2.15	379.2	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0046.LAB	9/16/2003 10:40	ND	ND	ND	688.31	ND	2.16	380.8	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0047.LAB	9/16/2003 10:43	ND	ND	ND	706.39	ND	2.15	379.1	ND	ND	149.76	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0048.LAB	9/16/2003 10:46	ND	ND	ND	697.56	ND	2.17	380.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0049.LAB	9/16/2003 10:48	ND	ND	ND	719.66	ND	2.18	380.9	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0050.LAB	9/16/2003 10:51	ND	ND	ND	864.41	ND	2.18	379.5	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0051.LAB	9/16/2003 10:53	ND	ND	ND	826.01	ND	2.18	380.2	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0052.LAB	9/16/2003 10:56	ND	ND	ND	809.16	ND	2.17	378.8	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0053.LAB	9/16/2003 10:58	ND	ND	ND	828.42	ND	2.17	378.5	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0054.LAB	9/16/2003 11:01	ND	ND	ND	842.79	ND	2.16	376.1	ND	ND	150.51	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0055.LAB	9/16/2003 11:04	ND	ND	ND	855.37	ND	2.17	377.7	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0056.LAB	9/16/2003 11:06	ND	ND	ND	863.54	ND	2.18	379.6	ND	ND	149.76	0.997

Scrubber Outlet 11s.1.9 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_9 09 16 03 RUN1 SAMPLE_0057.LAB	9/16/2003 11:09	ND	ND	ND	871.79	ND	2.18	378.3	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0058.LAB	9/16/2003 11:11	ND	ND	ND	856.99	ND	2.17	375.8	ND	ND	150.51	1.008
11S_1_9 09 16 03 RUN1 SAMPLE_0059.LAB	9/16/2003 11:14	ND	ND	ND	870.58	ND	2.17	377.0	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0060.LAB	9/16/2003 11:17	ND	ND	ND	867.37	ND	2.18	378.3	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0061.LAB	9/16/2003 11:19	ND	ND	ND	858.87	ND	2.17	377.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0062.LAB	9/16/2003 11:22	ND	ND	ND	836.99	ND	2.17	377.5	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0063.LAB	9/16/2003 11:24	ND	ND	ND	847.20	ND	2.17	378.0	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0064.LAB	9/16/2003 11:27	ND	ND	ND	856.81	ND	2.17	377.3	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0065.LAB	9/16/2003 11:30	ND	ND	ND	854.77	ND	2.16	377.1	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0066.LAB	9/16/2003 11:32	ND	ND	ND	864.75	ND	2.17	377.4	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0067.LAB	9/16/2003 11:35	ND	ND	ND	874.76	ND	2.17	377.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0068.LAB	9/16/2003 11:37	ND	ND	ND	842.08	ND	2.17	378.4	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0069.LAB	9/16/2003 11:40	ND	ND	ND	794.88	ND	2.17	378.2	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0070.LAB	9/16/2003 11:43	ND	ND	ND	792.60	ND	2.16	377.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0071.LAB	9/16/2003 11:45	ND	ND	ND	805.19	ND	2.17	378.8	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0072.LAB	9/16/2003 11:48	ND	ND	ND	844.48	ND	2.16	377.3	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0073.LAB	9/16/2003 11:50	ND	ND	ND	877.08	ND	2.16	376.8	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0074.LAB	9/16/2003 11:53	ND	ND	ND	904.35	ND	2.16	377.0	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0075.LAB	9/16/2003 11:56	ND	ND	ND	914.18	ND	2.16	376.7	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0076.LAB	9/16/2003 11:58	ND	ND	ND	904.82	ND	2.16	377.1	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0077.LAB	9/16/2003 12:01	ND	ND	ND	918.55	ND	2.17	379.6	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0078.LAB	9/16/2003 12:03	ND	ND	ND	923.86	ND	2.16	377.4	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0079.LAB	9/16/2003 12:06	ND	ND	ND	920.76	ND	2.16	377.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0080.LAB	9/16/2003 12:09	ND	ND	ND	891.63	ND	2.18	380.9	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0081.LAB	9/16/2003 12:11	ND	ND	ND	890.07	ND	2.16	378.6	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0082.LAB	9/16/2003 12:14	ND	ND	ND	926.45	ND	2.18	381.0	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0083.LAB	9/16/2003 12:16	ND	ND	ND	932.92	ND	2.18	380.8	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0084.LAB	9/16/2003 12:19	ND	ND	ND	935.36	ND	2.17	374.7	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0085.LAB	9/16/2003 12:22	ND	ND	ND	941.83	ND	2.16	366.6	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0086.LAB	9/16/2003 12:24	ND	ND	ND	964.36	ND	2.16	359.7	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0087.LAB	9/16/2003 12:27	ND	ND	ND	994.88	ND	2.15	352.6	ND	34.854	149.76	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0088.LAB	9/16/2003 12:29	ND	ND	ND	917.50	ND	2.17	359.2	ND	29.561	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0089.LAB	9/16/2003 12:32	ND	ND	ND	895.22	ND	2.17	363.5	ND	20.012	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0090.LAB	9/16/2003 12:34	ND	ND	ND	905.36	ND	2.19	367.9	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN1 SAMPLE_0091.LAB	9/16/2003 12:37	ND	ND	ND	919.32	ND	2.20	373.1	ND	ND	150.51	1.003
11S_1_9 09 16 03 RUN1 SAMPLE_0092.LAB	9/16/2003 12:40	ND	ND	ND	932.38	ND	2.20	373.5	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN2 SAMPLE_0005.LAB	9/16/2003 13:08	ND	ND	ND	741.07	ND	2.16	381.2	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0006.LAB	9/16/2003 13:11	ND	ND	ND	711.18	ND	2.18	382.9	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0007.LAB	9/16/2003 13:13	ND	ND	ND	706.88	ND	2.17	380.6	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0008.LAB	9/16/2003 13:16	ND	ND	ND	698.55	ND	2.17	382.0	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0009.LAB	9/16/2003 13:18	ND	ND	ND	694.82	ND	2.17	381.1	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0010.LAB	9/16/2003 13:21	ND	ND	ND	681.77	ND	2.18	382.0	ND	ND	150.51	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0011.LAB	9/16/2003 13:24	ND	ND	ND	664.27	ND	2.18	382.5	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0012.LAB	9/16/2003 13:26	ND	ND	ND	657.59	ND	2.18	383.0	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0013.LAB	9/16/2003 13:29	ND	ND	ND	625.55	ND	2.18	382.2	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0014.LAB	9/16/2003 13:31	ND	ND	ND	650.95	ND	2.17	380.1	ND	ND	149.76	1.003
11S_1_9 09 16 03 RUN2 SAMPLE_0015.LAB	9/16/2003 13:34	ND	ND	ND	616.22	ND	2.18	381.7	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0016.LAB	9/16/2003 13:37	ND	ND	ND	606.68	ND	2.19	383.6	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0017.LAB	9/16/2003 13:39	ND	ND	ND	622.56	ND	2.18	380.9	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0018.LAB	9/16/2003 13:42	ND	ND	ND	627.31	ND	2.18	380.8	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0019.LAB	9/16/2003 13:44	ND	ND	ND	686.31	ND	2.19	380.3	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0020.LAB	9/16/2003 13:47	ND	ND	ND	676.77	ND	2.19	380.8	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0021.LAB	9/16/2003 13:50	ND	ND	ND	695.39	ND	2.18	379.0	ND	ND	149.76	1.003

Scrubber Outlet 11s.1.9 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_9 09 16 03 RUN2 SAMPLE_0022.LAB	9/16/2003 13:52	ND	ND	ND	747.91	ND	2.19	380.9	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0023.LAB	9/16/2003 13:55	ND	ND	ND	708.18	ND	2.19	380.9	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0024.LAB	9/16/2003 13:57	ND	ND	ND	720.17	ND	2.19	381.7	ND	ND	150.51	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0025.LAB	9/16/2003 14:00	ND	ND	ND	769.54	ND	2.19	381.2	ND	43.727	150.51	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0026.LAB	9/16/2003 14:02	ND	ND	ND	711.33	ND	2.19	380.5	ND	45.095	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0027.LAB	9/16/2003 14:05	ND	ND	ND	695.41	ND	2.18	380.7	ND	62.496	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0028.LAB	9/16/2003 14:08	ND	ND	ND	689.77	ND	2.19	382.1	ND	67.586	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0029.LAB	9/16/2003 14:10	ND	ND	ND	713.87	ND	2.19	381.9	ND	73.364	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0030.LAB	9/16/2003 14:13	ND	ND	ND	713.18	ND	2.19	382.8	ND	59.242	150.51	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0031.LAB	9/16/2003 14:15	ND	ND	ND	749.78	ND	2.18	379.5	ND	42.910	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0032.LAB	9/16/2003 14:18	ND	ND	ND	666.02	ND	2.18	379.7	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0033.LAB	9/16/2003 14:21	ND	ND	ND	637.73	ND	2.17	379.9	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0034.LAB	9/16/2003 14:23	ND	ND	ND	666.57	ND	2.17	379.0	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0035.LAB	9/16/2003 14:26	ND	ND	ND	613.14	ND	2.19	381.9	ND	18.219	150.51	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0036.LAB	9/16/2003 14:28	ND	ND	ND	616.15	ND	2.17	380.0	ND	19.957	150.51	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0037.LAB	9/16/2003 14:31	ND	ND	ND	572.30	ND	2.16	379.6	ND	21.983	150.51	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0038.LAB	9/16/2003 14:34	ND	ND	ND	657.27	ND	2.16	378.6	ND	25.327	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0039.LAB	9/16/2003 14:36	ND	ND	ND	604.13	ND	2.16	377.7	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0040.LAB	9/16/2003 14:39	ND	ND	ND	681.11	ND	2.17	379.6	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0041.LAB	9/16/2003 14:41	ND	ND	ND	630.59	ND	2.17	380.6	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0042.LAB	9/16/2003 14:44	ND	ND	ND	656.38	ND	2.15	377.0	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0043.LAB	9/16/2003 14:47	ND	ND	ND	643.41	ND	2.15	377.5	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0044.LAB	9/16/2003 14:49	ND	ND	ND	653.50	ND	2.15	377.1	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0045.LAB	9/16/2003 14:52	ND	ND	ND	685.77	ND	2.16	377.6	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0046.LAB	9/16/2003 14:54	ND	ND	ND	696.40	ND	2.16	377.4	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0047.LAB	9/16/2003 14:57	ND	ND	ND	705.52	ND	2.16	376.9	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0048.LAB	9/16/2003 15:00	ND	ND	ND	715.66	ND	2.16	377.7	ND	ND	150.51	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0049.LAB	9/16/2003 15:02	ND	ND	ND	729.02	ND	2.16	376.7	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0050.LAB	9/16/2003 15:05	ND	ND	ND	718.80	ND	2.17	378.5	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0051.LAB	9/16/2003 15:07	ND	ND	ND	727.60	ND	2.16	377.5	ND	ND	150.51	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0052.LAB	9/16/2003 15:10	ND	ND	ND	739.09	ND	2.16	376.8	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0053.LAB	9/16/2003 15:13	ND	ND	ND	745.78	ND	2.15	376.4	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0054.LAB	9/16/2003 15:15	ND	ND	ND	717.54	ND	2.15	375.5	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0055.LAB	9/16/2003 15:18	ND	ND	ND	750.84	ND	2.16	377.4	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0056.LAB	9/16/2003 15:20	ND	ND	ND	721.04	ND	2.15	375.5	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0057.LAB	9/16/2003 15:23	ND	ND	ND	746.94	ND	2.46	376.4	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0058.LAB	9/16/2003 15:26	ND	ND	358.51	966.81	ND	2.56	379.2	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0059.LAB	9/16/2003 15:28	ND	ND	ND	996.54	ND	2.32	376.4	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0060.LAB	9/16/2003 15:31	ND	ND	ND	800.45	ND	2.17	376.1	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0061.LAB	9/16/2003 15:33	ND	ND	ND	748.94	ND	2.17	375.6	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0062.LAB	9/16/2003 15:36	ND	ND	ND	772.53	ND	2.18	377.3	ND	ND	150.51	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0063.LAB	9/16/2003 15:39	ND	ND	ND	756.41	ND	2.19	377.6	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0064.LAB	9/16/2003 15:41	ND	ND	ND	779.48	ND	2.19	378.0	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0065.LAB	9/16/2003 15:44	ND	ND	ND	719.66	ND	2.33	377.6	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0066.LAB	9/16/2003 15:46	ND	ND	ND	788.24	ND	2.42	375.9	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0067.LAB	9/16/2003 15:49	ND	ND	ND	903.73	ND	2.31	374.3	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0068.LAB	9/16/2003 15:51	ND	ND	ND	759.12	ND	2.17	373.8	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0069.LAB	9/16/2003 15:54	ND	ND	ND	723.95	ND	2.16	373.7	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0070.LAB	9/16/2003 15:57	ND	ND	ND	747.72	ND	2.17	374.6	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0071.LAB	9/16/2003 15:59	ND	ND	ND	715.60	ND	2.18	376.4	ND	ND	150.51	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0072.LAB	9/16/2003 16:02	ND	ND	ND	692.08	ND	2.16	373.5	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0073.LAB	9/16/2003 16:04	ND	ND	ND	697.88	ND	2.16	373.2	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0074.LAB	9/16/2003 16:07	ND	ND	ND	696.65	ND	2.17	376.0	ND	ND	149.76	0.992

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.9 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_9 09 16 03 RUN2 SAMPLE_0075.LAB	9/16/2003 16:10	ND	ND	ND	698.59	ND	2.17	375.3	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0076.LAB	9/16/2003 16:12	ND	ND	ND	677.49	ND	2.17	376.7	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0077.LAB	9/16/2003 16:15	ND	ND	ND	657.85	ND	2.19	379.9	ND	ND	150.51	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0078.LAB	9/16/2003 16:17	ND	ND	ND	612.65	ND	2.18	376.8	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0079.LAB	9/16/2003 16:20	ND	ND	ND	633.51	ND	2.19	379.6	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0080.LAB	9/16/2003 16:23	ND	ND	ND	606.11	ND	2.19	379.3	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0081.LAB	9/16/2003 16:25	ND	ND	ND	620.89	ND	2.18	377.1	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0082.LAB	9/16/2003 16:28	ND	ND	ND	609.03	ND	2.20	380.1	ND	ND	150.51	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0083.LAB	9/16/2003 16:30	ND	ND	ND	620.91	ND	2.19	378.1	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0084.LAB	9/16/2003 16:33	ND	ND	ND	636.06	ND	2.20	378.6	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0085.LAB	9/16/2003 16:36	ND	ND	ND	644.82	ND	2.20	378.8	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0086.LAB	9/16/2003 16:38	ND	ND	ND	626.89	ND	2.19	376.7	ND	ND	149.76	0.997
11S_1_9 09 16 03 RUN2 SAMPLE_0087.LAB	9/16/2003 16:41	ND	ND	ND	685.58	ND	2.19	377.7	ND	22.38	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0088.LAB	9/16/2003 16:43	ND	ND	ND	642.55	ND	2.20	377.3	ND	36.50	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0089.LAB	9/16/2003 16:46	ND	ND	ND	647.04	ND	2.20	376.5	ND	24.26	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0090.LAB	9/16/2003 16:49	ND	ND	ND	633.90	ND	2.20	375.8	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0091.LAB	9/16/2003 16:51	ND	ND	ND	670.07	ND	2.20	375.4	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0092.LAB	9/16/2003 16:54	ND	ND	ND	692.46	ND	2.20	376.3	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0093.LAB	9/16/2003 16:56	ND	ND	ND	711.09	ND	2.19	374.9	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0094.LAB	9/16/2003 16:59	ND	ND	ND	662.85	ND	2.19	374.5	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0095.LAB	9/16/2003 17:02	ND	ND	ND	621.32	ND	2.19	374.1	ND	ND	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0096.LAB	9/16/2003 17:04	ND	ND	ND	635.40	ND	2.18	374.4	ND	21.66	149.76	0.992
11S_1_9 09 16 03 RUN2 SAMPLE_0097.LAB	9/16/2003 17:07	ND	ND	ND	665.95	ND	2.19	376.9	ND	19.23	149.76	0.987
11S_1_9 09 16 03 RUN2 SAMPLE_0098.LAB	9/16/2003 17:09	ND	ND	ND	671.08	ND	2.17	375.0	ND	ND	149.76	0.992

Average_{wet}

ND

ND

365.75

744.29

ND

2.18

379.20

ND

19.64

149.87

0.999

Reference Method Calculations

Fab 11 South

11s.1.9

Run No.	Run 1	Run 2	
Date	9/16/2003	9/16/2003	
Start Time	8:40	13:10	AVERAGE
Stop Time	12:40	17:10	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.95	24.95	24.95
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Average Meter Temperature (°F)	83.5	85.7	84.6
Volume Metered (acf)	186.334	188.666	187.500
Volume Metered (dscf)	151.391	152.685	152.038
Volume of Water Collected (g)	68.6	43.1	55.9
Volume of Water Collected (scf)	3.234	2.032	2.633
Average Delta H (in. H ₂ O)	1.49	1.52	1.51
AVG SQRT of dH (in. H ₂ O)	1.2215	1.2340	1.2278
Measured Moisture (%)	2.1%	1.3%	1.7%
Saturation Moisture (%)	1.7%	1.8%	1.7%
Moisture Used for Calculations (%)	1.7%	1.8%	1.7%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.65	28.70	28.68
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-5.70	-5.70	-5.70
Stack Pressure (in. Hg)	24.53	24.53	24.53
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5744	0.5820	0.5782
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.5234	0.5176	0.5205
Stack Temperature Isokinetic Traverse (°F)	55.0	55.4	55.2
Stack Temperature Flow Traverse (°F)	56.7	59.1	57.9
Velocity (ft/sec) Isokinetic Traverse	35.31	35.76	35.53
Velocity (ft/sec) Flow Traverse	32.23	31.92	32.07
Nozzle Diameter (in.)	0.256	0.256	0.256
% Isokinetics	100.91	100.58	100.7
Stack Diameter (in.)	64.75	64.75	64.75
Stack Area (ft ²)	22.87	22.87	22.87
Stack Flow Rate Isokinetic Traverse (acfm)	48,446	49,063	48,754
Stack Flow Rate Flow Traverse (acfm)	44,214	43,790	44,002
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	39,997	40,472	40,234
Stack Flow Rate Outlet Flow Traverse (dscfm)	36,388	35,861	36,125
Chlorine			
Collected Cl. micrograms (ug)	16.5	26.0	21.3
Cl ₂ Concentration (ug/dscf)	0.11	0.17	0.14
Cl ₂ Concentration (ppb)	1	2	2
Cl ₂ Emission Rate (lbs/hr)	0.0005	0.0008	0.0007

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/16/2003
Unit Number:	11s.1.9	Stack Diameter (in.):	64.75
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.5
Run No.:	1	Operators:	PER/BMB/SC
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.95
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.7 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	7:35	
	End:	7:53	

Northwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.30	57
2	0.34	56
3	0.35	57
4	0.35	57
5	0.32	56
6	0.31	56
7	0.28	56
8	0.27	56
9	0.26	56
10	0.24	55
11	0.23	57
12	0.20	60

Southwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.27	57
2	0.33	57
3	0.32	57
4	0.33	57
5	0.34	57
6	0.33	56
7	0.23	55
8	0.22	55
9	0.21	55
10	0.21	56
11	0.22	58
12	0.18	61
Total Average:	sqrt dp = 0.5234	56.7

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/16/2003
Unit Number:	11s.1.9	Stack Diameter (in.):	64.75
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.5
Run No.:	2	Operators:	PER/BMB/SC
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.95
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.8 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	12:55
		End:	13:06

Northwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.31	58
2	0.34	58
3	0.33	57
4	0.35	57
5	0.35	57
6	0.31	57
7	0.27	57
8	0.25	57
9	0.24	57
10	0.23	58
11	0.19	62
12	0.18	66

Southwest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.22	59
2	0.26	58
3	0.30	58
4	0.31	58
5	0.34	57
6	0.34	57
7	0.27	57
8	0.24	57
9	0.23	57
10	0.19	63
11	0.18	66
12	0.27	71
Total Average:	sqrt dp = 0.5176	59.1

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 South						Leak Check Initial:	0.004	cfm@	11	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.001	cfm@	6	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	11s.1.9								1		671.5		669.3	
Date:	9/16/2003						24		2		730.7		757.7	
Technicians:	SCT/BMB								3		537.2		545.5	
Meter Box No.:	90394						Y_d:	0.999			4		645.6	
Probe / Pitot No.	401 / HA-1	C_p:	0.84			5		657.1		656.2				
Nozzle No.:	NA	dH_g:	1.721	Stack Dia. (in.):	64.75	Stack Area (ft²):	22.87	6		794.6		827.3		
Nozzle Dia:	0.256	0.256, 0.257, 0.256	Port Width (in.):	4.00	Port Length (in.):	4.00	Start Time:	8:40	Net Impinger Gain (g):	68.6				
Initial Meter Reading (ft³):	527.247	BP (in. Hg):	24.95	Static Pressure (in.):	-5.7	End Time:	12:40	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
NW 3	10	56	70	70	0.340	1.50	534.770	237	247	60	2			
NW 3	20	55	75	68	0.350	1.50	542.400	235	248	59	2			
NW 3	30	55	81	69	0.340	1.50	550.220	237	248	63	2			
NW 3	40	55	84	71	0.330	1.50	558.030	250	247	50	2			
NW 3	50	55	86	73	0.330	1.50	565.720	250	246	46	2			
NW 3	60	55	87	74	0.330	1.50	573.500	250	248	45	2			
NW 3	70	55	88	75	0.330	1.50	581.200	250	248	44	2			
NW 3	80	55	89	77	0.330	1.50	588.870	250	247	44	2			
NW 3	90	55	90	78	0.330	1.50	596.600	250	247	44	2			
NW 3	100	55	90	78	0.330	1.50	604.260	250	246	44	2			
NW 3	110	55	91	79	0.340	1.50	612.140	250	247	44	2			
NW 3	120	55	91	80	0.330	1.50	619.930	250	246	45	2			
NW 3	130	55	91	89	0.330	1.50	627.590	250	244	45	2			
NW 3	140	55	92	80	0.330	1.50	635.440	251	246	46	2			
NW 3	150	55	92	81	0.330	1.50	643.250	250	247	46	2			
NW 3	160	55	92	82	0.330	1.50	651.080	250	248	46	2			
NW 3	170	55	92	82	0.330	1.50	658.910	250	247	46	2			
NW 3	180	55	92	82	0.320	1.46	666.720	250	247	47	2			
NW 3	190	55	92	82	0.330	1.50	674.550	250	248	48	2			
NW 3	200	55	92	83	0.320	1.46	682.350	250	247	48	2			
NW 3	210	55	92	83	0.320	1.46	690.160	250	245	48	2			
NW 3	220	55	92	83	0.330	1.51	697.980	250	246	49	2			
NW 3	230	55	92	83	0.320	1.46	705.780	250	246	49	2			
NW 3	240	55	92	83	0.320	1.46	713.581	251	246	50	2			
Average / Net		55.0		83.5	0.3	1.5	186.334	248.4	246.8	48.2	2.0			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

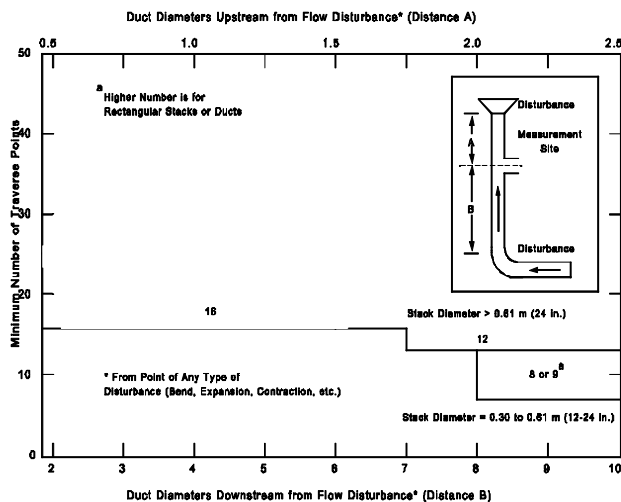
Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2		
Plant Name:	Fab 11 South						Leak Check Initial:	0.003	cfm@	15	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.002	cfm@	7.0	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points	24	Impinger	1	Initial	597.9	Final	589.0
Sampling Location:	11s.1.9								2	638.3	663.6			
Date:	9/16/2003								3	644.2	653.1			
Technicians:	SCT/BMB								4	643.2	642.8			
Meter Box No.:	90394	Y_d:	0.999			5	655.1	655.3						
Probe/Pitot No.:	401 / HA-1	C_p:	0.84			6	1006.5	1024.5						
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	64.75	Stack Area (ft²):	22.87	Start Time:	13:10	Net Impinger Gain (g):	43.1			
Nozzle Dia:	0.256	0.256, 0.257, 0.256	Port Width (in.):	4.00	Port Length (in.):	4.00	End Time:	17:10	Theta	240				
Initial Meter Reading (ft³):	713.906	BP (in. Hg):	24.95	Static Pressure (in.):	-5.7									
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
NW 3	10	58	80	80	0.340	1.53	721.740	230	237	58	6.5			
NW 3	20	56	83	80	0.340	1.54	729.580	230	232	56	6.5			
NW 3	30	56	87	79	0.340	1.54	737.550	237	235	51	6.5			
NW 3	40	56	88	79	0.340	1.54	745.400	236	236	47	6.5			
NW 3	50	56	90	80	0.330	1.50	753.225	238	237	45	6.5			
NW 3	60	56	90	80	0.340	1.50	761.030	243	246	45	6.5			
NW 3	70	56	90	80	0.330	1.50	768.820	244	244	45	6.5			
NW 3	80	55	90	80	0.340	1.50	776.590	244	245	45	6.5			
NW 3	90	55	91	81	0.340	1.50	784.420	243	244	46	6.5			
NW 3	100	55	91	81	0.340	1.50	792.310	244	245	45	6.5			
NW 3	110	55	91	82	0.340	1.50	800.230	244	245	47	6.5			
NW 3	120	55	91	82	0.340	1.50	808.130	243	247	48	6.5			
NW 3	130	55	91	82	0.340	1.50	816.040	244	245	49	6.5			
NW 3	140	55	91	82	0.340	1.50	823.940	244	244	49	6.5			
NW 3	150	55	91	82	0.340	1.50	831.830	244	246	50	6.5			
NW 3	160	55	91	82	0.340	1.50	839.730	244	245	51	6.5			
NW 3	170	55	91	82	0.330	1.50	847.620	244	244	51	6.5			
NW 3	180	55	91	82	0.340	1.55	855.560	243	243	52	6.5			
NW 3	190	55	92	82	0.340	1.55	863.340	244	243	52	6.5			
NW 3	200	55	92	83	0.340	1.56	871.190	244	243	54	6.5			
NW 3	210	55	92	83	0.340	1.56	879.040	244	243	54	6.5			
NW 3	220	55	92	83	0.340	1.56	886.890	244	243	55	6.5			
NW 3	230	55	92	84	0.340	1.56	894.720	244	243	56	6.5			
NW 3	240	55	92	84	0.340	1.56	902.572	244	243	57	6.5			
Average / Net		55.4		85.7	0.3	1.5	188.666	241.8	242.4	50.3	6.5			

EPA REFERENCE METHOD 1 FIELD DATA SHEET CIRCULAR STACKS

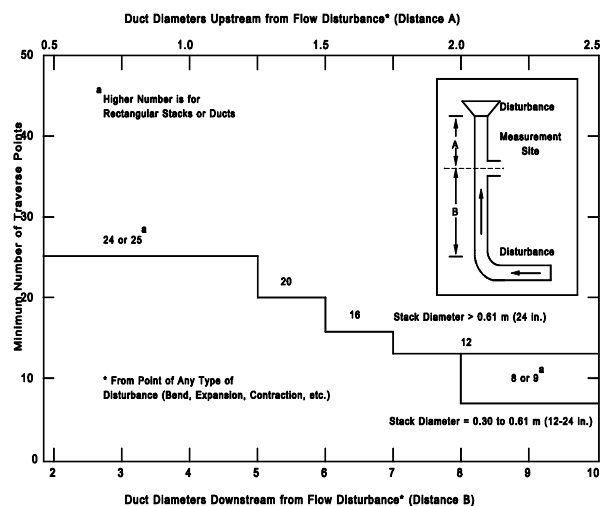
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 11S.1.9
 TRC Project No.: 31397-1600-00000
 Date: 9/16/2003
 Technician: B. Bauer
 Circular/Rectangular: C

Stack Diameter: 59.25
 Sample Port Diameter: 3.0
 Sample Port Depth: 4.25
 Diameters Upstream: 4.7
 Diameters Downstream: 4.7
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	5 8/16
2	8 4/16
3	11 4/16
4	14 12/16
5	19 1/16
6	25 5/16
7	42 7/16
8	48 11/16
9	53
10	56 8/16
11	59 8/16
12	62 4/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 11s.1.11 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_11 09 17 03 SAMPLE R1_0019.LAB	9/17/2003 7:44	ND	ND	ND	381.65	ND	2.18	380.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0020.LAB	9/17/2003 7:47	ND	ND	ND	359.80	ND	2.18	379.6	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0021.LAB	9/17/2003 7:49	ND	ND	ND	344.37	ND	2.17	376.8	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0022.LAB	9/17/2003 7:52	ND	ND	ND	339.69	ND	2.17	377.3	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0023.LAB	9/17/2003 7:55	ND	ND	ND	330.19	ND	2.18	379.0	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0024.LAB	9/17/2003 7:57	ND	ND	ND	312.53	ND	2.16	378.1	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0025.LAB	9/17/2003 8:00	ND	ND	ND	293.42	ND	2.16	379.2	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0026.LAB	9/17/2003 8:02	ND	ND	ND	305.36	ND	2.16	380.9	ND	ND	150.51	1.008
11S_1_11 09 17 03 SAMPLE R1_0027.LAB	9/17/2003 8:05	ND	ND	ND	305.43	ND	2.17	383.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0028.LAB	9/17/2003 8:08	ND	ND	ND	309.03	ND	2.16	383.6	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0029.LAB	9/17/2003 8:10	ND	ND	ND	311.05	ND	2.17	384.3	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0030.LAB	9/17/2003 8:13	ND	ND	ND	302.87	ND	2.17	384.7	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0031.LAB	9/17/2003 8:15	ND	ND	ND	293.67	ND	2.15	381.5	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0032.LAB	9/17/2003 8:18	ND	ND	ND	311.01	ND	2.16	383.2	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0033.LAB	9/17/2003 8:21	ND	ND	ND	300.59	ND	2.18	383.3	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0034.LAB	9/17/2003 8:23	ND	ND	ND	321.32	ND	2.53	381.9	ND	ND	150.51	1.008
11S_1_11 09 17 03 SAMPLE R1_0035.LAB	9/17/2003 8:26	ND	ND	ND	358.31	ND	2.50	382.6	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0036.LAB	9/17/2003 8:28	ND	ND	ND	302.84	ND	2.37	384.0	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0037.LAB	9/17/2003 8:31	ND	ND	ND	321.12	ND	2.20	384.6	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0038.LAB	9/17/2003 8:34	ND	ND	ND	309.79	ND	2.19	382.2	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0039.LAB	9/17/2003 8:36	ND	ND	ND	309.89	ND	2.19	382.0	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0040.LAB	9/17/2003 8:39	ND	ND	ND	292.88	ND	2.19	382.6	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0041.LAB	9/17/2003 8:41	ND	ND	ND	290.38	ND	2.21	386.0	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0042.LAB	9/17/2003 8:44	ND	ND	ND	280.89	ND	2.22	386.6	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0043.LAB	9/17/2003 8:47	ND	ND	ND	283.36	ND	2.22	387.2	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0044.LAB	9/17/2003 8:49	ND	ND	ND	280.59	ND	2.22	387.2	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0045.LAB	9/17/2003 8:52	ND	ND	ND	292.81	ND	2.22	389.6	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0046.LAB	9/17/2003 8:54	ND	ND	ND	300.40	ND	2.20	387.6	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0047.LAB	9/17/2003 8:57	ND	ND	ND	320.52	ND	2.22	390.4	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0048.LAB	9/17/2003 9:00	ND	ND	ND	298.75	ND	2.21	389.7	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0049.LAB	9/17/2003 9:02	ND	ND	ND	304.35	ND	2.22	392.2	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0050.LAB	9/17/2003 9:05	ND	ND	ND	300.46	ND	2.21	390.0	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0051.LAB	9/17/2003 9:07	ND	ND	ND	306.87	ND	2.22	393.3	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0052.LAB	9/17/2003 9:10	ND	ND	ND	278.53	ND	2.22	392.2	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0053.LAB	9/17/2003 9:13	ND	ND	ND	282.07	ND	2.22	392.8	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0054.LAB	9/17/2003 9:15	ND	ND	ND	277.67	ND	2.21	392.9	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0055.LAB	9/17/2003 9:18	ND	ND	ND	263.93	ND	2.21	393.0	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0056.LAB	9/17/2003 9:20	ND	ND	ND	259.49	ND	2.20	388.9	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0057.LAB	9/17/2003 9:23	ND	ND	ND	281.21	ND	2.19	387.8	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0058.LAB	9/17/2003 9:26	ND	ND	ND	248.55	ND	2.20	388.0	ND	ND	150.51	1.008
11S_1_11 09 17 03 SAMPLE R1_0059.LAB	9/17/2003 9:28	ND	ND	ND	260.70	ND	2.21	388.6	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0060.LAB	9/17/2003 9:31	ND	ND	ND	246.03	ND	2.20	386.6	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0061.LAB	9/17/2003 9:33	ND	ND	ND	242.36	ND	2.21	388.3	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0062.LAB	9/17/2003 9:36	ND	ND	ND	252.91	ND	2.21	388.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0063.LAB	9/17/2003 9:39	ND	ND	ND	244.14	ND	2.21	388.7	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0064.LAB	9/17/2003 9:41	ND	ND	ND	246.28	ND	2.21	389.3	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0065.LAB	9/17/2003 9:44	ND	ND	ND	256.22	ND	2.20	388.9	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0066.LAB	9/17/2003 9:46	ND	ND	ND	235.22	ND	2.19	386.7	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0067.LAB	9/17/2003 9:49	ND	ND	ND	246.56	ND	2.20	387.4	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0068.LAB	9/17/2003 9:52	ND	ND	ND	237.64	ND	2.22	390.1	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0069.LAB	9/17/2003 9:54	ND	ND	ND	264.24	ND	2.22	389.5	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0070.LAB	9/17/2003 9:57	ND	ND	ND	242.78	ND	2.21	388.2	ND	ND	150.51	1.008
11S_1_11 09 17 03 SAMPLE R1_0071.LAB	9/17/2003 9:59	ND	ND	ND	434.57	ND	2.22	389.1	ND	ND	149.76	1.003

Scrubber Outlet 11s.1.11 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_11 09 17 03 SAMPLE R1_0072.LAB	9/17/2003 10:02	ND	ND	ND	363.14	ND	2.22	388.7	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0073.LAB	9/17/2003 10:05	ND	ND	ND	332.33	ND	2.22	389.0	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0074.LAB	9/17/2003 10:07	ND	ND	ND	320.30	ND	2.21	386.0	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0075.LAB	9/17/2003 10:10	ND	ND	ND	320.67	ND	2.22	387.4	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0076.LAB	9/17/2003 10:12	ND	ND	ND	358.63	ND	2.21	386.9	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0077.LAB	9/17/2003 10:15	ND	ND	ND	375.37	ND	2.20	386.3	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0078.LAB	9/17/2003 10:18	ND	ND	ND	330.75	ND	2.20	386.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0079.LAB	9/17/2003 10:20	ND	ND	ND	310.42	ND	2.20	386.6	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0080.LAB	9/17/2003 10:23	ND	ND	ND	337.55	ND	2.19	384.0	ND	ND	150.51	1.008
11S_1_11 09 17 03 SAMPLE R1_0081.LAB	9/17/2003 10:25	ND	ND	ND	350.51	ND	2.20	385.8	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0082.LAB	9/17/2003 10:28	ND	ND	ND	367.71	ND	2.19	385.3	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0083.LAB	9/17/2003 10:31	ND	ND	ND	350.50	ND	2.18	382.6	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0084.LAB	9/17/2003 10:33	ND	ND	ND	385.43	ND	2.19	384.4	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0085.LAB	9/17/2003 10:36	ND	ND	ND	374.62	ND	2.18	381.4	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0086.LAB	9/17/2003 10:38	ND	ND	ND	391.18	ND	2.19	383.2	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0087.LAB	9/17/2003 10:41	ND	ND	ND	379.07	ND	2.17	380.4	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0088.LAB	9/17/2003 10:44	ND	ND	ND	379.93	ND	2.19	381.7	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0089.LAB	9/17/2003 10:46	ND	ND	ND	354.37	ND	2.17	378.8	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0090.LAB	9/17/2003 10:49	ND	ND	ND	333.38	ND	2.17	378.4	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0091.LAB	9/17/2003 10:51	ND	ND	ND	351.54	ND	2.18	380.5	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0092.LAB	9/17/2003 10:54	ND	ND	ND	329.12	ND	2.17	377.1	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0093.LAB	9/17/2003 10:57	ND	ND	ND	353.89	ND	2.18	380.0	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0094.LAB	9/17/2003 10:59	ND	ND	ND	351.25	ND	2.17	377.3	ND	ND	150.51	1.008
11S_1_11 09 17 03 SAMPLE R1_0095.LAB	9/17/2003 11:02	ND	ND	ND	360.48	ND	2.17	376.3	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0096.LAB	9/17/2003 11:04	ND	ND	ND	374.59	ND	2.18	377.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0097.LAB	9/17/2003 11:07	ND	ND	ND	384.53	ND	2.18	377.2	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0098.LAB	9/17/2003 11:10	ND	ND	ND	408.11	ND	2.17	376.7	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0099.LAB	9/17/2003 11:12	ND	ND	ND	384.33	ND	2.17	376.7	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0100.LAB	9/17/2003 11:15	ND	ND	ND	406.69	ND	2.17	375.6	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0101.LAB	9/17/2003 11:17	ND	ND	ND	386.94	ND	2.17	376.2	ND	ND	150.51	1.003
11S_1_11 09 17 03 SAMPLE R1_0102.LAB	9/17/2003 11:20	ND	ND	ND	386.05	ND	2.17	375.6	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0103.LAB	9/17/2003 11:23	ND	ND	ND	376.12	ND	2.16	374.0	ND	ND	150.51	1.008
11S_1_11 09 17 03 SAMPLE R1_0104.LAB	9/17/2003 11:25	ND	ND	ND	362.36	ND	2.16	373.4	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0105.LAB	9/17/2003 11:28	ND	ND	ND	421.15	ND	2.17	375.0	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0106.LAB	9/17/2003 11:30	ND	ND	ND	444.15	ND	2.17	375.0	ND	ND	149.76	1.003
11S_1_11 09 17 03 SAMPLE R1_0107.LAB	9/17/2003 11:33	ND	ND	ND	284.28	ND	2.16	372.8	ND	ND	150.51	1.008
11S_1_11 09 17 03 SAMPLE R1_0108.LAB	9/17/2003 11:36	ND	ND	ND	249.00	ND	2.16	372.0	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0109.LAB	9/17/2003 11:38	ND	ND	ND	534.82	ND	2.17	372.4	ND	ND	149.76	1.008
11S_1_11 09 17 03 SAMPLE R1_0110.LAB	9/17/2003 11:41	ND	ND	ND	483.71	ND	2.19	371.8	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0003.LAB	9/17/2003 12:05	ND	ND	ND	341.13	ND	2.21	394.7	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0004.LAB	9/17/2003 12:08	ND	ND	ND	315.89	ND	2.20	390.8	ND	ND	149.76	1.008
11S_1_11 09 17 03 RUN2 SAMPLE_0005.LAB	9/17/2003 12:10	ND	ND	ND	596.77	ND	2.20	389.3	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0006.LAB	9/17/2003 12:13	ND	ND	ND	448.34	ND	2.19	387.3	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0007.LAB	9/17/2003 12:15	ND	ND	ND	389.89	ND	2.19	386.4	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0008.LAB	9/17/2003 12:18	ND	ND	ND	416.48	ND	2.19	385.2	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0009.LAB	9/17/2003 12:21	ND	ND	ND	416.06	ND	2.18	381.6	ND	ND	149.76	1.008
11S_1_11 09 17 03 RUN2 SAMPLE_0010.LAB	9/17/2003 12:23	ND	ND	ND	413.79	ND	2.19	382.2	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0011.LAB	9/17/2003 12:26	ND	ND	ND	410.79	ND	2.20	383.4	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0012.LAB	9/17/2003 12:28	ND	ND	ND	391.35	ND	2.18	380.6	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0013.LAB	9/17/2003 12:31	ND	ND	ND	378.31	ND	2.18	380.5	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0014.LAB	9/17/2003 12:34	ND	ND	ND	385.99	ND	2.20	382.3	ND	ND	150.51	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0015.LAB	9/17/2003 12:36	ND	ND	ND	352.02	ND	2.18	379.4	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0016.LAB	9/17/2003 12:39	ND	ND	ND	326.84	ND	2.17	378.1	ND	ND	149.76	1.003

Scrubber Outlet 11s.1.11 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_11 09 17 03 RUN2 SAMPLE_0017.LAB	9/17/2003 12:41	ND	ND	ND	319.57	ND	2.17	377.7	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0018.LAB	9/17/2003 12:44	ND	ND	ND	305.47	ND	2.17	376.9	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0019.LAB	9/17/2003 12:47	ND	ND	ND	313.47	ND	2.17	376.9	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0020.LAB	9/17/2003 12:49	ND	ND	ND	305.04	ND	2.17	376.7	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0021.LAB	9/17/2003 12:52	ND	ND	ND	303.58	ND	2.17	377.0	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0022.LAB	9/17/2003 12:54	ND	ND	ND	294.97	ND	2.17	376.5	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0023.LAB	9/17/2003 12:57	ND	ND	ND	290.99	ND	2.17	375.3	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0024.LAB	9/17/2003 13:00	ND	ND	ND	293.78	ND	2.17	375.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0025.LAB	9/17/2003 13:02	ND	ND	ND	288.06	ND	2.17	374.7	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0026.LAB	9/17/2003 13:05	ND	ND	ND	287.66	ND	2.17	373.9	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0027.LAB	9/17/2003 13:07	ND	ND	ND	298.49	ND	2.18	374.4	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0028.LAB	9/17/2003 13:10	ND	ND	ND	295.85	ND	2.17	372.9	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0029.LAB	9/17/2003 13:13	ND	ND	ND	293.89	ND	2.17	373.5	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0030.LAB	9/17/2003 13:15	ND	ND	ND	301.81	ND	2.17	373.0	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0031.LAB	9/17/2003 13:18	ND	ND	ND	287.60	ND	2.17	372.9	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0032.LAB	9/17/2003 13:20	ND	ND	ND	288.79	ND	2.18	374.3	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0033.LAB	9/17/2003 13:23	ND	ND	ND	278.75	ND	2.18	374.2	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0034.LAB	9/17/2003 13:26	ND	ND	ND	270.24	ND	2.17	372.6	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0035.LAB	9/17/2003 13:28	ND	ND	ND	270.07	ND	2.18	373.8	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0036.LAB	9/17/2003 13:31	ND	ND	ND	272.12	ND	2.17	372.0	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0037.LAB	9/17/2003 13:33	ND	ND	ND	263.04	ND	2.17	371.5	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0038.LAB	9/17/2003 13:36	ND	ND	ND	256.40	ND	2.17	371.6	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0039.LAB	9/17/2003 13:39	ND	ND	ND	259.52	ND	2.17	371.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0040.LAB	9/17/2003 13:41	ND	ND	ND	247.77	ND	2.17	371.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0041.LAB	9/17/2003 13:44	ND	ND	ND	252.63	ND	2.17	370.6	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0042.LAB	9/17/2003 13:46	ND	ND	ND	262.07	ND	2.18	371.1	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0043.LAB	9/17/2003 13:49	ND	ND	ND	254.80	ND	2.18	372.7	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0044.LAB	9/17/2003 13:52	ND	ND	ND	256.79	ND	2.18	372.7	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0045.LAB	9/17/2003 13:54	ND	ND	ND	274.68	ND	2.17	370.4	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0046.LAB	9/17/2003 13:57	ND	ND	ND	249.87	ND	2.17	370.3	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0047.LAB	9/17/2003 13:59	ND	ND	ND	244.41	ND	2.18	371.6	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0048.LAB	9/17/2003 14:02	ND	ND	ND	245.52	ND	2.18	371.4	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0049.LAB	9/17/2003 14:05	ND	ND	ND	253.51	ND	2.18	372.1	ND	ND	150.51	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0050.LAB	9/17/2003 14:07	ND	ND	ND	237.88	ND	2.18	372.2	ND	ND	150.51	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0051.LAB	9/17/2003 14:10	ND	ND	ND	231.78	ND	2.17	371.3	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0052.LAB	9/17/2003 14:12	ND	ND	ND	286.37	ND	2.16	369.3	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0053.LAB	9/17/2003 14:15	ND	ND	ND	343.79	ND	2.17	370.9	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0054.LAB	9/17/2003 14:18	ND	ND	ND	348.08	ND	2.17	371.2	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0055.LAB	9/17/2003 14:20	ND	ND	ND	349.37	ND	2.17	372.2	ND	ND	150.51	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0056.LAB	9/17/2003 14:23	ND	ND	ND	322.27	ND	2.16	370.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0057.LAB	9/17/2003 14:25	ND	ND	ND	326.24	ND	2.16	369.4	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0058.LAB	9/17/2003 14:28	ND	ND	ND	346.64	ND	2.18	371.6	ND	ND	150.51	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0059.LAB	9/17/2003 14:31	ND	ND	ND	363.61	ND	2.16	368.8	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0060.LAB	9/17/2003 14:33	ND	ND	ND	342.61	ND	2.17	369.4	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0061.LAB	9/17/2003 14:36	ND	ND	ND	337.30	ND	2.17	368.4	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0062.LAB	9/17/2003 14:38	ND	ND	ND	276.16	ND	2.18	370.3	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0063.LAB	9/17/2003 14:41	ND	ND	ND	287.33	ND	2.18	370.7	ND	ND	150.51	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0064.LAB	9/17/2003 14:44	ND	ND	ND	275.09	ND	2.18	370.6	ND	ND	150.51	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0065.LAB	9/17/2003 14:46	ND	ND	ND	288.19	ND	2.16	368.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0066.LAB	9/17/2003 14:49	ND	ND	ND	274.70	ND	2.17	368.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0067.LAB	9/17/2003 14:51	ND	ND	ND	291.59	ND	2.18	370.9	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0068.LAB	9/17/2003 14:54	ND	ND	ND	277.52	ND	2.18	374.5	ND	ND	150.51	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0069.LAB	9/17/2003 14:57	ND	ND	ND	295.19	ND	2.16	375.1	ND	ND	149.76	1.003

Scrubber Outlet 11s.1.11 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_11 09 17 03 RUN2 SAMPLE_0070.LAB	9/17/2003 14:59	ND	ND	ND	296.37	ND	2.17	379.1	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0071.LAB	9/17/2003 15:02	ND	ND	ND	271.21	ND	2.18	383.4	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0072.LAB	9/17/2003 15:04	ND	ND	ND	263.23	ND	2.18	386.1	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0073.LAB	9/17/2003 15:07	ND	ND	ND	273.59	ND	2.17	386.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0074.LAB	9/17/2003 15:10	ND	ND	ND	261.74	ND	2.18	388.4	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0075.LAB	9/17/2003 15:12	ND	ND	ND	270.50	ND	2.20	391.8	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0076.LAB	9/17/2003 15:15	ND	ND	ND	293.53	ND	2.20	393.8	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0077.LAB	9/17/2003 15:17	ND	ND	ND	325.08	ND	2.20	394.9	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0078.LAB	9/17/2003 15:20	ND	ND	ND	334.73	ND	2.19	394.0	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0079.LAB	9/17/2003 15:23	ND	ND	ND	280.61	ND	2.20	397.0	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0080.LAB	9/17/2003 15:25	ND	ND	ND	280.40	ND	2.20	397.8	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0081.LAB	9/17/2003 15:28	ND	ND	ND	378.41	ND	2.20	396.8	ND	ND	150.51	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0082.LAB	9/17/2003 15:30	ND	ND	ND	266.16	ND	2.19	395.4	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0083.LAB	9/17/2003 15:33	ND	ND	ND	226.67	ND	2.20	398.7	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0084.LAB	9/17/2003 15:36	ND	ND	ND	218.39	ND	2.19	397.0	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0085.LAB	9/17/2003 15:38	ND	ND	ND	225.01	ND	2.20	398.0	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0086.LAB	9/17/2003 15:41	ND	ND	ND	219.74	ND	2.20	398.4	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0087.LAB	9/17/2003 15:43	ND	ND	ND	206.64	ND	2.20	398.2	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0088.LAB	9/17/2003 15:46	ND	ND	ND	224.97	ND	2.21	398.5	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0089.LAB	9/17/2003 15:49	ND	ND	ND	223.85	ND	2.21	398.4	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0090.LAB	9/17/2003 15:51	ND	ND	ND	298.14	ND	2.21	398.9	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0091.LAB	9/17/2003 15:54	ND	ND	ND	280.59	ND	2.21	398.9	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0092.LAB	9/17/2003 15:58	ND	ND	ND	245.40	ND	2.21	398.8	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0093.LAB	9/17/2003 16:01	ND	ND	ND	242.84	ND	2.21	396.1	ND	ND	149.76	1.003
11S_1_11 09 17 03 RUN2 SAMPLE_0094.LAB	9/17/2003 16:03	ND	ND	ND	260.31	ND	2.22	397.8	ND	ND	149.76	0.997
11S_1_11 09 17 03 RUN2 SAMPLE_0095.LAB	9/17/2003 16:06	ND	ND	ND	270.56	ND	2.22	397.3	ND	ND	149.76	0.997
Average _{wet}		ND	ND	ND	312.06	ND	2.19	381.90	ND	ND	149.95	1.003

Reference Method Calculations

Fab 11 South

11s.1.11

Run No.	Run 1	Run 2	
Date	9/17/2003	9/17/2003	
Start Time	7:43	12:05	AVERAGE
Stop Time	11:43	16:05	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.92	24.92	24.92
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	82.3	84.0	83.1
Volume Metered (acf)	184.081	181.577	182.829
Volume Metered (dscf)	150.774	148.248	149.511
Volume of Water Collected (g)	69.2	64.9	67.1
Volume of Water Collected (scf)	3.263	3.060	3.161
Average Delta H (in. H ₂ O)	1.50	1.46	1.48
AVG SQRT of dH (in. H ₂ O)	1.2257	1.2074	1.2166
Measured Moisture (%)	2.1%	2.0%	2.1%
Saturation Moisture (%)	1.9%	1.9%	1.9%
Moisture Used for Calculations (%)	1.9%	1.9%	1.9%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.63	28.64	28.63
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-5.70	-5.70	-5.70
Stack Pressure (in. Hg)	24.50	24.50	24.50
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.5806	0.5668	0.5737
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.5721	0.5403	0.5562
Stack Temperature Isokinetic Traverse (°F)	58.2	57.5	57.9
Stack Temperature Flow Traverse (°F)	61.3	61.5	61.4
Velocity (ft/sec) Isokinetic Traverse	35.83	34.96	35.40
Velocity (ft/sec) Flow Traverse	35.41	33.45	34.43
Nozzle Diameter (in.)	0.257	0.257	0.257
% Isokinetics	99.2	99.8	99.5
Stack Diameter (in.)	59.00	59.00	59.00
Stack Area (ft ²)	18.99	18.99	18.99
Stack Flow Rate Isokinetic Traverse (acfm)	40,821	39,821	40,321
Stack Flow Rate Flow Traverse (acfm)	40,340	38,108	39,224
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	33,381	32,622	33,002
Stack Flow Rate Outlet Flow Traverse (dscfm)	32,796	30,979	31,887
Chlorine			
Collected Cl. micrograms (ug)	17.9	80.8	49.4
Cl ₂ Concentration (ug/dscf)	0.12	0.55	0.33
Cl ₂ Concentration (ppb)	1	7	4
Cl ₂ Emission Rate (lbs/hr)	0.0005	0.0022	0.0014

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/17/2003
Unit Number:	11s.1.11	Stack Diameter (in.):	59.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.6
Run No.:	1	Operators:	BMB/PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.92
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.9 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	7:23
		End:	7:39

NorthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.29	61
2	0.30	61
3	0.32	60
4	0.32	60
5	0.31	60
6	0.29	60
7	0.30	60
8	0.30	60
9	0.32	60
10	0.30	59
11	0.27	63
12	0.23	68

SouthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.41	60
2	0.40	60
3	0.40	60
4	0.41	60
5	0.37	60
6	0.36	60
7	0.35	60
8	0.32	60
9	0.34	60
10	0.34	60
11	0.31	67
12	0.33	71
Total Average:	sqrt dp = 0.5721	61.3

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/17/2003
Unit Number:	11s.1.11	Stack Diameter (in.):	59.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.7
Run No.:	2	Operators:	BMB/PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.92
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.9 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	16:28
		End:	16:34

NorthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.32	62
2	0.33	62
3	0.31	62
4	0.32	61
5	0.30	60
6	0.31	60
7	0.31	61
8	0.34	59
9	0.32	60
10	0.31	61
11	0.28	62
12	0.25	62

SouthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.22	62
2	0.27	62
3	0.26	62
4	0.24	62
5	0.25	62
6	0.24	61
7	0.28	61
8	0.31	60
9	0.32	61
10	0.33	62
11	0.31	65
12	0.30	65
Total Average: grrt dp = 0.540		61.5

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 South						Leak Check Initial:	0.000	cfm@	15	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.000	cfm@	6	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	11s.1.11								1		659.4		653.9	
Date:	9/17/2003							24	2		728.1		754.9	
Technicians:	BMB/PER/SCT								3		535.9		545.2	
Meter Box No.:	90401	Y_d:	1.006			4		635.3		640.2				
Probe/Pitot No.	401 / HA-1	C_p:	0.84			5		662.9		664.3				
Nozzle No.:	NA	dH_g:	1.725	Stack Dia. (in.):	59.00	Stack Area (ft²):	18.99	6		827.0		859.3		
Nozzle Dia:	0.257	0.257, 0.256, 0.257		Port Width (in.):	3.00	Port Length (in.):	4.50	Start Time:	7:43	Net Impinger Gain (g):	69.2			
Initial Meter Reading (ft³):	66.907			BP (in. Hg):	24.92	Static Pressure (in.):	-5.7	End Time:	11:43	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
NW 8	10	61	71	71	0.330	1.44	74.140	236	245	60	2			
NW 8	20	59	77	71	0.340	1.50	81.670	243	233	57	2			
NW 8	30	59	82	71	0.340	1.50	89.390	243	233	57	2			
NW 8	40	58	85	72	0.340	1.51	97.010	242	235	56	2			
NW 8	50	58	87	73	0.340	1.52	104.610	242	233	55	2			
NW 8	60	58	88	74	0.330	1.48	112.230	242	234	55	2			
NW 8	70	58	89	76	0.340	1.53	119.950	242	235	56	2			
NW 8	80	58	89	76	0.340	1.53	127.640	242	233	55	2			
NW 8	90	58	90	77	0.340	1.53	135.180	243	233	53	2			
NW 8	100	58	90	78	0.340	1.53	142.860	243	234	52	2			
NW 8	110	58	90	78	0.330	1.48	150.570	243	234	53	2			
NW 8	120	58	90	78	0.330	1.48	158.280	242	233	52	2			
NW 8	130	58	90	78	0.340	1.53	166.000	242	233	52	2			
NW 8	140	58	90	78	0.340	1.50	173.700	242	234	52	2			
NW 8	150	58	90	79	0.330	1.50	181.390	252	233	52	2			
NW 8	160	58	90	79	0.340	1.50	189.120	249	250	52	2			
NW 8	170	58	90	79	0.330	1.50	196.750	249	252	52	2			
NW 8	180	58	90	79	0.330	1.50	204.430	249	251	52	2			
NW 8	190	58	90	79	0.340	1.50	212.120	250	251	52	2			
NW 8	200	58	90	79	0.340	1.50	219.910	249	251	52	2			
NW 8	210	58	91	79	0.340	1.50	227.670	249	252	52	2			
NW 8	220	58	91	79	0.340	1.50	235.460	250	252	52	2			
NW 8	230	58	90	79	0.340	1.50	243.220	250	251	53	2			
NW 8	240	58	90	79	0.340	1.50	250.988	250	253	53	2			
Average/Net		58.2		82.3	0.3	1.5	184.081	245.2	240.8	53.6	2.0			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

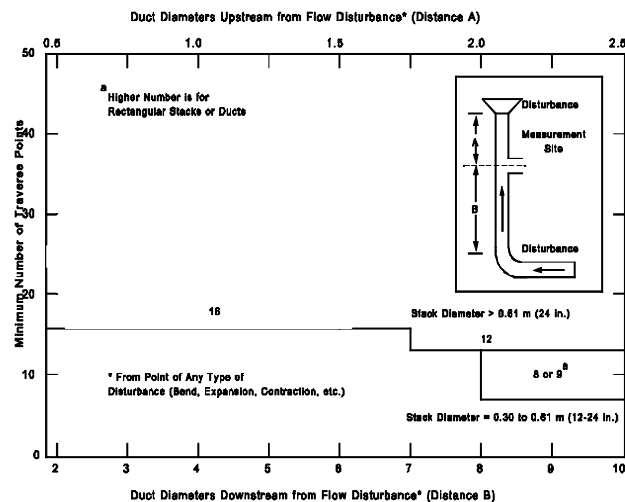
Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2
Plant Name:	Fab 11 South						Leak Check Initial:	0.004	cfm@	11	(in. Hg)	
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.002	cfm@	8.0	(in. Hg)	
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	11s.1.11						1	601.6	613.9			
Date:	9/17/2003						24	2	630.3	643.3		
Technicians:	BMB/PER/SCT						3	646.0	652.1			
Meter Box No.:	90401	Y_d:	1.006	4	637.8	638.6						
Probe / Pitot No.:	401 / HA-1	C_p:	0.84	5	644.1	643.0						
Nozzle No.:	NA	dH_g:	1.725	Stack Dia. (in.):	59.00	Stack Area (ft²):	18.99	6	938.5	972.3		
Nozzle Dia:	0.257	0.257, 0.256, 0.257	Port Width (in.):	3.00	Port Length (in.):	4.50	Start Time:	12:05	Net Impinger Gain (g):	64.9		
Initial Meter Reading (ft³):	251.498	BP (in. Hg):	24.92	Static Pressure (in.):	-5.7	End Time:	16:05	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
NW 8	10	58	77	78	0.330	1.50	259.170	231	257	55	3.5	
NW 8	20	58	85	77	0.320	1.45	266.720	251	255	53	3.5	
NW 8	30	58	88	77	0.320	1.50	274.250	241	257	49	3.5	
NW 8	40	58	89	77	0.320	1.45	281.780	242	251	48	3.5	
NW 8	50	58	89	78	0.330	1.45	289.340	242	251	48	3.5	
NW 8	60	58	90	78	0.320	1.45	296.880	249	251	48	3.5	
NW 8	70	57	90	78	0.320	1.45	304.430	249	251	48	3.5	
NW 8	80	58	90	78	0.320	1.45	311.980	249	250	49	3.5	
NW 8	90	58	90	79	0.320	1.45	319.510	248	252	49	3.5	
NW 8	100	58	90	78	0.320	1.45	327.050	248	251	49	3.5	
NW 8	110	58	91	79	0.310	1.45	334.570	249	251	50	3.5	
NW 8	120	58	91	79	0.320	1.45	342.090	248	252	50	3.5	
NW 8	130	57	90	79	0.320	1.45	349.610	248	250	51	3.5	
NW 8	140	57	91	79	0.320	1.45	357.130	248	250	51	3.5	
NW 8	150	57	91	79	0.320	1.45	364.740	249	249	53	3.5	
NW 8	160	57	90	79	0.320	1.45	372.360	248	251	54	3.5	
NW 8	170	58	90	79	0.330	1.49	379.970	248	251	47	3.5	
NW 8	180	57	91	79	0.330	1.50	387.580	248	251	46	3.5	
NW 8	190	57	91	80	0.320	1.45	395.230	249	250	46	3.5	
NW 8	200	57	91	79	0.320	1.45	402.780	248	250	47	3.5	
NW 8	210	57	91	79	0.320	1.45	410.320	248	251	48	3.5	
NW 8	220	57	90	79	0.320	1.45	417.900	249	252	49	3.5	
NW 8	230	58	90	79	0.320	1.45	425.520	249	250	50	3.5	
NW 8	240	57	90	79	0.320	1.45	433.075	248	251	51	3.5	
Average / Net		57.5		84.0	0.3	1.5	181.577	247.0	251.5	49.5	3.5	

EPA REFERENCE METHOD 1 FIELD DATA SHEET CIRCULAR STACKS

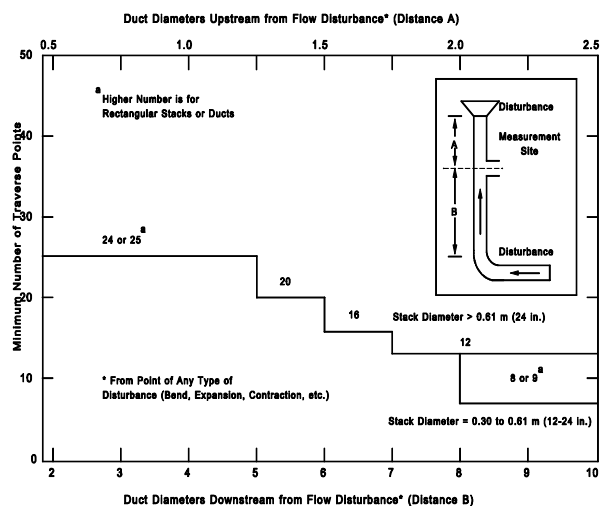
Firm Name: **INTEL**
 Plant Location: **Rio Rancho, NM**
 Sampling Location: **11s.1.11**
 TRC Project No.: **31397-1600-00000**
 Date: **9/17/2003**
 Technician: **B. Bauer**
 Circular/Rectangular: **C**

Stack Diameter: **59.0**
 Sample Port Diameter: **3.0**
 Sample Port Depth: **4.5**
 Diameters Upstream: **3.6**
 Diameters Downstream: **3.9**
 Flow or Particulate Test: **P**
 Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	5 12/16
2	8 7/16
3	11 7/16
4	14 15/16
5	19 4/16
6	25 8/16
7	42 8/16
8	48 12/16
9	53 1/16
10	56 9/16
11	59 9/16
12	62 4/16
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Scrubber Inlet 11s.1.14 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_14 INLET 09 19 03 SAMPLE_0024.LAB	9/19/2003 8:15	ND	ND	517.79	924.69	ND	1.40	382.9	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0025.LAB	9/19/2003 8:17	ND	ND	519.09	1154.22	ND	1.40	384.4	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0026.LAB	9/19/2003 8:20	ND	ND	496.78	842.07	ND	1.40	383.8	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0027.LAB	9/19/2003 8:23	ND	ND	494.76	1112.87	ND	1.40	383.4	ND	55.309	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0028.LAB	9/19/2003 8:26	ND	ND	544.52	799.98	ND	1.40	383.5	ND	22.585	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0029.LAB	9/19/2003 8:28	ND	ND	513.49	1072.02	ND	1.41	382.4	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0030.LAB	9/19/2003 8:31	ND	ND	573.53	719.19	ND	1.41	383.5	ND	80.171	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0031.LAB	9/19/2003 8:34	ND	ND	589.37	947.54	ND	1.40	383.9	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0032.LAB	9/19/2003 8:37	ND	ND	560.12	847.35	ND	1.39	382.1	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0033.LAB	9/19/2003 8:39	ND	ND	572.53	1210.36	ND	1.40	383.1	ND	33.190	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0034.LAB	9/19/2003 8:42	ND	ND	581.74	835.74	ND	1.40	383.7	ND	24.145	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0035.LAB	9/19/2003 8:45	ND	ND	570.70	1028.14	ND	1.39	382.0	ND	31.444	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0036.LAB	9/19/2003 8:48	ND	ND	592.88	825.30	ND	1.39	382.0	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0037.LAB	9/19/2003 8:50	ND	ND	588.25	980.22	ND	1.40	383.7	ND	73.381	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0038.LAB	9/19/2003 8:53	ND	ND	637.76	755.16	ND	1.40	383.7	ND	45.277	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0039.LAB	9/19/2003 8:56	ND	ND	632.60	1029.25	ND	1.39	384.5	ND	27.846	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0040.LAB	9/19/2003 8:59	ND	ND	683.96	783.36	ND	1.39	384.3	ND	70.395	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0041.LAB	9/19/2003 9:01	ND	ND	699.53	1009.89	ND	1.39	382.6	ND	23.444	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0042.LAB	9/19/2003 9:04	ND	ND	709.59	890.02	ND	1.40	384.4	ND	54.380	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0043.LAB	9/19/2003 9:07	ND	ND	730.03	982.07	ND	1.39	385.0	ND	73.542	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0044.LAB	9/19/2003 9:10	ND	ND	820.28	752.09	ND	1.40	387.4	ND	50.895	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0045.LAB	9/19/2003 9:12	ND	ND	801.79	933.59	ND	1.40	385.1	ND	51.470	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0046.LAB	9/19/2003 9:15	ND	ND	832.12	778.90	ND	1.40	384.7	ND	44.065	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0047.LAB	9/19/2003 9:18	ND	ND	794.09	1037.30	ND	1.41	387.2	ND	49.527	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0048.LAB	9/19/2003 9:21	ND	ND	880.53	775.40	ND	1.39	383.7	ND	73.105	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0049.LAB	9/19/2003 9:24	ND	ND	861.43	1006.11	ND	1.40	385.7	ND	20.978	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0050.LAB	9/19/2003 9:26	ND	ND	899.14	825.89	ND	1.39	383.3	ND	94.392	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0051.LAB	9/19/2003 9:29	ND	ND	920.34	812.27	ND	1.40	382.3	ND	26.786	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0052.LAB	9/19/2003 9:32	ND	ND	918.06	827.89	ND	1.40	382.9	ND	51.013	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0053.LAB	9/19/2003 9:35	ND	ND	950.36	758.88	ND	1.40	383.7	ND	38.503	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0054.LAB	9/19/2003 9:37	ND	ND	955.39	774.13	ND	1.40	384.0	ND	28.857	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0055.LAB	9/19/2003 9:40	ND	ND	916.98	1457.98	ND	1.41	383.9	ND	27.791	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0056.LAB	9/19/2003 9:43	ND	ND	978.58	808.05	ND	1.42	385.8	ND	64.791	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0057.LAB	9/19/2003 9:46	ND	ND	978.78	788.37	ND	1.42	383.5	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0058.LAB	9/19/2003 9:48	ND	ND	952.21	787.63	ND	1.42	383.1	ND	34.568	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0059.LAB	9/19/2003 9:51	ND	ND	967.27	981.21	ND	1.42	383.5	ND	28.641	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0060.LAB	9/19/2003 9:54	ND	ND	977.16	785.68	ND	1.40	381.7	ND	19.287	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0061.LAB	9/19/2003 9:57	ND	ND	950.43	915.00	ND	1.40	384.4	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0062.LAB	9/19/2003 9:59	ND	ND	940.71	994.78	ND	1.40	384.5	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0063.LAB	9/19/2003 10:02	ND	ND	916.51	1007.73	ND	1.40	384.7	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0064.LAB	9/19/2003 10:05	ND	ND	923.04	977.64	ND	1.41	385.3	ND	24.031	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0065.LAB	9/19/2003 10:08	ND	ND	960.82	858.72	ND	1.40	384.5	ND	35.381	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0066.LAB	9/19/2003 10:10	ND	ND	955.03	890.69	ND	1.42	386.0	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0067.LAB	9/19/2003 10:13	ND	ND	963.22	903.05	ND	1.44	386.9	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0068.LAB	9/19/2003 10:16	ND	ND	930.44	879.51	ND	1.42	385.2	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0069.LAB	9/19/2003 10:19	ND	ND	934.79	912.23	ND	1.41	384.7	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0070.LAB	9/19/2003 10:21	ND	ND	910.53	937.33	ND	1.41	386.4	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0071.LAB	9/19/2003 10:24	ND	ND	893.95	862.21	ND	1.41	385.2	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0072.LAB	9/19/2003 10:27	ND	ND	866.26	868.38	ND	1.40	384.2	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0073.LAB	9/19/2003 10:30	ND	ND	860.14	852.62	ND	1.42	385.9	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0074.LAB	9/19/2003 10:32	ND	ND	840.82	891.17	ND	1.41	384.2	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0075.LAB	9/19/2003 10:35	ND	ND	813.30	960.51	ND	1.41	385.6	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0076.LAB	9/19/2003 10:38	ND	ND	800.50	901.37	ND	1.41	385.4	ND	21.352	150.51	1.001

Scrubber Inlet 11s.1.14 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_14 INLET 09 19 03 SAMPLE_0077.LAB	9/19/2003 10:41	ND	ND	788.27	883.53	ND	1.42	384.4	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0078.LAB	9/19/2003 10:43	ND	ND	760.78	921.72	ND	1.41	385.0	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0079.LAB	9/19/2003 10:46	ND	ND	758.39	835.93	ND	1.40	383.4	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0080.LAB	9/19/2003 10:49	ND	ND	724.99	890.01	ND	1.40	381.3	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0081.LAB	9/19/2003 10:52	ND	ND	717.94	1491.24	ND	1.41	383.1	ND	18.274	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0082.LAB	9/19/2003 10:54	ND	ND	743.23	822.74	ND	1.42	384.9	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0083.LAB	9/19/2003 10:57	ND	ND	713.05	863.13	ND	1.40	383.8	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0084.LAB	9/19/2003 11:00	ND	ND	703.66	809.98	ND	1.40	384.5	ND	30.985	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0085.LAB	9/19/2003 11:03	ND	ND	692.23	819.19	ND	1.41	384.3	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0086.LAB	9/19/2003 11:06	ND	ND	674.50	873.11	ND	1.42	384.6	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0087.LAB	9/19/2003 11:08	ND	ND	706.62	747.03	ND	1.41	384.7	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0088.LAB	9/19/2003 11:11	ND	ND	675.43	898.91	ND	1.41	385.2	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0089.LAB	9/19/2003 11:14	ND	ND	686.67	852.00	ND	1.41	385.9	ND	22.036	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0090.LAB	9/19/2003 11:17	ND	ND	695.12	811.32	ND	1.41	387.6	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0091.LAB	9/19/2003 11:19	ND	ND	663.39	951.58	ND	1.42	386.4	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0092.LAB	9/19/2003 11:22	ND	ND	690.72	838.44	ND	1.40	383.5	ND	19.852	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0093.LAB	9/19/2003 11:25	ND	ND	673.64	873.71	ND	1.41	383.0	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0094.LAB	9/19/2003 11:28	ND	ND	654.24	886.02	ND	1.42	385.3	ND	24.589	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0095.LAB	9/19/2003 11:30	ND	ND	662.90	829.75	ND	1.41	383.4	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0096.LAB	9/19/2003 11:33	ND	ND	678.88	755.61	ND	1.41	383.1	ND	18.963	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0097.LAB	9/19/2003 11:36	ND	ND	690.47	676.38	ND	1.42	385.3	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0098.LAB	9/19/2003 11:39	ND	ND	658.77	764.86	ND	1.43	388.1	ND	18.453	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0099.LAB	9/19/2003 11:41	ND	ND	694.06	704.07	ND	1.44	387.3	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0100.LAB	9/19/2003 11:44	ND	ND	681.35	1030.68	ND	1.45	387.3	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0101.LAB	9/19/2003 11:47	ND	ND	697.51	750.71	ND	1.44	388.0	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0102.LAB	9/19/2003 11:50	ND	ND	709.08	787.16	ND	1.45	386.3	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0103.LAB	9/19/2003 11:52	ND	ND	686.42	774.25	ND	1.47	387.4	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0104.LAB	9/19/2003 11:55	ND	ND	704.29	767.28	ND	1.46	385.1	ND	ND	150.51	1.006
11S_1_14 INLET 09 19 03 SAMPLE_0105.LAB	9/19/2003 11:58	ND	ND	687.60	710.88	ND	1.43	385.6	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0106.LAB	9/19/2003 12:01	ND	ND	675.86	806.89	ND	1.43	385.7	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0107.LAB	9/19/2003 12:03	ND	ND	650.36	753.95	ND	1.44	385.0	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0108.LAB	9/19/2003 12:06	ND	ND	658.43	809.86	ND	1.45	384.6	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0109.LAB	9/19/2003 12:09	ND	ND	635.58	740.67	ND	1.43	389.6	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0110.LAB	9/19/2003 12:12	ND	ND	624.26	863.26	ND	1.44	390.9	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0116.LAB	9/19/2003 12:53	ND	ND	625.43	481.57	ND	1.38	382.7	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0117.LAB	9/19/2003 12:56	ND	ND	622.70	411.33	ND	1.39	384.2	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0118.LAB	9/19/2003 12:59	ND	ND	634.75	347.12	ND	1.39	384.8	ND	19.786	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0119.LAB	9/19/2003 13:02	ND	ND	634.29	409.18	ND	1.38	385.8	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0120.LAB	9/19/2003 13:05	ND	ND	601.99	438.37	ND	1.37	383.0	ND	ND	149.76	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0121.LAB	9/19/2003 13:07	ND	ND	631.56	494.37	ND	1.39	385.0	ND	39.431	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0122.LAB	9/19/2003 13:10	ND	ND	675.67	326.02	ND	1.38	384.9	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0123.LAB	9/19/2003 13:13	ND	ND	652.73	286.79	ND	1.39	385.9	ND	26.180	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0124.LAB	9/19/2003 13:16	ND	ND	674.33	289.79	ND	1.38	384.0	ND	31.119	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0125.LAB	9/19/2003 13:18	ND	ND	694.03	351.30	ND	1.38	385.7	ND	20.276	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0126.LAB	9/19/2003 13:21	ND	ND	697.39	326.94	ND	1.39	385.3	ND	19.962	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0127.LAB	9/19/2003 13:24	ND	ND	708.03	319.10	ND	1.38	385.6	ND	24.799	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0128.LAB	9/19/2003 13:27	ND	ND	761.54	312.13	ND	1.37	385.2	ND	95.031	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0129.LAB	9/19/2003 13:29	ND	ND	850.59	305.89	ND	1.38	387.9	ND	73.160	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0130.LAB	9/19/2003 13:32	ND	ND	881.02	256.46	ND	1.38	388.1	ND	54.320	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0131.LAB	9/19/2003 13:35	ND	ND	905.96	223.86	ND	1.38	389.0	ND	36.183	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0132.LAB	9/19/2003 13:38	ND	ND	909.28	253.58	ND	1.38	390.2	ND	27.736	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0133.LAB	9/19/2003 13:40	ND	ND	908.78	209.22	ND	1.39	388.0	ND	48.327	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0134.LAB	9/19/2003 13:43	ND	ND	888.05	243.61	ND	1.40	383.9	ND	20.009	150.51	1.001

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Inlet 11s.1.14 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_14 INLET 09 19 03 SAMPLE_0135.LAB	9/19/2003 13:46	ND	ND	917.66	210.04	ND	1.40	386.8	ND	48.692	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0136.LAB	9/19/2003 13:49	ND	ND	921.99	213.06	ND	1.41	387.3	ND	28.788	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0137.LAB	9/19/2003 13:51	ND	ND	909.27	200.19	ND	1.39	387.9	ND	56.733	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0138.LAB	9/19/2003 13:54	ND	ND	913.56	213.10	ND	1.38	386.5	ND	22.249	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0139.LAB	9/19/2003 13:57	ND	ND	891.62	209.41	ND	1.39	387.8	ND	18.086	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0140.LAB	9/19/2003 14:00	ND	ND	879.62	270.27	ND	1.39	386.9	ND	93.488	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0141.LAB	9/19/2003 14:02	ND	ND	979.87	194.81	ND	1.41	387.9	ND	30.542	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0142.LAB	9/19/2003 14:05	ND	ND	914.90	724.75	ND	1.41	387.6	ND	48.632	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0143.LAB	9/19/2003 14:08	ND	ND	961.80	312.64	ND	1.40	385.0	ND	50.219	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0144.LAB	9/19/2003 14:11	ND	ND	968.44	272.04	ND	1.40	387.3	ND	74.440	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0145.LAB	9/19/2003 14:13	ND	ND	966.86	209.25	ND	1.40	384.6	ND	24.077	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0146.LAB	9/19/2003 14:16	ND	ND	922.68	301.98	ND	1.40	385.1	ND	46.756	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0147.LAB	9/19/2003 14:19	ND	ND	939.67	242.45	ND	1.39	384.1	ND	37.031	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0148.LAB	9/19/2003 14:22	ND	ND	900.11	270.70	ND	1.40	386.7	ND	19.728	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0149.LAB	9/19/2003 14:24	ND	ND	950.17	ND	ND	1.38	384.3	ND	60.845	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0150.LAB	9/19/2003 14:27	ND	ND	940.73	ND	ND	1.38	385.0	ND	28.589	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0151.LAB	9/19/2003 14:30	ND	ND	966.20	ND	ND	1.37	384.9	ND	61.005	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0152.LAB	9/19/2003 14:33	ND	ND	970.71	ND	ND	1.38	387.6	ND	31.342	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0153.LAB	9/19/2003 14:36	ND	ND	995.81	ND	ND	1.38	387.0	ND	58.711	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0154.LAB	9/19/2003 14:38	ND	ND	952.99	ND	ND	1.38	387.0	ND	30.531	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0155.LAB	9/19/2003 14:41	ND	ND	976.55	ND	ND	1.38	387.3	ND	51.445	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0156.LAB	9/19/2003 14:44	ND	ND	941.46	ND	ND	1.37	386.3	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0157.LAB	9/19/2003 14:47	ND	ND	944.11	ND	ND	1.38	387.4	ND	26.971	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0158.LAB	9/19/2003 14:49	ND	ND	901.07	171.27	ND	1.38	387.3	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0159.LAB	9/19/2003 14:52	ND	ND	861.12	235.85	ND	1.38	388.6	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0160.LAB	9/19/2003 14:55	ND	ND	801.32	255.01	ND	1.38	389.7	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0161.LAB	9/19/2003 14:58	ND	ND	791.64	221.46	ND	1.38	387.7	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0162.LAB	9/19/2003 15:00	ND	ND	775.07	264.08	ND	1.38	387.2	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0163.LAB	9/19/2003 15:03	ND	ND	751.52	199.98	ND	1.37	387.0	ND	26.405	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0164.LAB	9/19/2003 15:06	ND	ND	763.45	ND	ND	1.38	391.1	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0165.LAB	9/19/2003 15:09	ND	ND	773.80	ND	ND	1.38	387.6	ND	48.203	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0166.LAB	9/19/2003 15:11	ND	ND	791.44	ND	ND	1.39	390.4	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0167.LAB	9/19/2003 15:14	ND	ND	799.39	ND	ND	1.38	390.4	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0168.LAB	9/19/2003 15:17	ND	ND	775.54	166.44	ND	1.38	388.9	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0169.LAB	9/19/2003 15:20	ND	ND	732.98	ND	ND	1.39	385.0	ND	24.539	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0170.LAB	9/19/2003 15:22	ND	ND	731.91	ND	ND	1.40	386.1	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0171.LAB	9/19/2003 15:25	ND	ND	736.04	ND	ND	1.39	385.0	ND	30.658	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0172.LAB	9/19/2003 15:28	ND	ND	720.91	ND	ND	1.38	387.8	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0173.LAB	9/19/2003 15:31	ND	ND	720.09	ND	ND	1.37	385.0	ND	46.449	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0174.LAB	9/19/2003 15:33	ND	ND	735.02	ND	ND	1.37	386.9	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0175.LAB	9/19/2003 15:36	ND	ND	732.25	ND	ND	1.37	387.1	ND	51.199	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0176.LAB	9/19/2003 15:39	ND	ND	744.70	ND	ND	1.37	388.1	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0177.LAB	9/19/2003 15:42	ND	ND	741.10	ND	ND	1.37	386.6	ND	68.633	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0178.LAB	9/19/2003 15:44	ND	ND	761.50	ND	ND	1.38	388.4	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0179.LAB	9/19/2003 15:47	ND	ND	753.66	ND	ND	1.38	386.3	ND	34.449	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0180.LAB	9/19/2003 15:50	ND	ND	765.09	ND	ND	1.38	385.2	ND	26.09	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0181.LAB	9/19/2003 15:53	ND	ND	743.25	ND	ND	1.38	382.7	ND	39.40	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0182.LAB	9/19/2003 15:55	ND	ND	787.07	ND	ND	1.39	388.5	ND	ND	150.51	0.990
11S_1_14 INLET 09 19 03 SAMPLE_0183.LAB	9/19/2003 15:58	ND	ND	770.85	ND	ND	1.38	386.5	ND	30.85	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0184.LAB	9/19/2003 16:01	ND	ND	763.27	ND	ND	1.40	384.9	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0185.LAB	9/19/2003 16:04	ND	ND	759.94	ND	ND	1.41	387.4	ND	21.49	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0186.LAB	9/19/2003 16:07	ND	ND	780.39	ND	ND	1.41	384.8	ND	20.98	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0187.LAB	9/19/2003 16:09	ND	ND	765.94	ND	ND	1.40	386.0	ND	27.65	150.51	0.996

Scrubber Inlet 11s.1.14 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_14 INLET 09 19 03 SAMPLE_0188.LAB	9/19/2003 16:12	ND	ND	790.81	ND	ND	1.41	385.0	ND	19.19	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0189.LAB	9/19/2003 16:15	ND	ND	771.80	ND	ND	1.41	384.8	ND	ND	149.76	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0190.LAB	9/19/2003 16:18	ND	ND	780.66	ND	ND	1.41	386.1	ND	33.96	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0191.LAB	9/19/2003 16:20	ND	ND	759.65	ND	ND	1.39	386.8	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0192.LAB	9/19/2003 16:23	ND	ND	777.06	ND	ND	1.39	387.6	ND	35.91	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0193.LAB	9/19/2003 16:26	ND	ND	754.42	ND	ND	1.39	386.1	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0194.LAB	9/19/2003 16:29	ND	ND	765.42	ND	ND	1.39	390.4	ND	21.85	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0195.LAB	9/19/2003 16:31	ND	ND	737.36	ND	ND	1.38	389.8	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0196.LAB	9/19/2003 16:34	ND	ND	726.20	ND	ND	1.39	390.8	ND	28.49	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0197.LAB	9/19/2003 16:37	ND	ND	702.72	ND	ND	1.38	388.6	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0198.LAB	9/19/2003 16:40	ND	ND	700.36	ND	ND	1.39	388.1	ND	18.66	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0199.LAB	9/19/2003 16:42	ND	ND	690.03	ND	ND	1.39	387.4	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0200.LAB	9/19/2003 16:45	ND	ND	675.09	ND	ND	1.39	387.6	ND	ND	150.51	0.996
11S_1_14 INLET 09 19 03 SAMPLE_0201.LAB	9/19/2003 16:48	ND	ND	663.10	ND	ND	1.38	385.6	ND	ND	150.51	1.001
11S_1_14 INLET 09 19 03 SAMPLE_0202.LAB	9/19/2003 16:51	ND	ND	663.24	ND	ND	1.40	389.6	ND	20.71	150.51	0.990
11S_1_14 INLET 09 19 03 SAMPLE_0203.LAB	9/19/2003 16:53	ND	ND	665.79	ND	ND	1.41	388.6	ND	ND	150.51	0.990
11S_1_14 INLET 09 19 03 SAMPLE_0204.LAB	9/19/2003 16:56	ND	ND	645.79	ND	ND	1.39	386.8	ND	22.59	150.51	0.996

Average _{wet}	ND	ND	773.17	544.95	ND	1.40	385.73	ND	29.06	150.50	0.999

Reference Method Calculations
FAB 11S Scrubber Inlet
11s.1.14 Inlet

Run No.	Run 1	Run 2	
Date	9/19/2003	9/19/2003	
Start Time	8:10	12:55	AVERAGE
Stop Time	12:10	16:55	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.733	1.733	1.733
Dry Gas Meter Calibration Factor	1.011	1.011	1.011
Average Meter Temperature (°F)	72.2	84.1	78.1
Volume Metered (acf)	206.545	207.451	206.998
Volume Metered (dscf)	173.301	170.235	171.768
Volume of Water Collected (g)	61.5	47.4	54.4
Volume of Water Collected (scf)	2.900	2.235	2.567
Average Delta H (in. H ₂ O)	2.00	2.00	2.00
Stack Flow Rate <u>Outlet</u> Flow Traverse (dscfm)	28,488	28,717	28,602
Chlorine			
Collected Cl. micrograms (ug)	1910.0	2050.0	1980.0
Cl ₂ Concentration (ug/dscf)	11.02	12.04	11.53
Cl ₂ Concentration (ppb)	132	144	138
Cl ₂ Emission Rate (lbs/hr)	0.0415	0.0457	0.0436

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Location Notes and Comments			Sample Train No.	B	Filter No.:	NA	Run No.:	1		
Plant Name:	FAB 11S Scrubber Inlet				Leak Check Initial:	0.001	cfm@	16	(in. Hg)			
Plant Location:	Rio Rancho, NM				Leak Check Final:	0.000	cfm@	15.5	(in. Hg)			
Project No.:	31397-1600-00000				Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	11s.1.14 Inlet						1		625.2		624.3	
Date:	9/19/2003					24	2		647.5		651.9	
Technicians:	SCT/BG						3		630.2		635.0	
Meter Box No.:	90394	Y_d:	1.011			4		757.9		761.1		
Probe/Pitot No.:	NA / NA	C_p:	0.84			5		745.6		759.1		
Nozzle No.:	NA	dH_g:	1.733	Stack Dia. (in.):	-	Stack Area (ft²):		6		798.0		834.5
Nozzle Dia:	NA	Port Width (in.):	3.00	Port Length (in.):	4.00	Start Time:	8:10	Net Impinger Gain (g):	61.5			
Initial Meter Reading (ft³):	902.89	BP (in. Hg):	24.89	Static Pressure (in.):	0	End Time:	12:10	Theta	240			
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)					
1	10	64	64	2.00	911.500	58	2.0					
1	20	71	64	2.00	920.010	53	2.0					
1	30	77	65	2.00	928.570	53	2.0					
1	40	80	66	2.00	936.320	50	2.0					
1	50	82	67	2.00	945.670	49	2.0					
1	60	83	69	2.00	953.650	48	2.0					
1	70	83	70	2.00	962.550	48	2.0					
1	80	84	72	2.00	971.250	49	2.0					
1	90	85	72	2.00	979.880	50	2.0					
1	100	86	73	2.00	988.030	51	2.0					
1	110	86	74	2.00	997.060	48	2.0					
1	120	86	74	2.00	1005.570	48	2.0					
1	130	86	75	2.00	1014.040	48	2.0					
1	140	85	75	2.00	1022.750	49	2.0					
1	150	86	75	2.00	1031.430	50	2.0					
1	160	86	75	2.00	1040.070	51	2.0					
1	170	86	75	2.00	1048.680	52	2.0					
1	180	86	75	2.00	1057.120	49	2.0					
1	190	86	75	2.00	1065.940	48	2.0					
1	200	86	75	2.00	1074.970	49	2.0					
1	210	86	75	2.00	1083.250	51	2.0					
1	220	86	75	2.00	1092.020	52	2.0					
1	230	86	76	2.00	1100.750	52	2.0					
1	240	86	76	2.00	1109.435	52	2.0					
Average / Net		72.2		2.00	206.545	50.3	2.0					

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic			Sample Train No.	C	Filter No.:	NA	Run No.:	2		
Plant Name:	FAB 11S Scrubber Inlet				Leak Check Initial:	0.000	cfm@	15.5	(in. Hg)			
Plant Location:	Rio Rancho, NM				Leak Check Final:	0.000	cfm@	6.0	(in. Hg)			
Project No.:	31397-1600-00000				Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	11s.1.14 Inlet						1		740.2		747.7	
Date:	9/19/2003				24		2		650.6		654.4	
Technicians:	SCT/BG						3		654.6		655.9	
Meter Box No.:	90394				Y_d:	1.011			4		736.0	
Probe / Pitot No.:	NA / NA	C_p:	0.84			5		642.8		644.3		
Nozzle No.:	NA	dH_g:	1.733	Stack Dia. (in.):	-	Stack Area (ft²):		6		838.6		872.2
Nozzle Dia:	NA			Port Width (in.):	3.00	Port Length (in.):	4.00	Start Time:	12:55	Net Impinger Gain (g):	47.4	
Initial Meter Reading (ft³):	109.652	BP (in. Hg):	24.89	Static Pressure (in.):	0	End Time:	16:55	Theta	240			
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)					
1	10	72	72	2.00	118.248	58	3.0					
1	20	71	76	2.00	126.855	40	3.0					
1	30	71	81	2.00	135.462	43	3.0					
1	40	71	82	2.00	144.110	43	3.0					
1	50	72	83	2.00	152.895	44	3.0					
1	60	72	84	2.00	161.600	44	3.0					
1	70	73	84	2.00	170.200	44	3.0					
1	80	73	84	2.00	179.011	44	3.0					
1	90	74	85	2.00	187.736	44	3.0					
1	100	74	85	2.00	196.500	44	3.0					
1	110	74	85	2.00	205.383	44	3.0					
1	120	75	86	2.00	214.162	45	3.0					
1	130	75	86	2.00	222.9.05	45	3.0					
1	140	75	86	2.00	231.690	45	3.0					
1	150	75	86	2.00	240.440	45	3.0					
1	160	75	86	2.00	249.040	45	3.0					
1	170	75	86	2.00	257.810	46	3.0					
1	180	76	86	2.00	266.390	45	3.0					
1	190	76	86	2.00	274.560	45	3.0					
1	200	76	86	2.00	283.420	47	3.0					
1	210	76	86	2.00	291.910	47	3.0					
1	220	76	86	2.00	300.330	48	3.0					
1	230	76	86	2.00	308.730	49	3.0					
1	240	76	86	2.00	317.103	47	3.0					
Average / Net		84.1		2.00	207.451	45.5	3.0					

Scrubber Outlet 11s.1.14 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_14 OUTLET 09 19 03 SAMPLE_0007.LAB	9/19/2003 8:15	ND	ND	ND	487.16	ND	2.00	363.6	ND	ND	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0008.LAB	9/19/2003 8:17	ND	ND	ND	507.82	ND	2.11	380.6	ND	ND	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0009.LAB	9/19/2003 8:20	ND	ND	ND	504.31	ND	2.10	380.4	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0010.LAB	9/19/2003 8:23	ND	ND	ND	503.05	ND	2.11	381.0	ND	ND	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0011.LAB	9/19/2003 8:25	ND	ND	ND	539.63	ND	2.10	380.0	ND	24.594	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0012.LAB	9/19/2003 8:28	ND	ND	ND	505.18	ND	2.09	380.2	ND	ND	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0013.LAB	9/19/2003 8:30	ND	ND	ND	521.66	ND	2.12	384.6	ND	25.939	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0014.LAB	9/19/2003 8:33	ND	ND	ND	510.88	ND	2.11	384.3	ND	ND	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0015.LAB	9/19/2003 8:36	ND	ND	ND	446.37	ND	2.10	382.1	ND	ND	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0016.LAB	9/19/2003 8:38	ND	ND	ND	454.77	ND	2.10	383.3	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0017.LAB	9/19/2003 8:41	ND	ND	ND	462.48	ND	2.10	383.6	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0018.LAB	9/19/2003 8:43	ND	ND	ND	430.73	ND	2.10	384.1	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0019.LAB	9/19/2003 8:46	ND	ND	ND	447.62	ND	2.10	385.1	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0020.LAB	9/19/2003 8:49	ND	ND	ND	426.27	ND	2.11	385.5	ND	ND	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0021.LAB	9/19/2003 8:51	ND	ND	ND	446.13	ND	2.10	384.0	ND	29.669	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0022.LAB	9/19/2003 8:54	ND	ND	ND	460.47	ND	2.10	384.4	ND	ND	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0023.LAB	9/19/2003 8:56	ND	ND	ND	403.60	ND	2.10	386.0	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0024.LAB	9/19/2003 8:59	ND	ND	ND	485.13	ND	2.12	387.2	ND	41.425	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0025.LAB	9/19/2003 9:02	ND	ND	ND	604.76	ND	2.11	386.2	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0026.LAB	9/19/2003 9:04	ND	ND	ND	523.69	ND	2.11	387.5	ND	24.513	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0027.LAB	9/19/2003 9:07	ND	ND	ND	533.16	ND	2.11	387.1	ND	20.270	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0028.LAB	9/19/2003 9:09	ND	ND	ND	593.37	ND	2.11	388.6	ND	30.737	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0029.LAB	9/19/2003 9:12	ND	ND	ND	516.47	ND	2.11	387.7	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0030.LAB	9/19/2003 9:15	ND	ND	ND	546.90	ND	2.12	388.6	ND	29.603	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0031.LAB	9/19/2003 9:17	ND	ND	ND	506.85	ND	2.11	387.9	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0032.LAB	9/19/2003 9:20	ND	ND	ND	580.10	ND	2.12	389.0	ND	49.381	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0033.LAB	9/19/2003 9:22	ND	ND	ND	548.49	ND	2.11	388.3	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0034.LAB	9/19/2003 9:25	ND	ND	ND	472.61	ND	2.11	388.5	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0035.LAB	9/19/2003 9:27	ND	ND	ND	543.84	ND	2.10	386.6	ND	40.268	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0036.LAB	9/19/2003 9:30	ND	ND	ND	475.89	ND	2.11	388.8	ND	ND	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0037.LAB	9/19/2003 9:33	ND	ND	344.67	465.35	ND	2.10	386.9	ND	26.140	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0038.LAB	9/19/2003 9:35	ND	ND	380.57	468.53	ND	2.13	385.3	ND	69.993	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0039.LAB	9/19/2003 9:38	ND	ND	385.85	449.05	ND	2.13	382.8	ND	78.436	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0040.LAB	9/19/2003 9:40	ND	ND	378.85	429.62	ND	2.11	379.3	ND	73.112	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0041.LAB	9/19/2003 9:43	ND	ND	392.80	477.92	ND	2.13	381.0	ND	100.467	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0042.LAB	9/19/2003 9:46	ND	ND	401.14	434.72	ND	2.14	382.5	ND	66.944	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0043.LAB	9/19/2003 9:48	ND	ND	384.81	431.11	ND	2.13	382.7	ND	72.152	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0044.LAB	9/19/2003 9:51	ND	ND	396.10	422.17	ND	2.13	383.9	ND	70.524	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0045.LAB	9/19/2003 9:53	ND	ND	388.63	418.72	ND	2.12	382.9	ND	58.145	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0046.LAB	9/19/2003 9:56	ND	ND	385.36	406.10	ND	2.12	384.0	ND	58.313	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0047.LAB	9/19/2003 9:59	ND	ND	375.10	413.12	ND	2.12	385.0	ND	61.030	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0048.LAB	9/19/2003 10:01	ND	ND	381.13	418.47	ND	2.12	385.2	ND	57.976	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0049.LAB	9/19/2003 10:04	ND	ND	384.97	444.42	ND	2.14	387.8	ND	60.183	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0050.LAB	9/19/2003 10:06	ND	ND	379.22	442.50	ND	2.14	389.8	ND	84.611	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0051.LAB	9/19/2003 10:09	ND	ND	391.58	451.28	ND	2.13	388.1	ND	68.460	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0052.LAB	9/19/2003 10:12	ND	ND	391.62	424.91	ND	2.13	388.6	ND	60.380	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0053.LAB	9/19/2003 10:14	ND	ND	401.63	429.12	ND	2.14	390.6	ND	65.118	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0054.LAB	9/19/2003 10:17	ND	ND	401.00	415.99	ND	2.14	390.7	ND	60.881	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0055.LAB	9/19/2003 10:19	ND	ND	395.82	412.54	ND	2.15	391.7	ND	61.914	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0056.LAB	9/19/2003 10:22	ND	ND	387.04	400.34	ND	2.15	391.7	ND	57.491	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0057.LAB	9/19/2003 10:25	ND	ND	379.11	399.61	ND	2.15	391.6	ND	65.387	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0058.LAB	9/19/2003 10:27	ND	ND	377.27	391.26	ND	2.14	390.0	ND	58.961	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0059.LAB	9/19/2003 10:30	ND	ND	369.24	389.14	ND	2.15	391.7	ND	62.228	149.76	0.992

Scrubber Outlet 11s.1.14 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_14 OUTLET 09 19 03 SAMPLE_0060.LAB	9/19/2003 10:32	ND	ND	360.89	390.45	ND	2.14	391.2	ND	54.714	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0061.LAB	9/19/2003 10:35	ND	ND	352.62	391.49	ND	2.15	392.2	ND	59.331	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0062.LAB	9/19/2003 10:37	ND	ND	352.36	395.09	ND	2.15	392.1	ND	58.328	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0063.LAB	9/19/2003 10:40	ND	ND	341.60	419.61	ND	2.15	391.2	ND	63.711	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0064.LAB	9/19/2003 10:43	ND	ND	ND	391.15	ND	2.14	389.3	ND	46.356	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0065.LAB	9/19/2003 10:45	ND	ND	341.94	391.99	ND	2.15	390.1	ND	61.456	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0066.LAB	9/19/2003 10:48	ND	ND	ND	436.86	ND	2.14	390.3	ND	54.073	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0067.LAB	9/19/2003 10:50	ND	ND	ND	406.80	ND	2.15	390.9	ND	47.247	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0068.LAB	9/19/2003 10:53	ND	ND	ND	440.47	ND	2.14	388.3	ND	67.539	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0069.LAB	9/19/2003 10:56	ND	ND	ND	457.41	ND	2.15	390.0	ND	49.111	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0070.LAB	9/19/2003 10:58	ND	ND	ND	425.89	ND	2.15	391.0	ND	47.948	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0071.LAB	9/19/2003 11:01	ND	ND	ND	459.06	ND	2.15	391.6	ND	68.691	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0072.LAB	9/19/2003 11:03	ND	ND	ND	432.03	ND	2.14	389.9	ND	46.126	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0073.LAB	9/19/2003 11:06	ND	ND	ND	426.30	ND	2.15	391.2	ND	55.977	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0074.LAB	9/19/2003 11:09	ND	ND	ND	455.57	ND	2.15	392.0	ND	63.521	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0075.LAB	9/19/2003 11:11	ND	ND	ND	434.81	ND	2.14	392.3	ND	46.977	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0076.LAB	9/19/2003 11:14	ND	ND	ND	435.53	ND	2.15	393.4	ND	63.302	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0077.LAB	9/19/2003 11:16	ND	ND	ND	447.87	ND	2.14	393.5	ND	53.828	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0078.LAB	9/19/2003 11:19	ND	ND	ND	400.86	ND	2.14	392.5	ND	47.084	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0079.LAB	9/19/2003 11:22	ND	ND	ND	426.75	ND	2.15	394.2	ND	72.142	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0080.LAB	9/19/2003 11:24	ND	ND	ND	405.88	ND	2.16	391.8	ND	52.885	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0081.LAB	9/19/2003 11:27	ND	ND	ND	392.69	ND	2.17	393.9	ND	58.179	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0082.LAB	9/19/2003 11:29	ND	ND	ND	387.82	ND	2.20	393.6	ND	56.920	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0083.LAB	9/19/2003 11:32	ND	ND	ND	390.03	ND	2.19	394.8	ND	70.069	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0084.LAB	9/19/2003 11:35	ND	ND	ND	403.71	ND	2.16	392.9	ND	63.822	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0085.LAB	9/19/2003 11:37	ND	ND	ND	412.85	ND	2.15	394.5	ND	60.538	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0086.LAB	9/19/2003 11:40	ND	ND	ND	374.01	ND	2.17	392.3	ND	55.360	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0087.LAB	9/19/2003 11:42	ND	ND	ND	362.99	ND	2.19	395.1	ND	56.204	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0088.LAB	9/19/2003 11:45	ND	ND	ND	364.19	ND	2.19	396.4	ND	54.543	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0089.LAB	9/19/2003 11:47	ND	ND	ND	365.80	ND	2.31	396.7	ND	54.490	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0090.LAB	9/19/2003 11:50	ND	ND	ND	365.39	ND	2.20	394.7	ND	51.806	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0091.LAB	9/19/2003 11:53	ND	ND	ND	368.11	ND	2.19	394.7	ND	49.357	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0092.LAB	9/19/2003 11:55	ND	ND	ND	389.12	ND	2.17	393.8	ND	65.641	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0093.LAB	9/19/2003 11:58	ND	ND	ND	380.14	ND	2.18	395.7	ND	55.978	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0094.LAB	9/19/2003 12:00	ND	ND	ND	366.78	ND	2.17	394.8	ND	53.292	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0095.LAB	9/19/2003 12:03	ND	ND	ND	366.96	ND	2.16	393.0	ND	55.990	149.76	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0096.LAB	9/19/2003 12:06	ND	ND	ND	358.00	ND	2.18	395.1	ND	46.518	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0097.LAB	9/19/2003 12:08	ND	ND	ND	349.73	ND	2.19	398.0	ND	48.740	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0098.LAB	9/19/2003 12:11	ND	ND	ND	354.66	ND	2.19	401.0	ND	43.246	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0099.LAB	9/19/2003 12:13	ND	ND	ND	364.64	ND	2.18	399.4	ND	41.503	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0102.LAB	9/19/2003 12:54	ND	ND	ND	502.73	ND	2.13	373.0	ND	55.962	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0103.LAB	9/19/2003 12:57	ND	ND	ND	588.83	ND	2.16	379.5	ND	78.438	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0104.LAB	9/19/2003 13:00	ND	ND	ND	634.82	ND	2.16	381.2	ND	68.659	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0105.LAB	9/19/2003 13:02	ND	ND	ND	668.25	ND	2.16	382.4	ND	71.323	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0106.LAB	9/19/2003 13:05	ND	ND	ND	698.02	ND	2.16	383.1	ND	66.931	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0107.LAB	9/19/2003 13:07	ND	ND	ND	675.84	ND	2.15	382.6	ND	78.141	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0108.LAB	9/19/2003 13:10	ND	ND	ND	683.96	ND	2.16	386.3	ND	75.181	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0109.LAB	9/19/2003 13:13	ND	ND	ND	642.94	ND	2.15	386.2	ND	60.917	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0110.LAB	9/19/2003 13:15	ND	ND	ND	647.64	ND	2.15	386.1	ND	77.118	150.51	0.997
11S_1_14 OUTLET 09 19 03 SAMPLE_0111.LAB	9/19/2003 13:18	ND	ND	ND	653.95	ND	2.16	390.1	ND	64.729	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0112.LAB	9/19/2003 13:22	ND	ND	ND	627.62	ND	2.17	391.7	ND	65.091	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0113.LAB	9/19/2003 13:24	ND	ND	ND	619.86	ND	2.17	392.7	ND	63.234	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0114.LAB	9/19/2003 13:27	ND	ND	ND	637.48	ND	2.19	395.0	ND	119.870	150.51	0.987

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.14 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_14 OUTLET 09 19 03 SAMPLE_0115.LAB	9/19/2003 13:30	ND	ND	ND	598.33	ND	2.14	390.1	ND	61.339	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0116.LAB	9/19/2003 13:32	ND	ND	ND	594.30	ND	2.14	389.2	ND	35.947	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0117.LAB	9/19/2003 13:35	ND	ND	ND	553.70	ND	2.13	388.4	ND	43.513	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0118.LAB	9/19/2003 13:37	ND	ND	ND	525.58	ND	2.13	388.7	ND	18.122	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0119.LAB	9/19/2003 13:40	ND	ND	ND	546.30	ND	2.14	389.9	ND	27.763	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0120.LAB	9/19/2003 13:43	ND	ND	ND	536.08	ND	2.15	391.8	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0121.LAB	9/19/2003 13:45	ND	ND	350.22	531.28	ND	2.14	389.7	ND	25.841	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0122.LAB	9/19/2003 13:48	ND	ND	357.59	553.83	ND	2.14	390.5	ND	20.707	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0123.LAB	9/19/2003 13:50	ND	ND	370.07	537.37	ND	2.15	391.7	ND	29.599	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0124.LAB	9/19/2003 13:53	ND	ND	377.25	550.54	ND	2.14	392.1	ND	30.240	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0125.LAB	9/19/2003 13:56	ND	ND	380.65	504.25	ND	2.14	390.8	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0126.LAB	9/19/2003 13:58	ND	ND	369.31	487.40	ND	2.14	391.1	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0127.LAB	9/19/2003 14:01	ND	ND	389.73	534.15	ND	2.14	392.7	ND	85.759	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0128.LAB	9/19/2003 14:03	ND	ND	404.79	512.49	ND	2.14	391.6	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0129.LAB	9/19/2003 14:06	ND	ND	401.48	458.61	ND	2.14	392.0	ND	40.002	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0130.LAB	9/19/2003 14:09	ND	ND	417.77	503.93	ND	2.15	393.7	ND	34.367	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0131.LAB	9/19/2003 14:11	ND	ND	413.78	468.73	ND	2.16	396.4	ND	46.783	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0132.LAB	9/19/2003 14:14	ND	ND	417.28	477.62	ND	2.14	392.9	ND	21.547	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0133.LAB	9/19/2003 14:16	ND	ND	419.21	464.38	ND	2.14	393.2	ND	32.279	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0134.LAB	9/19/2003 14:19	ND	ND	415.09	492.17	ND	2.15	393.2	ND	35.998	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0135.LAB	9/19/2003 14:22	ND	ND	429.68	497.37	ND	2.15	392.8	ND	ND	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0136.LAB	9/19/2003 14:24	ND	ND	410.90	498.67	ND	2.15	392.2	ND	50.092	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0137.LAB	9/19/2003 14:27	ND	ND	433.94	503.09	ND	2.14	392.0	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0138.LAB	9/19/2003 14:29	ND	ND	421.63	488.19	ND	2.15	393.5	ND	50.632	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0139.LAB	9/19/2003 14:32	ND	ND	434.35	496.65	ND	2.14	392.4	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0140.LAB	9/19/2003 14:34	ND	ND	444.55	470.83	ND	2.15	394.7	ND	38.689	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0141.LAB	9/19/2003 14:37	ND	ND	458.98	483.37	ND	2.15	394.8	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0142.LAB	9/19/2003 14:40	ND	ND	447.40	427.21	ND	2.14	392.1	ND	24.247	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0143.LAB	9/19/2003 14:42	ND	ND	454.03	470.59	ND	2.14	392.9	ND	18.274	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0144.LAB	9/19/2003 14:45	ND	ND	462.18	435.73	ND	2.15	394.2	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0145.LAB	9/19/2003 14:47	ND	ND	445.41	462.68	ND	2.13	392.6	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0146.LAB	9/19/2003 14:50	ND	ND	431.43	416.29	ND	2.13	392.4	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0147.LAB	9/19/2003 14:53	ND	ND	416.76	408.91	ND	2.14	394.6	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0148.LAB	9/19/2003 14:55	ND	ND	401.41	423.52	ND	2.13	392.3	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0149.LAB	9/19/2003 14:58	ND	ND	390.26	479.34	ND	2.14	394.9	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0150.LAB	9/19/2003 15:00	ND	ND	384.18	491.77	ND	2.14	394.8	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0151.LAB	9/19/2003 15:03	ND	ND	373.94	512.44	ND	2.14	395.3	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0152.LAB	9/19/2003 15:06	ND	ND	360.77	542.46	ND	2.13	393.7	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0153.LAB	9/19/2003 15:08	ND	ND	363.46	543.41	ND	2.14	395.1	ND	27.310	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0154.LAB	9/19/2003 15:11	ND	ND	367.75	512.17	ND	2.14	397.1	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0155.LAB	9/19/2003 15:13	ND	ND	366.70	488.48	ND	2.14	394.9	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0156.LAB	9/19/2003 15:16	ND	ND	379.94	484.67	ND	2.15	396.7	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0157.LAB	9/19/2003 15:19	ND	ND	358.19	450.49	ND	2.15	397.0	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0158.LAB	9/19/2003 15:21	ND	ND	365.32	484.60	ND	2.16	397.1	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0159.LAB	9/19/2003 15:24	ND	ND	363.22	452.84	ND	2.17	396.4	ND	20.290	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0160.LAB	9/19/2003 15:26	ND	ND	348.38	481.63	ND	2.14	393.7	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0161.LAB	9/19/2003 15:29	ND	ND	345.03	454.92	ND	2.15	396.0	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0162.LAB	9/19/2003 15:32	ND	ND	340.72	451.48	ND	2.14	393.2	ND	29.19	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0163.LAB	9/19/2003 15:34	ND	ND	352.04	442.09	ND	2.16	395.0	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0164.LAB	9/19/2003 15:37	ND	ND	343.26	444.08	ND	2.18	393.2	ND	27.34	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0165.LAB	9/19/2003 15:39	ND	ND	344.00	443.14	ND	2.19	394.7	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0166.LAB	9/19/2003 15:42	ND	ND	357.20	455.08	ND	2.19	395.9	ND	48.03	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0167.LAB	9/19/2003 15:45	ND	ND	356.85	483.02	ND	2.16	394.8	ND	ND	149.76	0.987

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.14 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_14 OUTLET 09 19 03 SAMPLE_0168.LAB	9/19/2003 15:47	ND	ND	344.57	430.55	ND	2.14	392.4	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0169.LAB	9/19/2003 15:50	ND	ND	354.84	441.89	ND	2.18	395.1	ND	22.27	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0170.LAB	9/19/2003 15:52	ND	ND	361.20	432.28	ND	2.20	395.4	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0171.LAB	9/19/2003 15:55	ND	ND	365.44	463.19	ND	2.17	394.6	ND	22.13	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0172.LAB	9/19/2003 15:57	ND	ND	363.53	418.78	ND	2.16	394.8	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0173.LAB	9/19/2003 16:00	ND	ND	357.30	427.07	ND	2.15	395.1	ND	25.54	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0174.LAB	9/19/2003 16:03	ND	ND	367.28	412.85	ND	2.15	397.1	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0175.LAB	9/19/2003 16:05	ND	ND	365.79	417.14	ND	2.15	397.6	ND	29.12	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0176.LAB	9/19/2003 16:08	ND	ND	392.89	402.15	ND	2.30	397.7	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0177.LAB	9/19/2003 16:10	ND	ND	370.12	394.58	ND	2.18	396.5	ND	28.27	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0178.LAB	9/19/2003 16:13	ND	ND	379.82	408.70	ND	2.18	397.4	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0179.LAB	9/19/2003 16:16	ND	ND	363.46	387.46	ND	2.17	397.0	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0180.LAB	9/19/2003 16:18	ND	ND	371.27	398.19	ND	2.17	398.2	ND	30.83	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0181.LAB	9/19/2003 16:21	ND	ND	367.60	381.76	ND	2.16	398.5	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0182.LAB	9/19/2003 16:23	ND	ND	367.63	372.45	ND	2.16	397.9	ND	33.33	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0183.LAB	9/19/2003 16:26	ND	ND	368.84	387.62	ND	2.16	400.1	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0184.LAB	9/19/2003 16:29	ND	ND	364.29	357.55	ND	2.16	402.7	ND	21.63	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0185.LAB	9/19/2003 16:31	ND	ND	361.74	355.39	ND	2.15	401.1	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0186.LAB	9/19/2003 16:34	ND	ND	351.60	346.85	ND	2.16	403.4	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0187.LAB	9/19/2003 16:36	ND	ND	359.70	345.55	ND	2.15	400.0	ND	ND	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0188.LAB	9/19/2003 16:39	ND	ND	350.31	338.81	ND	2.16	401.0	ND	ND	150.51	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0189.LAB	9/19/2003 16:42	ND	ND	347.30	346.94	ND	2.15	398.0	ND	18.89	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0190.LAB	9/19/2003 16:44	ND	ND	345.34	338.21	ND	2.17	398.5	ND	ND	150.51	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0191.LAB	9/19/2003 16:47	ND	ND	350.43	338.86	ND	2.20	400.3	ND	ND	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0192.LAB	9/19/2003 16:49	ND	ND	366.45	335.58	ND	2.23	400.8	ND	67.03	149.76	0.987
11S_1_14 OUTLET 09 19 03 SAMPLE_0193.LAB	9/19/2003 16:52	ND	ND	371.35	345.08	ND	2.22	398.8	ND	79.46	149.76	0.992
11S_1_14 OUTLET 09 19 03 SAMPLE_0194.LAB	9/19/2003 16:55	ND	ND	366.00	336.98	ND	2.24	404.2	ND	55.15	150.51	0.987
Average _{wet}		ND	ND	362.28	459.52	ND	2.15	391.21	ND	39.91	150.00	0.992

Reference Method Calculations

Fab 11 South

11s.1.14

Run No.	Run 1	Run 2	
Date	9/19/2003	9/19/2003	
Start Time	8:10	12:55	AVERAGE
Stop Time	12:10	16:55	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	25.10	25.10	25.10
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	82.6	83.9	83.3
Volume Metered (acf)	159.555	168.583	164.069
Volume Metered (dscf)	131.400	138.576	134.988
Volume of Water Collected (g)	47.7	82.6	65.2
Volume of Water Collected (scf)	2.249	3.895	3.072
Average Delta H (in. H ₂ O)	1.09	1.29	1.19
AVG SQRT of dH (in. H ₂ O)	1.0426	1.1354	1.0890
Measured Moisture (%)	1.7%	2.7%	2.2%
Saturation Moisture (%)	1.9%	2.0%	1.9%
Moisture Used for Calculations (%)	1.9%	2.0%	1.9%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.66	28.63	28.64
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-5.70	-5.70	-5.70
Stack Pressure (in. Hg)	24.68	24.68	24.68
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.4979	0.5292	0.5135
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.4704	0.4746	0.4725
Stack Temperature Isokinetic Traverse (°F)	58.0	58.5	58.3
Stack Temperature Flow Traverse (°F)	59.9	61.1	60.5
Velocity (ft/sec) Isokinetic Traverse	30.60	32.55	31.58
Velocity (ft/sec) Flow Traverse	28.96	29.27	29.11
Nozzle Diameter (in.)	0.257	0.257	0.257
% Isokinetics	100.45	99.71	100.1
Stack Diameter (in.)	60.50	60.50	60.50
Stack Area (ft ²)	19.96	19.96	19.96
Stack Flow Rate Isokinetic Traverse (acfm)	36,651	38,991	37,821
Stack Flow Rate Flow Traverse (acfm)	34,687	35,060	34,873
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	30,210	32,096	31,153
Stack Flow Rate Outlet Flow Traverse (dscfm)	28,488	28,717	28,602
Chlorine			
Collected Cl. micrograms (ug)	116.0	42.5	79.3
Cl ₂ Concentration (ug/dscf)	0.88	0.31	0.59
Cl ₂ Concentration (ppb)	11	4	7
Cl ₂ Emission Rate (lbs/hr)	0.0033	0.0012	0.0022

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 9/19/2003
Unit Number: 11s.1.14	Stack Diameter (in.): 60.50
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -5.1
Run No.: 1	Operators: BMB/PER/SC
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 25.10
Pitot Tube ID: HA-1	Pre Test PassFail Pitot Leak Check <u>Y</u> ____
Pitot Tube C_p: 0.84	
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.9 %	
Comments :	
	Post Test PassFail Pitot Leak Check <u>Y</u> ____
	Start: 7:18 End: 7:27

NorthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.27	59
2	0.28	59
3	0.28	59
4	0.28	59
5	0.27	59
6	0.25	60
7	0.21	59
8	0.19	59
9	0.18	59
10	0.16	59
11	0.13	61
12	0.13	65

SouthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.20	59
2	0.25	59
3	0.27	59
4	0.27	59
5	0.26	60
6	0.26	59
7	0.27	59
8	0.23	59
9	0.21	59
10	0.18	60
11	0.15	61
12	0.20	68
Total Average:	sqrt dp = 0.4704	59.9

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/19/2003
Unit Number:	11s.1.14	Stack Diameter (in.):	60.50
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-5.1
Run No.:	2	Operators:	BMB/PER/SC
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	25.10
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2 %		Pitot Leak Check	x —
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	x —
		Start:	12:24
		End:	12:35

NorthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.22	62
2	0.28	60
3	0.29	59
4	0.27	60
5	0.26	60
6	0.24	59
7	0.27	60
8	0.24	60
9	0.21	61
10	0.20	61
11	0.20	63
12	0.14	64

SouthWest Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.23	62
2	0.28	60
3	0.29	65
4	0.30	64
5	0.27	60
6	0.24	59
7	0.20	60
8	0.19	61
9	0.18	60
10	0.17	60
11	0.16	61
12	0.14	66
Total Average: grrt dp = 0.474		61.1

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11 South						Leak Check Initial:	0.001	cfm@	12	(in. Hg)			
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.000	cfm@	7	(in. Hg)			
Project No.:	31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	11s.1.14								1		673.3		674.3	
Date:	9/19/2003							24	2		732.0		749.5	
Technicians:	BMB/PER/SCT								3		537.8		542.5	
Meter Box No.:	90401	Y_d:	1.006			4		645.5		647.4				
Probe/Pitot No.	401 / HA-1	C_p:	0.84			5		655.8		655.4				
Nozzle No.:	NA	dH_g:	1.725	Stack Dia. (in.):	60.50	Stack Area (ft²):	19.96	6		801.9		824.9		
Nozzle Dia:	0.257	0.257, 0.256, 0.257		Port Width (in.):	3.00	Port Length (in.):	4.50	Start Time:	8:10	Net Impinger Gain (g):	47.7			
Initial Meter Reading (ft³):	434.398	BP (in. Hg):	25.10	Static Pressure (in.):	-5.7	End Time:	12:10	Theta	240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)			
SW 4	10	59	79	72	0.250	1.20	441.030	254	253	49	1			
SW 4	20	58	81	72	0.250	1.10	447.630	251	245	49	1			
SW 4	30	58	82	72	0.250	1.10	454.170	251	247	50	1			
SW 4	40	58	85	72	0.240	1.10	460.720	251	245	50	1			
SW 4	50	58	86	74	0.240	1.00	467.240	251	246	50	1			
SW 4	60	58	87	75	0.250	1.10	473.960	251	246	51	1			
SW 4	70	58	89	76	0.250	1.10	480.730	251	246	51	1			
SW 4	80	58	88	77	0.250	1.10	487.360	251	245	53	1			
SW 4	90	58	88	78	0.250	1.10	493.980	250	246	55	1			
SW 4	100	58	89	79	0.250	1.10	500.620	251	244	56	1			
SW 4	110	58	89	79	0.250	1.10	507.250	251	246	56	1			
SW 4	120	58	89	79	0.250	1.10	514.070	251	247	57	1			
SW 4	130	58	89	79	0.250	1.10	520.800	250	245	51	1			
SW 4	140	58	89	79	0.250	1.10	527.470	251	245	50	1			
SW 4	150	58	89	79	0.250	1.10	534.130	250	246	50	1			
SW 4	160	58	89	79	0.240	1.00	540.690	250	246	51	1			
SW 4	170	58	89	79	0.240	1.00	547.240	252	245	52	1			
SW 4	180	58	89	80	0.250	1.10	553.840	252	247	54	1			
SW 4	190	58	90	80	0.250	1.10	560.570	251	246	55	1			
SW 4	200	58	90	80	0.250	1.10	567.290	250	247	55	1			
SW 4	210	58	89	80	0.250	1.10	574.010	251	246	56	1			
SW 4	220	58	90	80	0.250	1.10	580.670	250	246	57	1			
SW 4	230	58	90	80	0.250	1.10	587.360	252	247	57	1			
SW 4	240	58	89	80	0.240	1.00	593.953	251	246	57	1			
Average / Net		58.0		82.6	0.2	1.1	159.555	251.0	246.2	53.0	1.0			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic					Sample Train No.	SF	Filter No.:	NA	Run No.:	2
Plant Name:	Fab 11 South						Leak Check Initial:	0.002	cfm@	11	(in. Hg)	
Plant Location:	Rio Rancho, NM						Leak Check Final:	0.001	cfm@	7.0	(in. Hg)	
Project No.:	31397-1600-00000						Total Traverse Points		Impinger	Initial	Final	
Sampling Location:	11s.1.14							1	601.6	599.1		
Date:	9/19/2003						24	2	630.3	636.0		
Technicians:	BMB/PER/SCT							3	646.0	649.0		
Meter Box No.:	90401	Y_d:	1.006		4	637.8	649.1					
Probe / Pitot No.:	401 / HA-1	C_p:	0.84		5	644.1	647.8					
Nozzle No.:	NA	dH_g:	1.725	Stack Dia. (in.):	60.50	Stack Area (ft²):	19.96	6	938.5	999.9		
Nozzle Dia:	0.257	0.257, 0.256, 0.257	Port Width (in.):	3.00	Port Length (in.):	4.50	Start Time:	12:55	Net Impinger Gain (g):	82.6		
Initial Meter Reading (ft³):	594.239	BP (in. Hg):	25.10	Static Pressure (in.):	-5.7	End Time:	16:55	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
SW 3	10	59	78	77	0.280	1.30	601.200	240	252	54	3.0	
SW 3	20	59	81	76	0.280	1.30	608.160	242	254	51	3.0	
SW 3	30	58	87	77	0.280	1.30	615.190	249	254	52	3.0	
SW 3	40	58	87	77	0.280	1.30	622.220	248	254	52	3.0	
SW 3	50	59	89	77	0.280	1.30	629.260	248	254	52	3.0	
SW 3	60	59	89	78	0.280	1.30	636.250	248	256	53	3.0	
SW 3	70	59	89	78	0.280	1.26	643.301	249	253	54	3.0	
SW 3	80	58	90	78	0.280	1.26	650.360	248	255	55	3.0	
SW 3	90	58	90	79	0.280	1.27	657.410	248	253	55	3.0	
SW 3	100	58	90	79	0.280	1.27	664.460	248	254	56	3.0	
SW 3	110	59	90	80	0.280	1.26	671.490	248	252	48	3.0	
SW 3	120	59	89	79	0.280	1.26	678.530	248	253	46	3.0	
SW 3	130	59	90	80	0.280	1.26	685.560	249	254	47	3.0	
SW 3	140	58	90	80	0.280	1.30	692.580	249	254	47	3.0	
SW 3	150	59	90	80	0.280	1.30	699.600	248	254	47	3.0	
SW 3	160	58	90	80	0.280	1.30	706.630	248	252	48	3.0	
SW 3	170	58	90	80	0.280	1.30	713.620	248	255	48	3.0	
SW 3	180	58	90	80	0.280	1.30	720.670	248	254	49	3.0	
SW 3	190	59	90	81	0.280	1.30	727.710	248	254	49	3.0	
SW 3	200	59	90	80	0.280	1.30	734.740	248	254	50	3.0	
SW 3	210	58	90	81	0.280	1.30	741.770	248	254	51	3.0	
SW 3	220	59	90	81	0.280	1.30	748.790	249	254	52	3.0	
SW 3	230	59	90	80	0.280	1.30	755.800	248	254	52	3.0	
SW 3	240	58	90	81	0.280	1.30	762.822	248	254	52	3.0	
Average / Net		58.5		83.9	0.3	1.3	168.583	247.6	253.8	50.8	3.0	

EPA REFERENCE METHOD 1

FIELD DATA SHEET

CIRCULAR STACKS

Firm Name: **INTEL**

Plant Location: **Rio Rancho, NM**

Sampling Location: **11s.1.14**

TRC Project No.: **31397-1600-00000**

Date: **9/19/2003**

Technician: **B. Bauer**

Circular/Rectangular: **C**

Stack Diameter: **60.3**

Sample Port Diameter: **3.0**

Sample Port Depth: **4.0**

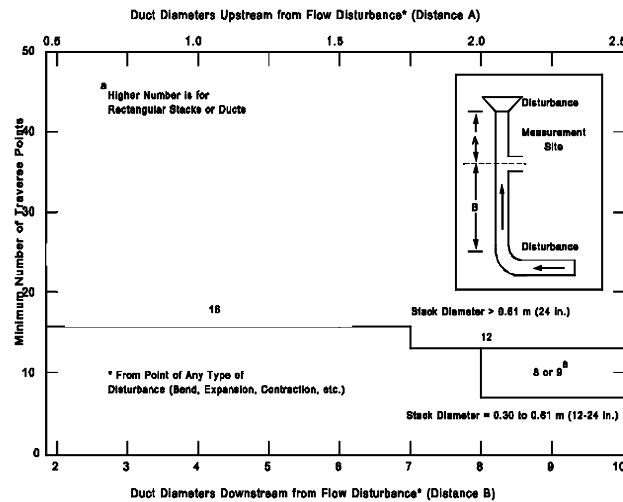
Diameters Upstream: **3.5**

Diameters Downstream: **3.9**

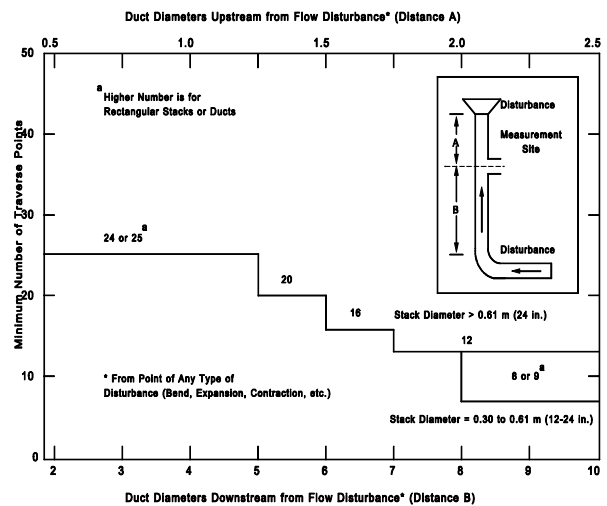
Flow or Particulate Test: **P**

Number of Test Ports: **2**

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	5 4/16
2	8 1/16
3	11 2/16
4	14 11/16
5	19 1/16
6	25 7/16
7	42 13/16
8	49 3/16
9	53 9/16
10	57 2/16
11	60 3/16
12	63
13	
14	
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16	
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19	
20	
21	
22	
23	
24	

INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER

FIELD AND SOURCE DOCUMENTATION

APPENDIX A
Field and Measurement Data

SECTION 5
Fab 11X-Bridge Side Acid Scrubber Results

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

Reference Method Calculations

11X Bridge Side

11s.1.6 Inlet

Run No.	Run 1	Run 2	
Date	8/19/2003	8/19/2003	
Start Time	8:45	13:20	AVERAGE
Stop Time	12:45	17:20	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.92	24.92	24.92
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	90.6	93.5	92.1
Volume Metered (acf)	147.988	149.703	148.846
Volume Metered (dscf)	119.205	119.956	119.580
Volume of Water Collected (g)	38.3	40.6	39.4
Volume of Water Collected (scf)	1.806	1.914	1.860
Average Delta H (in. H ₂ O)	1.00	1.00	1.00
Stack Flow Rate <u>Outlet</u> Flow Traverse (dscfm)	29,654	30,635	30,144
Chlorine			
Collected Cl. micrograms (ug)	70.8	170.0	120.4
Cl ₂ Concentration (ug/dscf)	0.59	1.42	1.01
Cl ₂ Concentration (ppb)	7	17	12
Cl ₂ Emission Rate (lbs/hr)	0.0023	0.0057	0.0040

Scrubber Inlet 11s.1.6 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S.1.6 INLET 08 19 03 SAMPLE R1_0006.LAB	8/19/2003 8:48	ND	ND	377.19	2581.09	ND	1.55	551.2	ND	65.331	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0007.LAB	8/19/2003 8:51	ND	ND	410.85	3099.72	ND	1.55	551.6	ND	88.911	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0008.LAB	8/19/2003 8:53	ND	ND	428.52	3750.89	ND	1.55	554.2	ND	88.172	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0009.LAB	8/19/2003 8:56	ND	ND	456.99	3780.84	ND	1.54	550.9	ND	89.243	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0010.LAB	8/19/2003 8:59	ND	ND	473.37	4127.14	ND	1.54	553.0	ND	87.187	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0011.LAB	8/19/2003 9:01	ND	ND	505.99	3438.40	ND	1.53	549.7	ND	69.563	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0012.LAB	8/19/2003 9:04	ND	ND	545.20	4017.05	ND	1.53	552.8	ND	75.504	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0013.LAB	8/19/2003 9:06	ND	ND	583.79	4335.37	ND	1.52	549.9	ND	46.832	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0014.LAB	8/19/2003 9:09	ND	ND	620.00	3956.31	ND	1.53	552.5	ND	44.359	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0015.LAB	8/19/2003 9:12	ND	ND	654.54	3829.11	ND	1.53	550.7	ND	83.620	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0016.LAB	8/19/2003 9:14	ND	ND	700.44	3098.45	ND	1.53	550.4	ND	78.555	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0017.LAB	8/19/2003 9:17	ND	ND	750.15	4901.40	ND	1.54	552.0	ND	79.645	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0018.LAB	8/19/2003 9:19	ND	ND	782.63	5362.62	ND	1.54	551.9	ND	85.273	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0019.LAB	8/19/2003 9:22	ND	ND	805.64	5305.96	ND	1.54	551.4	ND	90.811	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0020.LAB	8/19/2003 9:25	ND	ND	846.24	5198.26	ND	1.54	550.9	ND	90.003	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0021.LAB	8/19/2003 9:27	ND	ND	883.06	4569.96	ND	1.54	554.1	ND	90.583	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0022.LAB	8/19/2003 9:30	ND	ND	905.81	5304.49	ND	1.54	551.3	ND	91.151	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0023.LAB	8/19/2003 9:32	ND	ND	923.21	5498.48	ND	1.54	551.6	ND	79.709	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0024.LAB	8/19/2003 9:35	ND	ND	955.32	4690.36	ND	1.53	551.4	ND	88.241	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0025.LAB	8/19/2003 9:38	ND	ND	1019.55	3597.90	ND	1.53	550.5	ND	79.502	149.02	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0026.LAB	8/19/2003 9:40	ND	ND	1071.57	3059.01	ND	1.53	552.4	ND	91.950	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0027.LAB	8/19/2003 9:43	ND	ND	1120.60	3456.17	ND	1.53	552.4	ND	97.739	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0028.LAB	8/19/2003 9:45	ND	ND	1151.55	3990.68	ND	1.53	552.4	ND	90.117	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0029.LAB	8/19/2003 9:48	ND	ND	1176.05	4787.43	ND	1.53	552.2	ND	96.207	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0030.LAB	8/19/2003 9:51	ND	ND	1225.89	4508.07	ND	1.54	553.4	ND	114.300	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0031.LAB	8/19/2003 9:53	ND	ND	1280.29	4343.84	ND	1.56	557.2	ND	588.629	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0032.LAB	8/19/2003 9:56	ND	ND	1289.49	4684.60	ND	1.55	554.9	ND	643.468	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0033.LAB	8/19/2003 9:58	ND	ND	1310.79	4761.77	ND	1.55	554.7	ND	614.853	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0034.LAB	8/19/2003 10:01	ND	ND	1337.57	6992.31	ND	1.55	555.3	ND	621.876	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0035.LAB	8/19/2003 10:04	ND	ND	1367.43	5502.41	ND	1.55	554.9	ND	607.374	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0036.LAB	8/19/2003 10:06	ND	ND	1377.90	4993.50	ND	1.55	554.5	ND	549.733	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0037.LAB	8/19/2003 10:09	ND	ND	1420.73	4493.40	ND	1.55	554.6	ND	328.274	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0038.LAB	8/19/2003 10:11	ND	ND	1444.82	4282.81	ND	1.54	553.9	ND	334.811	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0039.LAB	8/19/2003 10:14	ND	ND	1496.19	4172.99	ND	1.54	553.7	ND	316.424	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0040.LAB	8/19/2003 10:17	ND	ND	1566.59	3334.19	ND	1.54	553.4	ND	124.581	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0041.LAB	8/19/2003 10:19	ND	ND	1603.37	3937.84	ND	1.54	553.4	ND	108.816	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0042.LAB	8/19/2003 10:22	ND	ND	1628.05	4082.53	ND	1.54	553.1	ND	114.960	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0043.LAB	8/19/2003 10:24	ND	ND	1657.47	4150.79	ND	1.54	552.5	ND	236.870	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0044.LAB	8/19/2003 10:27	ND	ND	1676.75	4621.02	ND	1.54	552.5	ND	439.087	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0045.LAB	8/19/2003 10:30	ND	ND	1704.91	4254.06	ND	1.54	552.1	ND	606.320	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0046.LAB	8/19/2003 10:32	ND	ND	1684.42	5223.49	ND	1.54	552.2	ND	622.127	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0047.LAB	8/19/2003 10:35	ND	ND	1733.98	5349.45	ND	1.54	552.0	ND	446.250	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0048.LAB	8/19/2003 10:37	ND	ND	1731.01	5561.63	ND	1.54	551.7	ND	318.319	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0049.LAB	8/19/2003 10:40	ND	ND	1757.58	5374.02	ND	1.54	551.2	ND	297.455	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0050.LAB	8/19/2003 10:43	ND	ND	1779.77	4491.17	ND	1.54	551.1	ND	138.166	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0051.LAB	8/19/2003 10:45	ND	ND	1815.07	4463.97	ND	1.54	551.1	ND	108.602	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0052.LAB	8/19/2003 10:48	ND	ND	1877.39	4355.42	ND	1.54	551.5	ND	124.898	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0053.LAB	8/19/2003 10:50	ND	ND	1915.39	4333.38	ND	1.55	551.8	ND	117.080	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0054.LAB	8/19/2003 10:53	ND	ND	1978.75	3807.22	ND	1.55	551.7	ND	461.446	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0055.LAB	8/19/2003 10:56	ND	ND	2021.45	3430.83	ND	1.55	551.5	ND	609.482	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0056.LAB	8/19/2003 10:58	ND	ND	2047.01	3900.45	ND	1.55	551.9	ND	626.869	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0057.LAB	8/19/2003 11:01	ND	ND	2093.63	4011.82	ND	1.55	551.4	ND	605.679	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0058.LAB	8/19/2003 11:03	ND	ND	2130.75	4041.56	ND	1.55	551.3	ND	636.768	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Inlet 11s.1.6 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S.1.6 INLET 08 19 03 SAMPLE R1_0059.LAB	8/19/2003 11:06	ND	ND	2148.92	3940.29	ND	1.55	551.0	ND	444.409	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0060.LAB	8/19/2003 11:09	ND	ND	2145.62	4649.11	ND	1.56	553.3	ND	414.734	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0061.LAB	8/19/2003 11:11	ND	ND	2138.28	4887.10	ND	1.55	550.9	ND	1103.111	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0062.LAB	8/19/2003 11:14	ND	ND	2135.16	4439.85	ND	1.54	549.5	ND	1296.691	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0063.LAB	8/19/2003 11:16	ND	ND	2168.90	4132.09	ND	1.54	549.2	ND	1048.574	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0064.LAB	8/19/2003 11:19	ND	ND	2203.77	3283.39	ND	1.55	549.9	ND	755.459	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0065.LAB	8/19/2003 11:22	ND	ND	2224.98	3828.03	ND	1.55	549.9	ND	576.601	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0066.LAB	8/19/2003 11:24	ND	ND	2240.51	4185.71	ND	1.55	549.5	ND	441.401	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0067.LAB	8/19/2003 11:27	ND	ND	2230.80	4328.11	ND	1.55	552.5	ND	280.527	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0068.LAB	8/19/2003 11:29	ND	ND	2231.65	4300.87	ND	1.55	548.3	ND	209.750	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0069.LAB	8/19/2003 11:32	ND	ND	2199.77	3400.54	ND	1.52	545.7	ND	157.716	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0070.LAB	8/19/2003 11:35	ND	ND	2159.39	4174.65	ND	1.52	544.9	ND	167.594	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0071.LAB	8/19/2003 11:37	ND	ND	2202.30	4092.33	ND	1.52	544.9	ND	155.178	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0072.LAB	8/19/2003 11:40	ND	ND	2220.64	4157.94	ND	1.53	547.4	ND	149.932	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0073.LAB	8/19/2003 11:43	ND	ND	2227.16	3959.41	ND	1.52	544.0	ND	151.922	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0074.LAB	8/19/2003 11:45	ND	ND	2250.06	3490.68	ND	1.52	544.0	ND	151.255	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0075.LAB	8/19/2003 11:48	ND	ND	2263.69	4077.59	ND	1.53	547.3	ND	156.780	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0076.LAB	8/19/2003 11:50	ND	ND	2266.22	4147.70	ND	1.53	546.4	ND	147.809	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0077.LAB	8/19/2003 11:53	ND	ND	2242.70	4765.13	ND	1.52	544.1	ND	148.942	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0078.LAB	8/19/2003 11:56	ND	ND	2270.17	4913.89	ND	1.53	546.9	ND	64.695	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0079.LAB	8/19/2003 11:58	ND	ND	2242.75	4543.10	ND	1.52	543.7	ND	51.678	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0080.LAB	8/19/2003 12:01	ND	ND	2245.49	4866.80	ND	1.54	545.4	ND	59.810	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0081.LAB	8/19/2003 12:03	ND	ND	2243.74	4482.20	ND	1.54	543.6	ND	61.627	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0082.LAB	8/19/2003 12:06	ND	ND	2279.17	4420.93	ND	1.54	543.7	ND	53.769	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0083.LAB	8/19/2003 12:09	ND	ND	2318.20	3767.81	ND	1.54	543.6	ND	57.413	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0084.LAB	8/19/2003 12:11	ND	ND	2367.55	3821.65	ND	1.55	546.1	ND	53.532	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0085.LAB	8/19/2003 12:14	ND	ND	2333.43	4174.57	ND	1.54	543.9	ND	57.892	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0086.LAB	8/19/2003 12:16	ND	ND	2330.45	4574.01	ND	1.54	543.7	ND	60.910	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0087.LAB	8/19/2003 12:19	ND	ND	2332.46	5399.42	ND	1.55	546.3	ND	63.208	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0088.LAB	8/19/2003 12:22	ND	ND	2322.53	4605.93	ND	1.55	546.0	ND	65.307	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0089.LAB	8/19/2003 12:24	ND	ND	2300.44	5807.27	ND	1.55	544.8	ND	60.967	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0090.LAB	8/19/2003 12:27	ND	ND	2322.81	5888.75	ND	1.55	544.0	ND	62.606	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0091.LAB	8/19/2003 12:30	ND	ND	2371.44	5032.63	ND	1.55	544.4	ND	68.520	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0092.LAB	8/19/2003 12:32	ND	ND	2375.32	4764.16	ND	1.55	544.0	ND	56.145	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0093.LAB	8/19/2003 12:35	ND	ND	2362.29	4558.60	ND	1.55	540.6	ND	51.352	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0094.LAB	8/19/2003 12:37	ND	ND	2400.67	4358.55	ND	1.55	543.7	ND	52.761	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0095.LAB	8/19/2003 12:40	ND	ND	2454.94	4507.01	ND	1.55	544.3	ND	51.453	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R1_0096.LAB	8/19/2003 12:43	ND	ND	2458.25	4438.04	ND	1.54	539.4	ND	54.168	149.02	1.003
11S.1.6 INLET 08 19 03 SAMPLE R1_0097.LAB	8/19/2003 12:45	ND	ND	2524.66	3650.31	ND	1.55	543.9	ND	55.019	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0004.LAB	8/19/2003 13:19	ND	ND	2384.70	4337.90	ND	1.46	537.2	ND	ND	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R2_0005.LAB	8/19/2003 13:22	ND	ND	2421.71	4192.70	ND	1.49	541.9	ND	ND	149.02	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0006.LAB	8/19/2003 13:24	ND	ND	2389.81	5732.47	ND	1.51	543.8	ND	ND	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0007.LAB	8/19/2003 13:27	ND	ND	2428.90	5231.17	ND	1.53	545.6	ND	ND	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0008.LAB	8/19/2003 13:29	ND	ND	2444.80	5717.89	ND	1.52	543.6	ND	ND	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R2_0009.LAB	8/19/2003 13:32	ND	ND	2453.36	6331.03	ND	1.52	546.2	ND	19.118	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0010.LAB	8/19/2003 13:35	ND	ND	2461.95	7254.19	ND	1.52	546.6	ND	ND	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0011.LAB	8/19/2003 13:37	ND	ND	2465.25	7426.91	ND	1.52	547.4	ND	ND	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0012.LAB	8/19/2003 13:40	ND	ND	2474.62	6451.78	ND	1.52	547.8	ND	ND	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0013.LAB	8/19/2003 13:43	ND	ND	2464.63	5705.49	ND	1.51	547.8	ND	35.256	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0014.LAB	8/19/2003 13:45	ND	ND	2492.43	4959.37	ND	1.50	545.3	ND	34.573	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R2_0015.LAB	8/19/2003 13:48	ND	ND	2544.34	4528.46	ND	1.51	548.1	ND	38.643	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0016.LAB	8/19/2003 13:50	ND	ND	2554.76	4791.16	ND	1.51	548.1	ND	39.130	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0017.LAB	8/19/2003 13:53	ND	ND	2576.26	3628.31	ND	1.51	548.4	ND	37.938	149.76	0.997

Scrubber Inlet 11s.1.6 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S.1.6 INLET 08 19 03 SAMPLE R2_0018.LAB	8/19/2003 13:56	ND	ND	2526.03	5830.28	ND	1.51	548.5	ND	44.958	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0019.LAB	8/19/2003 13:58	ND	ND	2567.93	5558.02	ND	1.52	548.9	ND	47.377	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0020.LAB	8/19/2003 14:01	ND	ND	2531.78	7757.12	ND	1.52	548.8	ND	69.558	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0021.LAB	8/19/2003 14:04	ND	ND	2499.89	8285.97	ND	1.52	548.8	ND	64.401	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0022.LAB	8/19/2003 14:06	ND	ND	2518.70	6501.23	ND	1.52	548.8	ND	49.572	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0023.LAB	8/19/2003 14:09	ND	ND	2470.26	7697.70	ND	1.52	548.6	ND	51.644	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0024.LAB	8/19/2003 14:11	ND	ND	2458.32	7792.48	ND	1.51	549.0	ND	54.283	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0025.LAB	8/19/2003 14:14	ND	ND	2462.53	8089.80	ND	1.52	548.8	ND	49.405	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0026.LAB	8/19/2003 14:17	ND	ND	2461.33	7492.42	ND	1.52	549.4	ND	46.712	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0027.LAB	8/19/2003 14:19	ND	ND	2450.62	5780.21	ND	1.52	549.0	ND	42.120	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0028.LAB	8/19/2003 14:22	ND	ND	2457.23	6058.94	ND	1.53	548.8	ND	41.432	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0029.LAB	8/19/2003 14:24	ND	ND	2478.16	6065.94	ND	1.53	546.0	ND	44.881	149.76	1.003
11S.1.6 INLET 08 19 03 SAMPLE R2_0030.LAB	8/19/2003 14:27	ND	ND	2480.74	6295.29	ND	1.54	549.4	ND	52.609	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0031.LAB	8/19/2003 14:30	ND	ND	2481.30	5263.07	ND	1.53	549.1	ND	116.345	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0032.LAB	8/19/2003 14:32	ND	ND	2503.41	4558.39	ND	1.53	551.8	ND	340.108	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0033.LAB	8/19/2003 14:35	ND	ND	2475.00	5696.97	ND	1.52	549.1	ND	492.206	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0034.LAB	8/19/2003 14:38	ND	ND	2475.88	5862.75	ND	1.52	548.5	ND	556.185	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0035.LAB	8/19/2003 14:40	ND	ND	2499.05	5850.37	ND	1.52	548.5	ND	440.334	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0036.LAB	8/19/2003 14:43	ND	ND	2550.14	4841.69	ND	1.53	551.3	ND	245.852	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0037.LAB	8/19/2003 14:45	ND	ND	2559.80	4394.42	ND	1.53	551.5	ND	239.128	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0038.LAB	8/19/2003 14:48	ND	ND	2566.51	5817.49	ND	1.52	547.4	ND	121.641	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0039.LAB	8/19/2003 14:51	ND	ND	2579.49	5873.56	ND	1.52	547.6	ND	54.159	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0040.LAB	8/19/2003 14:53	ND	ND	2590.60	6007.17	ND	1.52	547.3	ND	79.512	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0041.LAB	8/19/2003 14:56	ND	ND	2635.42	4663.60	ND	1.53	548.6	ND	112.777	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0042.LAB	8/19/2003 14:58	ND	ND	2625.26	4013.91	ND	1.53	548.1	ND	107.515	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0043.LAB	8/19/2003 15:01	ND	ND	2664.78	4468.14	ND	1.54	548.4	ND	106.430	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0044.LAB	8/19/2003 15:04	ND	ND	2716.21	4644.83	ND	1.54	548.7	ND	106.336	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0045.LAB	8/19/2003 15:06	ND	ND	2718.33	4474.60	ND	1.54	548.7	ND	135.986	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0046.LAB	8/19/2003 15:09	ND	ND	2755.10	4200.48	ND	1.53	548.3	ND	145.645	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0047.LAB	8/19/2003 15:12	ND	ND	2778.41	3616.61	ND	1.53	547.5	ND	131.831	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0048.LAB	8/19/2003 15:14	ND	ND	2822.23	4348.48	ND	1.54	551.0	ND	119.848	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0049.LAB	8/19/2003 15:17	ND	ND	2838.16	4310.31	ND	1.54	551.1	ND	121.132	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0050.LAB	8/19/2003 15:19	ND	ND	2824.57	4290.90	ND	1.53	547.6	ND	121.629	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0051.LAB	8/19/2003 15:22	ND	ND	2869.39	3784.65	ND	1.53	547.5	ND	127.574	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0052.LAB	8/19/2003 15:25	ND	ND	2887.28	3493.08	ND	1.53	547.7	ND	206.507	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0053.LAB	8/19/2003 15:27	ND	ND	2848.44	4116.64	ND	1.51	545.4	ND	176.673	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0054.LAB	8/19/2003 15:30	ND	ND	2853.69	4629.68	ND	1.50	545.5	ND	174.099	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0055.LAB	8/19/2003 15:33	ND	ND	2814.18	6508.44	ND	1.50	546.2	ND	181.699	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0056.LAB	8/19/2003 15:35	ND	ND	2791.07	6103.70	ND	1.50	545.3	ND	224.179	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0057.LAB	8/19/2003 15:38	ND	ND	2776.17	5917.66	ND	1.51	548.1	ND	223.416	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0058.LAB	8/19/2003 15:40	ND	ND	2787.03	5957.82	ND	1.50	544.1	ND	192.745	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0059.LAB	8/19/2003 15:43	ND	ND	2784.90	5739.40	ND	1.51	544.0	ND	190.822	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0060.LAB	8/19/2003 15:46	ND	ND	2791.01	5704.61	ND	1.52	544.1	ND	186.013	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0061.LAB	8/19/2003 15:48	ND	ND	2819.44	3988.20	ND	1.51	544.3	ND	189.719	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0062.LAB	8/19/2003 15:51	ND	ND	2787.58	4067.84	ND	1.50	544.5	ND	209.589	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0063.LAB	8/19/2003 15:53	ND	ND	2833.48	4465.97	ND	1.50	547.6	ND	189.22	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0064.LAB	8/19/2003 15:56	ND	ND	2802.21	4720.85	ND	1.49	544.7	ND	185.23	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0065.LAB	8/19/2003 16:00	ND	ND	2809.96	4133.78	ND	1.49	547.6	ND	196.88	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0066.LAB	8/19/2003 16:03	ND	ND	2797.70	3464.49	ND	1.48	544.4	ND	185.01	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0067.LAB	8/19/2003 16:06	ND	ND	2782.96	4203.31	ND	1.49	544.5	ND	182.40	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0068.LAB	8/19/2003 16:08	ND	ND	2833.40	4264.41	ND	1.49	544.1	ND	194.17	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0069.LAB	8/19/2003 16:11	ND	ND	2850.94	4346.39	ND	1.50	543.2	ND	173.65	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0070.LAB	8/19/2003 16:14	ND	ND	2869.26	3800.64	ND	1.51	543.7	ND	185.50	149.76	0.997

Scrubber Inlet 11s.1.6 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S.1.6 INLET 08 19 03 SAMPLE R2_0071.LAB	8/19/2003 16:16	ND	ND	2842.59	4153.00	ND	1.52	543.8	ND	181.81	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0072.LAB	8/19/2003 16:19	ND	ND	2825.97	5189.22	ND	1.53	547.7	ND	175.80	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0073.LAB	8/19/2003 16:21	ND	ND	2792.12	5454.92	ND	1.52	543.3	ND	184.85	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0074.LAB	8/19/2003 16:24	ND	ND	2797.97	4811.71	ND	1.51	543.8	ND	185.14	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0075.LAB	8/19/2003 16:27	ND	ND	2755.92	5022.43	ND	1.51	546.1	ND	181.35	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0076.LAB	8/19/2003 16:29	ND	ND	2709.71	5005.32	ND	1.49	544.1	ND	193.52	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0077.LAB	8/19/2003 16:32	ND	ND	2645.58	6059.25	ND	1.48	543.7	ND	197.44	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0078.LAB	8/19/2003 16:35	ND	ND	2637.59	6403.71	ND	1.48	543.8	ND	213.47	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0079.LAB	8/19/2003 16:37	ND	ND	2610.67	6670.51	ND	1.48	543.6	ND	218.08	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0080.LAB	8/19/2003 16:40	ND	ND	2618.15	6141.64	ND	1.47	543.9	ND	197.89	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0081.LAB	8/19/2003 16:42	ND	ND	2605.30	6037.33	ND	1.48	543.9	ND	130.15	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0082.LAB	8/19/2003 16:45	ND	ND	2583.35	6556.35	ND	1.49	543.0	ND	92.73	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0083.LAB	8/19/2003 16:48	ND	ND	2599.72	6464.45	ND	1.50	542.6	ND	84.83	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0084.LAB	8/19/2003 16:50	ND	ND	2598.95	6593.86	ND	1.51	542.7	ND	79.43	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0085.LAB	8/19/2003 16:53	ND	ND	2644.24	4770.69	ND	1.53	542.5	ND	65.40	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0086.LAB	8/19/2003 16:55	ND	ND	2670.31	4080.85	ND	1.57	546.5	ND	74.21	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0087.LAB	8/19/2003 16:58	ND	ND	2647.31	4430.67	ND	1.58	545.1	ND	122.12	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0088.LAB	8/19/2003 17:01	ND	ND	2616.50	4507.37	ND	1.59	544.8	ND	95.68	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0089.LAB	8/19/2003 17:03	ND	ND	2564.17	4570.89	ND	1.59	545.1	ND	89.45	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0090.LAB	8/19/2003 17:06	ND	ND	2555.52	3853.35	ND	1.59	544.4	ND	91.24	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0091.LAB	8/19/2003 17:09	ND	ND	2505.44	4339.76	ND	1.60	545.0	ND	91.76	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0092.LAB	8/19/2003 17:11	ND	ND	2510.62	5552.77	ND	1.63	549.3	ND	130.08	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0093.LAB	8/19/2003 17:14	ND	ND	2483.17	5407.39	ND	1.63	548.8	ND	133.50	149.76	0.992
11S.1.6 INLET 08 19 03 SAMPLE R2_0094.LAB	8/19/2003 17:17	ND	ND	2449.94	5587.42	ND	1.61	545.8	ND	137.15	149.76	0.997
11S.1.6 INLET 08 19 03 SAMPLE R2_0095.LAB	8/19/2003 17:19	ND	ND	2364.65	4511.21	ND	1.60	545.9	ND	91.66	149.76	0.992
Average _{wet}		ND	ND	2154.71	4838.55	ND	1.53	548.08	ND	196.16	149.75	0.999

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Location Notes and Comments				Sample Train No.	B	Filter No.:	NA	Run No.:	1
Plant Name:	11X Bridge Side					Leak Check Initial:	0.010	cfm@	15	(in. Hg)	
Plant Location:	Rio Rancho, NM					Leak Check Final:	0.000	cfm@	4	(in. Hg)	
Project No.:	31397-1600-00000					Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	11s.1.6 Inlet					24	1	633.0	642.6		
Date:	8/19/2003						2	666.8	669.5		
Technicians:	JL/BDS						3	631.5	632.5		
Meter Box No.:	90401					Y_d:	1.006		4	763.1	764.1
Probe / Pitot No.:	Teflon / HA-1	C_p:	NA		5	758.7	758.6				
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57		6	795.8	819.9
Nozzle Dia:	NA	Port Width (in.):	3.00	Port Length (in.):	3.00	Start Time:	8:45	Net Impinger Gain (g):	38.3		
Initial Meter Reading (ft³):	186.473	BP (in. Hg):	24.92	Static Pressure (in.):	-0.12	End Time:	12:45	Theta	240		
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)				
Center	10	78	76	1.00	192.540	65	2				
Center	20	82	75	1.00	198.620	54	2				
Center	30	86	76	1.00	204.690	54	2				
Center	40	88	77	1.00	210.770	51	2				
Center	50	90	81	1.00	216.860	48	2				
Center	60	93	84	1.00	222.960	47	2				
Center	70	96	89	1.00	229.110	49	2				
Center	80	97	91	1.00	235.280	49	2				
Center	90	97	93	1.00	241.460	50	2				
Center	100	97	93	1.00	247.630	50	2				
Center	110	95	91	1.00	253.810	51	2				
Center	120	95	90	1.00	259.980	52	2				
Center	130	95	89	1.00	266.140	53	2				
Center	140	95	88	1.00	272.290	53	2				
Center	150	97	90	1.00	278.440	53	2				
Center	160	98	91	1.00	284.680	54	2				
Center	170	97	91	1.00	290.920	54	2				
Center	180	97	90	1.00	297.310	54	2				
Center	190	97	91	1.00	303.370	54	2				
Center	200	97	90	1.00	309.600	54	2				
Center	210	97	91	1.00	315.810	55	2				
Center	220	97	90	1.00	322.020	55	2				
Center	230	96	90	1.00	328.240	56	2				
Center	240	96	90	1.00	334.461	56	2				
Average / Net			90.6	1.0	147.988	53.0	2.0				

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic				Sample Train No. C		Filter No.: NA		Run No.: 2		
Plant Name:	11X Bridge Side					Leak Check Initial:		0.005	cfm@	15	(in. Hg)	
Plant Location:	Rio Rancho, NM					Leak Check Final:		0.001	cfm@	4.0	(in. Hg)	
Project No.:	31397-1600-00000					Total Traverse Points	P	Initial		Final		
Sampling Location:	11s.1.6 Inlet						1	728.0		736.9		
Date:	8/19/2003						2	642.6		644.1		
Technicians:	JL/BDS						3	655.1		656.6		
Meter Box No.: 90401	Y_d: 1.006						4	736.5		738.9		
Probe / Pitot No.: Teflon / HA-1	C_p: NA	5	663.2		663.7							
Nozzle No.: NA	dH_g: 1.725	Stack Dia. (in.): 48.00		Stack Area (ft²): 12.57		6	817.9		843.7			
Nozzle Dia: NA		Port Width (in.): 3.00		Port Length (in.): 3.00		Start Time: 13:20		Net Impinger Gain (g): 40.6				
Initial Meter Reading (ft³):	334.989	BP (in. Hg): 24.92		Static Pressure (in.): -0.21		End Time: 17:20		Theta 240				
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)					
Center	10	87	86	1.00	341.120	48	2.0					
Center	20	92	86	1.00	327.340	47	2.0					
Center	30	95	86	1.00	353.500	45	2.0					
Center	40	97	88	1.00	359.670	46	2.0					
Center	50	97	88	1.00	365.870	46	2.0					
Center	60	98	88	1.00	372.230	47	2.0					
Center	70	98	89	1.00	378.580	47	2.0					
Center	80	98	90	1.00	384.650	48	2.0					
Center	90	98	90	1.00	390.910	47	2.0					
Center	100	99	92	1.00	397.180	49	2.0					
Center	110	99	91	1.00	403.460	49	2.0					
Center	120	98	91	1.00	409.730	49	2.0					
Center	130	99	91	1.00	415.990	49	2.0					
Center	140	99	91	1.00	422.240	49	2.0					
Center	150	99	91	1.00	428.480	49	2.0					
Center	160	98	91	1.00	434.740	50	2.0					
Center	170	99	91	1.00	440.980	50	2.0					
Center	180	100	91	1.00	447.230	50	2.0					
Center	190	99	91	1.00	453.470	51	2.0					
Center	200	99	91	1.00	459.710	50	2.0					
Center	210	98	90	1.00	465.930	50	2.0					
Center	220	98	90	1.00	472.160	51	2.0					
Center	230	97	89	1.00	478.370	52	2.0					
Center	240	97	89	1.00	484.692	53	2.0					
Average / Net		93.5		1.0	149.703	48.8	2.0					

Scrubber Outlet 11s.1.6 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0006.LAB	8/19/2003 8:49	ND	ND	488.88	921.48	ND	2.43	559.1	ND	30.492	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0007.LAB	8/19/2003 8:52	ND	ND	468.77	1025.58	ND	2.43	556.9	ND	55.691	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0008.LAB	8/19/2003 8:55	ND	ND	488.16	1117.02	ND	2.41	552.6	ND	26.974	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0009.LAB	8/19/2003 8:58	ND	ND	482.10	1235.34	ND	2.41	554.0	ND	41.318	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0010.LAB	8/19/2003 9:00	ND	ND	483.85	1255.09	ND	2.40	552.2	ND	18.371	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0011.LAB	8/19/2003 9:03	ND	ND	490.66	1205.62	ND	2.38	549.3	ND	22.705	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0012.LAB	8/19/2003 9:06	ND	ND	509.39	1257.90	ND	2.40	552.0	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0013.LAB	8/19/2003 9:09	ND	ND	516.97	1210.75	ND	2.38	548.9	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0014.LAB	8/19/2003 9:12	ND	ND	497.35	1164.90	ND	2.39	551.9	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0015.LAB	8/19/2003 9:14	ND	ND	521.43	1099.35	ND	2.38	551.5	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0016.LAB	8/19/2003 9:17	ND	ND	514.33	1191.42	ND	2.38	551.7	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0017.LAB	8/19/2003 9:20	ND	ND	508.45	1336.38	ND	2.39	551.7	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0018.LAB	8/19/2003 9:23	ND	ND	519.23	1433.01	ND	2.38	551.4	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0019.LAB	8/19/2003 9:25	ND	ND	513.90	1482.71	ND	2.38	551.0	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0020.LAB	8/19/2003 9:28	ND	ND	517.21	1464.52	ND	2.37	548.7	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0021.LAB	8/19/2003 9:31	ND	ND	527.38	1557.99	ND	2.38	551.3	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0022.LAB	8/19/2003 9:34	ND	ND	528.48	1618.52	ND	2.38	552.5	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0023.LAB	8/19/2003 9:36	ND	ND	538.76	1573.47	ND	2.38	552.5	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0024.LAB	8/19/2003 9:39	ND	ND	544.97	1394.46	ND	2.38	553.1	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0025.LAB	8/19/2003 9:42	ND	ND	557.71	1226.11	ND	2.36	550.4	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0026.LAB	8/19/2003 9:45	ND	ND	544.07	1117.50	ND	2.36	550.7	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0027.LAB	8/19/2003 9:47	ND	ND	545.57	1120.79	ND	2.38	553.4	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0028.LAB	8/19/2003 9:50	ND	ND	547.31	1162.01	ND	2.38	554.7	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0029.LAB	8/19/2003 9:53	ND	ND	523.56	1064.84	ND	2.38	555.8	ND	417.547	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0030.LAB	8/19/2003 9:56	ND	ND	517.28	1072.79	ND	2.39	556.9	ND	530.791	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0031.LAB	8/19/2003 9:59	ND	ND	517.31	1138.86	ND	2.39	557.0	ND	503.495	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0032.LAB	8/19/2003 10:01	ND	ND	510.92	1352.96	ND	2.38	552.5	ND	508.099	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0033.LAB	8/19/2003 10:04	ND	ND	515.48	1393.47	ND	2.37	551.5	ND	496.162	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0034.LAB	8/19/2003 10:07	ND	ND	495.25	1390.44	ND	2.39	553.9	ND	371.944	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0035.LAB	8/19/2003 10:10	ND	ND	483.29	1394.64	ND	2.39	554.9	ND	200.982	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0036.LAB	8/19/2003 10:12	ND	ND	496.58	1328.56	ND	2.38	552.7	ND	194.834	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0037.LAB	8/19/2003 10:15	ND	ND	497.39	1278.99	ND	2.39	555.2	ND	112.642	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0038.LAB	8/19/2003 10:18	ND	ND	497.56	1169.29	ND	2.39	555.1	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0039.LAB	8/19/2003 10:21	ND	ND	475.40	1107.65	ND	2.38	551.9	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0040.LAB	8/19/2003 10:23	ND	ND	494.97	1008.97	ND	2.39	554.8	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0041.LAB	8/19/2003 10:26	ND	ND	463.76	930.10	ND	2.39	553.5	ND	275.471	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0042.LAB	8/19/2003 10:29	ND	ND	492.05	872.93	ND	2.39	553.5	ND	467.817	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0043.LAB	8/19/2003 10:32	ND	ND	486.65	945.91	ND	2.39	553.4	ND	515.197	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0044.LAB	8/19/2003 10:35	ND	ND	479.72	1058.67	ND	2.38	550.5	ND	381.002	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0045.LAB	8/19/2003 10:37	ND	ND	469.19	1235.87	ND	2.38	550.3	ND	182.466	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0046.LAB	8/19/2003 10:40	ND	ND	481.79	1328.98	ND	2.39	553.6	ND	184.137	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0047.LAB	8/19/2003 10:43	ND	ND	490.01	1381.77	ND	2.40	556.5	ND	21.052	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0048.LAB	8/19/2003 10:46	ND	ND	489.93	1344.09	ND	2.38	553.3	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0049.LAB	8/19/2003 10:48	ND	ND	478.56	1230.78	ND	2.37	550.7	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0050.LAB	8/19/2003 10:51	ND	ND	489.38	1186.93	ND	2.38	552.7	ND	36.723	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0051.LAB	8/19/2003 10:54	ND	ND	505.34	976.73	ND	2.37	548.5	ND	424.151	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0052.LAB	8/19/2003 10:57	ND	ND	511.82	883.63	ND	2.38	552.2	ND	520.301	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0053.LAB	8/19/2003 11:00	ND	ND	487.82	880.69	ND	2.37	549.0	ND	503.892	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0054.LAB	8/19/2003 11:02	ND	ND	498.05	983.18	ND	2.38	549.3	ND	506.539	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0055.LAB	8/19/2003 11:05	ND	ND	493.65	881.73	ND	2.38	551.9	ND	439.806	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0056.LAB	8/19/2003 11:08	ND	ND	491.16	805.06	ND	2.37	548.3	ND	219.575	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0057.LAB	8/19/2003 11:11	ND	ND	500.72	702.05	ND	2.38	552.0	ND	747.537	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0058.LAB	8/19/2003 11:13	ND	ND	502.49	695.06	ND	2.38	551.3	ND	1183.900	150.51	1.001

Scrubber Outlet 11s.1.6 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0059.LAB	8/19/2003 11:16	ND	ND	506.05	716.16	ND	2.36	547.2	ND	1003.004	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0060.LAB	8/19/2003 11:19	ND	ND	480.88	713.29	ND	2.38	551.5	ND	688.280	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0061.LAB	8/19/2003 11:22	ND	ND	503.78	724.33	ND	2.39	554.4	ND	455.080	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0062.LAB	8/19/2003 11:24	ND	ND	480.54	779.70	ND	2.38	551.2	ND	299.143	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0063.LAB	8/19/2003 11:27	ND	ND	480.65	876.76	ND	2.38	550.7	ND	135.429	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0064.LAB	8/19/2003 11:30	ND	ND	479.47	897.30	ND	2.38	549.9	ND	82.355	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0065.LAB	8/19/2003 11:33	ND	ND	464.54	820.75	ND	2.36	545.7	ND	91.680	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0066.LAB	8/19/2003 11:36	ND	ND	483.79	858.88	ND	2.38	548.5	ND	95.867	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0067.LAB	8/19/2003 11:38	ND	ND	456.36	862.66	ND	2.36	545.3	ND	95.256	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0068.LAB	8/19/2003 11:41	ND	ND	457.08	878.56	ND	2.38	548.2	ND	84.675	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0069.LAB	8/19/2003 11:44	ND	ND	448.07	842.00	ND	2.37	548.0	ND	92.676	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0070.LAB	8/19/2003 11:47	ND	ND	443.82	814.48	ND	2.36	545.8	ND	93.071	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0071.LAB	8/19/2003 11:49	ND	ND	448.86	830.11	ND	2.38	548.0	ND	81.252	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0072.LAB	8/19/2003 11:52	ND	ND	450.57	831.13	ND	2.37	545.8	ND	83.750	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0073.LAB	8/19/2003 11:55	ND	ND	443.19	927.33	ND	2.38	549.5	ND	20.033	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0074.LAB	8/19/2003 11:58	ND	ND	459.16	951.94	ND	2.37	546.0	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0075.LAB	8/19/2003 12:01	ND	ND	438.90	975.23	ND	2.37	544.2	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0076.LAB	8/19/2003 12:03	ND	ND	434.54	986.88	ND	2.38	547.2	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0077.LAB	8/19/2003 12:06	ND	ND	444.06	991.50	ND	2.39	547.3	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0078.LAB	8/19/2003 12:09	ND	ND	449.75	928.27	ND	2.39	547.0	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0079.LAB	8/19/2003 12:12	ND	ND	448.37	856.74	ND	2.39	547.0	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0080.LAB	8/19/2003 12:14	ND	ND	440.89	833.17	ND	2.39	547.5	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0081.LAB	8/19/2003 12:17	ND	ND	407.60	848.84	ND	2.38	547.3	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0082.LAB	8/19/2003 12:20	ND	ND	416.67	917.32	ND	2.37	543.9	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0083.LAB	8/19/2003 12:23	ND	ND	415.61	958.70	ND	2.38	546.0	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0084.LAB	8/19/2003 12:26	ND	ND	396.60	1047.51	ND	2.38	545.3	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0085.LAB	8/19/2003 12:28	ND	ND	399.22	1047.47	ND	2.37	542.5	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0086.LAB	8/19/2003 12:31	ND	ND	402.27	1051.30	ND	2.38	545.4	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0087.LAB	8/19/2003 12:34	ND	ND	390.58	1005.38	ND	2.38	545.1	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0088.LAB	8/19/2003 12:37	ND	ND	372.08	981.19	ND	2.39	545.3	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0089.LAB	8/19/2003 12:39	ND	ND	374.87	926.46	ND	2.39	546.2	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0090.LAB	8/19/2003 12:42	ND	ND	370.17	883.89	ND	2.39	545.2	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R1_0091.LAB	8/19/2003 12:45	ND	ND	341.35	869.78	ND	2.39	545.0	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0003.LAB	8/19/2003 13:18	ND	ND	402.75	944.01	ND	2.38	549.7	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0004.LAB	8/19/2003 13:20	ND	ND	415.71	882.17	ND	2.39	551.6	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0005.LAB	8/19/2003 13:23	ND	ND	392.21	846.95	ND	2.39	548.9	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0006.LAB	8/19/2003 13:26	ND	ND	386.35	927.16	ND	2.39	546.3	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0007.LAB	8/19/2003 13:29	ND	ND	380.29	1007.32	ND	2.40	546.0	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0008.LAB	8/19/2003 13:31	ND	ND	374.34	1152.75	ND	2.41	547.1	ND	ND	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0009.LAB	8/19/2003 13:34	ND	ND	361.19	1303.69	ND	2.40	543.6	ND	ND	151.25	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0010.LAB	8/19/2003 13:37	ND	ND	388.16	1415.63	ND	2.41	546.1	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0011.LAB	8/19/2003 13:40	ND	ND	387.68	1471.37	ND	2.41	546.0	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0012.LAB	8/19/2003 13:43	ND	ND	365.72	1463.46	ND	2.40	546.5	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0013.LAB	8/19/2003 13:45	ND	ND	376.68	1385.70	ND	2.41	547.3	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0014.LAB	8/19/2003 13:48	ND	ND	363.12	1251.41	ND	2.38	544.1	ND	ND	150.51	1.006
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0015.LAB	8/19/2003 13:51	ND	ND	372.20	1148.27	ND	2.41	549.9	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0016.LAB	8/19/2003 13:54	ND	ND	366.35	994.53	ND	2.39	547.6	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0017.LAB	8/19/2003 13:56	ND	ND	377.51	1025.72	ND	2.40	547.8	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0018.LAB	8/19/2003 13:59	ND	ND	369.49	1095.40	ND	2.42	549.8	ND	ND	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0019.LAB	8/19/2003 14:02	ND	ND	352.44	1362.76	ND	2.44	552.0	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0020.LAB	8/19/2003 14:05	ND	ND	378.85	1549.03	ND	2.43	551.2	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0021.LAB	8/19/2003 14:08	ND	ND	376.57	1587.08	ND	2.41	548.1	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0022.LAB	8/19/2003 14:10	ND	ND	377.43	1756.18	ND	2.43	552.3	ND	ND	151.25	0.996

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.6 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0023.LAB	8/19/2003 14:13	ND	ND	381.64	1816.71	ND	2.43	551.8	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0024.LAB	8/19/2003 14:16	ND	ND	366.16	1923.62	ND	2.43	552.9	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0025.LAB	8/19/2003 14:19	ND	ND	370.53	1826.78	ND	2.42	552.8	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0026.LAB	8/19/2003 14:21	ND	ND	368.01	1798.88	ND	2.43	552.7	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0027.LAB	8/19/2003 14:24	ND	ND	372.07	1725.31	ND	2.42	550.8	ND	ND	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0028.LAB	8/19/2003 14:27	ND	ND	366.85	1661.72	ND	2.43	552.7	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0029.LAB	8/19/2003 14:30	ND	ND	375.75	1545.66	ND	2.42	550.2	ND	79.213	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0030.LAB	8/19/2003 14:33	ND	ND	369.17	1260.33	ND	2.41	549.6	ND	311.929	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0031.LAB	8/19/2003 14:35	ND	ND	361.45	1191.36	ND	2.42	553.1	ND	473.360	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0032.LAB	8/19/2003 14:38	ND	ND	359.19	1185.06	ND	2.42	552.3	ND	529.954	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0033.LAB	8/19/2003 14:41	ND	ND	355.62	1260.47	ND	2.40	548.3	ND	319.536	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0034.LAB	8/19/2003 14:44	ND	ND	346.53	1216.44	ND	2.40	548.2	ND	195.222	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0035.LAB	8/19/2003 14:47	ND	ND	ND	1171.62	ND	2.39	546.2	ND	187.962	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0036.LAB	8/19/2003 14:49	ND	ND	ND	1232.21	ND	2.39	545.1	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0037.LAB	8/19/2003 14:52	ND	ND	ND	1231.38	ND	2.40	548.6	ND	27.522	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0038.LAB	8/19/2003 14:55	ND	ND	ND	1197.39	ND	2.39	545.6	ND	32.901	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0039.LAB	8/19/2003 14:58	ND	ND	ND	1099.31	ND	2.39	546.0	ND	35.648	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0040.LAB	8/19/2003 15:00	ND	ND	ND	1018.22	ND	2.40	548.5	ND	38.977	151.25	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0041.LAB	8/19/2003 15:03	ND	ND	ND	955.62	ND	2.40	547.5	ND	36.862	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0042.LAB	8/19/2003 15:06	ND	ND	ND	904.54	ND	2.38	545.1	ND	57.060	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0043.LAB	8/19/2003 15:11	ND	ND	ND	832.71	ND	2.40	547.4	ND	63.438	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0044.LAB	8/19/2003 15:14	ND	ND	ND	791.29	ND	2.39	544.7	ND	41.837	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0045.LAB	8/19/2003 15:17	ND	ND	ND	811.38	ND	2.39	546.3	ND	33.621	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0046.LAB	8/19/2003 15:19	ND	ND	ND	813.96	ND	2.39	544.9	ND	35.082	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0047.LAB	8/19/2003 15:22	ND	ND	ND	756.13	ND	2.40	548.4	ND	45.001	151.25	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0048.LAB	8/19/2003 15:25	ND	ND	ND	670.53	ND	2.39	544.9	ND	130.968	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0049.LAB	8/19/2003 15:28	ND	ND	ND	650.97	ND	2.40	547.7	ND	145.572	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0050.LAB	8/19/2003 15:30	ND	ND	344.92	695.77	ND	2.38	545.0	ND	140.690	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0051.LAB	8/19/2003 15:33	ND	ND	ND	868.93	ND	2.39	545.5	ND	135.385	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0052.LAB	8/19/2003 15:36	ND	ND	ND	1010.26	ND	2.38	543.4	ND	169.529	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0053.LAB	8/19/2003 15:39	ND	ND	ND	1104.56	ND	2.38	543.6	ND	155.704	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0054.LAB	8/19/2003 15:42	ND	ND	345.31	1144.25	ND	2.39	546.0	ND	131.279	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0055.LAB	8/19/2003 15:44	ND	ND	379.24	1150.40	ND	2.39	546.9	ND	126.219	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0056.LAB	8/19/2003 15:47	ND	ND	370.33	1141.57	ND	2.39	546.7	ND	123.120	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0057.LAB	8/19/2003 15:50	ND	ND	375.77	1038.48	ND	2.39	547.4	ND	129.299	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0058.LAB	8/19/2003 15:53	ND	ND	356.97	954.48	ND	2.40	548.1	ND	108.418	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0059.LAB	8/19/2003 15:56	ND	ND	366.31	901.10	ND	2.38	544.1	ND	88.797	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0060.LAB	8/19/2003 15:58	ND	ND	388.84	852.39	ND	2.38	547.0	ND	99.438	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0061.LAB	8/19/2003 16:01	ND	ND	355.90	787.03	ND	2.37	544.2	ND	96.832	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0062.LAB	8/19/2003 16:04	ND	ND	384.84	693.54	ND	2.38	547.6	ND	92.414	151.25	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0063.LAB	8/19/2003 16:07	ND	ND	ND	630.38	ND	2.37	544.4	ND	97.764	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0064.LAB	8/19/2003 16:09	ND	ND	347.24	662.51	ND	2.39	548.4	ND	97.136	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0065.LAB	8/19/2003 16:12	ND	ND	342.52	663.42	ND	2.39	549.0	ND	95.669	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0066.LAB	8/19/2003 16:15	ND	ND	ND	614.56	ND	2.38	546.9	ND	111.289	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0067.LAB	8/19/2003 16:18	ND	ND	352.06	633.23	ND	2.39	547.6	ND	114.221	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0068.LAB	8/19/2003 16:21	ND	ND	349.84	675.35	ND	2.39	547.0	ND	111.04	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0069.LAB	8/19/2003 16:23	ND	ND	349.28	721.11	ND	2.38	543.4	ND	113.37	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0070.LAB	8/19/2003 16:26	ND	ND	344.48	761.43	ND	2.38	544.4	ND	113.27	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0071.LAB	8/19/2003 16:29	ND	ND	ND	827.56	ND	2.39	547.6	ND	107.07	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0072.LAB	8/19/2003 16:32	ND	ND	ND	953.75	ND	2.38	544.1	ND	107.53	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0073.LAB	8/19/2003 16:35	ND	ND	ND	1094.36	ND	2.39	547.1	ND	128.11	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0074.LAB	8/19/2003 16:37	ND	ND	ND	1214.02	ND	2.38	543.9	ND	136.50	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0075.LAB	8/19/2003 16:40	ND	ND	345.44	1313.39	ND	2.37	543.9	ND	123.76	150.51	1.001

Scrubber Outlet 11s.1.6 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0076.LAB	8/19/2003 16:43	ND	ND	353.69	1350.14	ND	2.38	544.6	ND	41.93	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0077.LAB	8/19/2003 16:46	ND	ND	369.98	1434.80	ND	2.39	546.1	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0078.LAB	8/19/2003 16:48	ND	ND	350.82	1477.77	ND	2.37	542.7	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0079.LAB	8/19/2003 16:51	ND	ND	382.90	1570.50	ND	2.38	542.5	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0080.LAB	8/19/2003 16:54	ND	ND	364.43	1524.56	ND	2.40	546.0	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0081.LAB	8/19/2003 16:57	ND	ND	393.62	1434.69	ND	2.41	547.2	ND	23.21	151.25	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0082.LAB	8/19/2003 17:00	ND	ND	404.69	1295.55	ND	2.40	544.5	ND	48.94	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0083.LAB	8/19/2003 17:02	ND	ND	407.50	1235.23	ND	2.42	547.9	ND	ND	151.25	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0084.LAB	8/19/2003 17:05	ND	ND	407.03	1161.09	ND	2.42	548.1	ND	ND	151.25	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0085.LAB	8/19/2003 17:08	ND	ND	412.84	1066.42	ND	2.41	545.0	ND	ND	151.25	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0086.LAB	8/19/2003 17:11	ND	ND	398.28	1054.03	ND	2.42	546.6	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0087.LAB	8/19/2003 17:14	ND	ND	406.96	1097.02	ND	2.42	546.5	ND	ND	150.51	0.996
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0088.LAB	8/19/2003 17:16	ND	ND	396.01	1140.19	ND	2.41	542.7	ND	ND	150.51	1.001
11S.1.6 OUTLET 08 19 03 SAMPLE R2_0089.LAB	8/19/2003 17:19	ND	ND	383.21	1160.56	ND	2.43	546.6	ND	ND	151.25	0.996

Average _{wet}	ND	ND	420.62	1097.47	ND	2.39	548.79	ND	120.77	150.60	1.000

Reference Method Calculations
Fab 11-X Bridge Side
11s.1.6 Outlet

Run No.	Run 1	Run 2	
Date	8/19/2003	8/19/2003	
Start Time	8:45	13:20	AVERAGE
Stop Time	12:45	17:20	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.733	1.733	1.733
Dry Gas Meter Calibration Factor	1.011	1.011	1.011
Average Meter Temperature (°F)	93.6	99.6	96.6
Volume Metered (acf)	191.037	201.164	196.101
Volume Metered (dscf)	153.895	160.406	157.150
Volume of Water Collected (g)	76.4	80.8	78.6
Volume of Water Collected (scf)	3.602	3.810	3.706
Average Delta H (in. H ₂ O)	1.60	1.79	1.70
AVG SQRT of dH (in. H ₂ O)	1.2649	1.3385	1.3017
Measured Moisture (%)	2.3%	2.3%	2.3%
Saturation Moisture (%)	2.3%	2.4%	2.4%
Moisture Used for Calculations (%)	2.3%	2.4%	2.4%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.1	0.1	0.1
Nitrogen Concentration (%)	79.0	79.0	79.0
Dry Molecular Weight (lb/lbmole)	28.85	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.60	28.59	28.60
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.17	-0.17	-0.17
Stack Pressure (in. Hg)	24.88	24.88	24.88
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.8426	0.8770	0.8598
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.7794	0.8073	0.7933
Stack Temperature Isokinetic Traverse (°F)	63.6	65.0	64.3
Stack Temperature Flow Traverse (°F)	63.0	65.0	64.0
Velocity (ft/sec) Isokinetic Traverse	51.91	54.10	53.01
Velocity (ft/sec) Flow Traverse	47.99	49.80	48.90
Nozzle Diameter (in.)	0.215	0.215	0.215
% Isokinetics	99.77	100.12	99.9
Stack Diameter (in.)	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	39,139	40,793	39,966
Stack Flow Rate Flow Traverse (acfm)	36,183	37,551	36,867
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	32,040	33,281	32,661
Stack Flow Rate Outlet Flow Traverse (dscfm)	29,654	30,635	30,144
Chlorine			
Collected Cl ₂ micrograms (ug)	30.6	50.2	40.4
Cl ₂ Concentration (ug/dscf)	0.20	0.31	0.26
Cl ₂ Concentration (ppb)	2	4	3
Cl ₂ Emission Rate (lbs/hr)	0.0008	0.0013	0.0010

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 8/19/2003
Unit Number: 11s.1.6 Outlet	Stack Diameter (in.): 48.00
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.12
Run No.: 1	Operators: BMB/JL
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 24.89
Pitot Tube ID: HA-1	Pre Test Pass Fail Pitot Leak Check <u>Y</u> —
Pitot Tube C_p: 0.84	
Actual Stack CO ₂ : 0.1 % O ₂ : 20.9 % H ₂ O: 2.3 %	
Comments :	
	Post Test Pass Fail Pitot Leak Check <u>Y</u> —
	Start: 7:45 End: 8:00

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.54	63
2	0.52	63
3	0.46	63
4	0.46	63
5	0.55	63
6	0.70	63
7	0.71	63
8	0.62	63
9	0.60	63
10	0.64	63
11	0.71	63
12	0.54	63

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.70	63
2	0.70	63
3	0.77	63
4	0.71	63
5	0.77	63
6	0.61	63
7	0.60	63
8	0.51	63
9	0.52	63
10	0.55	63
11	0.60	63
12	0.57	63
Total Average:	sqrt dp = 0.7794	63.0

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/19/2003
Unit Number:	11s.1.6 Outlet	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.21
Run No.:	2	Operators:	BMB/JL
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.89
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack	CO₂: 0.1 % O₂: 20.9 % H₂O: 2.4 %	Pitot Leak Check	<u>Y</u> _____
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> _____
		Start:	12:50
		End:	13:00

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.57	65
2	0.54	65
3	0.52	65
4	0.56	65
5	0.65	65
6	0.77	65
7	0.73	65
8	0.60	65
9	0.60	65
10	0.66	65
11	0.72	65
12	0.70	65

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.85	65
2	0.85	65
3	0.83	65
4	0.88	65
5	0.91	65
6	0.95	65
7	0.69	65
8	0.57	65
9	0.55	65
10	0.47	65
11	0.42	65
12	0.30	65
Total Average:	sqrt dp = 0.8073	65.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:		Intel		Location Notes and Comments				Sample Train No. AA		Filter No.: NA		Run No.: 1			
Plant Name:		Fab 11-X Bridge Side						Leak Check Initial:		0.009 cfm@		14.5			
Plant Location:		Rio Rancho, NM						Leak Check Final:		0.001 cfm@		3		(in. Hg)	
Project No.:		31397-1600-00000						Total Traverse Points		Impinger		Initial		Final	
Sampling Location:		11s.1.6 Outlet						24		1		681.7		690.1	
Date:		8/19/2003								2		749.3		769.8	
Technicians:		BMB/JL								3		536.5		540.8	
Meter Box No.: 90394		Y_d: 1.011				4		654.8		658.7					
Probe/Pitot No 401 / HA-1		C_p: 0.84				5		669.7		668.8					
Nozzle No.: NA		dH₀: 1.733		Stack Dia. (in.): 48.00		Stack Area (ft²): 12.57		6		828.2		868.4			
Nozzle Dia: 0.215		0.215, 0.216, 0.215		Port Width (in.): 4.00		Port Length (in.): 3.00		Start Time: 8:45		Net Impinger Gain (g): 76.4					
Initial Meter Reading (ft³):		610.462		BP (in. Hg): 24.89		Static Pressure (in.): -0.17		End Time: 12:45		Theta 240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)				
1	10	63	77	76	0.710	1.60	618.370	249	243	50	2				
1	20	63	77	75	0.710	1.60	626.240	250	242	50	2				
1	30	63	83	76	0.710	1.60	634.050	251	245	50	2				
1	40	63	88	79	0.710	1.60	641.850	250	243	50	2				
1	50	63	90	80	0.710	1.60	649.850	250	244	50	2				
1	60	63	94	84	0.710	1.60	657.310	250	245	50	2				
1	70	63	96	88	0.710	1.60	665.300	250	245	50	2				
1	80	63	97	89	0.710	1.60	673.430	250	245	51	2				
1	90	63	98	90	0.710	1.60	681.510	251	243	51	2				
1	100	63	99	93	0.710	1.60	689.580	252	243	51	2				
1	110	64	101	93	0.710	1.60	697.670	254	245	52	2				
1	120	64	102	94	0.710	1.60	705.720	256	247	52	2				
1	130	64	104	98	0.710	1.60	713.650	257	245	52	2				
1	140	64	104	100	0.710	1.60	721.850	255	244	52	2				
1	150	64	102	99	0.710	1.60	729.870	254	244	52	2				
1	160	64	102	99	0.710	1.60	737.880	255	245	52	2				
1	170	64	101	97	0.710	1.60	745.870	251	243	53	2				
1	180	64	101	95	0.710	1.60	753.860	251	245	53	2				
1	190	64	101	95	0.710	1.60	762.020	252	245	53	2				
1	200	64	101	95	0.710	1.60	769.950	249	241	54	2				
1	210	64	101	94	0.710	1.60	777.710	249	243	54	2				
1	220	64	101	94	0.710	1.60	785.650	249	245	54	2				
1	230	64	102	94	0.710	1.60	793.580	250	242	54	2				
1	240	64	101	94	0.710	1.60	801.499	249	244	54	2				
Average / Net		63.6		93.6		0.7		1.6		191.037		251.4 244.0 51.8 2.0			

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic				Sample Train No. SF		Filter No.: NA		Run No.: 2			
Plant Name:	Fab 11-X Bridge Side					Leak Check Initial:		0.005	cfm@	14.5	(in. Hg)		
Plant Location:	Rio Rancho, NM					Leak Check Final:		0.000	cfm@	4.0	(in. Hg)		
Project No.:	31397-1600-00000					Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	11s.1.6 Outlet					24		1		588.3		608.2	
Date:	8/19/2003							2		634.0		648.3	
Technicians:	BMB/JL							3		646.0		651.9	
Meter Box No.: 90394	Y _d : 1.011							4		658.7		659.6	
Probe / Pitot No.: 401 / HA-1	C _p : 0.84			5		673.3		674.3					
Nozzle No.: NA	dH _g : 1.733	Stack Dia. (in.): 48.00		Stack Area (ft²): 12.57		6		961.7		1000.5			
Nozzle Dia: 0.215	0.215, 0.216, 0.215	Port Width (in.): 4.00		Port Length (in.): 3.00		Start Time: 13:20		Net Impinger Gain (g): 80.8					
Initial Meter Reading (ft³):	802.145	BP (in. Hg): 24.89		Static Pressure (in.): -0.17		End Time: 17:20		Theta 240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)		
1	10	65	92	92	0.770	1.70	810.330	240	240	50	3.0		
1	20	65	97	92	0.780	1.80	818.780	250	240	50	3.0		
1	30	65	102	93	0.770	1.80	827.200	242	241	51	3.0		
1	40	65	106	94	0.770	1.80	835.620	242	241	51	3.0		
1	50	65	106	96	0.780	1.80	844.020	242	242	51	3.0		
1	60	65	107	97	0.770	1.80	852.440	242	242	52	3.0		
1	70	65	105	98	0.780	1.80	860.860	241	242	52	3.0		
1	80	65	105	97	0.780	1.80	869.340	241	241	53	3.0		
1	90	65	105	97	0.780	1.80	877.670	242	243	51	3.0		
1	100	65	104	96	0.770	1.800	886.070	245	243	51	3.0		
1	110	65	104	95	0.770	1.80	894.450	241	240	51	3.0		
1	120	65	105	96	0.770	1.80	902.860	255	247	51	3.0		
1	130	65	105	95	0.770	1.80	911.340	255	248	52	3.0		
1	140	65	106	98	0.770	1.80	919.660	256	247	52	3.0		
1	150	65	105	98	0.700	1.80	927.900	257	245	53	3.0		
1	160	65	106	98	0.770	1.80	936.520	256	245	53	3.0		
1	170	65	105	98	0.770	1.80	944.890	256	245	53	3.0		
1	180	65	104	98	0.770	1.80	953.240	254	245	53	3.0		
1	190	65	104	98	0.770	1.80	961.620	254	247	54	3.0		
1	200	65	103	95	0.770	1.80	969.950	256	244	54	3.0		
1	210	65	104	95	0.770	1.80	978.300	257	247	54	3.0		
1	220	65	103	94	0.770	1.80	986.640	255	245	54	3.0		
1	230	65	102	94	0.770	1.80	994.980	254	245	55	3.0		
1	240	65	100	93	0.770	1.70	1003.309	255	246	55	3.0		
Average / Net		65.0		99.6	0.8	1.8	201.164	249.5	243.8	52.3	3.0		

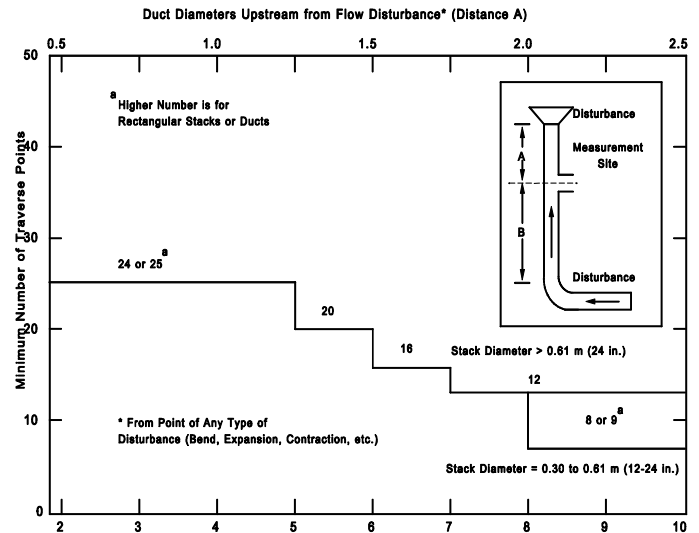
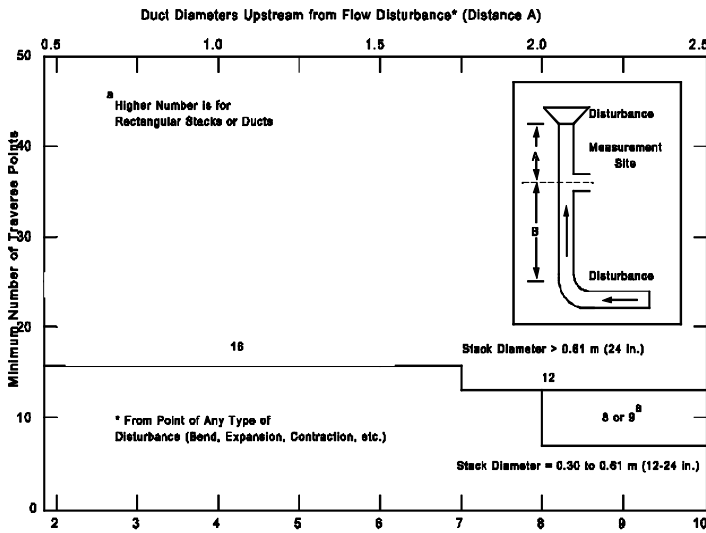
**EPA REFERENCE METHOD 1
FIELD DATA SHEET
CIRCULAR STACKS**

Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 11s.1.6
 TRC Project No.: 31397-1600-00000
 Date: 8/18/2003
 Technician: B. Bauer
 Circular/Rectangular: C

Stack Diameter: 48.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 3.00
 Diameters Upstream: 3.4
 Diameters Downstream: 2.4
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses

For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	4
2	6 3/16
3	8 11/16
4	11 8/16
5	15
6	20 1/16
7	33 15/16
8	39
9	42 8/16
10	45 5/16
11	47 13/16
12	50
13	
14	
15	
16	
17	
18	
19	
20	
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23	
24	

Scrubber Outlet 11s.1.10 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_10 OUTLET 08 21 03 SAMPLE_0009.LAB	8/21/2003 10:20	ND	ND	ND	246.77	ND	2.34	544.8	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0010.LAB	8/21/2003 10:23	ND	ND	ND	248.46	ND	2.33	544.8	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0011.LAB	8/21/2003 10:26	ND	ND	ND	238.26	ND	2.33	547.1	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0012.LAB	8/21/2003 10:28	ND	ND	ND	258.43	ND	2.32	543.5	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0013.LAB	8/21/2003 10:31	ND	ND	ND	284.86	ND	2.32	543.6	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0014.LAB	8/21/2003 10:34	ND	ND	ND	335.44	ND	2.32	543.6	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0015.LAB	8/21/2003 10:37	ND	ND	ND	348.80	ND	2.32	544.4	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0016.LAB	8/21/2003 10:39	ND	ND	ND	326.83	ND	2.32	545.5	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0017.LAB	8/21/2003 10:42	ND	ND	ND	316.19	ND	2.33	547.5	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0018.LAB	8/21/2003 10:45	ND	ND	ND	315.83	ND	2.35	551.3	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0019.LAB	8/21/2003 10:48	ND	ND	ND	352.09	ND	2.35	551.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0020.LAB	8/21/2003 10:51	ND	ND	ND	382.28	ND	2.36	551.2	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0021.LAB	8/21/2003 10:53	ND	ND	ND	387.14	ND	2.36	550.7	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0022.LAB	8/21/2003 10:56	ND	ND	ND	378.31	ND	2.34	548.0	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0023.LAB	8/21/2003 10:59	ND	ND	ND	368.99	ND	2.35	548.7	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0024.LAB	8/21/2003 11:02	ND	ND	ND	351.37	ND	2.34	547.2	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0025.LAB	8/21/2003 11:04	ND	ND	ND	311.78	ND	2.34	548.3	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0026.LAB	8/21/2003 11:07	ND	ND	ND	292.11	ND	2.33	548.3	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0027.LAB	8/21/2003 11:10	ND	ND	ND	250.78	ND	2.33	546.7	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0028.LAB	8/21/2003 11:13	ND	ND	ND	215.60	ND	2.32	545.1	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0029.LAB	8/21/2003 11:16	ND	ND	ND	213.97	ND	2.32	545.4	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0030.LAB	8/21/2003 11:18	ND	ND	ND	222.68	ND	2.32	545.1	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0031.LAB	8/21/2003 11:21	ND	ND	ND	247.06	ND	2.33	548.1	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0032.LAB	8/21/2003 11:24	ND	ND	ND	232.57	ND	2.33	549.8	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0033.LAB	8/21/2003 11:27	ND	ND	ND	235.72	ND	2.32	544.7	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0034.LAB	8/21/2003 11:29	ND	ND	ND	217.90	ND	2.31	544.4	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0035.LAB	8/21/2003 11:32	ND	ND	ND	204.27	ND	2.31	544.2	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0036.LAB	8/21/2003 11:35	ND	ND	ND	209.47	ND	2.32	546.7	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0037.LAB	8/21/2003 11:38	ND	ND	ND	246.59	ND	2.31	543.0	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0038.LAB	8/21/2003 11:41	ND	ND	ND	272.92	ND	2.31	542.8	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0039.LAB	8/21/2003 11:43	ND	ND	ND	365.18	ND	2.31	542.2	ND	48.816	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0040.LAB	8/21/2003 11:46	ND	ND	ND	368.26	ND	2.31	541.1	ND	392.092	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0041.LAB	8/21/2003 11:49	ND	ND	ND	464.52	ND	2.33	544.0	ND	385.585	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0042.LAB	8/21/2003 11:52	ND	ND	ND	609.68	ND	2.30	537.6	ND	158.001	150.51	1.006
11S_1_10 OUTLET 08 21 03 SAMPLE_0043.LAB	8/21/2003 11:54	ND	ND	ND	714.62	ND	2.32	540.1	ND	146.481	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0044.LAB	8/21/2003 11:57	ND	ND	ND	690.10	ND	2.32	540.1	ND	33.128	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0045.LAB	8/21/2003 12:00	ND	ND	ND	618.35	ND	2.32	540.8	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0046.LAB	8/21/2003 12:03	ND	ND	ND	529.30	ND	2.33	541.0	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0047.LAB	8/21/2003 12:05	ND	ND	ND	470.19	ND	2.32	540.6	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0048.LAB	8/21/2003 12:08	ND	ND	ND	425.84	ND	2.34	544.6	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0049.LAB	8/21/2003 12:11	ND	ND	ND	412.56	ND	2.33	543.0	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0050.LAB	8/21/2003 12:14	ND	ND	ND	391.36	ND	2.34	543.9	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0051.LAB	8/21/2003 12:17	ND	ND	ND	398.52	ND	2.34	541.8	ND	ND	150.51	1.006
11S_1_10 OUTLET 08 21 03 SAMPLE_0052.LAB	8/21/2003 12:19	ND	ND	ND	403.16	ND	2.36	544.4	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0053.LAB	8/21/2003 12:22	ND	ND	ND	389.46	ND	2.36	544.0	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0054.LAB	8/21/2003 12:25	ND	ND	ND	419.21	ND	2.36	543.1	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0055.LAB	8/21/2003 12:28	ND	ND	ND	455.70	ND	2.36	542.0	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0056.LAB	8/21/2003 12:31	ND	ND	ND	427.53	ND	2.35	540.6	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0057.LAB	8/21/2003 12:33	ND	ND	ND	423.52	ND	2.36	542.7	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0058.LAB	8/21/2003 12:36	ND	ND	ND	470.99	ND	2.36	543.6	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0059.LAB	8/21/2003 12:39	ND	ND	ND	439.36	ND	2.37	545.8	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0060.LAB	8/21/2003 12:42	ND	ND	ND	413.43	ND	2.36	543.2	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0061.LAB	8/21/2003 12:44	ND	ND	ND	382.61	ND	2.36	541.8	ND	ND	150.51	1.001

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.10 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_10 OUTLET 08 21 03 SAMPLE_0062.LAB	8/21/2003 12:47	ND	ND	ND	348.31	ND	2.36	543.8	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0063.LAB	8/21/2003 12:50	ND	ND	ND	324.77	ND	2.38	547.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0064.LAB	8/21/2003 12:53	ND	ND	ND	345.36	ND	2.38	544.5	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0065.LAB	8/21/2003 12:56	ND	ND	ND	423.19	ND	2.39	547.5	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0066.LAB	8/21/2003 12:58	ND	ND	ND	516.43	ND	2.38	544.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0067.LAB	8/21/2003 13:01	ND	ND	ND	532.08	ND	2.37	543.0	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0068.LAB	8/21/2003 13:04	ND	ND	ND	577.05	ND	2.36	540.4	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0069.LAB	8/21/2003 13:07	ND	ND	ND	545.79	ND	2.36	543.2	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0070.LAB	8/21/2003 13:09	ND	ND	ND	507.97	ND	2.36	542.9	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0071.LAB	8/21/2003 13:12	ND	ND	ND	476.14	ND	2.35	542.1	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0072.LAB	8/21/2003 13:15	ND	ND	ND	449.05	ND	2.35	542.4	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0073.LAB	8/21/2003 13:18	ND	ND	ND	462.36	ND	2.35	541.4	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0074.LAB	8/21/2003 13:21	ND	ND	ND	494.85	ND	2.36	544.2	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0075.LAB	8/21/2003 13:23	ND	ND	ND	515.95	ND	2.35	541.4	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0076.LAB	8/21/2003 13:26	ND	ND	ND	512.79	ND	2.36	544.1	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0077.LAB	8/21/2003 13:29	ND	ND	ND	505.32	ND	2.35	543.2	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0078.LAB	8/21/2003 13:32	ND	ND	ND	495.43	ND	2.34	542.1	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0079.LAB	8/21/2003 13:34	ND	ND	ND	454.87	ND	2.33	541.3	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0080.LAB	8/21/2003 13:37	ND	ND	ND	426.49	ND	2.31	538.3	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0081.LAB	8/21/2003 13:40	ND	ND	ND	420.83	ND	2.31	538.2	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0082.LAB	8/21/2003 13:43	ND	ND	ND	356.81	ND	2.31	538.3	ND	137.233	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0083.LAB	8/21/2003 13:46	ND	ND	ND	309.43	ND	2.31	538.9	ND	353.811	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0084.LAB	8/21/2003 13:48	ND	ND	ND	321.87	ND	2.31	538.8	ND	445.157	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0085.LAB	8/21/2003 13:51	ND	ND	ND	380.94	ND	2.31	537.8	ND	365.035	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0086.LAB	8/21/2003 13:54	ND	ND	ND	441.55	ND	2.32	538.0	ND	164.692	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0087.LAB	8/21/2003 13:57	ND	ND	ND	462.81	ND	2.34	542.8	ND	159.274	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0088.LAB	8/21/2003 13:59	ND	ND	ND	567.11	ND	2.34	543.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0089.LAB	8/21/2003 14:02	ND	ND	ND	637.89	ND	2.33	540.7	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0090.LAB	8/21/2003 14:05	ND	ND	ND	713.26	ND	2.31	538.4	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0091.LAB	8/21/2003 14:08	ND	ND	ND	778.64	ND	2.31	537.3	ND	25.682	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0092.LAB	8/21/2003 14:11	ND	ND	ND	755.37	ND	2.33	540.7	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0093.LAB	8/21/2003 14:13	ND	ND	ND	802.06	ND	2.33	542.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0094.LAB	8/21/2003 14:16	ND	ND	ND	784.73	ND	2.33	540.0	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0097.LAB	8/21/2003 14:44	ND	ND	ND	413.11	ND	2.31	542.5	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0098.LAB	8/21/2003 14:47	ND	ND	ND	427.21	ND	2.30	540.3	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0099.LAB	8/21/2003 14:50	ND	ND	ND	415.82	ND	2.31	542.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0100.LAB	8/21/2003 14:53	ND	ND	ND	404.62	ND	2.30	542.7	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0101.LAB	8/21/2003 14:56	ND	ND	ND	377.69	ND	2.30	542.1	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0102.LAB	8/21/2003 14:58	ND	ND	ND	329.81	ND	2.29	542.5	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0103.LAB	8/21/2003 15:01	ND	ND	ND	308.95	ND	2.28	540.1	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0104.LAB	8/21/2003 15:04	ND	ND	ND	310.97	ND	2.31	544.0	ND	26.606	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0105.LAB	8/21/2003 15:07	ND	ND	ND	323.66	ND	2.32	545.8	ND	25.448	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0106.LAB	8/21/2003 15:10	ND	ND	ND	319.98	ND	2.32	544.9	ND	26.698	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0107.LAB	8/21/2003 15:12	ND	ND	ND	343.12	ND	2.31	546.6	ND	56.136	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0108.LAB	8/21/2003 15:15	ND	ND	ND	279.39	ND	2.29	540.4	ND	60.525	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0109.LAB	8/21/2003 15:18	ND	ND	ND	260.62	ND	2.30	542.2	ND	45.623	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0110.LAB	8/21/2003 15:21	ND	ND	ND	242.10	ND	2.31	544.1	ND	46.823	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0111.LAB	8/21/2003 15:23	ND	ND	ND	236.13	ND	2.30	541.4	ND	32.648	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0112.LAB	8/21/2003 15:26	ND	ND	ND	224.41	ND	2.31	543.4	ND	54.787	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0113.LAB	8/21/2003 15:29	ND	ND	ND	223.99	ND	2.30	540.9	ND	60.878	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0114.LAB	8/21/2003 15:32	ND	ND	ND	208.16	ND	2.30	539.7	ND	63.425	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0115.LAB	8/21/2003 15:35	ND	ND	ND	228.93	ND	2.30	539.6	ND	62.280	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0116.LAB	8/21/2003 15:37	ND	ND	ND	231.92	ND	2.29	536.8	ND	68.074	150.51	1.001

Scrubber Outlet 11s.1.10 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_10 OUTLET 08 21 03 SAMPLE_0117.LAB	8/21/2003 15:40	ND	ND	ND	263.28	ND	2.31	539.8	ND	61.784	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0118.LAB	8/21/2003 15:43	ND	ND	ND	281.58	ND	2.31	539.7	ND	64.292	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0119.LAB	8/21/2003 15:46	ND	ND	ND	313.49	ND	2.31	540.8	ND	54.597	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0120.LAB	8/21/2003 15:49	ND	ND	ND	337.93	ND	2.33	545.1	ND	43.291	150.51	0.990
11S_1_10 OUTLET 08 21 03 SAMPLE_0121.LAB	8/21/2003 15:51	ND	ND	ND	281.78	ND	2.31	539.4	ND	74.547	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0122.LAB	8/21/2003 15:54	ND	ND	ND	207.54	ND	2.33	542.8	ND	258.258	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0123.LAB	8/21/2003 15:57	ND	ND	ND	198.32	ND	2.33	543.1	ND	382.522	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0124.LAB	8/21/2003 16:00	ND	ND	ND	169.38	ND	2.34	542.8	ND	410.417	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0125.LAB	8/21/2003 16:02	ND	ND	ND	179.46	ND	2.34	543.3	ND	476.757	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0126.LAB	8/21/2003 16:05	ND	ND	ND	180.76	ND	2.33	541.6	ND	459.383	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0127.LAB	8/21/2003 16:08	ND	ND	ND	275.98	ND	2.34	543.5	ND	461.146	150.51	0.990
11S_1_10 OUTLET 08 21 03 SAMPLE_0128.LAB	8/21/2003 16:11	ND	ND	ND	534.61	ND	2.35	543.3	ND	134.381	150.51	0.990
11S_1_10 OUTLET 08 21 03 SAMPLE_0129.LAB	8/21/2003 16:14	ND	ND	ND	755.74	ND	2.34	542.1	ND	ND	150.51	0.990
11S_1_10 OUTLET 08 21 03 SAMPLE_0130.LAB	8/21/2003 16:16	ND	ND	ND	872.99	ND	2.33	538.9	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0131.LAB	8/21/2003 16:19	ND	ND	ND	903.19	ND	2.33	539.2	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0132.LAB	8/21/2003 16:22	ND	ND	ND	864.45	ND	2.32	539.7	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0133.LAB	8/21/2003 16:25	ND	ND	ND	837.25	ND	2.31	539.7	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0134.LAB	8/21/2003 16:28	ND	ND	ND	779.14	ND	2.32	542.7	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0135.LAB	8/21/2003 16:30	ND	ND	ND	700.13	ND	2.31	541.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0136.LAB	8/21/2003 16:33	ND	ND	ND	572.02	ND	2.29	539.9	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0137.LAB	8/21/2003 16:36	ND	ND	ND	532.20	ND	2.29	539.7	ND	ND	152.00	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0138.LAB	8/21/2003 16:39	ND	ND	ND	594.33	ND	2.29	539.6	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0139.LAB	8/21/2003 16:42	ND	ND	ND	634.94	ND	2.28	535.9	ND	ND	151.25	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0140.LAB	8/21/2003 16:44	ND	ND	ND	696.01	ND	2.28	535.9	ND	ND	151.25	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0141.LAB	8/21/2003 16:47	ND	ND	ND	755.18	ND	2.28	535.8	ND	ND	151.25	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0142.LAB	8/21/2003 16:50	ND	ND	ND	805.00	ND	2.30	537.5	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0143.LAB	8/21/2003 16:53	ND	ND	ND	810.56	ND	2.30	538.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0144.LAB	8/21/2003 16:56	ND	ND	ND	771.21	ND	2.29	535.7	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0145.LAB	8/21/2003 16:58	ND	ND	ND	699.56	ND	2.31	539.3	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0146.LAB	8/21/2003 17:01	ND	ND	ND	690.06	ND	2.33	542.1	ND	ND	150.51	0.990
11S_1_10 OUTLET 08 21 03 SAMPLE_0147.LAB	8/21/2003 17:04	ND	ND	ND	653.23	ND	2.30	536.9	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0148.LAB	8/21/2003 17:07	ND	ND	ND	625.50	ND	2.30	538.0	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0149.LAB	8/21/2003 17:09	ND	ND	ND	551.98	ND	2.30	539.1	ND	20.505	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0150.LAB	8/21/2003 17:12	ND	ND	ND	462.69	ND	2.32	543.5	ND	129.826	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0151.LAB	8/21/2003 17:15	ND	ND	ND	463.70	ND	2.32	543.5	ND	135.480	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0152.LAB	8/21/2003 17:20	ND	ND	ND	578.06	ND	2.32	543.0	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0153.LAB	8/21/2003 17:22	ND	ND	ND	661.49	ND	2.33	542.2	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0154.LAB	8/21/2003 17:25	ND	ND	ND	728.09	ND	2.33	543.3	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0155.LAB	8/21/2003 17:28	ND	ND	ND	723.20	ND	2.32	541.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0156.LAB	8/21/2003 17:31	ND	ND	ND	720.75	ND	2.32	541.0	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0157.LAB	8/21/2003 17:34	ND	ND	ND	672.26	ND	2.31	540.5	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0158.LAB	8/21/2003 17:36	ND	ND	ND	596.40	ND	2.30	539.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0159.LAB	8/21/2003 17:39	ND	ND	ND	558.64	ND	2.30	539.6	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0160.LAB	8/21/2003 17:42	ND	ND	ND	486.49	ND	2.28	535.1	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0161.LAB	8/21/2003 17:45	ND	ND	ND	431.67	ND	2.28	536.0	ND	ND	151.25	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0162.LAB	8/21/2003 17:48	ND	ND	ND	398.83	ND	2.29	537.8	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0163.LAB	8/21/2003 17:50	ND	ND	ND	389.50	ND	2.30	540.5	ND	ND	150.51	0.990
11S_1_10 OUTLET 08 21 03 SAMPLE_0164.LAB	8/21/2003 17:53	ND	ND	ND	406.42	ND	2.29	538.4	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0165.LAB	8/21/2003 17:56	ND	ND	ND	372.60	ND	2.30	543.1	ND	ND	151.25	0.990
11S_1_10 OUTLET 08 21 03 SAMPLE_0166.LAB	8/21/2003 17:59	ND	ND	ND	322.61	ND	2.29	540.3	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0167.LAB	8/21/2003 18:02	ND	ND	ND	308.83	ND	2.30	540.8	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0168.LAB	8/21/2003 18:04	ND	ND	ND	302.38	ND	2.30	540.8	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0169.LAB	8/21/2003 18:07	ND	ND	ND	298.40	ND	2.33	544.4	ND	ND	151.25	0.996

Scrubber Outlet 11s.1.10 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_10 OUTLET 08 21 03 SAMPLE_0170.LAB	8/21/2003 18:10	ND	ND	ND	288.42	ND	2.32	541.5	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0171.LAB	8/21/2003 18:13	ND	ND	ND	284.97	ND	2.31	537.1	ND	ND	151.25	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0172.LAB	8/21/2003 18:15	ND	ND	ND	320.56	ND	2.32	536.5	ND	ND	151.25	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0173.LAB	8/21/2003 18:18	ND	ND	ND	325.97	ND	2.34	540.1	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0174.LAB	8/21/2003 18:21	ND	ND	ND	334.22	ND	2.34	540.5	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0175.LAB	8/21/2003 18:24	ND	ND	ND	309.29	ND	2.34	540.0	ND	ND	151.25	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0176.LAB	8/21/2003 18:27	ND	ND	ND	278.84	ND	2.36	542.8	ND	ND	151.25	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0177.LAB	8/21/2003 18:29	ND	ND	ND	346.22	ND	2.36	542.6	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0178.LAB	8/21/2003 18:32	ND	ND	ND	328.73	ND	2.36	540.2	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0179.LAB	8/21/2003 18:35	ND	ND	ND	321.36	ND	2.37	542.1	ND	ND	150.51	0.996
11S_1_10 OUTLET 08 21 03 SAMPLE_0180.LAB	8/21/2003 18:38	ND	ND	ND	300.60	ND	2.36	540.7	ND	ND	151.25	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0181.LAB	8/21/2003 18:41	ND	ND	ND	298.26	ND	2.36	539.6	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0182.LAB	8/21/2003 18:43	ND	ND	ND	306.64	ND	2.35	539.2	ND	ND	150.51	1.001
11S_1_10 OUTLET 08 21 03 SAMPLE_0183.LAB	8/21/2003 18:46	ND	ND	ND	321.20	ND	2.36	540.5	ND	ND	150.51	0.996

Average _{wet}	ND	ND	ND	430.82	ND	2.33	542.11	ND	51.53	150.63	0.998

Reference Method Calculations

Fab 11X Bridge Side

11s.1.10

Run No.	Run 1	Run 2	
Date	8/21/2003	8/21/2003	
Start Time	10:15	14:45	AVERAGE
Stop Time	14:15	18:45	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.86	24.86	24.86
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Dry Gas Meter Calibration Check Value	1.008	1.017	1.012
Average Meter Temperature ($^{\circ}$ F)	102.1	104.2	103.2
Volume Metered (acf)	218.018	219.539	218.779
Volume Metered (dscf)	170.928	171.522	171.225
Volume of Water Collected (g)	80.2	80.1	80.1
Volume of Water Collected (scf)	3.781	3.777	3.779
Average Delta H (in. H ₂ O)	2.02	2.08	2.05
AVG SQRT of dH (in. H ₂ O)	1.4218	1.4426	1.4322
Measured Moisture (%)	2.2%	2.2%	2.2%
Saturation Moisture (%)	2.3%	2.2%	2.2%
Moisture Used for Calculations (%)	2.3%	2.3%	2.3%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.1	0.1	0.1
Nitrogen Concentration (%)	79.0	79.0	79.0
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.61	28.61	28.61
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	
Stack Static Pressure (in. H ₂ O)	-0.11	-0.11	-0.11
Stack Pressure (in. Hg)	24.85	24.85	24.85
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.8580	0.8551	0.8566
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.7719	0.7914	0.7816
Stack Temperature Isokinetic Traverse ($^{\circ}$ F)	62.6	62.0	62.3
Stack Temperature Flow Traverse ($^{\circ}$ F)	63.7	62.3	63.0
Velocity (ft/sec) Isokinetic Traverse	52.83	52.62	52.72
Velocity (ft/sec) Flow Traverse	47.57	48.71	48.14
Nozzle Diameter (in.)	0.225	0.225	0.225
% Isokinetics	99.35	99.96	99.7
Stack Diameter (in.)	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	39,829	39,673	39,751
Stack Flow Rate Flow Traverse (acfm)	35,868	36,726	36,297
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	32,632	32,544	32,588
Stack Flow Rate Outlet Flow Traverse (dscfm)	29,326	30,109	29,718
Chlorine			
Collected Cl. micrograms (ug)	23.6	24.8	24.2
Cl ₂ Concentration (ug/dscf)	0.14	0.14	0.14
Cl ₂ Concentration (ppb)	2	2	2
Cl ₂ Emission Rate (lbs/hr)	0.0005	0.0006	0.0006

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/21/2003
Unit Number:	11s.1.10	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.14
Run No.:	1	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.86
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack	CO₂: 0.1 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	x <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	x <u> </u>
		Start:	14:24
		End:	14:38

S Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.39	65
2	0.37	64
3	0.40	64
4	0.45	63
5	0.56	63
6	0.73	63
7	0.62	63
8	0.62	64
9	0.66	63
10	0.72	64
11	0.72	65
12	0.67	70

W Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.78	64
2	0.84	64
3	0.81	64
4	0.79	63
5	0.71	63
6	0.66	63
7	0.53	63
8	0.47	62
9	0.49	62
10	0.51	62
11	0.54	63
12	0.46	64
Total Average:	sqrt dp = 0.7719	63.7

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/21/2003
Unit Number:	11s.1.10	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.13
Run No.:	2	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.86
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack	CO₂: 0.1 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	Y —
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	Y —
		Start:	19:15
		End:	19:25

S Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.37	63
2	0.43	63
3	0.42	62
4	0.61	62
5	0.67	62
6	0.74	62
7	0.64	62
8	0.60	62
9	0.66	62
10	0.70	62
11	0.73	62
12	0.77	67

W Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.75	62
2	0.80	62
3	0.84	62
4	0.78	62
5	0.75	62
6	0.69	62
7	0.57	62
8	0.51	62
9	0.49	62
10	0.51	62
11	0.62	62
12	0.55	63
Total Average:	sqrt dp = 0.7914	62.3

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1
Plant Name:	Fab 11X Bridge Side						Leak Check Initial:	PER	cfm@	0.004	(in. Hg)	12
Plant Location:	Rio Rancho, NM						Leak Check Final:	PER	cfm@	0.001	(in. Hg)	8
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	11s.1.10						1	660.6	671.1			
Date:	8/21/2003						24	2	746.2	770.8		
Technicians:	PER/SCT						3	537.2	540.5			
Meter Box No.:	90394	Y_d:	0.999	4	641.8	644.6						
Probe/Pitot No.:	401 / HA-1	C_p:	0.84	5	641.6	640.9						
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57	6	803.6	843.3		
Nozzle Dia:	0.225	0.225, 0.226, 0.225	Port Width (in.):	4.00	Port Length (in.):	3.00	Start Time:	10:15	Net Impinger Gain (g):	80.2		
Initial Meter Reading (ft³):	3.624	BP (in. Hg):	24.86	Static Pressure (in.):	-0.11	End Time:	14:15	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
S6	10	63	93	94	0.730	1.90	12.280	243	245	54	2.0	
S6	20	63	99	103	0.740	2.00	21.140	244	246	56	2.0	
S6	30	62	102	101	0.740	2.05	30.160	242	243	58	2.0	
S6	40	62	105	101	0.740	2.05	39.240	244	243	58	2.0	
S6	50	62	107	101	0.740	2.05	48.570	244	239	60	2.0	
S6	60	62	106	100	0.740	2.05	57.440	243	242	55	2.0	
S6	70	62	106	99	0.740	2.05	66.490	244	241	52	2.0	
S6	80	63	107	99	0.730	2.05	75.690	243	242	52	2.0	
S6	90	63	107	98	0.740	2.05	84.890	241	243	54	2.0	
S6	100	63	107	98	0.740	2.05	94.240	241	244	56	2.0	
S6	110	63	107	99	0.740	2.05	103.340	244	243	56	2.0	
S6	120	63	107	98	0.730	2.05	112.420	243	242	49	2.0	
S6	130	63	106	97	0.740	2.05	121.680	241	242	51	2.0	
S6	140	63	105	96	0.740	2.05	130.910	242	245	55	2.0	
S6	150	63	105	99	0.740	2.05	140.130	241	242	54	2.0	
S6	160	64	104	95	0.740	2.05	149.350	242	243	52	2.0	
S6	170	63	104	95	0.730	1.90	158.160	242	246	50	2.0	
S6	180	63	105	95	0.750	2.05	167.190	242	245	45	2.0	
S6	190	63	106	96	0.720	1.97	176.240	244	244	37	2.0	
S6	200	62	108	97	0.730	2.00	185.270	244	245	45	2.0	
S6	210	61	110	98	0.730	2.01	194.340	244	243	56	2.0	
S6	220	62	112	99	0.730	1.99	203.340	245	244	45	2.0	
S6	230	62	112	100	0.740	2.00	212.480	244	245	52	2.0	
S6	240	62	112	102	0.730	2.00	221.642	242	242	63	2.0	
Average / Net		62.6		102.1	0.736	2.0	218.018	242.9	243.3	52.7	2.0	

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

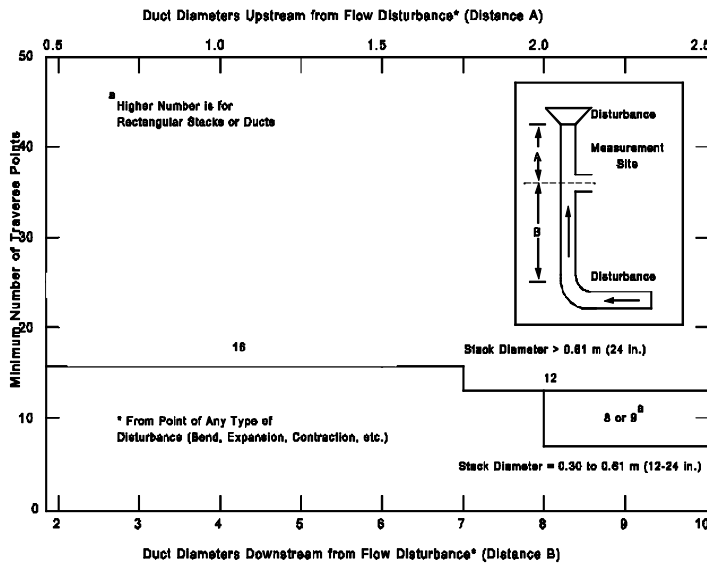
Client:	Intel	Test Location Schematic					Sample Train No.	SJ	Filter No.:	NA	Run No.:	2
Plant Name:	Fab 11X Bridge Side						Leak Check Initial:	PER	cfm@	0.001	(in. Hg)	10
Plant Location:	Rio Rancho, NM						Leak Check Final:	PER	cfm@	0.000	(in. Hg)	4
Project No.:	31397-1600-00000						Total Traverse Points		Impinger	Initial	Final	
Sampling Location:	11s.1.10						24		1	586.1	605.1	
Date:	8/21/2003								2	650.2	664.8	
Technicians:	PER/SCT								3	647.5	651.7	
Meter Box No.:	90394						Y_d:	0.999			4	636.6
Probe/Pitot No.:	401 / HA-1	C_p:	0.84			5	633.8	633.7				
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57	6	931.4	972.2		
Nozzle Dia:	0.225	0.225, 0.226, 0.225	Port Width (in.):	4.00	Port Length (in.):	3.00	Start Time:	14:45	Net Impinger Gain (g):	80.1		
Initial Meter Reading (ft³):	221.933	BP (in. Hg):	24.86	Static Pressure (in.):	-0.11	End Time:	18:45	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
S6	10	62	105	106	0.730	2.10	231.130	246	243	54	3.0	
S6	20	62	113	105	0.730	2.00	240.230	244	244	58	3.0	
S6	30	62	114	106	0.720	2.05	249.360	244	244	59	3.0	
S6	40	62	115	107	0.730	2.05	258.470	245	246	58	3.0	
S6	50	62	114	108	0.720	2.10	267.640	245	244	54	3.0	
S6	60	63	113	107	0.730	2.10	276.880	244	245	52	3.0	
S6	70	62	112	106	0.730	2.05	285.980	243	242	59	3.0	
S6	80	63	106	102	0.730	2.05	295.120	247	243	58	3.0	
S6	90	63	106	101	0.740	2.10	304.320	242	242	48	3.0	
S6	100	63	106	100	0.730	2.10	313.470	240	247	44	3.0	
S6	110	62	106	99	0.730	2.10	322.660	238	242	46	3.5	
S6	120	62	106	100	0.730	2.10	331.870	239	241	54	3.5	
S6	130	61	106	99	0.730	2.05	340.930	240	245	54	3.5	
S6	140	61	107	99	0.740	2.10	350.010	238	247	59	3.5	
S6	150	62	106	99	0.730	2.10	359.180	240	243	60	3.5	
S6	160	61	107	99	0.740	2.10	368.350	248	241	59	3.5	
S6	170	61	107	100	0.740	2.10	377.510	239	242	58	3.5	
S6	180	61	107	99	0.730	2.10	386.690	257	244	52	3.5	
S6	190	62	104	99	0.730	2.10	395.860	245	245	58	3.5	
S6	200	63	103	97	0.720	2.05	405.010	244	242	57	3.5	
S6	210	62	104	96	0.740	2.10	414.140	248	244	57	3.5	
S6	220	63	105	95	0.730	2.10	423.250	250	247	42	3.5	
S6	230	62	105	95	0.730	2.05	432.400	253	249	34	3.5	
S6	240	62	105	95	0.740	2.10	441.472	249	244	35	3.5	
Average / Net		62.0		104.2	0.7	2.1	219.539	244.5	244.0	52.9	3.3	

**EPA REFERENCE METHOD 1
FIELD DATA SHEET
CIRCULAR STACKS**

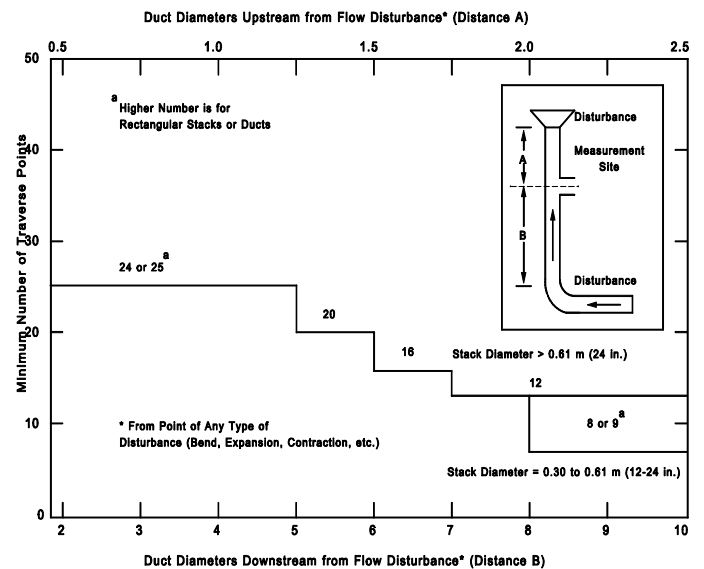
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 11s.1.10
 TRC Project No.: 31397-1600-00000
 Date: 8/20/2003
 Technician: B. Bauer
 Circular/Rectangular: C

Stack Diameter: 48.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 3.00
 Diameters Upstream: 3.4
 Diameters Downstream: 2.4
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	4.01
2	6.22
3	8.66
4	11.50
5	15.00
6	20.09
7	33.91
8	39.00
9	42.50
10	45.34
11	47.78
12	49.99
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 11s.1.12 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_12 OUTLET 08 22 03 SAMPLE_0003.LAB	8/22/2003 10:29	ND	ND	ND	217.89	ND	2.34	530.9	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0004.LAB	8/22/2003 10:32	ND	ND	ND	232.62	ND	2.33	528.3	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0005.LAB	8/22/2003 10:35	ND	ND	ND	218.22	ND	2.34	531.7	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0006.LAB	8/22/2003 10:38	ND	ND	ND	209.53	ND	2.33	529.8	ND	39.084	151.25	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0007.LAB	8/22/2003 10:40	ND	ND	ND	224.72	ND	2.33	539.3	ND	194.205	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0008.LAB	8/22/2003 10:43	ND	ND	ND	253.17	ND	2.33	538.8	ND	123.378	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0009.LAB	8/22/2003 10:46	ND	ND	ND	263.35	ND	2.34	540.9	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0010.LAB	8/22/2003 10:49	ND	ND	ND	252.09	ND	2.35	541.2	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0011.LAB	8/22/2003 10:51	ND	ND	ND	269.92	ND	2.33	537.6	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0012.LAB	8/22/2003 10:54	ND	ND	ND	242.66	ND	2.34	539.0	ND	110.536	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0013.LAB	8/22/2003 10:57	ND	ND	ND	ND	ND	2.32	536.6	ND	539.013	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0014.LAB	8/22/2003 11:00	ND	ND	ND	ND	ND	2.33	539.7	ND	521.584	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0015.LAB	8/22/2003 11:03	ND	ND	ND	ND	ND	2.33	538.8	ND	514.415	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0016.LAB	8/22/2003 11:05	ND	ND	ND	ND	ND	2.33	538.5	ND	528.720	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0017.LAB	8/22/2003 11:08	ND	ND	ND	ND	ND	2.34	539.0	ND	361.347	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0018.LAB	8/22/2003 11:11	ND	ND	ND	320.22	ND	2.32	534.1	ND	245.651	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0019.LAB	8/22/2003 11:14	ND	ND	ND	439.71	ND	2.34	536.9	ND	265.040	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0020.LAB	8/22/2003 11:16	ND	ND	ND	530.94	ND	2.32	534.5	ND	77.418	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0021.LAB	8/22/2003 11:19	ND	ND	ND	636.86	ND	2.32	534.0	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0022.LAB	8/22/2003 11:22	ND	ND	ND	659.60	ND	2.32	534.6	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0023.LAB	8/22/2003 11:25	ND	ND	ND	660.38	ND	2.32	535.7	ND	27.507	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0024.LAB	8/22/2003 11:27	ND	ND	ND	670.23	ND	2.34	538.7	ND	42.685	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0025.LAB	8/22/2003 11:30	ND	ND	ND	682.04	ND	2.32	534.5	ND	31.304	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0026.LAB	8/22/2003 11:33	ND	ND	ND	716.75	ND	2.34	537.9	ND	32.423	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0027.LAB	8/22/2003 11:36	ND	ND	ND	829.31	ND	2.33	535.2	ND	53.778	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0028.LAB	8/22/2003 11:39	ND	ND	ND	823.96	ND	2.33	535.7	ND	49.498	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0029.LAB	8/22/2003 11:41	ND	ND	ND	828.59	ND	2.33	535.3	ND	55.969	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0030.LAB	8/22/2003 11:44	ND	ND	ND	785.77	ND	2.33	535.0	ND	48.496	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0031.LAB	8/22/2003 11:47	ND	ND	ND	722.21	ND	2.34	538.5	ND	52.614	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0032.LAB	8/22/2003 11:50	ND	ND	ND	626.92	ND	2.32	536.6	ND	45.883	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0033.LAB	8/22/2003 11:53	ND	ND	ND	516.39	ND	2.30	537.3	ND	29.164	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0034.LAB	8/22/2003 11:55	ND	ND	ND	379.94	ND	2.31	539.4	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0035.LAB	8/22/2003 11:58	ND	ND	ND	272.55	ND	2.30	538.6	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0036.LAB	8/22/2003 12:01	ND	ND	ND	243.23	ND	2.28	533.2	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0037.LAB	8/22/2003 12:04	ND	ND	ND	209.58	ND	2.30	535.5	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0038.LAB	8/22/2003 12:06	ND	ND	ND	219.28	ND	2.30	536.3	ND	21.568	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0039.LAB	8/22/2003 12:09	ND	ND	ND	197.84	ND	2.29	534.5	ND	18.684	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0040.LAB	8/22/2003 12:12	ND	ND	ND	219.83	ND	2.30	539.3	ND	18.055	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0041.LAB	8/22/2003 12:15	ND	ND	ND	246.40	ND	2.30	540.7	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0042.LAB	8/22/2003 12:18	ND	ND	ND	214.02	ND	2.31	539.9	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0043.LAB	8/22/2003 12:20	ND	ND	ND	197.59	ND	2.30	537.1	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0044.LAB	8/22/2003 12:23	ND	ND	ND	196.01	ND	2.30	536.7	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0045.LAB	8/22/2003 12:26	ND	ND	ND	189.03	ND	2.30	536.6	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0046.LAB	8/22/2003 12:29	ND	ND	ND	223.09	ND	2.30	534.6	ND	30.147	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0047.LAB	8/22/2003 12:31	ND	ND	ND	207.06	ND	2.30	533.5	ND	21.193	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0048.LAB	8/22/2003 12:34	ND	ND	ND	217.45	ND	2.31	534.8	ND	27.444	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0049.LAB	8/22/2003 12:37	ND	ND	ND	240.05	ND	2.31	534.8	ND	28.296	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0050.LAB	8/22/2003 12:40	ND	ND	ND	257.16	ND	2.31	533.8	ND	32.406	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0051.LAB	8/22/2003 12:43	ND	ND	ND	234.52	ND	2.31	531.7	ND	28.647	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0052.LAB	8/22/2003 12:45	ND	ND	ND	219.03	ND	2.32	534.6	ND	19.895	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0053.LAB	8/22/2003 12:48	ND	ND	ND	203.51	ND	2.31	531.2	ND	18.073	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0054.LAB	8/22/2003 12:51	ND	ND	ND	218.05	ND	2.32	534.2	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0055.LAB	8/22/2003 12:54	ND	ND	ND	240.58	ND	2.33	533.7	ND	ND	150.51	0.996

Scrubber Outlet 11s.1.12 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_12 OUTLET 08 22 03 SAMPLE_0056.LAB	8/22/2003 12:56	ND	ND	ND	321.35	ND	2.33	532.6	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0057.LAB	8/22/2003 12:59	ND	ND	ND	394.30	ND	2.32	530.1	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0058.LAB	8/22/2003 13:02	ND	ND	ND	416.48	ND	2.33	532.3	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0059.LAB	8/22/2003 13:05	ND	ND	ND	441.60	ND	2.33	533.4	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0060.LAB	8/22/2003 13:08	ND	ND	ND	424.97	ND	2.32	530.3	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0061.LAB	8/22/2003 13:10	ND	ND	ND	380.60	ND	2.33	532.5	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0062.LAB	8/22/2003 13:13	ND	ND	ND	380.36	ND	2.32	530.4	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0063.LAB	8/22/2003 13:16	ND	ND	ND	371.40	ND	2.32	529.9	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0064.LAB	8/22/2003 13:19	ND	ND	ND	346.78	ND	2.33	532.5	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0065.LAB	8/22/2003 13:22	ND	ND	ND	365.29	ND	2.32	530.6	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0066.LAB	8/22/2003 13:24	ND	ND	ND	352.03	ND	2.33	532.8	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0067.LAB	8/22/2003 13:27	ND	ND	ND	334.86	ND	2.33	533.2	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0068.LAB	8/22/2003 13:30	ND	ND	ND	314.09	ND	2.32	531.6	ND	ND	151.25	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0069.LAB	8/22/2003 13:33	ND	ND	ND	295.77	ND	2.32	531.1	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0070.LAB	8/22/2003 13:35	ND	ND	ND	312.11	ND	2.34	535.1	ND	ND	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0071.LAB	8/22/2003 13:38	ND	ND	ND	343.64	ND	2.34	533.7	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0072.LAB	8/22/2003 13:41	ND	ND	ND	309.19	ND	2.34	534.6	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0073.LAB	8/22/2003 13:44	ND	ND	ND	333.35	ND	2.36	537.7	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0074.LAB	8/22/2003 13:47	ND	ND	ND	317.25	ND	2.34	534.3	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0075.LAB	8/22/2003 13:49	ND	ND	ND	316.75	ND	2.34	534.4	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0076.LAB	8/22/2003 13:52	ND	ND	ND	327.46	ND	2.35	535.1	ND	ND	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0077.LAB	8/22/2003 13:55	ND	ND	ND	289.37	ND	2.35	534.9	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0078.LAB	8/22/2003 13:58	ND	ND	ND	272.67	ND	2.34	534.9	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0079.LAB	8/22/2003 14:01	ND	ND	ND	309.89	ND	2.34	534.6	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0080.LAB	8/22/2003 14:03	ND	ND	ND	284.11	ND	2.34	534.5	ND	20.149	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0081.LAB	8/22/2003 14:06	ND	ND	ND	286.69	ND	2.33	531.1	ND	20.999	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0082.LAB	8/22/2003 14:09	ND	ND	ND	290.71	ND	2.33	534.2	ND	21.080	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0083.LAB	8/22/2003 14:12	ND	ND	ND	258.50	ND	2.33	534.2	ND	23.449	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0084.LAB	8/22/2003 14:14	ND	ND	ND	243.52	ND	2.31	530.8	ND	23.276	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0085.LAB	8/22/2003 14:17	ND	ND	ND	263.50	ND	2.32	533.5	ND	30.692	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0086.LAB	8/22/2003 14:20	ND	ND	ND	318.69	ND	2.33	536.6	ND	47.690	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0087.LAB	8/22/2003 14:23	ND	ND	ND	286.82	ND	2.33	535.6	ND	50.557	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0088.LAB	8/22/2003 14:26	ND	ND	ND	346.26	ND	2.31	531.2	ND	49.350	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0091.LAB	8/22/2003 14:59	ND	ND	ND	200.07	ND	2.25	539.7	ND	ND	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0092.LAB	8/22/2003 15:02	ND	ND	ND	186.24	ND	2.25	537.0	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0093.LAB	8/22/2003 15:05	ND	ND	ND	177.94	ND	2.27	536.5	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0094.LAB	8/22/2003 15:08	ND	ND	ND	185.58	ND	2.27	536.0	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0095.LAB	8/22/2003 15:10	ND	ND	ND	206.37	ND	2.29	537.0	ND	ND	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0096.LAB	8/22/2003 15:13	ND	ND	ND	237.94	ND	2.29	536.6	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0097.LAB	8/22/2003 15:16	ND	ND	ND	238.71	ND	2.29	536.3	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0098.LAB	8/22/2003 15:19	ND	ND	ND	217.27	ND	2.28	532.9	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0099.LAB	8/22/2003 15:22	ND	ND	ND	231.64	ND	2.29	534.1	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0100.LAB	8/22/2003 15:24	ND	ND	ND	236.36	ND	2.31	537.9	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0101.LAB	8/22/2003 15:27	ND	ND	ND	252.94	ND	2.29	534.3	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0102.LAB	8/22/2003 15:30	ND	ND	ND	254.82	ND	2.28	532.6	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0103.LAB	8/22/2003 15:33	ND	ND	ND	255.01	ND	2.31	539.7	ND	ND	151.25	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0104.LAB	8/22/2003 15:36	ND	ND	ND	251.24	ND	2.31	546.7	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0105.LAB	8/22/2003 15:38	ND	ND	ND	290.69	ND	2.32	547.9	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0106.LAB	8/22/2003 15:41	ND	ND	ND	284.07	ND	2.31	545.5	ND	ND	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0107.LAB	8/22/2003 15:44	ND	ND	ND	225.84	ND	2.31	545.2	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0108.LAB	8/22/2003 15:47	ND	ND	ND	232.18	ND	2.32	548.2	ND	ND	151.25	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0109.LAB	8/22/2003 15:49	ND	ND	ND	223.42	ND	2.30	544.7	ND	ND	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0110.LAB	8/22/2003 15:52	ND	ND	ND	220.55	ND	2.32	547.0	ND	ND	150.51	0.990

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 11s.1.12 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_12 OUTLET 08 22 03 SAMPLE_0111.LAB	8/22/2003 15:55	ND	ND	ND	251.20	ND	2.32	546.1	ND	ND	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0112.LAB	8/22/2003 15:58	ND	ND	ND	342.60	ND	2.32	548.8	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0113.LAB	8/22/2003 16:01	ND	ND	ND	336.99	ND	2.31	545.8	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0114.LAB	8/22/2003 16:03	ND	ND	ND	296.57	ND	2.29	544.5	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0115.LAB	8/22/2003 16:06	ND	ND	ND	287.71	ND	2.31	549.0	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0116.LAB	8/22/2003 16:09	ND	ND	ND	289.89	ND	2.29	543.6	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0117.LAB	8/22/2003 16:12	ND	ND	ND	282.28	ND	2.29	542.7	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0118.LAB	8/22/2003 16:15	ND	ND	ND	283.49	ND	2.31	548.2	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0119.LAB	8/22/2003 16:17	ND	ND	ND	260.86	ND	2.29	542.8	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0120.LAB	8/22/2003 16:20	ND	ND	ND	261.54	ND	2.31	550.1	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0121.LAB	8/22/2003 16:23	ND	ND	ND	299.33	ND	2.31	549.0	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0122.LAB	8/22/2003 16:26	ND	ND	ND	323.06	ND	2.30	548.8	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0123.LAB	8/22/2003 16:28	ND	ND	ND	215.92	ND	2.30	548.2	ND	389.284	151.25	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0124.LAB	8/22/2003 16:31	ND	ND	ND	181.50	ND	2.30	548.2	ND	516.652	151.25	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0125.LAB	8/22/2003 16:34	ND	ND	ND	157.21	ND	2.28	545.0	ND	510.426	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0126.LAB	8/22/2003 16:37	ND	ND	ND	ND	ND	2.28	543.6	ND	488.798	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0127.LAB	8/22/2003 16:40	ND	ND	ND	ND	ND	2.30	545.2	ND	455.467	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0128.LAB	8/22/2003 16:42	ND	ND	ND	210.90	ND	2.28	542.8	ND	233.577	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0129.LAB	8/22/2003 16:45	ND	ND	ND	238.40	ND	2.31	547.4	ND	214.526	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0130.LAB	8/22/2003 16:48	ND	ND	ND	302.48	ND	2.31	547.2	ND	211.759	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0131.LAB	8/22/2003 16:51	ND	ND	ND	350.16	ND	2.30	543.1	ND	106.960	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0132.LAB	8/22/2003 16:54	ND	ND	ND	345.95	ND	2.31	546.5	ND	103.213	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0133.LAB	8/22/2003 16:56	ND	ND	ND	317.68	ND	2.29	543.1	ND	111.312	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0134.LAB	8/22/2003 16:59	ND	ND	ND	309.45	ND	2.30	544.8	ND	122.762	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0135.LAB	8/22/2003 17:02	ND	ND	ND	322.55	ND	2.28	540.1	ND	112.270	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0136.LAB	8/22/2003 17:05	ND	ND	ND	345.77	ND	2.29	543.6	ND	110.088	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0137.LAB	8/22/2003 17:08	ND	ND	ND	355.34	ND	2.30	544.5	ND	105.176	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0138.LAB	8/22/2003 17:11	ND	ND	ND	357.87	ND	2.29	543.9	ND	102.616	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0139.LAB	8/22/2003 17:14	ND	ND	ND	382.88	ND	2.28	542.0	ND	90.312	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0140.LAB	8/22/2003 17:17	ND	ND	ND	380.14	ND	2.27	539.3	ND	104.511	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0141.LAB	8/22/2003 17:19	ND	ND	ND	367.27	ND	2.29	544.6	ND	103.243	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0142.LAB	8/22/2003 17:22	53.75	ND	ND	401.02	ND	2.51	544.5	ND	95.407	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0143.LAB	8/22/2003 17:25	63.06	ND	ND	1154.88	ND	2.37	542.7	ND	94.036	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0144.LAB	8/22/2003 17:28	64.75	ND	ND	880.46	ND	2.30	542.1	ND	114.656	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0145.LAB	8/22/2003 17:30	67.05	ND	ND	539.63	ND	2.29	540.5	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0146.LAB	8/22/2003 17:33	61.84	ND	ND	506.30	ND	2.30	543.8	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0147.LAB	8/22/2003 17:36	66.73	ND	ND	463.12	ND	2.31	543.1	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0148.LAB	8/22/2003 17:39	70.31	ND	ND	446.55	ND	2.31	543.0	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0149.LAB	8/22/2003 17:42	62.42	ND	ND	395.41	ND	2.30	540.5	ND	ND	150.51	1.001
11S_1_12 OUTLET 08 22 03 SAMPLE_0150.LAB	8/22/2003 17:44	66.91	ND	ND	361.56	ND	2.31	545.6	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0151.LAB	8/22/2003 17:47	77.75	ND	ND	362.14	ND	2.31	546.6	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0152.LAB	8/22/2003 17:50	83.40	ND	ND	352.91	ND	2.33	549.5	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0153.LAB	8/22/2003 17:53	73.21	ND	ND	321.02	ND	2.32	548.1	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0154.LAB	8/22/2003 17:55	75.35	ND	ND	311.81	ND	2.32	548.7	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0155.LAB	8/22/2003 17:58	73.14	ND	ND	292.22	ND	2.32	549.1	ND	ND	151.25	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0156.LAB	8/22/2003 18:01	73.84	ND	ND	285.79	ND	2.32	547.8	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0157.LAB	8/22/2003 18:04	75.94	ND	ND	307.01	ND	2.33	550.6	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0158.LAB	8/22/2003 18:07	77.69	ND	ND	324.93	ND	2.31	546.3	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0159.LAB	8/22/2003 18:09	75.19	ND	ND	351.86	ND	2.31	546.5	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0160.LAB	8/22/2003 18:12	75.93	ND	ND	349.10	ND	2.31	546.3	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0161.LAB	8/22/2003 18:15	74.68	ND	ND	359.86	ND	2.31	547.1	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0162.LAB	8/22/2003 18:18	73.35	ND	ND	369.59	ND	2.31	547.0	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0163.LAB	8/22/2003 18:20	74.63	ND	ND	398.12	ND	2.31	545.9	ND	ND	150.51	0.996

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Scrubber Outlet 11s.1.12 FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
11S_1_12 OUTLET 08 22 03 SAMPLE_0164.LAB	8/22/2003 18:23	70.61	ND	ND	435.60	ND	2.31	545.8	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0165.LAB	8/22/2003 18:26	71.15	ND	ND	444.95	ND	2.32	548.9	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0166.LAB	8/22/2003 18:29	72.94	ND	ND	433.90	ND	2.31	546.1	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0167.LAB	8/22/2003 18:32	74.19	ND	ND	409.99	ND	2.32	548.6	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0168.LAB	8/22/2003 18:34	67.40	ND	ND	435.45	ND	2.30	545.7	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0169.LAB	8/22/2003 18:37	67.01	ND	ND	397.71	ND	2.31	547.8	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0170.LAB	8/22/2003 18:40	71.15	ND	ND	428.85	ND	2.29	544.1	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0171.LAB	8/22/2003 18:43	68.54	ND	ND	532.78	ND	2.31	546.2	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0172.LAB	8/22/2003 18:45	71.47	ND	ND	672.41	ND	2.31	545.7	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0173.LAB	8/22/2003 18:48	70.29	ND	ND	788.97	ND	2.31	546.5	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0174.LAB	8/22/2003 18:51	65.79	ND	ND	766.85	ND	2.29	543.9	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0175.LAB	8/22/2003 18:54	76.84	ND	ND	711.93	ND	2.29	545.2	ND	ND	150.51	0.996
11S_1_12 OUTLET 08 22 03 SAMPLE_0176.LAB	8/22/2003 18:57	71.93	ND	ND	655.88	ND	2.30	548.7	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0177.LAB	8/22/2003 18:59	80.26	ND	ND	606.14	ND	2.30	550.5	ND	ND	150.51	0.990
11S_1_12 OUTLET 08 22 03 SAMPLE_0178.LAB	8/22/2003 19:02	83.10	ND	ND	564.45	ND	2.29	548.8	ND	ND	150.51	0.996

Average _{wet}	55.44	ND	ND	358.19	ND	2.31	539.71	ND	62.87	150.59	0.996

Reference Method Calculations

Fab 11X Bridge Side

11s.1.12

Run No.	Run 1	Run 2	
Date	8/22/2003	8/22/2003	
Start Time	10:25	15:00	AVERAGE
Stop Time	14:25	19:00	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.92	24.92	24.92
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Dry Gas Meter Calibration Check Value	1.006	1.001	1.003
Average Meter Temperature (°F)	99.9	99.4	99.7
Volume Metered (acf)	239.692	242.786	241.239
Volume Metered (dscf)	189.347	192.007	190.677
Volume of Water Collected (g)	87.6	91.1	89.3
Volume of Water Collected (scf)	4.130	4.295	4.213
Average Delta H (in. H ₂ O)	2.45	2.49	2.47
AVG SQRT of dH (in. H ₂ O)	1.5660	1.5791	1.5726
Measured Moisture (%)	2.1%	2.2%	2.2%
Saturation Moisture (%)	2.3%	2.3%	2.3%
Moisture Used for Calculations (%)	2.3%	2.3%	2.3%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.1	0.1	0.1
Nitrogen Concentration (%)	79.0	79.0	79.0
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.61	28.61	28.61
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	
Stack Static Pressure (in. H ₂ O)	-0.25	-0.25	-0.25
Stack Pressure (in. Hg)	24.90	24.90	24.90
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.9474	0.9555	0.9514
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.8111	0.7887	0.7999
Stack Temperature Isokinetic Traverse (°F)	63.6	63.8	63.7
Stack Temperature Flow Traverse (°F)	61.7	64.3	63.0
Velocity (ft/sec) Isokinetic Traverse	58.32	58.84	58.58
Velocity (ft/sec) Flow Traverse	49.84	48.59	49.21
Nozzle Diameter (in.)	0.225	0.225	0.225
% Isokinetics	99.67	100.20	99.9
Stack Diameter (in.)	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	43,973	44,362	44,167
Stack Flow Rate Flow Traverse (acfm)	37,577	36,637	37,107
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	36,031	36,343	36,187
Stack Flow Rate Outlet Flow Traverse (dscfm)	30,906	29,988	30,447
Chlorine			
Collected Cl ₂ micrograms (ug)	42.5	27.4	35.0
Cl ₂ Concentration (ug/dscf)	0.22	0.14	0.18
Cl ₂ Concentration (ppb)	3	2	2
Cl ₂ Emission Rate (lbs/hr)	0.0009	0.0006	0.0007

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/22/2003
Unit Number:	11s.1.12	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.25
Run No.:	1	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.92
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack	CO₂: 0.1 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	Y —
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	Y —
		Start:	9:01
		End:	9:19

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.42	63
2	0.37	62
3	0.32	62
4	0.35	62
5	0.42	62
6	0.61	62
7	0.60	61
8	0.63	61
9	0.75	62
10	0.83	62
11	0.88	62
12	0.74	63

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.92	62
2	1.10	62
3	1.10	62
4	1.00	61
5	0.97	61
6	0.94	61
7	0.57	61
8	0.52	61
9	0.55	61
10	0.59	61
11	0.58	61
12	0.52	62
Total Average:	sqrt dp = 0.8111	61.7

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/22/2003
Unit Number:	11s.1.12	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.19
Run No.:	2	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.83
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack	CO₂: 0.1 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	Y —
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	Y —
		Start:	14:29
		End:	14:39

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.43	65
2	0.35	65
3	0.29	64
4	0.28	64
5	0.38	65
6	0.56	64
7	0.54	64
8	0.58	64
9	0.70	64
10	0.86	64
11	0.90	67
12	0.77	68

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	1.20	65
2	1.10	64
3	0.99	64
4	0.95	63
5	0.89	63
6	0.80	63
7	0.51	63
8	0.41	63
9	0.44	63
10	0.49	64
11	0.63	65
12	0.49	65
Total Average:	sqrt dp = 0.7887	64.3

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	AA	Filter No.:	NA	Run No.:	1
Plant Name:	Fab 11X Bridge Side						Leak Check Initial:	PER	cfm@	0.000	(in. Hg)	11
Plant Location:	Rio Rancho, NM						Leak Check Final:	PER	cfm@	0.000	(in. Hg)	9
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	11s.1.12							1	660.7	658.5		
Date:	8/22/2003						24	2	742.7	776.0		
Technicians:	PER/SCT							3	535.2	542.4		
Meter Box No.:	90394						Y_d:	0.999		4	646.6	652.7
Probe/Pitot No.:	401 / HA-1	C_p:	0.84		5	665.6	664.0					
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57	6	820.3	865.1		
Nozzle Dia:	0.225	0.225, 0.226, 0.225	Port Width (in.):	4.00	Port Length (in.):	3.00	Start Time:	10:25	Net Impinger Gain (g):	87.6		
Initial Meter Reading (ft³):	441.802	BP (in. Hg):	24.92	Static Pressure (in.):	-0.25	End Time:	14:25	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
S11	10	62	84	82	0.890	2.40	451.400	233	238	36	2.8	
S11	20	63	88	83	0.900	2.40	461.060	251	236	41	3.0	
S11	30	63	93	84	0.910	2.40	470.760	251	237	41	3.0	
S11	40	64	98	86	0.900	2.45	480.480	252	253	41	3.0	
S11	50	63	103	90	0.900	2.45	490.480	251	251	56	3.0	
S11	60	63	106	93	0.890	2.45	500.380	252	253	57	3.0	
S11	70	64	106	93	0.900	2.45	510.370	251	252	54	3.0	
S11	80	63	107	95	0.900	2.45	520.440	251	252	52	3.0	
S11	90	64	107	96	0.890	2.45	530.530	249	250	56	3.0	
S11	100	64	106	96	0.900	2.45	540.600	250	252	57	3.0	
S11	110	63	108	97	0.890	2.45	550.700	251	251	53	3.0	
S11	120	64	108	97	0.900	2.45	560.690	252	252	52	3.0	
S11	130	64	107	97	0.900	2.45	570.910	249	251	56	3.0	
S11	140	63	108	98	0.910	2.50	580.940	251	250	52	3.0	
S11	150	64	108	98	0.910	2.50	591.040	252	252	52	3.0	
S11	160	64	108	98	0.900	2.50	601.120	251	255	44	3.0	
S11	170	64	108	98	0.880	2.42	611.120	251	251	45	3.0	
S11	180	64	109	98	0.900	2.47	621.120	249	251	55	3.0	
S11	190	64	110	99	0.890	2.45	631.110	251	254	49	3.0	
S11	200	64	109	99	0.890	2.44	641.100	250	253	50	3.0	
S11	210	64	108	99	0.890	2.44	651.070	248	252	55	3.0	
S11	220	63	110	100	0.900	2.47	661.110	251	252	53	3.0	
S11	230	64	111	100	0.900	2.47	671.160	249	252	55	3.0	
S11	240	65	110	101	0.900	2.50	681.494	248	249	61	3.0	
Average / Net		63.6		99.9	0.898	2.5	239.692	249.8	250.0	51.0	3.0	

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments					Sample Train No.	SJ	Filter No.:	NA	Run No.:	2
Plant Name:	Fab 11X Bridge Side						Leak Check Initial:	PER	cfm@	0.001	(in. Hg)	12
Plant Location:	Rio Rancho, NM						Leak Check Final:	PER	cfm@	0.003	(in. Hg)	12
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	11s.1.12							1	582.4	592.4		
Date:	8/22/2003						24	2	617.6	640.4		
Technicians:	PER/SCT							3	644.5	653.3		
Meter Box No.:	90394						Y_d:	0.999		4	635.0	636.6
Probe/Pitot No.:	401 / HA-1	C_p:	0.84		5	638.0	636.7					
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57	6	935.2	984.4		
Nozzle Dia:	0.225	0.225, 0.226, 0.225	Port Width (in.):	4.00	Port Length (in.):	3.00	Start Time:	15:00	Net Impinger Gain (g):	91.1		
Initial Meter Reading (ft³):	681.872	BP (in. Hg):	24.92	Static Pressure (in.):	-0.25	End Time:	19:00	Theta	240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
S11	10	65	98	99	0.910	2.45	691.810	253	249	64	3.5	
S11	20	65	104	97	0.890	2.45	701.890	252	250	58	3.5	
S11	30	65	104	98	0.910	2.55	711.990	248	251	58	4.0	
S11	40	65	105	98	0.920	2.50	722.150	248	251	62	4.0	
S11	50	65	102	97	0.910	2.40	732.000	246	251	49	4.0	
S11	60	65	102	96	0.920	2.50	742.250	247	252	49	4.0	
S11	70	64	104	95	0.910	2.50	752.460	248	252	43	4.0	
S11	80	64	105	95	0.920	2.50	762.640	250	252	39	4.0	
S11	90	64	107	96	0.910	2.50	772.820	250	253	45	4.0	
S11	100	63	108	97	0.920	2.50	782.990	248	252	54	4.0	
S11	110	63	108	98	0.910	2.50	793.190	251	253	49	4.0	
S11	120	63	108	98	0.920	2.50	803.370	251	253	50	4.0	
S11	130	64	108	99	0.910	2.50	813.570	251	254	49	4.0	
S11	140	63	108	98	0.910	2.50	823.770	255	253	55	4.0	
S11	150	64	105	98	0.910	2.50	833.910	244	254	59	4.0	
S11	160	64	104	97	0.910	2.50	844.160	243	253	61	4.0	
S11	170	64	103	95	0.910	2.50	854.260	251	252	53	4.0	
S11	180	64	102	94	0.910	2.50	864.360	249	252	62	4.0	
S11	190	63	100	91	0.910	2.50	874.420	250	252	58	4.0	
S11	200	63	99	92	0.910	2.50	884.510	250	252	62	4.0	
S11	210	63	99	91	0.920	2.50	894.560	251	251	62	4.0	
S11	220	63	99	91	0.920	2.50	904.610	250	251	62	4.0	
S11	230	63	99	90	0.920	2.50	914.620	250	251	60	4.0	
S11	240	63	100	89	0.920	2.50	924.658	250	251	58	4.0	
Average / Net		63.8		99.4	0.9	2.5	242.786	249.4	251.9	55.0	4.0	

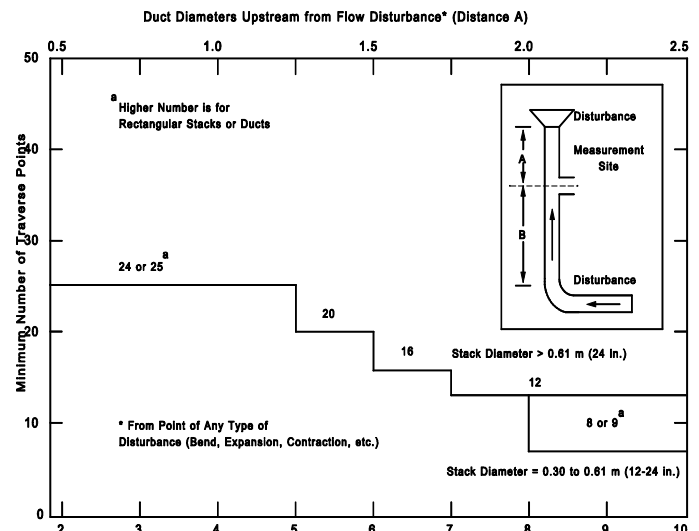
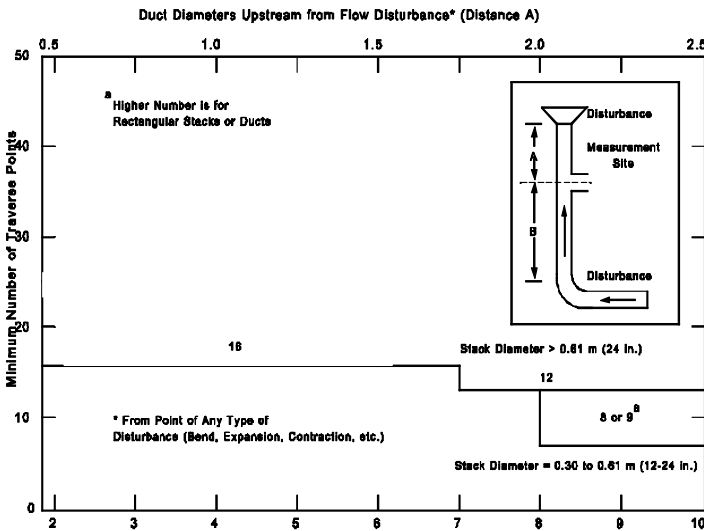
**EPA REFERENCE METHOD 1
FIELD DATA SHEET
CIRCULAR STACKS**

Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 11s.1.12
 TRC Project No.: 31397-1600-00000
 Date: 8/21/2003
 Technician: B. Bauer
 Circular/Rectangular: C

Stack Diameter: 48.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 3.00
 Diameters Upstream: 3.4
 Diameters Downstream: 2.4
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses

For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	4
2	6 3/16
3	8 11/16
4	11 8/16
5	15
6	20 1/16
7	33 15/16
8	39
9	42 8/16
10	45 5/16
11	47 13/16
12	50
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**INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER**

FIELD AND SOURCE DOCUMENTATION

APPENDIX A
Field and Measurement Data

SECTION 6
Fab 11X-Fab Side Acid Scrubber Results

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

Scrubber Outlet 9s.1.2a FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2A OUTLET 08 04 03 SAMPLE_0004.LAB	8/4/2003 7:53	ND	ND	ND	953.49	ND	2.44	404.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0005.LAB	8/4/2003 7:56	ND	ND	ND	1145.49	ND	2.45	404.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0006.LAB	8/4/2003 7:59	ND	ND	ND	989.12	ND	2.44	401.1	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0007.LAB	8/4/2003 8:01	ND	ND	ND	912.50	ND	2.44	399.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0008.LAB	8/4/2003 8:04	ND	ND	ND	954.61	ND	2.44	397.5	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0009.LAB	8/4/2003 8:06	ND	ND	ND	1023.27	ND	2.44	395.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0010.LAB	8/4/2003 8:09	ND	ND	ND	1069.23	ND	2.43	394.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0011.LAB	8/4/2003 8:12	ND	ND	ND	921.06	ND	2.45	396.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0012.LAB	8/4/2003 8:14	ND	ND	ND	933.00	ND	2.44	394.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0013.LAB	8/4/2003 8:17	ND	ND	ND	1058.91	ND	2.45	395.4	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0014.LAB	8/4/2003 8:19	ND	ND	ND	1066.37	ND	2.45	393.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0015.LAB	8/4/2003 8:22	ND	ND	ND	939.01	ND	2.46	392.3	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0016.LAB	8/4/2003 8:25	ND	ND	ND	951.62	ND	2.46	389.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0017.LAB	8/4/2003 8:27	ND	ND	ND	1054.21	ND	2.45	385.5	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0018.LAB	8/4/2003 8:30	ND	ND	ND	1072.40	ND	2.46	385.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0019.LAB	8/4/2003 8:32	ND	ND	ND	1114.73	ND	2.45	382.3	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0020.LAB	8/4/2003 8:35	ND	ND	ND	1037.69	ND	2.45	380.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0021.LAB	8/4/2003 8:38	ND	ND	ND	1082.87	ND	2.47	381.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0022.LAB	8/4/2003 8:40	ND	ND	ND	950.98	ND	2.45	378.2	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0023.LAB	8/4/2003 8:43	ND	ND	ND	955.40	ND	2.47	379.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0024.LAB	8/4/2003 8:45	ND	ND	ND	1051.35	ND	2.47	378.8	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0025.LAB	8/4/2003 8:48	ND	ND	ND	1044.07	ND	2.46	376.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0026.LAB	8/4/2003 8:51	ND	ND	ND	937.14	ND	2.47	378.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0027.LAB	8/4/2003 8:53	ND	ND	ND	936.14	ND	2.46	375.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0028.LAB	8/4/2003 8:56	ND	ND	ND	1006.48	ND	2.46	374.9	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0029.LAB	8/4/2003 8:58	ND	ND	ND	1158.95	ND	2.47	376.0	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0030.LAB	8/4/2003 9:01	ND	ND	ND	918.87	ND	2.46	373.4	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0031.LAB	8/4/2003 9:04	ND	ND	ND	894.75	ND	2.46	372.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0032.LAB	8/4/2003 9:06	ND	ND	ND	934.76	ND	2.47	373.4	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0033.LAB	8/4/2003 9:09	ND	ND	ND	1057.88	ND	2.46	370.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0034.LAB	8/4/2003 9:11	ND	ND	ND	1000.51	ND	2.47	371.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0035.LAB	8/4/2003 9:14	ND	ND	ND	868.93	ND	2.46	367.5	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0036.LAB	8/4/2003 9:17	ND	ND	ND	876.56	ND	2.47	368.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0037.LAB	8/4/2003 9:19	ND	ND	ND	904.27	ND	2.46	365.3	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0038.LAB	8/4/2003 9:22	ND	ND	ND	1045.98	ND	2.47	366.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0039.LAB	8/4/2003 9:24	ND	ND	ND	920.02	ND	2.46	364.2	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0040.LAB	8/4/2003 9:27	ND	ND	ND	894.46	ND	2.46	362.8	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0041.LAB	8/4/2003 9:30	ND	ND	ND	894.62	ND	2.47	364.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0042.LAB	8/4/2003 9:32	ND	ND	ND	1227.76	ND	2.48	363.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0043.LAB	8/4/2003 9:35	ND	ND	ND	1092.64	ND	2.46	361.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0044.LAB	8/4/2003 9:37	ND	ND	ND	887.38	ND	2.48	364.0	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0045.LAB	8/4/2003 9:40	ND	ND	ND	878.47	ND	2.48	363.8	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0046.LAB	8/4/2003 9:43	ND	ND	ND	902.38	ND	2.47	361.8	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0047.LAB	8/4/2003 9:45	ND	ND	ND	992.14	ND	2.47	362.5	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0048.LAB	8/4/2003 9:48	ND	ND	ND	851.94	ND	2.47	363.0	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0049.LAB	8/4/2003 9:50	ND	ND	ND	795.48	ND	2.48	363.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0050.LAB	8/4/2003 9:53	ND	ND	ND	817.28	ND	2.48	364.5	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0051.LAB	8/4/2003 9:56	ND	ND	ND	894.93	ND	2.47	362.4	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0052.LAB	8/4/2003 9:58	ND	ND	ND	1003.80	ND	2.47	362.1	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0053.LAB	8/4/2003 10:01	ND	ND	ND	824.24	ND	2.49	364.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0054.LAB	8/4/2003 10:03	ND	ND	ND	836.50	ND	2.49	364.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0055.LAB	8/4/2003 10:06	ND	ND	ND	860.60	ND	2.48	362.2	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0056.LAB	8/4/2003 10:09	ND	ND	ND	975.16	ND	2.48	362.1	ND	ND	149.76	1.008

Scrubber Outlet 9s.1.2a FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2A OUTLET 08 04 03 SAMPLE_0057.LAB	8/4/2003 10:11	ND	ND	ND	774.29	ND	2.48	361.8	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0058.LAB	8/4/2003 10:14	ND	ND	ND	746.06	ND	2.48	360.2	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0059.LAB	8/4/2003 10:17	ND	ND	ND	769.86	ND	2.49	362.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0060.LAB	8/4/2003 10:19	ND	ND	ND	828.95	ND	2.48	361.4	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0061.LAB	8/4/2003 10:22	ND	ND	ND	1015.94	ND	2.48	361.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0062.LAB	8/4/2003 10:24	ND	ND	ND	781.01	ND	2.49	363.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0063.LAB	8/4/2003 10:27	ND	ND	ND	752.89	ND	2.48	360.9	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0064.LAB	8/4/2003 10:30	ND	ND	ND	795.58	ND	2.49	362.8	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0065.LAB	8/4/2003 10:32	ND	ND	ND	1271.09	ND	2.50	362.4	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0066.LAB	8/4/2003 10:35	ND	ND	ND	908.50	ND	2.50	362.3	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0067.LAB	8/4/2003 10:37	ND	ND	ND	805.20	ND	2.49	359.9	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0068.LAB	8/4/2003 10:40	ND	ND	ND	886.38	ND	2.50	361.0	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0069.LAB	8/4/2003 10:43	ND	ND	ND	909.38	ND	2.51	361.8	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0070.LAB	8/4/2003 10:45	ND	ND	ND	743.71	ND	2.49	359.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0071.LAB	8/4/2003 10:48	ND	ND	ND	730.37	ND	2.50	362.0	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0072.LAB	8/4/2003 10:50	ND	ND	ND	754.41	ND	2.50	364.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0073.LAB	8/4/2003 10:53	ND	ND	ND	795.82	ND	2.50	366.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0074.LAB	8/4/2003 10:56	ND	ND	ND	798.10	ND	2.52	369.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0075.LAB	8/4/2003 10:58	ND	ND	ND	725.92	ND	2.52	369.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0076.LAB	8/4/2003 11:01	ND	ND	ND	759.75	ND	2.52	368.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0077.LAB	8/4/2003 11:03	ND	ND	ND	820.27	ND	2.51	366.5	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0078.LAB	8/4/2003 11:06	ND	ND	ND	729.01	ND	2.51	365.9	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0079.LAB	8/4/2003 11:09	ND	ND	ND	741.59	ND	2.51	365.3	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0080.LAB	8/4/2003 11:11	ND	ND	ND	688.33	ND	2.52	365.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0081.LAB	8/4/2003 11:14	ND	ND	ND	650.50	ND	2.51	362.8	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0082.LAB	8/4/2003 11:16	ND	ND	ND	673.86	ND	2.52	364.3	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0083.LAB	8/4/2003 11:19	ND	ND	ND	878.05	ND	2.53	363.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0084.LAB	8/4/2003 11:22	ND	ND	ND	700.05	ND	2.52	360.3	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0085.LAB	8/4/2003 11:24	ND	ND	ND	586.45	ND	2.54	361.4	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0086.LAB	8/4/2003 11:27	ND	ND	ND	520.68	ND	2.54	359.5	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0087.LAB	8/4/2003 11:29	ND	ND	ND	1975.49	ND	2.54	358.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0088.LAB	8/4/2003 11:32	ND	ND	ND	2143.87	ND	2.53	355.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0089.LAB	8/4/2003 11:34	ND	ND	ND	1168.67	ND	2.55	359.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0090.LAB	8/4/2003 11:37	ND	ND	ND	1493.26	ND	2.55	358.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0091.LAB	8/4/2003 11:40	ND	ND	ND	1100.06	ND	2.54	361.3	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0092.LAB	8/4/2003 11:42	ND	ND	ND	1274.24	ND	2.54	363.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0093.LAB	8/4/2003 11:45	ND	ND	ND	1062.72	ND	2.54	365.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0094.LAB	8/4/2003 11:47	ND	ND	ND	952.25	ND	2.54	366.5	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0095.LAB	8/4/2003 11:50	ND	ND	ND	1015.99	ND	2.54	368.0	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0098.LAB	8/4/2003 12:12	ND	ND	ND	729.81	ND	2.52	379.5	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0099.LAB	8/4/2003 12:14	ND	ND	ND	880.48	ND	2.52	382.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0100.LAB	8/4/2003 12:17	ND	ND	ND	666.02	ND	2.51	381.0	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0101.LAB	8/4/2003 12:20	ND	ND	ND	717.06	ND	2.50	381.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0102.LAB	8/4/2003 12:22	ND	ND	ND	904.33	ND	2.50	382.1	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0103.LAB	8/4/2003 12:25	ND	ND	ND	838.07	ND	2.49	382.8	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0104.LAB	8/4/2003 12:28	ND	ND	ND	756.78	ND	2.50	383.9	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0105.LAB	8/4/2003 12:30	ND	ND	ND	802.13	ND	2.51	386.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0106.LAB	8/4/2003 12:33	ND	ND	ND	933.55	ND	2.49	385.2	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0107.LAB	8/4/2003 12:35	ND	ND	ND	816.07	ND	2.50	388.3	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0108.LAB	8/4/2003 12:38	ND	ND	ND	759.31	ND	2.51	392.5	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0109.LAB	8/4/2003 12:41	ND	ND	ND	1875.50	ND	2.49	390.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0110.LAB	8/4/2003 12:43	ND	ND	ND	1473.53	ND	2.51	395.0	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0111.LAB	8/4/2003 12:46	ND	ND	ND	967.55	ND	2.50	393.4	ND	ND	149.76	1.008

Scrubber Outlet 9s.1.2a FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2A OUTLET 08 04 03 SAMPLE_0112.LAB	8/4/2003 12:48	ND	ND	ND	1052.83	ND	2.49	393.0	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0113.LAB	8/4/2003 12:51	ND	ND	ND	1240.73	ND	2.50	393.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0114.LAB	8/4/2003 12:54	ND	ND	ND	961.20	ND	2.50	391.5	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0115.LAB	8/4/2003 12:56	ND	ND	ND	944.51	ND	2.50	389.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0116.LAB	8/4/2003 12:59	ND	ND	ND	1160.02	ND	2.50	386.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0117.LAB	8/4/2003 13:01	ND	ND	ND	890.56	ND	2.50	383.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0118.LAB	8/4/2003 13:04	ND	ND	ND	863.65	ND	2.50	382.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0119.LAB	8/4/2003 13:07	ND	ND	ND	926.51	ND	2.50	380.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0120.LAB	8/4/2003 13:09	ND	ND	ND	1238.65	ND	2.48	375.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0121.LAB	8/4/2003 13:12	ND	ND	ND	890.48	ND	2.48	374.8	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0122.LAB	8/4/2003 13:14	ND	ND	ND	825.16	ND	2.49	373.9	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0123.LAB	8/4/2003 13:17	ND	ND	ND	907.46	ND	2.50	375.3	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0124.LAB	8/4/2003 13:20	ND	ND	ND	1261.59	ND	2.50	375.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0125.LAB	8/4/2003 13:22	ND	ND	ND	876.18	ND	2.49	376.8	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0126.LAB	8/4/2003 13:25	ND	ND	ND	817.21	ND	2.49	380.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0127.LAB	8/4/2003 13:27	ND	ND	ND	842.39	ND	2.47	380.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0128.LAB	8/4/2003 13:30	ND	ND	ND	1057.08	ND	2.49	385.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0129.LAB	8/4/2003 13:33	ND	ND	ND	1187.90	ND	2.51	390.5	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0130.LAB	8/4/2003 13:35	ND	ND	ND	792.78	ND	2.50	390.4	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0131.LAB	8/4/2003 13:38	ND	ND	ND	796.76	ND	2.51	389.9	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0132.LAB	8/4/2003 13:40	ND	ND	ND	986.28	ND	2.52	391.0	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0133.LAB	8/4/2003 13:43	ND	ND	ND	1131.78	ND	2.52	390.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0134.LAB	8/4/2003 13:46	ND	ND	ND	768.71	ND	2.50	387.6	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0135.LAB	8/4/2003 13:48	ND	ND	ND	823.37	ND	2.51	387.8	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0136.LAB	8/4/2003 13:51	ND	ND	ND	978.75	ND	2.51	385.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0137.LAB	8/4/2003 13:53	ND	ND	ND	1234.62	ND	2.49	382.1	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0138.LAB	8/4/2003 13:56	ND	ND	ND	750.79	ND	2.49	380.0	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0139.LAB	8/4/2003 13:59	ND	ND	ND	730.53	ND	2.49	379.5	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0140.LAB	8/4/2003 14:01	ND	ND	ND	788.31	ND	2.49	379.1	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0141.LAB	8/4/2003 14:04	ND	ND	ND	1121.15	ND	2.50	380.0	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0142.LAB	8/4/2003 14:06	ND	ND	ND	1003.36	ND	2.49	378.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0143.LAB	8/4/2003 14:09	ND	ND	ND	874.47	ND	2.50	378.4	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0144.LAB	8/4/2003 14:12	ND	ND	ND	891.94	ND	2.49	377.4	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0145.LAB	8/4/2003 14:14	ND	ND	ND	1198.34	ND	2.49	375.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0146.LAB	8/4/2003 14:17	ND	ND	ND	804.35	ND	2.49	373.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0147.LAB	8/4/2003 14:19	ND	ND	ND	748.15	ND	2.49	374.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0148.LAB	8/4/2003 14:22	ND	ND	ND	829.69	ND	2.48	372.2	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0149.LAB	8/4/2003 14:25	ND	ND	ND	1561.40	ND	2.48	371.3	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0150.LAB	8/4/2003 14:27	ND	ND	ND	780.52	ND	2.47	370.9	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0151.LAB	8/4/2003 14:30	ND	ND	ND	697.17	ND	2.48	370.4	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0152.LAB	8/4/2003 14:32	ND	ND	ND	734.10	ND	2.46	369.0	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0153.LAB	8/4/2003 14:35	ND	ND	ND	746.70	ND	2.47	372.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0154.LAB	8/4/2003 14:38	ND	ND	ND	1073.32	ND	2.46	370.5	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0155.LAB	8/4/2003 14:40	ND	ND	ND	853.57	ND	2.47	373.4	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0156.LAB	8/4/2003 14:43	ND	ND	ND	674.10	ND	2.48	374.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0157.LAB	8/4/2003 14:45	ND	ND	ND	668.95	ND	2.48	373.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0158.LAB	8/4/2003 14:48	ND	ND	ND	730.47	ND	2.47	372.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0159.LAB	8/4/2003 14:51	ND	ND	ND	1120.16	ND	2.46	370.8	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0160.LAB	8/4/2003 14:53	ND	ND	ND	917.40	ND	2.45	370.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0161.LAB	8/4/2003 14:56	ND	ND	ND	700.01	ND	2.45	369.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0162.LAB	8/4/2003 14:58	ND	ND	ND	733.80	ND	2.45	368.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0163.LAB	8/4/2003 15:01	ND	ND	ND	1007.37	ND	2.45	367.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0164.LAB	8/4/2003 15:04	ND	ND	ND	861.58	ND	2.43	364.8	ND	ND	149.76	1.008

Scrubber Outlet 9s.1.2a FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2A OUTLET 08 04 03 SAMPLE_0165.LAB	8/4/2003 15:06	ND	ND	ND	688.65	ND	2.45	367.3	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0166.LAB	8/4/2003 15:09	ND	ND	ND	708.67	ND	2.45	367.4	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0167.LAB	8/4/2003 15:11	ND	ND	ND	960.59	ND	2.45	366.5	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0168.LAB	8/4/2003 15:14	ND	ND	ND	838.42	ND	2.44	366.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0169.LAB	8/4/2003 15:17	ND	ND	ND	693.50	ND	2.45	366.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0170.LAB	8/4/2003 15:19	ND	ND	ND	834.25	ND	2.44	365.0	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0171.LAB	8/4/2003 15:22	ND	ND	ND	987.12	ND	2.44	363.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0172.LAB	8/4/2003 15:24	ND	ND	ND	687.02	ND	2.43	360.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0173.LAB	8/4/2003 15:27	ND	ND	ND	711.14	ND	2.43	360.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0174.LAB	8/4/2003 15:30	ND	ND	ND	996.83	ND	2.42	360.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0175.LAB	8/4/2003 15:32	ND	ND	ND	939.08	ND	2.41	358.9	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0176.LAB	8/4/2003 15:35	ND	ND	ND	722.63	ND	2.43	361.0	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0177.LAB	8/4/2003 15:37	ND	ND	ND	848.27	ND	2.43	360.5	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0178.LAB	8/4/2003 15:40	ND	ND	ND	704.82	ND	2.42	358.7	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0179.LAB	8/4/2003 15:43	ND	ND	ND	700.71	ND	2.42	358.8	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0180.LAB	8/4/2003 15:45	ND	ND	ND	755.72	ND	2.42	358.3	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0181.LAB	8/4/2003 15:48	ND	ND	ND	867.33	ND	2.43	359.8	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0182.LAB	8/4/2003 15:51	ND	ND	ND	736.73	ND	2.44	360.3	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0183.LAB	8/4/2003 15:53	ND	ND	ND	771.47	ND	2.43	359.6	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0184.LAB	8/4/2003 15:56	ND	ND	ND	968.38	ND	2.43	358.9	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0185.LAB	8/4/2003 15:58	ND	ND	ND	642.04	ND	2.43	359.2	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0186.LAB	8/4/2003 16:01	ND	ND	ND	611.70	ND	2.42	358.0	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0187.LAB	8/4/2003 16:04	ND	ND	ND	646.03	ND	2.43	360.8	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0188.LAB	8/4/2003 16:06	ND	ND	ND	896.99	ND	2.44	362.7	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0189.LAB	8/4/2003 16:09	ND	ND	ND	730.81	ND	2.44	362.1	ND	ND	149.76	1.003
9S_1_2A OUTLET 08 04 03 SAMPLE_0190.LAB	8/4/2003 16:11	ND	ND	ND	718.24	ND	2.42	360.2	ND	ND	149.76	1.008
9S_1_2A OUTLET 08 04 03 SAMPLE_0191.LAB	8/4/2003 16:16	ND	ND	ND	715.55	ND	2.44	368.7	ND	ND	149.76	0.997
Average _{wet}		ND	ND	ND	915.93	ND	2.48	372.91	ND	ND	149.76	1.005

Reference Method Calculations

Fab 11-X Fab Side

9s.1.2a

Run No.	Run 1	Run 2	
Date	8/4/2003	8/4/2003	
Start Time	7:50	12:12	AVERAGE
Stop Time	11:50	16:12	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.90	24.90	24.90
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Average Meter Temperature (°F)	84.4	99.4	91.9
Volume Metered (acf)	217.720	225.634	221.677
Volume Metered (dscf)	176.580	178.128	177.354
Volume of Water Collected (g)	90.2	102.3	96.2
Volume of Water Collected (scf)	4.253	4.823	4.538
Average Delta H (in. H ₂ O)	2.09	2.20	2.15
AVG SQRT of dH (in. H ₂ O)	1.4470	1.4838	1.4654
Measured Moisture (%)	2.4%	2.6%	2.5%
Saturation Moisture (%)	3.2%	4.1%	3.6%
Moisture Used for Calculations (%)	2.5%	2.5%	2.5%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.0	0.0	0.0
Nitrogen Concentration (%)	79.1	79.1	79.1
Dry Molecular Weight (lb/lbmole)	28.84	28.84	28.84
Wet Molecular Weight (lb/lbmole)	28.59	28.56	28.57
Flow Pitot Coefficient	0.99	0.99	0.99
Probe pitot Coefficient	0.84	0.84	
Stack Static Pressure (in. H ₂ O)	0.06	0.06	0.06
Stack Pressure (in. Hg)	24.90	24.90	24.90
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.8876	0.9055	0.8966
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.6262	0.6167	0.6215
Stack Temperature Isokinetic Traverse (°F)	72.5	79.9	76.2
Stack Temperature Flow Traverse (°F)	65.2	79.4	72.3
Velocity (ft/sec) Isokinetic Traverse	55.13	56.66	55.89
Velocity (ft/sec) Flow Traverse	45.52	45.46	45.49
Nozzle Diameter (in.)	0.225	0.225	0.225
% Isokinetics	100.15	99.7	99.9
Stack Diameter (in.)	18.00	18.00	18.00
Stack Area (ft ²)	1.77	1.77	1.77
Stack Flow Rate Isokinetic Traverse (acfm)	5,845	6,007	5,926
Stack Flow Rate Flow Traverse (acfm)	4,826	4,820	4,823
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	4,703	4,767	4,735
Stack Flow Rate Outlet Flow Traverse (dscfm)	3,937	3,829	3,883
Chlorine			
Collected Cl ₂ micrograms (ug)	17.5	17.8	17.7
Cl ₂ Concentration (ug/dscf)	0.10	0.10	0.10
Cl ₂ Concentration (ppb)	1	1	1
Cl ₂ Emission Rate (lbs/hr)	0.0001	0.0001	0.0001
Ammonia			
Collected NH ₃ micrograms (ug)	5510	6240	5875.00
NH ₃ Concentration (ug/dscf)	31.20	35.03	33.12
NH ₃ Concentration (ug/dscm)	1,101.96	1,237.10	1,169.53
NH ₃ Concentration (ppb)	1,557	1,748	1,653
NH ₃ Emission Rate (lbs/hr)	0.0163	0.0177	0.0170

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/4/2003
Unit Number:	9s.1.2a	Stack Diameter (in.):	18.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	0.02
Run No.:	1	Operators:	PER
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.90
Pitot Tube ID:	STD	Pre Test	
Pitot Tube C_p:	0.99	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.5 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	7:15
		End:	7:27

NE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.29	65
2	0.33	65
3	0.34	65
4	0.35	65
5	0.35	65
6	0.35	65
7	0.38	65
8	0.41	65
9	0.43	65
10	0.46	65
11	0.48	65
12	0.50	66

NW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.35	66
2	0.44	66
3	0.48	65
4	0.48	66
5	0.45	65
6	0.40	65
7	0.34	65
8	0.34	65
9	0.36	65
10	0.38	65
11	0.39	65
12	0.38	65
Total Average: sqrt dp = 0.6262		65.2

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/4/2003
Unit Number:	9s.1.2a	Stack Diameter (in.):	18.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	0.02
Run No.:	2	Operators:	PER
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.90
Pitot Tube ID:	STD	Pre Test	
Pitot Tube C_p:	0.99	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 2.5 %		Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	16:25
		End:	16:33

NE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.28	81
2	0.29	80
3	0.32	80
4	0.32	80
5	0.50	80
6	0.32	80
7	0.37	79
8	0.39	79
9	0.42	79
10	0.45	79
11	0.47	79
12	0.47	79

NW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.42	80
2	0.46	79
3	0.47	79
4	0.47	79
5	0.43	79
6	0.37	79
7	0.31	79
8	0.31	79
9	0.33	79
10	0.34	79
11	0.35	79
12	0.34	80
Total Average: sqrt dp = 0.6167		79.4

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments				Sample Train No.	AA	Filter No.:	NA	Run No.:	1
Plant Name:	Fab 11-X Fab Side					Leak Check Initial:	PER	cfm@	0.004	(in. Hg)	16
Plant Location:	Rio Rancho, NM					Leak Check Final:	PER	cfm@	0.000	(in. Hg)	15
Project No.:	31397-1600-00000					Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.2a					24	1	655.8	668.0		
Date:	8/4/2003						2	742.5	771.1		
Technicians:	PER						3	534.6	540.3		
Meter Box No.:	90394	Y_d:	0.999				4	647.6	650.4		
Probe / Pitot No.:	315 / STD	C_p:	0.84				5	656.2	658.4		
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	18.00	Stack Area (ft²):	1.77		6	821.9	860.6
Nozzle Dia:	0.225	0.225, 0.225, 0.226		Port Width (in.):	2.75	Port Length (in.):	1.00	Start Time:	7:50	Net Impinger Gain (g):	90.2
Initial Meter Reading (ft³):	862.713			BP (in. Hg):	24.90	Static Pressure (in.):	0.06	End Time:	11:50	Theta	240
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
NW 4	10	66	67	67	0.790	2.10	871.700	248	238	43	3
NW 4	20	66	73	67	0.800	2.10	880.580	246	258	38	2
NW 4	30	67	82	69	0.780	2.00	889.480	246	247	42	2
NW 4	40	68	82	70	0.790	2.05	898.250	247	248	43	2
NW 4	50	68	83	71	0.790	2.10	907.370	249	246	43	2
NW 4	60	69	85	72	0.800	2.10	916.580	247	248	44	2
NW 4	70	70	86	74	0.790	2.10	925.650	249	248	45	2
NW 4	80	71	87	76	0.790	2.10	934.620	249	250	48	2
NW 4	90	71	87	77	0.780	2.10	943.760	248	250	48	2
NW 4	100	72	88	77	0.780	2.10	952.860	248	249	45	2
NW 4	110	72	88	78	0.800	2.10	961.950	250	250	45	2
NW 4	120	73	90	79	0.780	2.10	971.040	250	250	46	2
NW 4	130	73	91	80	0.790	2.10	980.050	248	250	47	2
NW 4	140	74	92	82	0.790	2.10	989.110	247	251	48	2
NW 4	150	74	93	83	0.790	2.10	998.180	251	250	50	2
NW 4	160	74	94	83	0.780	2.10	1007.240	253	251	51	2
NW 4	170	75	95	84	0.790	2.10	1016.310	252	251	52	2
NW 4	180	75	96	87	0.780	2.10	1025.400	251	249	53	2
NW 4	190	76	97	87	0.780	2.10	1034.500	254	250	48	2
NW 4	200	76	97	87	0.790	2.10	1043.590	250	251	48	2
NW 4	210	77	97	87	0.800	2.10	1052.740	251	251	49	2
NW 4	220	77	98	88	0.780	2.10	1061.960	252	250	50	2
NW 4	230	78	99	89	0.790	2.10	1071.190	250	249	52	2
NW 4	240	77	99	90	0.780	2.10	1080.433	250	250	53	2
Average / Net		72.5		84.4	0.788	2.1	217.720	249.4	249.4	47.1	2.0

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic				Sample Train No.	SF	Filter No.:	NA	Run No.:	2
Plant Name:	Fab 11-X Fab Side					Leak Check Initial:	PER	cfm@	0.002	(in. Hg)	21
Plant Location:	Rio Rancho, NM					Leak Check Final:	PER	cfm@	0.003	(in. Hg)	17
Project No.:	31397-1600-00000					Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.2a					24	1	597.7	611.4		
Date:	8/4/2003						2	637.5	661.4		
Technicians:	PER						3	643.8	654.0		
Meter Box No.:	90394					Y_d:	0.999		4	650.8	663.7
Probe / Pitot No.:	315 / STD	C_p:	0.84		5	650.8	654.3				
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	18.00	Stack Area (ft²):	1.77		6	940.1	978.2
Nozzle Dia:	0.225	0.225, 0.225, 0.226	Port Width (in.):	2.75	Port Length (in.):	1.00	Start Time:	12:12	Net Impinger Gain (g):	102.3	
Initial Meter Reading (ft³):	80.84	BP (in. Hg):	24.90	Static Pressure (in.):	0.06	End Time:	16:12	Theta	240		
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
NW 4	10	79	92	88	0.800	2.10	90.170	237	246	59	4.0
NW 4	20	79	98	89	0.810	2.10	99.160	255	246	50	4.0
NW 4	30	80	100	89	0.820	2.20	108.280	254	247	47	4.0
NW 4	40	80	101	91	0.810	2.10	117.340	251	247	47	4.0
NW 4	50	80	102	92	0.810	2.10	126.590	253	246	48	4.0
NW 4	60	80	103	93	0.820	2.20	135.870	253	243	39	4.0
NW 4	70	80	105	94	0.810	2.20	145.310	250	244	38	4.0
NW 4	80	80	104	95	0.820	2.20	154.740	252	245	39	4.5
NW 4	90	80	106	95	0.830	2.20	164.160	251	246	40	4.5
NW 4	100	81	105	96	0.820	2.20	173.610	250	246	43	4.5
NW 4	110	81	105	95	0.820	2.20	183.010	254	245	41	4.5
NW 4	120	80	106	96	0.820	2.20	192.450	252	246	40	4.5
NW 4	130	80	106	97	0.820	2.20	201.900	250	245	40	4.5
NW 4	140	81	106	97	0.820	2.20	211.210	256	245	44	4.5
NW 4	150	81	106	97	0.820	2.25	220.580	247	244	47	4.5
NW 4	160	81	105	97	0.830	2.30	230.190	245	240	49	4.5
NW 4	170	79	105	97	0.840	2.30	239.710	245	246	44	4.5
NW 4	180	78	106	96	0.820	2.20	249.240	252	245	42	4.5
NW 4	190	79	107	96	0.810	2.20	258.750	254	243	43	4.5
NW 4	200	79	107	97	0.820	2.20	268.250	248	244	44	4.5
NW 4	210	79	107	97	0.820	2.20	277.740	253	245	45	4.5
NW 4	220	80	106	97	0.830	2.20	287.210	251	244	49	4.5
NW 4	230	80	105	97	0.830	2.30	296.940	242	244	47	4.5
NW 4	240	80	105	97	0.830	2.30	306.474	251	243	47	5.0
Average / Net		79.9		99.4	0.8	2.2	225.634	250.3	244.8	44.7	4.4

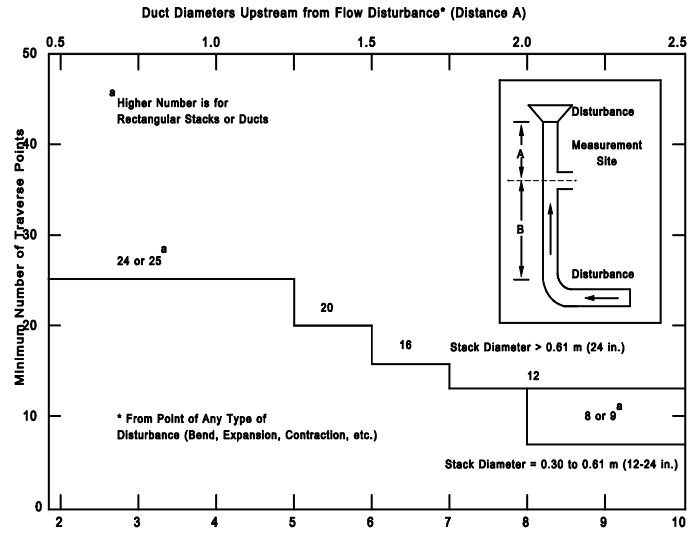
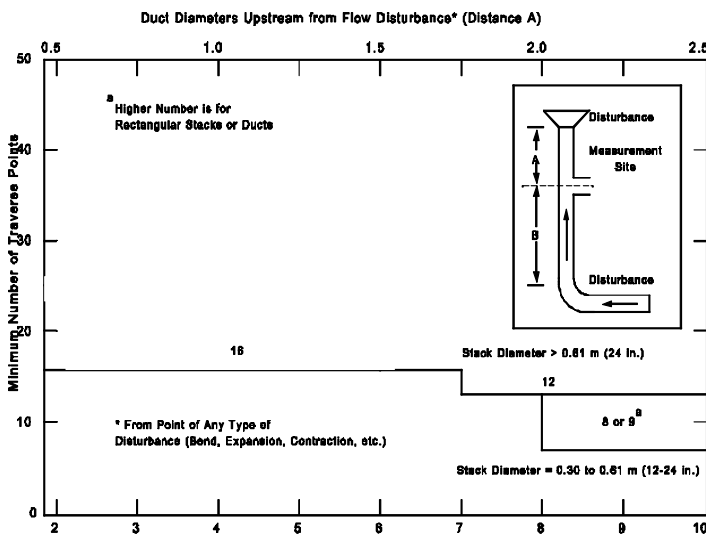
**EPA REFERENCE METHOD 1
FIELD DATA SHEET
CIRCULAR STACKS**

Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 9s.1.2a
 TRC Project No.: 31397-1600-00000
 Date: 8/2/2003
 Technician: PER/SCT
 Circular/Rectangular: C

Stack Diameter: 18.0
 Sample Port Diameter: 2.8
 Sample Port Depth: 1.00
 Diameters Upstream: 20.0
 Diameters Downstream: 3.7
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses

For Particulate Traverses



Duct Diameters Downstream from Flow Disturbance* (Distance B)												
Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	1 6/16
2	2 3/16
3	3 2/16
4	4 3/16
5	5 8/16
6	7 7/16
7	12 9/16
8	14 8/16
9	15 13/16
10	16 14/16
11	17 13/16
12	18 10/16
13	
14	
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17	
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19	
20	
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22	
23	
24	

Scrubber Outlet 9s.1.2b FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2B 07 30 03 SAMPLE_0002.LAB	7/30/2003 8:19	ND	ND	ND	ND	ND	2.38	556.8	ND	72.323	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0003.LAB	7/30/2003 8:21	ND	ND	ND	ND	ND	2.38	555.8	ND	573.824	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0004.LAB	7/30/2003 8:24	ND	ND	ND	ND	ND	2.40	558.8	ND	468.148	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0005.LAB	7/30/2003 8:26	ND	ND	ND	ND	ND	2.38	554.1	ND	398.188	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0006.LAB	7/30/2003 8:29	ND	ND	ND	165.67	ND	2.38	553.4	ND	64.614	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0007.LAB	7/30/2003 8:32	ND	ND	ND	172.01	ND	2.38	552.6	ND	64.212	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0008.LAB	7/30/2003 8:34	ND	ND	ND	174.51	ND	2.39	555.4	ND	71.450	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0009.LAB	7/30/2003 8:37	ND	ND	ND	182.22	ND	2.38	552.7	ND	68.366	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0010.LAB	7/30/2003 8:39	ND	ND	ND	190.35	ND	2.39	555.5	ND	66.911	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0011.LAB	7/30/2003 8:42	ND	ND	ND	179.61	ND	2.38	553.3	ND	104.366	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0012.LAB	7/30/2003 8:45	ND	ND	ND	175.03	ND	2.39	556.5	ND	82.724	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0013.LAB	7/30/2003 8:47	ND	ND	ND	166.23	ND	2.39	557.4	ND	88.053	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0014.LAB	7/30/2003 8:50	ND	ND	ND	161.75	ND	2.39	556.9	ND	105.316	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0015.LAB	7/30/2003 8:52	ND	ND	ND	219.71	ND	2.40	559.6	ND	119.600	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0016.LAB	7/30/2003 8:55	ND	ND	ND	247.32	ND	2.40	559.8	ND	165.080	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0017.LAB	7/30/2003 8:58	ND	ND	ND	220.79	ND	2.39	557.0	ND	117.430	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0018.LAB	7/30/2003 9:00	ND	ND	ND	157.03	ND	2.38	556.8	ND	121.701	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0019.LAB	7/30/2003 9:03	ND	ND	ND	163.97	ND	2.38	556.1	ND	97.741	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0020.LAB	7/30/2003 9:05	ND	ND	ND	158.74	ND	2.38	555.6	ND	93.451	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0021.LAB	7/30/2003 9:08	ND	ND	ND	160.48	ND	2.40	558.2	ND	120.757	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0022.LAB	7/30/2003 9:11	ND	ND	ND	ND	ND	2.39	554.7	ND	71.964	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0023.LAB	7/30/2003 9:13	ND	ND	ND	188.91	ND	2.40	556.9	ND	176.342	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0024.LAB	7/30/2003 9:16	ND	ND	ND	189.57	ND	2.39	553.5	ND	100.316	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0025.LAB	7/30/2003 9:18	ND	ND	ND	185.72	ND	2.39	552.5	ND	166.184	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0026.LAB	7/30/2003 9:21	ND	ND	ND	201.55	ND	2.39	551.0	ND	116.079	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0027.LAB	7/30/2003 9:24	ND	ND	ND	202.69	ND	2.40	551.5	ND	151.102	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0028.LAB	7/30/2003 9:26	ND	ND	ND	193.92	ND	2.40	552.3	ND	135.188	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0029.LAB	7/30/2003 9:29	ND	ND	ND	201.88	ND	2.40	551.5	ND	138.530	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0030.LAB	7/30/2003 9:31	ND	ND	ND	214.72	ND	2.41	551.3	ND	142.057	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0031.LAB	7/30/2003 9:34	ND	ND	ND	207.88	ND	2.40	549.8	ND	144.363	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0032.LAB	7/30/2003 9:37	ND	ND	ND	223.94	ND	2.42	552.5	ND	138.510	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0033.LAB	7/30/2003 9:39	ND	ND	342.63	192.35	ND	2.42	550.5	ND	136.719	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0034.LAB	7/30/2003 9:42	ND	ND	352.00	187.87	ND	2.43	552.3	ND	130.165	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0035.LAB	7/30/2003 9:44	ND	ND	341.89	169.36	ND	2.42	548.7	ND	132.415	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0036.LAB	7/30/2003 9:47	ND	ND	359.94	156.00	ND	2.42	548.4	ND	125.389	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0037.LAB	7/30/2003 9:50	ND	ND	350.77	ND	ND	2.41	545.8	ND	81.420	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0038.LAB	7/30/2003 9:52	ND	ND	362.60	ND	ND	2.42	547.9	ND	386.782	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0039.LAB	7/30/2003 9:55	ND	ND	363.85	ND	ND	2.42	546.3	ND	807.648	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0040.LAB	7/30/2003 9:57	ND	ND	357.47	ND	ND	2.43	547.2	ND	1026.999	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0041.LAB	7/30/2003 10:00	ND	ND	372.49	ND	ND	2.44	550.0	ND	910.178	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0042.LAB	7/30/2003 10:03	ND	ND	379.12	ND	ND	2.42	545.1	ND	553.592	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0043.LAB	7/30/2003 10:07	ND	ND	378.03	ND	ND	2.44	548.7	ND	412.223	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0044.LAB	7/30/2003 10:09	ND	ND	374.98	ND	ND	2.44	547.7	ND	134.925	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0045.LAB	7/30/2003 10:12	ND	ND	380.87	ND	ND	2.42	543.7	ND	65.149	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0046.LAB	7/30/2003 10:15	ND	ND	372.83	ND	ND	2.42	542.7	ND	123.298	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0047.LAB	7/30/2003 10:17	ND	ND	373.97	ND	ND	2.42	542.7	ND	62.989	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0048.LAB	7/30/2003 10:20	ND	ND	374.24	ND	ND	2.44	546.4	ND	112.694	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0049.LAB	7/30/2003 10:22	ND	ND	366.48	ND	ND	2.43	544.1	ND	76.379	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0050.LAB	7/30/2003 10:25	ND	ND	371.73	ND	ND	2.45	547.0	ND	113.226	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0051.LAB	7/30/2003 10:28	ND	ND	369.41	ND	ND	2.44	544.2	ND	88.792	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0052.LAB	7/30/2003 10:30	ND	ND	357.92	ND	ND	2.45	544.8	ND	113.862	149.02	0.997
9S_1_2B 07 30 03 SAMPLE_0053.LAB	7/30/2003 10:33	ND	ND	345.11	ND	ND	2.44	541.0	ND	78.838	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0054.LAB	7/30/2003 10:35	ND	ND	350.78	ND	ND	2.44	541.0	ND	114.065	149.76	1.003

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 9s.1.2b FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2B 07 30 03 SAMPLE_0055.LAB	7/30/2003 10:38	ND	ND	359.00	ND	ND	2.44	541.0	ND	67.130	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0056.LAB	7/30/2003 10:41	ND	ND	349.33	ND	ND	2.45	543.3	ND	122.972	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0057.LAB	7/30/2003 10:43	ND	ND	347.09	ND	ND	2.44	540.5	ND	84.879	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0058.LAB	7/30/2003 10:46	ND	ND	ND	ND	ND	2.43	539.1	ND	117.863	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0059.LAB	7/30/2003 10:48	ND	ND	ND	ND	ND	2.43	539.4	ND	94.077	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0060.LAB	7/30/2003 10:51	ND	ND	343.04	ND	ND	2.43	539.4	ND	108.029	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0061.LAB	7/30/2003 10:54	ND	ND	ND	ND	ND	2.43	538.6	ND	94.071	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0062.LAB	7/30/2003 10:56	ND	ND	344.88	ND	ND	2.43	539.9	ND	214.532	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0063.LAB	7/30/2003 10:59	ND	ND	342.21	ND	ND	2.44	541.6	ND	871.629	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0064.LAB	7/30/2003 11:01	ND	ND	351.44	ND	ND	2.44	544.3	ND	851.971	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0065.LAB	7/30/2003 11:04	ND	ND	344.75	ND	ND	2.43	543.2	ND	856.405	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0066.LAB	7/30/2003 11:07	ND	ND	355.44	ND	ND	2.44	545.9	ND	836.730	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0067.LAB	7/30/2003 11:09	ND	ND	353.25	ND	ND	2.44	545.8	ND	832.070	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0068.LAB	7/30/2003 11:12	ND	ND	344.96	ND	ND	2.43	545.8	ND	908.298	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0069.LAB	7/30/2003 11:14	ND	ND	ND	ND	ND	2.43	546.4	ND	409.888	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0070.LAB	7/30/2003 11:17	ND	ND	347.30	ND	ND	2.43	546.3	ND	393.832	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0071.LAB	7/30/2003 11:20	ND	ND	355.42	ND	ND	2.44	546.1	ND	386.434	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0072.LAB	7/30/2003 11:22	ND	ND	349.21	ND	ND	2.43	545.4	ND	142.075	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0073.LAB	7/30/2003 11:25	ND	ND	ND	ND	ND	2.42	542.9	ND	44.940	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0074.LAB	7/30/2003 11:27	ND	ND	ND	ND	ND	2.42	542.3	ND	53.735	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0075.LAB	7/30/2003 11:30	ND	ND	ND	ND	ND	2.42	541.6	ND	54.704	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0076.LAB	7/30/2003 11:33	ND	ND	ND	ND	ND	2.42	540.6	ND	55.992	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0077.LAB	7/30/2003 11:35	ND	ND	ND	ND	ND	2.42	540.2	ND	54.253	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0078.LAB	7/30/2003 11:38	ND	ND	ND	ND	ND	2.42	539.0	ND	53.202	149.02	1.003
9S_1_2B 07 30 03 SAMPLE_0079.LAB	7/30/2003 11:40	ND	ND	ND	ND	ND	2.42	539.9	ND	53.145	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0080.LAB	7/30/2003 11:43	ND	ND	ND	ND	ND	2.42	538.6	ND	52.382	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0081.LAB	7/30/2003 11:46	ND	ND	ND	ND	ND	2.42	537.7	ND	72.019	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0082.LAB	7/30/2003 11:48	ND	ND	ND	ND	ND	2.44	540.3	ND	65.619	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0083.LAB	7/30/2003 11:51	ND	ND	ND	ND	ND	2.43	538.4	ND	64.536	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0084.LAB	7/30/2003 11:53	ND	ND	ND	ND	ND	2.43	538.0	ND	96.003	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0085.LAB	7/30/2003 11:56	ND	ND	ND	ND	ND	2.42	536.5	ND	57.606	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0086.LAB	7/30/2003 11:59	ND	ND	ND	ND	ND	2.43	539.3	ND	86.624	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0087.LAB	7/30/2003 12:01	ND	ND	ND	ND	ND	2.42	535.6	ND	97.674	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0088.LAB	7/30/2003 12:04	ND	ND	ND	ND	ND	2.42	535.3	ND	102.219	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0089.LAB	7/30/2003 12:06	ND	ND	ND	ND	ND	2.43	535.7	ND	86.458	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0090.LAB	7/30/2003 12:09	ND	ND	ND	ND	ND	2.43	535.4	ND	86.928	149.02	1.003
9S_1_2B 07 30 03 SAMPLE_0091.LAB	7/30/2003 12:12	ND	ND	ND	ND	ND	2.45	538.1	ND	93.542	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0092.LAB	7/30/2003 12:14	ND	ND	ND	ND	ND	2.44	536.4	ND	63.667	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0093.LAB	7/30/2003 12:17	ND	ND	ND	ND	ND	2.43	536.9	ND	85.300	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0103.LAB	7/30/2003 12:59	ND	ND	ND	ND	ND	2.42	559.6	ND	683.886	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0104.LAB	7/30/2003 13:02	ND	ND	ND	ND	ND	2.43	562.8	ND	837.145	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0105.LAB	7/30/2003 13:04	ND	ND	ND	ND	ND	2.42	560.2	ND	826.501	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0106.LAB	7/30/2003 13:07	ND	ND	ND	ND	ND	2.41	560.2	ND	790.144	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0107.LAB	7/30/2003 13:09	ND	ND	ND	ND	ND	2.41	560.4	ND	815.680	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0108.LAB	7/30/2003 13:12	ND	ND	ND	ND	ND	2.40	560.3	ND	863.487	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0109.LAB	7/30/2003 13:15	ND	ND	ND	ND	ND	2.41	563.2	ND	565.025	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0110.LAB	7/30/2003 13:17	ND	ND	ND	ND	ND	2.40	560.0	ND	305.153	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0111.LAB	7/30/2003 13:20	ND	ND	ND	ND	ND	2.40	559.9	ND	287.693	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0112.LAB	7/30/2003 13:22	ND	ND	ND	ND	ND	2.39	559.5	ND	227.022	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0113.LAB	7/30/2003 13:25	ND	ND	ND	205.36	ND	2.39	561.3	ND	64.677	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0114.LAB	7/30/2003 13:28	ND	ND	ND	249.91	ND	2.40	561.2	ND	57.887	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0115.LAB	7/30/2003 13:30	ND	ND	ND	238.47	ND	2.39	557.7	ND	63.641	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0116.LAB	7/30/2003 13:33	ND	ND	ND	222.82	ND	2.38	556.9	ND	124.844	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 9s.1.2b FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2B 07 30 03 SAMPLE_0117.LAB	7/30/2003 13:35	ND	ND	ND	240.39	ND	2.40	559.6	ND	81.726	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0118.LAB	7/30/2003 13:38	ND	ND	ND	237.81	ND	2.39	555.8	ND	43.062	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0119.LAB	7/30/2003 13:41	ND	ND	ND	232.85	ND	2.38	555.5	ND	72.628	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0120.LAB	7/30/2003 13:43	ND	ND	ND	218.79	ND	2.39	554.7	ND	128.606	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0121.LAB	7/30/2003 13:46	ND	ND	ND	237.99	ND	2.38	554.3	ND	60.430	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0122.LAB	7/30/2003 13:48	ND	ND	ND	213.30	ND	2.39	555.4	ND	31.903	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0123.LAB	7/30/2003 13:51	ND	ND	ND	188.54	ND	2.40	556.5	ND	77.758	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0124.LAB	7/30/2003 13:54	ND	ND	ND	193.07	ND	2.39	554.3	ND	383.534	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0125.LAB	7/30/2003 13:56	ND	ND	ND	ND	ND	2.38	551.5	ND	639.661	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0126.LAB	7/30/2003 13:59	ND	ND	ND	ND	ND	2.38	550.3	ND	967.956	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0127.LAB	7/30/2003 14:01	ND	ND	ND	ND	ND	2.39	553.0	ND	1518.454	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0128.LAB	7/30/2003 14:04	ND	ND	ND	ND	ND	2.38	549.3	ND	1352.565	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0129.LAB	7/30/2003 14:07	ND	ND	ND	ND	ND	2.39	552.0	ND	1143.011	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0130.LAB	7/30/2003 14:09	ND	ND	ND	ND	ND	2.37	549.1	ND	1221.183	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0131.LAB	7/30/2003 14:12	ND	ND	ND	ND	ND	2.39	552.4	ND	481.790	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0132.LAB	7/30/2003 14:14	ND	ND	341.83	ND	ND	2.38	550.7	ND	325.425	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0133.LAB	7/30/2003 14:17	ND	ND	349.79	ND	ND	2.39	550.4	ND	270.980	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0134.LAB	7/30/2003 14:20	ND	ND	341.62	161.10	ND	2.37	547.6	ND	91.359	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0135.LAB	7/30/2003 14:22	ND	ND	ND	183.03	ND	2.39	550.9	ND	104.970	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0136.LAB	7/30/2003 14:25	ND	ND	ND	179.94	ND	2.38	550.8	ND	34.002	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0137.LAB	7/30/2003 14:27	ND	ND	ND	203.04	ND	2.38	551.1	ND	55.522	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0138.LAB	7/30/2003 14:30	ND	ND	ND	244.36	ND	2.38	551.9	ND	155.090	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0139.LAB	7/30/2003 14:33	ND	ND	ND	257.54	ND	2.37	553.5	ND	110.180	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0140.LAB	7/30/2003 14:35	ND	ND	ND	249.45	ND	2.37	555.3	ND	65.445	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0141.LAB	7/30/2003 14:38	ND	ND	ND	240.15	ND	2.38	560.2	ND	96.262	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0142.LAB	7/30/2003 14:40	ND	ND	ND	229.01	ND	2.37	558.8	ND	137.587	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0143.LAB	7/30/2003 14:43	ND	ND	ND	250.26	ND	2.38	562.6	ND	77.353	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0144.LAB	7/30/2003 14:46	ND	ND	ND	237.28	ND	2.38	560.0	ND	57.083	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0145.LAB	7/30/2003 14:48	ND	ND	ND	216.47	ND	2.38	560.4	ND	138.757	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0146.LAB	7/30/2003 14:51	ND	ND	ND	242.87	ND	2.39	563.4	ND	118.558	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0147.LAB	7/30/2003 14:53	ND	ND	ND	327.32	ND	2.40	563.6	ND	132.140	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0148.LAB	7/30/2003 14:56	ND	ND	ND	261.26	ND	2.39	560.8	ND	87.520	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0149.LAB	7/30/2003 14:59	ND	ND	ND	175.21	ND	2.39	560.9	ND	116.523	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0150.LAB	7/30/2003 15:01	ND	ND	ND	203.30	ND	2.40	563.8	ND	82.848	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0151.LAB	7/30/2003 15:04	ND	ND	ND	202.17	ND	2.39	560.7	ND	36.592	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0152.LAB	7/30/2003 15:06	ND	ND	ND	ND	ND	2.40	560.7	ND	65.745	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0153.LAB	7/30/2003 15:09	ND	ND	ND	ND	ND	2.40	560.8	ND	84.909	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0154.LAB	7/30/2003 15:12	ND	ND	ND	ND	ND	2.42	563.8	ND	ND	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0155.LAB	7/30/2003 15:14	ND	ND	ND	ND	ND	2.42	563.8	ND	ND	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0156.LAB	7/30/2003 15:17	ND	ND	ND	ND	ND	2.42	563.8	ND	65.165	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0157.LAB	7/30/2003 15:19	ND	ND	ND	173.27	ND	2.41	562.8	ND	97.860	149.02	0.997
9S_1_2B 07 30 03 SAMPLE_0158.LAB	7/30/2003 15:22	ND	ND	ND	270.98	ND	2.42	563.6	ND	94.937	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0159.LAB	7/30/2003 15:25	ND	ND	ND	271.52	ND	2.42	563.5	ND	101.530	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0160.LAB	7/30/2003 15:27	ND	ND	ND	269.55	ND	2.42	563.3	ND	189.260	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0161.LAB	7/30/2003 15:30	ND	ND	ND	248.38	ND	2.43	563.0	ND	133.082	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0162.LAB	7/30/2003 15:32	ND	ND	ND	276.32	ND	2.43	562.8	ND	91.45	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0163.LAB	7/30/2003 15:35	ND	ND	ND	307.29	ND	2.43	562.6	ND	185.81	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0164.LAB	7/30/2003 15:38	ND	ND	ND	243.27	ND	2.43	562.5	ND	154.54	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0165.LAB	7/30/2003 15:40	ND	ND	ND	290.30	ND	2.43	562.2	ND	110.38	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0166.LAB	7/30/2003 15:43	ND	ND	ND	273.08	ND	2.43	562.1	ND	97.02	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0167.LAB	7/30/2003 15:45	ND	ND	ND	ND	ND	2.42	558.8	ND	722.51	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0168.LAB	7/30/2003 15:48	ND	ND	ND	ND	ND	2.44	561.6	ND	3704.07	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0169.LAB	7/30/2003 15:51	ND	ND	ND	ND	ND	2.43	558.7	ND	4507.04	149.76	1.003

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 9s.1.2b FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_2B 07 30 03 SAMPLE_0170.LAB	7/30/2003 15:53	ND	ND	ND	ND	ND	2.43	558.2	ND	1679.34	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0171.LAB	7/30/2003 15:56	ND	ND	ND	ND	ND	2.43	558.2	ND	1463.02	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0172.LAB	7/30/2003 15:58	ND	ND	ND	ND	ND	2.44	561.6	ND	1275.18	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0173.LAB	7/30/2003 16:01	ND	ND	ND	ND	ND	2.44	561.8	ND	1135.74	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0174.LAB	7/30/2003 16:04	ND	ND	ND	ND	ND	2.44	559.4	ND	466.39	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0175.LAB	7/30/2003 16:06	ND	ND	ND	ND	ND	2.43	559.6	ND	449.39	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0176.LAB	7/30/2003 16:09	ND	ND	ND	ND	ND	2.43	559.4	ND	271.07	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0177.LAB	7/30/2003 16:11	ND	ND	342.35	181.98	ND	2.44	562.3	ND	35.32	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0178.LAB	7/30/2003 16:14	ND	ND	ND	165.01	ND	2.44	562.2	ND	128.85	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0179.LAB	7/30/2003 16:17	ND	ND	ND	226.41	ND	2.44	562.2	ND	121.09	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0180.LAB	7/30/2003 16:19	ND	ND	ND	253.49	ND	2.42	558.8	ND	100.11	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0181.LAB	7/30/2003 16:22	ND	ND	ND	197.67	ND	2.42	558.8	ND	338.26	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0182.LAB	7/30/2003 16:25	ND	ND	ND	ND	ND	2.43	560.6	ND	670.88	149.02	0.997
9S_1_2B 07 30 03 SAMPLE_0183.LAB	7/30/2003 16:27	ND	ND	344.50	ND	ND	2.44	561.7	ND	827.48	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0184.LAB	7/30/2003 16:30	ND	ND	ND	ND	ND	2.43	561.3	ND	813.33	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0185.LAB	7/30/2003 16:32	ND	ND	ND	ND	ND	2.41	558.3	ND	809.18	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0186.LAB	7/30/2003 16:35	ND	ND	ND	169.86	ND	2.43	561.0	ND	431.27	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0187.LAB	7/30/2003 16:38	ND	ND	341.89	ND	ND	2.41	558.3	ND	348.03	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0188.LAB	7/30/2003 16:40	ND	ND	347.31	ND	ND	2.42	560.9	ND	255.515	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0189.LAB	7/30/2003 16:43	ND	ND	340.47	194.24	ND	2.40	556.7	ND	127.829	149.02	1.003
9S_1_2B 07 30 03 SAMPLE_0190.LAB	7/30/2003 16:45	ND	ND	ND	222.00	ND	2.42	560.6	ND	134.379	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0191.LAB	7/30/2003 16:48	ND	ND	ND	225.92	ND	2.40	557.7	ND	69.189	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0192.LAB	7/30/2003 16:51	ND	ND	ND	273.21	ND	2.41	557.7	ND	149.984	149.76	1.003
9S_1_2B 07 30 03 SAMPLE_0193.LAB	7/30/2003 16:53	ND	ND	349.52	275.83	ND	2.43	561.0	ND	205.008	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0194.LAB	7/30/2003 16:56	ND	ND	ND	293.50	ND	2.41	560.2	ND	139.430	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0195.LAB	7/30/2003 16:58	ND	ND	355.44	200.30	ND	2.43	560.6	ND	90.475	149.76	0.997
9S_1_2B 07 30 03 SAMPLE_0196.LAB	7/30/2003 17:01	ND	ND	344.95	204.27	ND	2.42	560.4	ND	126.702	149.76	0.997
Average _{wet}		ND	ND	343.68	180.10	ND	2.41	552.80	ND	322.20	149.74	1.001

Reference Method Calculations

Fab 11X Fab Side

9s.1.2b

Run No.	Run 1	Run 2	
Date	7/30/2003	7/30/2003	
Start Time	8:15	13:00	AVERAGE
Stop Time	12:15	14:00	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	25.00	25.00	25.00
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Average Meter Temperature (°F)	84.7	91.5	88.1
Volume Metered (acf)	211.884	214.166	213.025
Volume Metered (dscf)	172.382	172.103	172.242
Volume of Water Collected (g)	86.3	92.3	89.3
Volume of Water Collected (scf)	4.069	4.352	4.210
Average Delta H (in. H ₂ O)	2.02	2.04	2.03
AVG SQRT of dH (in. H ₂ O)	1.4201	1.4273	1.4237
Measured Moisture (%)	2.3%	2.5%	2.4%
Saturation Moisture (%)	2.3%	2.5%	2.4%
Moisture Used for Calculations (%)	2.3%	2.4%	2.4%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.1	0.1	0.1
Nitrogen Concentration (%)	79.0	79.0	79.0
Dry Molecular Weight (lb/lbmole)	28.84	28.85	28.85
Wet Molecular Weight (lb/lbmole)	28.59	28.58	28.59
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.08	-0.08	-0.08
Stack Pressure (in. Hg)	24.99	24.99	24.99
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.6942	0.6973	0.6957
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.6049	0.6079	0.6064
Stack Temperature Isokinetic Traverse (°F)	63.6	65.5	64.5
Stack Temperature Flow Traverse (°F)	64.6	64.5	64.5
Velocity (ft/sec) Isokinetic Traverse	42.67	42.95	42.81
Velocity (ft/sec) Flow Traverse	37.21	37.41	37.31
Nozzle Diameter (in.)	0.250	0.250	0.250
% Isokinetics	100.09	99.7	99.9
Stack Diameter (in.)	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	32,171	32,383	32,277
Stack Flow Rate Flow Traverse (acfm)	28,058	28,203	28,131
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	26,459	26,518	26,488
Stack Flow Rate Outlet Flow Traverse (dscfm)	23,035	23,139	23,087
Chlorine			
Collected Cl ₂ micrograms (ug)	75.6	102.0	88.8
Cl ₂ Concentration (ug/dscf)	0.44	0.59	0.52
Cl ₂ Concentration (ppb)	5	7	6
Cl ₂ Emission Rate (lbs/hr)	0.0013	0.0018	0.0016

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 7/30/2003												
Unit Number: 9s.1.2b	Stack Diameter (in.): 48.00												
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -1.1												
Run No.: 1	Operators: PER/JEL												
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 25.00												
Pitot Tube ID: HA-1	Pre Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Post Test <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> </table> Start: 12:22 End: 12:46		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
	<u>Pass</u>	<u>Fail</u>											
Pitot Leak Check	<u>Y</u>	—											
Pitot Tube C_p: 0.84													
Actual Stack CO₂: 0.1 % O₂: 20.9 % H₂O: 2.3 %													
Comments :													

NE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.35	65
2	0.37	65
3	0.41	65
4	0.40	65
5	0.38	65
6	0.33	65
7	0.32	65
8	0.34	64
9	0.38	64
10	0.42	64
11	0.48	64
12	0.44	65

NW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.46	65
2	0.47	65
3	0.43	65
4	0.42	64
5	0.41	64
6	0.38	64
7	0.26	64
8	0.26	64
9	0.24	64
10	0.26	65
11	0.31	65
12	0.34	65
Total Average: sqrt dp = 0.6049		64.6

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 7/30/2003
Unit Number: 9s.1.2b	Stack Diameter (in.): 48.00
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.08
Run No.: 2	Operators: PER/JEL
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 25.00
Pitot Tube ID: HA-1	Pre Test Pass Fail Pitot Leak Check <u>Y</u> —
Pitot Tube C_p: 0.84	
Actual Stack CO₂: 0.1 % O₂: 20.9 % H₂O: 2.4 %	
Comments :	
	Post Test Pass Fail Pitot Leak Check <u>Y</u> —
	Start: 17:20 End: 17:36

NE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.34	65
2	0.37	65
3	0.39	65
4	0.40	65
5	0.39	65
6	0.37	65
7	0.31	64
8	0.35	64
9	0.39	64
10	0.46	64
11	0.49	64
12	0.49	64

NW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.44	65
2	0.46	65
3	0.44	65
4	0.41	65
5	0.40	64
6	0.38	64
7	0.27	64
8	0.24	64
9	0.27	64
10	0.28	64
11	0.31	64
12	0.30	65
Total Average:	sqrt dp = 0.6079	64.5

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments				Sample Train No. AA		Filter No.: NA		Run No.: 1	
Plant Name:	Fab 11X Fab Side					Leak Check Initial: 0.000 cfm@ 20 (in. Hg)					
Plant Location:	Rio Rancho, NM					Leak Check Final: 0.000 cfm@ 14 (in. Hg)					
Project No.:	31397-1600-00000					Total Traverse Points		Impinger	Initial	Final	
Sampling Location:	9s.1.2b					24		1	637.6	653.0	
Date:	7/30/2003							2	740.0	761.9	
Technicians:	PER/JEL							3	531.9	538.5	
Meter Box No.: 90394	Y_d: 0.999							4	631.1	635.8	
Probe / Pitot No.: 401 / HA-1	C_p: 0.84			5	638.7	640.2					
Nozzle No.: NA	dH₀: 1.721	Stack Dia. (in.): 48.00	Stack Area (ft²): 12.57		6	790.4	826.6				
Nozzle Dia: 0.250	0.251, 0.250, 0.250	Port Width (in.): 2.25	Port Length (in.): 3.00		Start Time: 8:15		Net Impinger Gain (g): 86.3				
Initial Meter Reading (ft³): 40.647		BP (in. Hg): 25.00	Static Pressure (in.): -0.08		End Time: 12:15		Theta 240				
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
NE 10	10	63	72	71	0.470	1.50	48.350	237	238	47	1
NE 10	20	63	79	71	0.480	1.90	56.870	244	236	45	2
NE 10	30	62	82	72	0.480	1.95	65.620	245	237	46	2
NE 10	40	62	86	73	0.480	2.00	74.250	245	257	49	2
NE 10	50	62	87	75	0.500	2.10	83.310	245	252	50	2
NE 10	60	62	89	77	0.480	2.10	92.310	248	253	52	2
NE 10	70	63	90	79	0.480	2.10	101.330	247	252	53	2
NE 10	80	62	92	80	0.480	2.10	110.310	248	252	52	2
NE 10	90	62	94	82	0.480	2.10	119.320	240	253	48	2
NE 10	100	63	95	83	0.480	2.10	128.350	253	252	48	2
NE 10	110	63	95	85	0.480	2.00	137.120	253	252	48	2
NE 10	120	64	95	86	0.480	2.00	145.850	253	254	50	2
NE 10	130	64	93	87	0.490	2.10	154.890	252	250	55	2
NE 10	140	65	91	86	0.490	2.15	164.190	252	250	53	2
NE 10	150	65	90	86	0.480	2.10	173.120	251	252	50	2
NE 10	160	65	90	85	0.490	2.10	182.120	251	250	50	2
NE 10	170	65	88	85	0.480	2.05	191.100	251	250	50	2
NE 10	180	65	91	84	0.480	2.00	199.860	249	252	51	2
NE 10	190	65	87	83	0.480	2.00	208.640	249	251	52	2
NE 10	200	65	87	83	0.480	2.00	217.440	249	254	53	2
NE 10	210	64	87	83	0.475	2.00	226.220	250	249	53	2
NE 10	220	65	87	83	0.480	2.00	235.000	249	249	49	2
NE 10	230	64	87	83	0.480	2.00	243.820	250	251	51	2
NE 10	240	64	88	83	0.490	2.00	252.531	251	252	52	2
Average / Net		63.6		84.7	0.482	2.0	211.884	248.4	249.9	50.3	1.9

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic				Sample Train No. SF		Filter No.: NA		Run No.: 2	
Plant Name:	Fab 11X Fab Side					Leak Check Initial: 0.000 cfm@ 15		(in. Hg)			
Plant Location:	Rio Rancho, NM					Leak Check Final: 0.000 cfm@ 16		(in. Hg)			
Project No.:	31397-1600-00000					Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.2b						1	588.4	610.1		
Date:	7/30/2003					24	2	621.0	640.7		
Technicians:	PER/JEL						3	641.3	649.4		
Meter Box No.: 90394	Y_d: 0.999						4	636.1	641.9		
Probe / Pitot No.: 401 / HA-1	C_p: 0.84	5	633.3	633.4							
Nozzle No.: NA	dH₀: 1.721	Stack Dia. (in.): 48.00		Stack Area (ft²): 12.57		6	891.2	928.1			
Nozzle Dia: 0.250	0.251, 0.250, 0.250	Port Width (in.): 2.25		Port Length (in.): 3.00		Start Time: 13:00		Net Impinger Gain (g): 92.3			
Initial Meter Reading (ft³):	253.198	BP (in. Hg): 25.00		Static Pressure (in.): -0.08		End Time: 14:00		Theta 240			
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
NE 10	10	65	88	87	0.480	2.00	262.120	252	240	45	3.5
NE 10	20	65	94	88	0.480	2.00	270.920	251	239	44	3.5
NE 10	30	65	94	89	0.485	2.00	279.800	252	242	47	3.5
NE 10	40	64	97	90	0.490	2.00	288.690	252	257	49	3.5
NE 10	50	64	99	91	0.480	2.00	297.700	254	247	50	4.0
NE 10	60	64	101	94	0.480	2.10	306.730	256	249	53	4.0
NE 10	70	66	99	95	0.490	2.10	315.750	257	251	53	3.5
NE 10	80	64	103	96	0.485	2.10	324.770	256	248	54	4.0
NE 10	90	64	103	96	0.480	2.10	333.710	254	249	55	4.0
NE 10	100	64	102	95	0.490	2.10	342.850	255	248	52	4.0
NE 10	110	64	101	95	0.480	2.10	351.870	255	250	53	4.0
NE 10	120	66	95	93	0.490	2.10	360.860	255	250	53	4.0
NE 10	130	65	98	92	0.480	2.10	369.830	256	248	50	4.0
NE 10	140	68	89	90	0.490	2.10	379.000	250	249	50	4.0
NE 10	150	66	88	86	0.490	2.00	387.690	251	248	50	4.0
NE 10	160	67	87	86	0.490	2.00	396.590	250	251	52	4.0
NE 10	170	67	90	87	0.500	2.00	405.500	250	251	54	4.0
NE 10	180	67	91	86	0.490	2.00	414.360	252	251	52	4.0
NE 10	190	67	89	87	0.490	2.00	423.220	250	250	51	4.0
NE 10	200	67	87	85	0.480	2.00	432.080	250	250	52	4.0
NE 10	210	66	88	84	0.490	2.00	440.920	251	251	53	4.0
NE 10	220	66	88	84	0.490	2.00	449.750	250	250	54	4.0
NE 10	230	65	89	84	0.490	2.00	458.550	251	249	54	4.0
NE 10	240	65	89	84	0.480	2.00	467.364	251	250	53	4.0
Average / Net		65.5		91.5	0.5	2.0	214.166	252.5	248.7	51.4	3.9

EPA REFERENCE METHOD 1

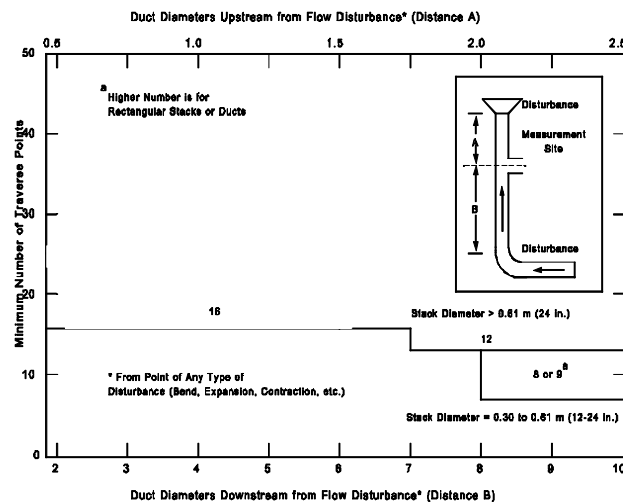
FIELD DATA SHEET

CIRCULAR STACKS

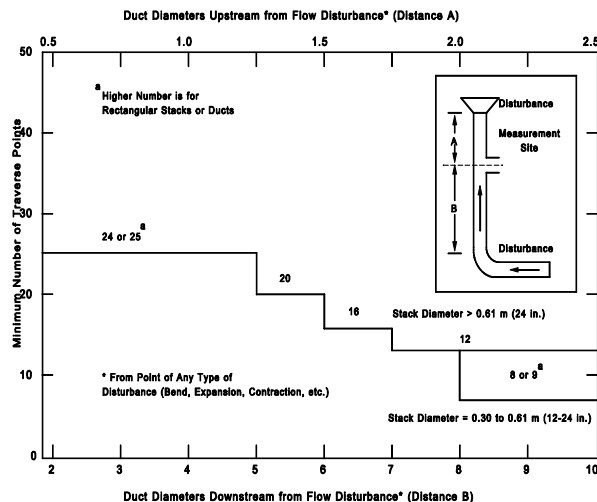
Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 9.1.2b
 TRC Project No.: 31397-1600-00000
 Date: 7/30/2003
 Technician: B. Guyton
 Circular/Rectangular: C

Stack Diameter: 41.5
 Sample Port Diameter: 3.0
 Sample Port Depth: 2.50
 Diameters Upstream: 3.1
 Diameters Downstream: 2.2
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	3 6/16
2	5 4/16
3	7 6/16
4	9 14/16
5	12 14/16
6	17 4/16
7	29 4/16
8	33 10/16
9	36 10/16
10	39 2/16
11	41 4/16
12	43 2/16
13	
14	
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24	

Scrubber Inlet 9s.1.3ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S13AB INLET 08 01 03 SAMPLE_0009.LAB	8/1/2003 8:30	ND	ND	ND	ND	ND	1.68	424.4	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0010.LAB	8/1/2003 8:32	ND	ND	ND	ND	ND	1.61	412.0	ND	22.728	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0011.LAB	8/1/2003 8:35	ND	ND	ND	ND	ND	1.60	413.5	ND	28.417	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0012.LAB	8/1/2003 8:38	ND	ND	ND	ND	ND	1.60	410.3	ND	19.756	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0013.LAB	8/1/2003 8:41	ND	ND	ND	ND	ND	1.61	415.7	ND	31.611	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0014.LAB	8/1/2003 8:44	ND	ND	ND	ND	ND	1.61	416.7	ND	32.804	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0015.LAB	8/1/2003 8:46	ND	ND	ND	ND	ND	1.59	409.0	ND	31.395	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0016.LAB	8/1/2003 8:49	ND	ND	ND	ND	ND	1.60	415.3	ND	31.966	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0017.LAB	8/1/2003 8:52	ND	ND	ND	ND	ND	1.59	410.8	ND	31.600	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0018.LAB	8/1/2003 8:55	ND	ND	ND	ND	ND	1.62	413.4	ND	28.272	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0019.LAB	8/1/2003 8:57	ND	ND	ND	ND	ND	1.63	414.3	ND	24.656	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0020.LAB	8/1/2003 9:00	ND	ND	ND	ND	ND	1.63	413.7	ND	26.092	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0021.LAB	8/1/2003 9:03	ND	ND	ND	ND	ND	1.64	416.8	ND	26.315	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0022.LAB	8/1/2003 9:06	ND	ND	ND	ND	ND	1.64	412.1	ND	ND	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0023.LAB	8/1/2003 9:09	ND	ND	ND	ND	ND	1.65	413.3	ND	18.086	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0024.LAB	8/1/2003 9:11	ND	ND	ND	ND	ND	1.67	419.2	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0025.LAB	8/1/2003 9:14	ND	ND	ND	ND	ND	1.67	415.2	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0026.LAB	8/1/2003 9:17	ND	ND	ND	ND	ND	1.67	416.4	ND	ND	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0027.LAB	8/1/2003 9:20	ND	ND	ND	ND	ND	1.68	418.0	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0028.LAB	8/1/2003 9:22	ND	ND	ND	ND	ND	1.67	416.4	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0029.LAB	8/1/2003 9:25	ND	ND	ND	ND	ND	1.65	411.9	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0030.LAB	8/1/2003 9:28	ND	ND	ND	ND	ND	1.66	412.4	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0031.LAB	8/1/2003 9:31	ND	ND	ND	ND	ND	1.65	410.0	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0032.LAB	8/1/2003 9:33	ND	ND	ND	ND	ND	1.66	408.9	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0033.LAB	8/1/2003 9:36	ND	ND	ND	ND	ND	1.65	405.6	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0034.LAB	8/1/2003 9:39	ND	ND	ND	ND	ND	1.66	412.0	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0035.LAB	8/1/2003 9:42	ND	ND	ND	ND	ND	1.67	410.2	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0036.LAB	8/1/2003 9:45	ND	ND	ND	ND	ND	1.67	409.2	ND	42.522	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0037.LAB	8/1/2003 9:47	ND	ND	ND	ND	ND	1.66	406.0	ND	62.429	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0038.LAB	8/1/2003 9:50	ND	ND	ND	ND	ND	1.64	401.1	ND	94.038	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0039.LAB	8/1/2003 9:53	ND	ND	ND	ND	ND	1.65	402.5	ND	110.640	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0040.LAB	8/1/2003 9:56	ND	ND	ND	ND	ND	1.66	405.2	ND	74.529	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0041.LAB	8/1/2003 9:58	ND	ND	ND	ND	ND	1.65	405.2	ND	126.223	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0042.LAB	8/1/2003 10:01	ND	ND	ND	ND	ND	1.67	405.0	ND	132.472	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0043.LAB	8/1/2003 10:04	ND	ND	ND	ND	ND	1.66	402.8	ND	104.302	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0044.LAB	8/1/2003 10:07	ND	ND	ND	ND	ND	1.64	399.3	ND	106.867	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0045.LAB	8/1/2003 10:10	ND	ND	ND	ND	ND	1.62	400.4	ND	107.804	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0046.LAB	8/1/2003 10:12	ND	ND	ND	ND	ND	1.61	398.3	ND	82.773	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0047.LAB	8/1/2003 10:15	ND	ND	ND	ND	ND	1.60	397.8	ND	62.438	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0048.LAB	8/1/2003 10:18	ND	ND	ND	ND	ND	1.60	394.7	ND	62.348	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0049.LAB	8/1/2003 10:21	ND	ND	ND	ND	ND	1.59	394.1	ND	35.729	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0050.LAB	8/1/2003 10:23	ND	ND	ND	ND	ND	1.60	396.0	ND	27.542	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0051.LAB	8/1/2003 10:26	ND	ND	ND	ND	ND	1.62	397.0	ND	36.180	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0052.LAB	8/1/2003 10:29	ND	ND	ND	ND	ND	1.61	393.3	ND	26.136	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0053.LAB	8/1/2003 10:32	ND	ND	ND	ND	ND	1.62	396.8	ND	34.111	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0054.LAB	8/1/2003 10:34	ND	ND	ND	ND	ND	1.61	398.4	ND	27.434	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0055.LAB	8/1/2003 10:37	ND	ND	ND	ND	ND	1.61	394.4	ND	31.398	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0056.LAB	8/1/2003 10:40	ND	ND	ND	ND	ND	1.62	396.7	ND	29.769	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0057.LAB	8/1/2003 10:43	ND	ND	ND	ND	ND	1.61	392.9	ND	28.666	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0058.LAB	8/1/2003 10:46	ND	ND	ND	ND	ND	1.62	395.1	ND	28.220	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0059.LAB	8/1/2003 10:48	ND	ND	ND	ND	ND	1.60	393.2	ND	65.177	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0060.LAB	8/1/2003 10:51	ND	ND	ND	ND	ND	1.61	392.5	ND	84.718	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0061.LAB	8/1/2003 10:54	ND	ND	ND	ND	ND	1.60	393.9	ND	116.270	150.51	1.001

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Inlet 9s.1.3ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S13AB INLET 08 01 03 SAMPLE_0062.LAB	8/1/2003 10:57	ND	ND	ND	ND	ND	1.59	396.6	ND	100.404	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0063.LAB	8/1/2003 10:59	ND	ND	ND	ND	ND	1.59	400.2	ND	99.498	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0064.LAB	8/1/2003 11:02	ND	ND	ND	ND	ND	1.59	398.8	ND	55.081	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0065.LAB	8/1/2003 11:05	ND	ND	ND	ND	ND	1.60	402.1	ND	49.471	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0066.LAB	8/1/2003 11:08	ND	ND	ND	ND	ND	1.60	402.3	ND	32.965	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0067.LAB	8/1/2003 11:11	ND	ND	ND	ND	ND	1.60	402.7	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0068.LAB	8/1/2003 11:13	ND	ND	ND	ND	ND	1.59	398.1	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0069.LAB	8/1/2003 11:16	ND	ND	ND	ND	ND	1.60	401.9	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0070.LAB	8/1/2003 11:19	ND	ND	ND	ND	ND	1.60	401.7	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0071.LAB	8/1/2003 11:22	ND	ND	ND	ND	ND	1.60	399.5	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0072.LAB	8/1/2003 11:24	ND	ND	ND	ND	ND	1.60	398.6	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0073.LAB	8/1/2003 11:27	ND	ND	ND	ND	ND	1.59	400.9	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0074.LAB	8/1/2003 11:30	ND	ND	ND	ND	ND	1.56	395.6	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0075.LAB	8/1/2003 11:33	ND	ND	ND	ND	ND	1.51	391.3	ND	19.063	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0076.LAB	8/1/2003 11:35	ND	ND	ND	ND	ND	1.50	395.5	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0077.LAB	8/1/2003 11:38	ND	ND	ND	ND	ND	1.50	389.5	ND	21.292	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0078.LAB	8/1/2003 11:41	ND	ND	ND	ND	ND	1.50	393.4	ND	17.989	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0079.LAB	8/1/2003 11:44	ND	ND	ND	ND	ND	1.51	390.7	ND	ND	150.51	1.001
9S13AB INLET 08 01 03 SAMPLE_0080.LAB	8/1/2003 11:47	ND	ND	ND	ND	ND	1.49	393.8	ND	17.702	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0081.LAB	8/1/2003 11:49	ND	ND	ND	ND	ND	1.49	392.9	ND	30.314	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0082.LAB	8/1/2003 11:52	ND	ND	ND	ND	ND	1.51	396.9	ND	74.097	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0083.LAB	8/1/2003 11:55	ND	ND	ND	ND	ND	1.50	397.5	ND	114.776	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0084.LAB	8/1/2003 11:58	ND	ND	ND	ND	ND	1.51	394.8	ND	109.733	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0085.LAB	8/1/2003 12:00	ND	ND	ND	ND	ND	1.52	393.5	ND	121.378	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0086.LAB	8/1/2003 12:03	ND	ND	ND	ND	ND	1.52	394.1	ND	61.327	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0087.LAB	8/1/2003 12:06	ND	ND	ND	ND	ND	1.52	396.6	ND	55.225	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0088.LAB	8/1/2003 12:09	ND	ND	ND	ND	ND	1.52	397.9	ND	49.315	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0089.LAB	8/1/2003 12:12	ND	ND	ND	ND	ND	1.51	394.9	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0090.LAB	8/1/2003 12:14	ND	ND	ND	ND	ND	1.51	397.2	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0091.LAB	8/1/2003 12:17	ND	ND	ND	ND	ND	1.49	396.4	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0092.LAB	8/1/2003 12:20	ND	ND	ND	ND	ND	1.50	398.8	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0093.LAB	8/1/2003 12:23	ND	ND	ND	ND	ND	1.49	396.0	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0094.LAB	8/1/2003 12:25	ND	ND	ND	ND	ND	1.49	397.0	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0112.LAB	8/1/2003 13:33	ND	ND	ND	ND	ND	1.40	403.4	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0113.LAB	8/1/2003 13:36	ND	ND	ND	ND	ND	1.41	495.2	ND	20.740	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0114.LAB	8/1/2003 13:38	ND	ND	ND	ND	ND	1.38	414.1	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0115.LAB	8/1/2003 13:41	ND	ND	ND	ND	ND	1.37	414.2	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0116.LAB	8/1/2003 13:44	ND	ND	ND	ND	ND	1.35	411.2	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0117.LAB	8/1/2003 13:47	ND	ND	ND	ND	ND	1.33	412.7	ND	ND	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0118.LAB	8/1/2003 13:50	ND	ND	ND	ND	ND	1.26	411.3	ND	27.175	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0119.LAB	8/1/2003 13:52	ND	ND	ND	ND	ND	1.27	410.4	ND	26.556	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0120.LAB	8/1/2003 13:55	ND	ND	ND	ND	ND	1.24	409.7	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0121.LAB	8/1/2003 13:58	ND	ND	ND	ND	ND	1.18	406.5	ND	18.529	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0122.LAB	8/1/2003 14:01	ND	ND	ND	ND	ND	1.07	409.5	ND	81.468	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0123.LAB	8/1/2003 14:04	ND	ND	ND	ND	ND	1.02	409.0	ND	132.939	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0124.LAB	8/1/2003 14:06	ND	ND	ND	ND	ND	1.07	414.6	ND	135.063	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0125.LAB	8/1/2003 14:09	ND	ND	ND	ND	ND	1.10	413.5	ND	149.826	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0126.LAB	8/1/2003 14:12	ND	ND	ND	ND	ND	1.12	415.0	ND	92.571	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0127.LAB	8/1/2003 14:15	ND	ND	ND	ND	ND	1.11	418.9	ND	63.669	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0128.LAB	8/1/2003 14:17	ND	ND	ND	ND	ND	1.11	419.5	ND	95.251	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0129.LAB	8/1/2003 14:20	ND	ND	ND	ND	ND	1.11	419.4	ND	102.305	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0130.LAB	8/1/2003 14:23	ND	ND	ND	ND	ND	1.11	419.6	ND	137.711	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0131.LAB	8/1/2003 14:26	ND	ND	ND	ND	ND	1.15	410.0	ND	158.818	150.51	0.996

Scrubber Inlet 9s.1.3ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S13AB INLET 08 01 03 SAMPLE_0132.LAB	8/1/2003 14:29	ND	ND	ND	ND	ND	1.14	414.3	ND	194.464	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0133.LAB	8/1/2003 14:31	ND	ND	ND	ND	ND	1.11	418.1	ND	209.202	151.25	0.990
9S13AB INLET 08 01 03 SAMPLE_0134.LAB	8/1/2003 14:34	ND	ND	ND	ND	ND	1.09	412.4	ND	201.552	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0135.LAB	8/1/2003 14:37	ND	ND	ND	ND	ND	1.03	408.7	ND	201.676	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0136.LAB	8/1/2003 14:40	ND	ND	ND	ND	ND	1.02	411.1	ND	169.759	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0137.LAB	8/1/2003 14:43	ND	ND	ND	ND	ND	1.05	409.8	ND	160.073	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0138.LAB	8/1/2003 14:45	ND	ND	ND	ND	ND	1.08	414.5	ND	30.501	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0139.LAB	8/1/2003 14:48	ND	ND	ND	ND	ND	1.09	414.8	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0140.LAB	8/1/2003 14:51	ND	ND	ND	ND	ND	1.09	410.9	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0141.LAB	8/1/2003 14:54	ND	ND	ND	ND	ND	1.11	415.8	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0142.LAB	8/1/2003 14:56	ND	ND	ND	ND	ND	1.11	418.4	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0143.LAB	8/1/2003 14:59	ND	ND	ND	ND	ND	1.11	415.9	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0144.LAB	8/1/2003 15:02	ND	ND	ND	ND	ND	1.11	413.9	ND	22.315	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0145.LAB	8/1/2003 15:05	ND	ND	ND	ND	ND	1.13	414.7	ND	28.242	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0146.LAB	8/1/2003 15:08	ND	ND	ND	ND	ND	1.12	413.0	ND	29.815	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0147.LAB	8/1/2003 15:10	ND	ND	ND	ND	ND	1.12	408.1	ND	71.880	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0148.LAB	8/1/2003 15:13	ND	ND	ND	ND	ND	1.12	413.5	ND	77.673	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0149.LAB	8/1/2003 15:16	ND	ND	ND	ND	ND	1.10	414.7	ND	55.816	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0150.LAB	8/1/2003 15:19	ND	ND	ND	ND	ND	1.07	410.9	ND	43.461	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0151.LAB	8/1/2003 15:22	ND	ND	ND	ND	ND	1.09	419.6	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0152.LAB	8/1/2003 15:24	ND	ND	ND	ND	ND	1.08	412.7	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0153.LAB	8/1/2003 15:27	ND	ND	ND	ND	ND	1.06	412.0	ND	20.003	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0154.LAB	8/1/2003 15:30	ND	ND	ND	ND	ND	1.05	409.6	ND	58.966	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0155.LAB	8/1/2003 15:33	ND	ND	ND	ND	ND	1.02	409.4	ND	78.454	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0156.LAB	8/1/2003 15:35	ND	ND	ND	ND	ND	0.99	413.5	ND	58.325	151.25	0.990
9S13AB INLET 08 01 03 SAMPLE_0157.LAB	8/1/2003 15:38	ND	ND	ND	ND	ND	1.01	410.0	ND	35.158	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0158.LAB	8/1/2003 15:41	ND	ND	ND	ND	ND	1.04	408.4	ND	20.708	151.25	0.990
9S13AB INLET 08 01 03 SAMPLE_0159.LAB	8/1/2003 15:44	ND	ND	ND	ND	ND	1.05	407.4	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0160.LAB	8/1/2003 15:47	ND	ND	ND	ND	ND	1.05	406.4	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0161.LAB	8/1/2003 15:49	ND	ND	ND	ND	ND	1.04	406.5	ND	ND	151.25	0.990
9S13AB INLET 08 01 03 SAMPLE_0162.LAB	8/1/2003 15:52	ND	ND	ND	ND	ND	1.01	405.5	ND	24.605	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0163.LAB	8/1/2003 15:55	ND	ND	ND	ND	ND	0.99	408.4	ND	46.473	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0164.LAB	8/1/2003 15:58	ND	ND	ND	ND	ND	0.98	408.1	ND	63.119	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0165.LAB	8/1/2003 16:01	ND	ND	ND	ND	ND	0.95	404.8	ND	67.125	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0166.LAB	8/1/2003 16:03	ND	ND	ND	ND	ND	0.91	404.9	ND	71.402	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0167.LAB	8/1/2003 16:06	ND	ND	ND	ND	ND	0.85	408.7	ND	25.050	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0168.LAB	8/1/2003 16:09	ND	ND	ND	ND	ND	0.80	408.6	ND	27.421	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0169.LAB	8/1/2003 16:12	ND	ND	ND	ND	ND	0.72	407.7	ND	26.108	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0170.LAB	8/1/2003 16:15	ND	ND	ND	ND	ND	0.72	405.2	ND	28.216	151.25	0.996
9S13AB INLET 08 01 03 SAMPLE_0171.LAB	8/1/2003 16:17	ND	ND	ND	ND	ND	0.73	405.2	ND	24.852	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0172.LAB	8/1/2003 16:20	ND	ND	ND	ND	ND	0.79	405.6	ND	28.231	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0173.LAB	8/1/2003 16:23	ND	ND	ND	ND	ND	0.82	406.4	ND	32.451	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0174.LAB	8/1/2003 16:26	ND	ND	ND	ND	ND	0.87	409.8	ND	27.804	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0175.LAB	8/1/2003 16:28	ND	ND	ND	ND	ND	0.90	408.7	ND	29.741	151.25	0.985
9S13AB INLET 08 01 03 SAMPLE_0176.LAB	8/1/2003 16:31	ND	ND	ND	ND	ND	0.87	409.2	ND	38.667	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0177.LAB	8/1/2003 16:34	ND	ND	ND	ND	ND	0.84	406.2	ND	29.23	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0178.LAB	8/1/2003 16:37	ND	ND	ND	ND	ND	0.84	407.1	ND	51.33	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0179.LAB	8/1/2003 16:40	ND	ND	ND	ND	ND	0.85	407.8	ND	144.69	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0180.LAB	8/1/2003 16:42	ND	ND	ND	ND	ND	0.86	412.0	ND	148.59	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0181.LAB	8/1/2003 16:45	ND	ND	ND	ND	ND	0.88	407.4	ND	138.73	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0182.LAB	8/1/2003 16:48	ND	ND	ND	ND	ND	0.90	408.9	ND	153.32	150.51	0.985
9S13AB INLET 08 01 03 SAMPLE_0183.LAB	8/1/2003 16:51	ND	ND	ND	ND	ND	0.92	403.7	ND	152.70	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0184.LAB	8/1/2003 16:54	ND	ND	ND	ND	ND	0.92	404.8	ND	136.99	150.51	0.990

Scrubber Inlet 9s.1.3ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S13AB INLET 08 01 03 SAMPLE_0185.LAB	8/1/2003 16:56	ND	ND	ND	ND	ND	0.96	403.5	ND	65.57	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0186.LAB	8/1/2003 16:59	ND	ND	ND	ND	ND	1.09	403.9	ND	70.72	151.25	0.996
9S13AB INLET 08 01 03 SAMPLE_0187.LAB	8/1/2003 17:02	ND	ND	ND	ND	ND	1.17	404.0	ND	63.50	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0188.LAB	8/1/2003 17:05	ND	ND	ND	ND	ND	1.22	407.9	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0189.LAB	8/1/2003 17:08	ND	ND	ND	ND	ND	1.24	405.2	ND	17.85	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0190.LAB	8/1/2003 17:10	ND	ND	ND	ND	ND	1.23	408.8	ND	18.43	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0191.LAB	8/1/2003 17:13	ND	ND	ND	ND	ND	1.23	408.3	ND	ND	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0192.LAB	8/1/2003 17:16	ND	ND	ND	ND	ND	1.21	406.0	ND	20.62	151.25	0.990
9S13AB INLET 08 01 03 SAMPLE_0193.LAB	8/1/2003 17:19	ND	ND	ND	ND	ND	1.21	403.9	ND	149.18	150.51	0.996
9S13AB INLET 08 01 03 SAMPLE_0194.LAB	8/1/2003 17:21	ND	ND	ND	ND	ND	1.25	401.9	ND	151.50	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0195.LAB	8/1/2003 17:24	ND	ND	ND	ND	ND	1.24	402.6	ND	209.71	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0196.LAB	8/1/2003 17:27	ND	ND	ND	ND	ND	1.23	404.6	ND	261.63	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0197.LAB	8/1/2003 17:30	ND	ND	ND	ND	ND	1.21	407.1	ND	278.10	150.51	0.990
9S13AB INLET 08 01 03 SAMPLE_0198.LAB	8/1/2003 17:33	ND	ND	ND	ND	ND	1.20	409.0	ND	250.74	151.25	0.985
9S13AB INLET 08 01 03 SAMPLE_0199.LAB	8/1/2003 17:35	ND	ND	ND	ND	ND	1.21	406.1	ND	148.62	150.51	0.996

Average _{wet}	ND	ND	ND	ND	ND	ND	1.33	406.78	ND	58.59	150.55	0.993

Reference Method Calculations

Fab 11X Fab Side

9s.1.3ab Inlet

Run No.	Run 1	Run 2	
Date	8/1/2003	8/1/2003	
Start Time	8:25	13:35	AVERAGE
Stop Time	12:25	17:35	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	25.00	25.00	25.00
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	88.3	98.6	93.4
Volume Metered (acf)	149.745	152.864	151.305
Volume Metered (dscf)	121.521	121.767	121.644
Volume of Water Collected (g)	14.1	33.7	23.9
Volume of Water Collected (scf)	0.665	1.589	1.127
Average Delta H (in. H ₂ O)	1.00	1.00	1.00
Stack Flow Rate <u>Outlet</u> Flow Traverse (dscfm)	23,947	23,065	23,506
Chlorine			
Collected Cl. micrograms (ug)	276.0	186.0	231.0
Cl ₂ Concentration (ug/dscf)	2.27	1.53	1.90
Cl ₂ Concentration (ppb)	27	18	23
Cl ₂ Emission Rate (lbs/hr)	0.0072	0.0047	0.0059

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/1/2003
Unit Number:	9s.1.3ab Inlet	Stack Diameter (in.):	60.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-4.5
Run No.:	1	Operators:	SCT/BG
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	25.00
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.6 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	13:10	
	End:	13:20	

Top Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.11	81
2	0.15	80
3	0.18	79
4	0.17	78
5	0.16	78
6	0.17	78
7	0.13	77
8	0.14	77
9	0.15	77
10	0.14	77
11	0.14	79
12	0.10	81

Side Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.16	77
2	0.17	77
3	0.18	76
4	0.18	76
5	0.17	76
6	0.17	76
7	0.15	75
8	0.11	75
9	0.14	75
10	0.12	75
11	0.13	78
12	0.08	82
Total Average:	sqrt dp = 0.3801	77.5

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/1/2003
Unit Number:	9s.1.3ab Inlet	Stack Diameter (in.):	60.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-4.4
Run No.:	2	Operators:	ST/PR
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	25.00
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack CO₂: 0 % O₂: 20.9 % H₂O: 1.1 %	Pitot Leak Check	<u>Y</u>	___
Comments :	Post Test		
		Pass	Fail
	Pitot Leak Check	<u>Y</u>	___
	Start:	18:22	
	End:	18:35	

Top Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.14	74
2	0.17	75
3	0.18	74
4	0.17	74
5	0.15	74
6	0.14	76
7	0.14	75
8	0.15	76
9	0.14	75
10	0.15	76
11	0.16	76
12	0.11	74

Side Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.15	75
2	0.16	75
3	0.16	75
4	0.15	74
5	0.14	74
6	0.14	74
7	0.10	74
8	0.13	75
9	0.14	75
10	0.13	75
11	0.11	79
12	0.11	84
Total Average:	sqrt dp = 0.3765	75.3

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Location Notes and Comments			Sample Train No.	B	Filter No.:	NA	Run No.:	1		
Plant Name:	Fab 11X Fab Side				Leak Check Initial:	0.002	cfm@	16	(in. Hg)			
Plant Location:	Rio Rancho, NM				Leak Check Final:	0.001	cfm@	2	(in. Hg)			
Project No.:	31397-1600-00000				Total Traverse Points		Impinger		Initial		Final	
Sampling Location:	9s.1.3ab Inlet						1		622.8		622.6	
Date:	8/1/2003				24		2		725.5		723.3	
Technicians:	SCT/BG						3		537.1		539.1	
Meter Box No.:	90401				Y_d:	1.006			4		746.0	
Probe/Pitot No.:	Teflon / HA-1	C_p:	0.84			5		715.2		707.4		
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	60.00	Stack Area (ft²):	19.63	6		781.5		804.8
Nozzle Dia:	NA			Port Width (in.):	3.00	Port Length (in.):	3.00	Start Time:	8:25	Net Impinger Gain (g):	14.1	
Initial Meter Reading (ft³):	2.249	BP (in. Hg):	25.00	Static Pressure (in.):	-4.5	End Time:	12:25	Theta	240			
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)					
Centroid	10	75	74	1.00	8.590	51	2.0					
Centroid	20	80	74	1.00	14.700	49	2.0					
Centroid	30	85	76	1.00	20.890	52	2.0					
Centroid	40	88	77	1.00	27.060	50	1.0					
Centroid	50	90	78	1.00	33.290	49	1.0					
Centroid	60	91	80	1.00	39.480	50	1.0					
Centroid	70	91	80	1.00	45.740	50	1.0					
Centroid	80	92	82	1.00	51.890	52	1.0					
Centroid	90	93	82	1.00	58.110	49	1.0					
Centroid	100	93	83	1.00	64.340	48	1.0					
Centroid	110	93	84	1.00	70.560	49	1.0					
Centroid	120	94	85	1.00	76.820	50	1.0					
Centroid	130	95	85	1.00	83.050	50	1.0					
Centroid	140	95	86	1.00	89.290	51	1.0					
Centroid	150	96	86	1.00	95.530	48	1.0					
Centroid	160	96	87	1.00	101.810	48	1.0					
Centroid	170	96	87	1.00	108.070	48	1.0					
Centroid	180	96	88	1.00	114.340	49	1.0					
Centroid	190	97	88	1.00	120.600	51	1.0					
Centroid	200	98	88	1.00	126.850	48	1.0					
Centroid	210	98	89	1.00	133.110	48	1.0					
Centroid	220	98	89	1.00	139.400	49	1.0					
Centroid	230	99	90	1.00	145.690	50	1.0					
Centroid	240	100	91	1.00	151.994	51	1.0					
Average / Net			88.3	1.0	149.745	49.6	1.0					

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic			Sample Train No.	C	Filter No.:	NA	Run No.:	2		
Plant Name:	Fab 11X Fab Side				Leak Check Initial:	0.002	cfm@	15	(in. Hg)			
Plant Location:	Rio Rancho, NM				Leak Check Final:	0.002	cfm@	4.5	(in. Hg)			
Project No.:	31397-1600-00000				Total Traverse Points	24	Impinger	1	Initial	743.2	Final	750.4
Sampling Location:	9s.1.3ab Inlet						2	653.4	654.6			
Date:	8/1/2003						3	653.8	653.7			
Technicians:	SCT/BG						4	756.9	756.8			
Meter Box No.:	90401				Y_d:	1.006			5	634.3	634.5	
Probe/Pitot No.:	Teflon / HA-1	C_p:	0.84			6	836.4	861.7				
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	60.00	Stack Area (ft²):	19.63					
Nozzle Dia:	NA			Port Width (in.):	3.00	Port Length (in.):	3.00	Start Time:	13:35	Net Impinger Gain (g):	33.7	
Initial Meter Reading (ft³):	152.636	BP (in. Hg):	25.00	Static Pressure (in.):	-4.4	End Time:	17:35	Theta	240			
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)					
Centroid	10	98	92	1.00	158.990	64	4.3					
Centroid	20	102	93	1.00	165.318	55	4.3					
Centroid	30	104	95	1.00	171.630	55	4.0					
Centroid	40	104	97	1.00	178.000	55	4.0					
Centroid	50	104	97	1.00	184.000	55	4.0					
Centroid	60	105	98	1.00	190.643	59	4.0					
Centroid	70	104	98	1.00	197.010	55	4.0					
Centroid	80	104	98	1.00	203.480	53	4.0					
Centroid	90	103	98	1.00	209.775	53	4.0					
Centroid	100	105	98	1.00	216.150	53	4.0					
Centroid	110	105	97	1.00	222.490	51	4.0					
Centroid	120	105	97	1.00	228.820	52	4.0					
Centroid	130	106	98	1.00	235.140	54	4.0					
Centroid	140	107	99	1.00	241.550	49	4.0					
Centroid	150	107	100	1.00	247.980	46	4.0					
Centroid	160	108	101	1.00	254.400	48	4.0					
Centroid	170	108	101	1.00	260.810	49	4.0					
Centroid	180	109	101	1.00	267.220	48	4.0					
Centroid	190	109	102	1.00	273.620	50	4.0					
Centroid	200	110	102	1.00	280.050	46	4.0					
Centroid	210	108	102	1.00	286.430	50	4.0					
Centroid	220	106	102	1.00	292.790	54	4.0					
Centroid	230	105	101	1.00	299.130	57	4.0					
Centroid	240	103	99	1.00	305.500	60	4.0					
Average / Net			98.6	1.0	152.864	53.0	4.0					

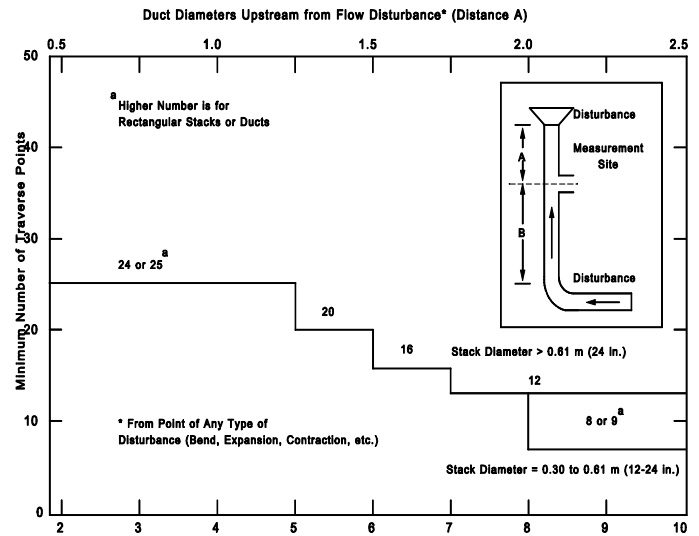
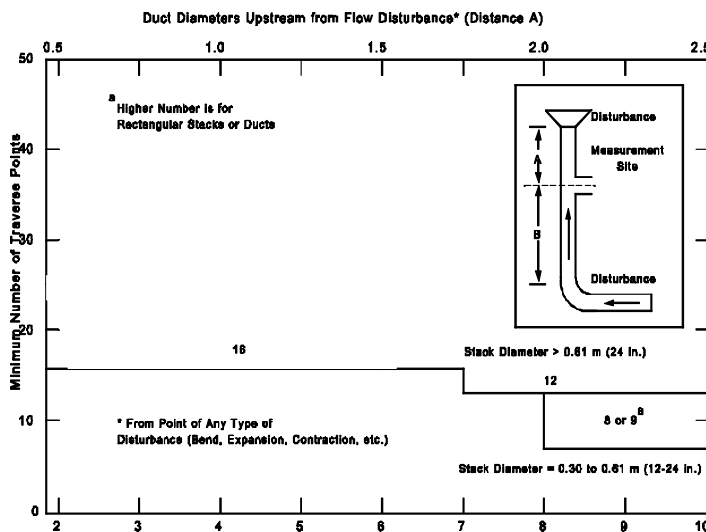
**EPA REFERENCE METHOD 1
FIELD DATA SHEET
CIRCULAR STACKS**

Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 9s.1.3ab Inlet
 TRC Project No.: 31397-1600-00000
 Date: 7/31/2003
 Technician: P. Reinwald
 Circular/Rectangular: C

Stack Diameter: 60.0
 Sample Port Diameter: 3.0
 Sample Port Depth: 3.00
 Diameters Upstream: 0.6
 Diameters Downstream: 5.2
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses

For Particulate Traverses



Duct Diameters Downstream from Flow Disturbance* (Distance B)

Duct Diameters Downstream from Flow Disturbance* (Distance B)

Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	4 4/16
2	7
3	10 1/16
4	13 10/16
5	18
6	24 6/16
7	41 10/16
8	48
9	52 6/16
10	55 15/16
11	59
12	61 12/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Scrubber Outlet 9s.1.3ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_3AB OUTLET 08 01 03 SAMPLE_0003.LAB	8/1/2003 8:28	ND	ND	ND	ND	ND	2.41	557.9	1053.265	95.943	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0004.LAB	8/1/2003 8:31	ND	ND	ND	ND	ND	2.42	557.8	1258.459	70.203	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0005.LAB	8/1/2003 8:33	ND	ND	ND	225.23	ND	2.42	557.9	1497.746	74.854	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0006.LAB	8/1/2003 8:36	ND	ND	ND	302.56	ND	2.42	557.8	1497.994	159.377	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0007.LAB	8/1/2003 8:39	ND	ND	ND	282.48	ND	2.42	557.8	1308.033	102.066	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0008.LAB	8/1/2003 8:41	ND	ND	ND	270.48	ND	2.41	557.8	1193.341	175.209	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0009.LAB	8/1/2003 8:44	ND	ND	ND	287.16	ND	2.41	557.9	1222.325	138.793	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0010.LAB	8/1/2003 8:46	ND	ND	ND	192.52	ND	2.41	557.9	1122.376	71.512	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0011.LAB	8/1/2003 8:49	ND	ND	ND	177.18	ND	2.41	557.9	1195.068	88.287	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0012.LAB	8/1/2003 8:52	ND	ND	ND	195.38	ND	2.41	557.9	1237.921	45.479	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0013.LAB	8/1/2003 8:54	ND	ND	ND	168.45	ND	2.42	560.8	1190.242	88.555	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0014.LAB	8/1/2003 8:57	ND	ND	ND	179.02	ND	2.42	560.8	1143.951	70.175	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0015.LAB	8/1/2003 8:59	ND	ND	ND	224.61	ND	2.42	560.8	1106.263	81.752	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0016.LAB	8/1/2003 9:02	ND	ND	ND	185.04	ND	2.41	557.8	1121.095	108.058	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0017.LAB	8/1/2003 9:05	ND	ND	ND	187.74	ND	2.40	557.7	1188.585	36.341	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0018.LAB	8/1/2003 9:07	ND	ND	ND	167.77	ND	2.41	557.8	1155.472	91.550	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0019.LAB	8/1/2003 9:10	ND	ND	ND	194.65	ND	2.41	557.7	1329.959	47.382	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0020.LAB	8/1/2003 9:12	ND	ND	ND	199.62	ND	2.40	555.0	1331.356	52.495	149.76	1.013
9S_1_3AB OUTLET 08 01 03 SAMPLE_0021.LAB	8/1/2003 9:15	ND	ND	ND	187.45	ND	2.41	557.9	1407.895	81.231	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0022.LAB	8/1/2003 9:18	ND	ND	ND	190.27	ND	2.41	557.9	1230.079	40.806	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0023.LAB	8/1/2003 9:20	ND	ND	ND	241.56	ND	2.41	557.9	1216.195	136.000	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0024.LAB	8/1/2003 9:23	ND	ND	ND	231.27	ND	2.40	554.8	1288.809	91.494	149.76	1.013
9S_1_3AB OUTLET 08 01 03 SAMPLE_0025.LAB	8/1/2003 9:25	ND	ND	ND	204.92	ND	2.42	557.5	1351.082	89.048	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0026.LAB	8/1/2003 9:28	ND	ND	ND	179.91	ND	2.43	560.2	1423.926	80.577	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0027.LAB	8/1/2003 9:31	ND	ND	ND	205.08	ND	2.42	556.9	1578.146	27.714	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0028.LAB	8/1/2003 9:33	ND	ND	ND	193.42	ND	2.42	556.6	1468.249	62.917	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0029.LAB	8/1/2003 9:36	ND	ND	ND	202.52	ND	2.42	556.1	1498.245	47.714	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0030.LAB	8/1/2003 9:39	ND	ND	ND	201.31	ND	2.41	552.9	1551.918	36.920	149.76	1.013
9S_1_3AB OUTLET 08 01 03 SAMPLE_0031.LAB	8/1/2003 9:41	ND	ND	ND	224.42	ND	2.42	555.7	1550.713	96.677	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0032.LAB	8/1/2003 9:44	ND	ND	ND	206.27	ND	2.42	555.3	1553.014	338.506	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0033.LAB	8/1/2003 9:46	ND	ND	ND	ND	ND	2.41	555.0	1555.125	602.524	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0034.LAB	8/1/2003 9:49	ND	ND	ND	ND	ND	2.42	554.6	1521.879	871.120	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0035.LAB	8/1/2003 9:52	ND	ND	ND	ND	ND	2.41	554.4	1557.955	941.493	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0036.LAB	8/1/2003 9:54	ND	ND	ND	ND	ND	2.41	553.6	1515.761	1082.457	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0037.LAB	8/1/2003 9:57	ND	ND	ND	ND	ND	2.40	553.9	1338.461	637.590	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0038.LAB	8/1/2003 9:59	ND	ND	ND	ND	ND	2.41	553.7	1276.467	1329.247	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0039.LAB	8/1/2003 10:02	ND	ND	ND	ND	ND	2.40	553.2	1193.956	1269.459	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0040.LAB	8/1/2003 10:05	ND	ND	ND	ND	ND	2.40	553.2	1244.333	936.860	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0041.LAB	8/1/2003 10:07	ND	ND	ND	ND	ND	2.40	552.7	1192.331	948.114	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0042.LAB	8/1/2003 10:10	ND	ND	ND	ND	ND	2.40	552.3	1281.892	899.263	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0043.LAB	8/1/2003 10:12	ND	ND	ND	ND	ND	2.41	552.5	1181.241	507.855	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0044.LAB	8/1/2003 10:15	ND	ND	ND	ND	ND	2.40	551.9	1192.338	372.573	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0045.LAB	8/1/2003 10:18	ND	ND	ND	ND	ND	2.40	551.1	1222.478	359.284	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0046.LAB	8/1/2003 10:20	ND	ND	ND	151.94	ND	2.42	554.3	1209.177	173.398	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0047.LAB	8/1/2003 10:23	ND	ND	342.02	173.93	ND	2.41	551.2	1203.574	30.347	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0048.LAB	8/1/2003 10:25	ND	ND	ND	188.86	ND	2.40	550.2	1304.177	91.785	149.02	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0049.LAB	8/1/2003 10:28	ND	ND	343.95	209.64	ND	2.41	550.8	1167.489	79.586	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0050.LAB	8/1/2003 10:31	ND	ND	ND	202.80	ND	2.40	551.1	1189.485	83.516	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0051.LAB	8/1/2003 10:33	ND	ND	ND	215.43	ND	2.41	551.1	1163.580	88.646	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0052.LAB	8/1/2003 10:36	ND	ND	ND	200.45	ND	2.40	550.6	1060.957	85.016	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0053.LAB	8/1/2003 10:38	ND	ND	356.97	212.33	ND	2.41	551.1	1021.247	96.051	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0054.LAB	8/1/2003 10:41	ND	ND	342.46	220.75	ND	2.41	551.2	953.349	65.826	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0055.LAB	8/1/2003 10:44	ND	ND	ND	214.29	ND	2.39	548.0	855.292	109.527	149.76	1.013

TRC Environmental Corporaitor
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 9s.1.3ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_3AB OUTLET 08 01 03 SAMPLE_0056.LAB	8/1/2003 10:46	ND	ND	347.21	190.73	ND	2.39	547.4	913.345	55.245	149.76	1.013
9S_1_3AB OUTLET 08 01 03 SAMPLE_0057.LAB	8/1/2003 10:49	ND	ND	341.68	ND	ND	2.41	551.0	946.054	480.084	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0058.LAB	8/1/2003 10:51	ND	ND	358.76	ND	ND	2.42	551.3	934.279	748.701	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0059.LAB	8/1/2003 10:54	ND	ND	355.04	ND	ND	2.41	550.9	959.198	952.966	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0060.LAB	8/1/2003 10:57	ND	ND	354.85	ND	ND	2.42	550.8	929.433	990.111	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0061.LAB	8/1/2003 10:59	ND	ND	364.52	ND	ND	2.42	550.7	933.047	885.041	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0062.LAB	8/1/2003 11:02	ND	ND	373.61	ND	ND	2.41	550.2	855.198	405.298	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0063.LAB	8/1/2003 11:05	ND	ND	379.01	ND	ND	2.41	550.3	885.509	435.540	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0064.LAB	8/1/2003 11:07	ND	ND	376.06	ND	ND	2.41	549.6	845.661	261.500	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0065.LAB	8/1/2003 11:10	ND	ND	377.92	ND	ND	2.40	549.3	1048.465	67.439	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0066.LAB	8/1/2003 11:12	ND	ND	376.57	ND	ND	2.40	548.9	1242.592	71.135	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0067.LAB	8/1/2003 11:15	ND	ND	384.65	194.74	ND	2.40	549.2	1096.101	90.874	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0068.LAB	8/1/2003 11:18	ND	ND	374.41	240.77	ND	2.40	548.8	ND	134.689	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0069.LAB	8/1/2003 11:20	ND	ND	375.85	176.73	ND	2.39	547.7	886.028	61.835	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0070.LAB	8/1/2003 11:23	ND	ND	380.60	228.45	ND	2.39	548.1	787.117	126.991	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0071.LAB	8/1/2003 11:25	ND	ND	380.87	212.88	ND	2.39	547.9	921.107	80.839	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0072.LAB	8/1/2003 11:28	ND	ND	374.23	211.17	ND	2.39	548.1	771.633	119.244	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0073.LAB	8/1/2003 11:31	ND	ND	380.68	224.96	ND	2.39	547.0	817.178	75.676	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0074.LAB	8/1/2003 11:33	ND	ND	380.70	214.24	ND	2.39	546.7	889.444	114.512	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0075.LAB	8/1/2003 11:36	ND	ND	375.42	231.65	ND	2.39	547.1	905.516	59.732	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0076.LAB	8/1/2003 11:38	ND	ND	376.50	198.26	ND	2.39	546.1	1001.552	139.411	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0077.LAB	8/1/2003 11:41	ND	ND	374.10	223.02	ND	2.40	549.5	937.350	121.877	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0078.LAB	8/1/2003 11:44	ND	ND	388.85	208.78	ND	2.38	546.6	973.911	89.318	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0079.LAB	8/1/2003 11:46	ND	ND	378.36	185.74	ND	2.38	546.7	1007.708	70.841	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0080.LAB	8/1/2003 11:49	ND	ND	381.51	ND	ND	2.39	545.4	987.929	172.323	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0081.LAB	8/1/2003 11:52	ND	ND	396.26	ND	ND	2.39	545.4	958.702	517.276	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0082.LAB	8/1/2003 11:54	ND	ND	392.02	ND	ND	2.39	545.6	928.940	825.006	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0083.LAB	8/1/2003 11:57	ND	ND	390.81	ND	ND	2.38	545.6	975.083	1004.065	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0084.LAB	8/1/2003 11:59	ND	ND	393.25	ND	ND	2.39	545.3	947.674	1005.688	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0085.LAB	8/1/2003 12:02	ND	ND	391.62	ND	ND	2.40	548.2	971.953	809.291	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0086.LAB	8/1/2003 12:05	ND	ND	389.56	ND	ND	2.39	545.1	992.857	460.426	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0087.LAB	8/1/2003 12:07	ND	ND	394.82	ND	ND	2.39	544.8	886.865	476.146	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0088.LAB	8/1/2003 12:10	ND	ND	382.07	ND	ND	2.39	544.9	886.322	218.736	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0089.LAB	8/1/2003 12:12	ND	ND	385.61	169.30	ND	2.41	548.7	1089.375	95.052	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0090.LAB	8/1/2003 12:15	ND	ND	404.14	ND	ND	2.40	546.8	1162.534	86.860	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0091.LAB	8/1/2003 12:18	ND	ND	388.76	197.54	ND	2.41	547.3	928.494	110.271	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0092.LAB	8/1/2003 12:20	ND	ND	384.71	234.76	ND	2.39	543.9	844.277	127.118	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0093.LAB	8/1/2003 12:23	ND	ND	387.02	167.91	ND	2.39	544.2	849.005	150.976	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0094.LAB	8/1/2003 12:25	ND	ND	383.27	ND	ND	2.40	544.0	797.277	68.618	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0114.LAB	8/1/2003 13:33	ND	ND	419.11	ND	ND	2.41	559.1	ND	180.930	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0115.LAB	8/1/2003 13:36	ND	ND	419.84	ND	ND	2.41	559.1	ND	171.868	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0116.LAB	8/1/2003 13:39	ND	ND	404.80	157.40	ND	2.40	555.9	ND	140.614	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0117.LAB	8/1/2003 13:41	ND	ND	416.87	157.68	ND	2.40	555.9	ND	178.399	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0118.LAB	8/1/2003 13:44	ND	ND	419.55	ND	ND	2.41	556.3	ND	167.116	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0119.LAB	8/1/2003 13:46	ND	ND	415.38	156.34	ND	2.40	556.2	ND	135.811	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0120.LAB	8/1/2003 13:49	ND	ND	415.08	154.31	ND	2.41	558.9	ND	149.135	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0121.LAB	8/1/2003 13:52	ND	ND	416.24	153.39	ND	2.41	559.1	1060.821	185.657	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0122.LAB	8/1/2003 13:54	ND	ND	418.46	168.97	ND	2.40	559.3	ND	142.403	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0123.LAB	8/1/2003 13:57	ND	ND	417.40	154.72	ND	2.41	559.4	817.738	139.460	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0124.LAB	8/1/2003 14:00	ND	ND	408.72	ND	ND	2.38	556.5	ND	443.313	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0125.LAB	8/1/2003 14:02	ND	ND	415.45	ND	ND	2.38	556.8	ND	808.772	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0126.LAB	8/1/2003 14:05	ND	ND	420.25	ND	ND	2.39	560.0	ND	1013.537	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0127.LAB	8/1/2003 14:07	ND	ND	408.26	ND	ND	2.37	556.9	ND	1091.635	149.76	1.008

Scrubber Outlet 9s.1.3ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_3AB OUTLET 08 01 03 SAMPLE_0128.LAB	8/1/2003 14:10	ND	ND	428.80	ND	ND	2.37	557.1	ND	1026.757	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0129.LAB	8/1/2003 14:13	ND	ND	424.60	ND	ND	2.37	560.0	ND	478.361	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0130.LAB	8/1/2003 14:15	ND	ND	422.05	ND	ND	2.36	557.4	ND	488.384	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0131.LAB	8/1/2003 14:18	ND	ND	436.72	ND	ND	2.36	557.3	823.836	633.938	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0132.LAB	8/1/2003 14:21	ND	ND	446.12	ND	ND	2.35	557.3	867.414	753.063	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0133.LAB	8/1/2003 14:23	ND	ND	458.83	ND	ND	2.36	560.4	1243.945	953.897	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0134.LAB	8/1/2003 14:26	ND	ND	472.38	ND	ND	2.37	560.5	871.857	1064.081	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0135.LAB	8/1/2003 14:28	ND	ND	464.23	ND	ND	2.36	560.3	798.574	1323.012	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0136.LAB	8/1/2003 14:31	ND	ND	470.58	ND	ND	2.35	557.4	ND	1652.189	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0137.LAB	8/1/2003 14:34	ND	ND	472.92	ND	ND	2.37	560.4	888.207	1556.037	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0138.LAB	8/1/2003 14:36	ND	ND	475.74	ND	ND	2.36	557.7	ND	1504.288	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0139.LAB	8/1/2003 14:39	ND	ND	479.60	ND	ND	2.35	557.5	939.753	1231.654	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0140.LAB	8/1/2003 14:41	ND	ND	485.20	ND	ND	2.36	560.3	ND	1181.361	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0141.LAB	8/1/2003 14:44	ND	ND	480.25	ND	ND	2.34	557.4	890.695	695.850	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0142.LAB	8/1/2003 14:47	ND	ND	480.92	ND	ND	2.34	557.3	842.186	101.219	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0143.LAB	8/1/2003 14:49	ND	ND	467.98	ND	ND	2.35	560.1	881.582	98.848	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0144.LAB	8/1/2003 14:52	ND	ND	475.29	ND	ND	2.35	560.0	834.902	149.223	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0145.LAB	8/1/2003 14:55	ND	ND	462.25	ND	ND	2.34	556.8	962.297	83.096	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0146.LAB	8/1/2003 14:57	ND	ND	474.60	ND	ND	2.35	559.9	1105.686	96.868	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0147.LAB	8/1/2003 15:00	ND	ND	479.07	ND	ND	2.35	556.9	1169.048	88.679	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0148.LAB	8/1/2003 15:02	ND	ND	465.26	ND	ND	2.33	556.3	849.757	110.111	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0149.LAB	8/1/2003 15:05	ND	ND	450.10	ND	ND	2.34	559.2	954.246	120.017	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0150.LAB	8/1/2003 15:08	ND	ND	440.57	ND	ND	2.35	559.2	1011.994	146.782	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0151.LAB	8/1/2003 15:10	ND	ND	444.60	ND	ND	2.33	556.2	966.065	424.536	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0152.LAB	8/1/2003 15:13	ND	ND	443.17	ND	ND	2.34	556.5	845.751	453.675	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0153.LAB	8/1/2003 15:16	ND	ND	456.70	ND	ND	2.33	556.4	867.325	487.600	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0154.LAB	8/1/2003 15:18	ND	ND	461.94	ND	ND	2.34	559.4	974.025	444.663	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0155.LAB	8/1/2003 15:21	ND	ND	450.50	ND	ND	2.33	556.1	883.720	136.910	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0156.LAB	8/1/2003 15:23	ND	ND	468.41	ND	ND	2.33	559.3	918.178	143.844	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0157.LAB	8/1/2003 15:26	ND	ND	464.99	ND	ND	2.34	559.3	839.033	172.751	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0158.LAB	8/1/2003 15:29	ND	ND	427.67	ND	ND	2.31	558.7	1084.502	338.155	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0159.LAB	8/1/2003 15:31	ND	ND	433.36	ND	ND	2.31	558.3	1113.282	430.574	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0160.LAB	8/1/2003 15:34	ND	ND	428.17	ND	ND	2.31	558.1	1195.703	421.309	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0161.LAB	8/1/2003 15:37	ND	ND	434.77	ND	ND	2.31	557.9	1069.670	377.637	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0162.LAB	8/1/2003 15:39	ND	ND	431.64	ND	ND	2.29	554.8	1076.767	54.075	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0163.LAB	8/1/2003 15:42	ND	ND	425.31	ND	ND	2.29	554.7	1031.459	78.050	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0164.LAB	8/1/2003 15:44	ND	ND	420.55	ND	ND	2.29	554.2	1124.863	22.097	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0165.LAB	8/1/2003 15:47	ND	ND	420.54	ND	ND	2.30	556.8	1056.365	76.096	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0166.LAB	8/1/2003 15:50	ND	ND	415.67	155.64	ND	2.29	553.6	1105.813	106.426	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0167.LAB	8/1/2003 15:52	ND	ND	412.18	154.67	ND	2.30	556.2	1069.982	114.118	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0168.LAB	8/1/2003 15:55	ND	ND	398.78	ND	ND	2.29	553.4	1131.820	310.697	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0169.LAB	8/1/2003 15:58	ND	ND	401.98	ND	ND	2.30	555.9	998.220	431.106	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0170.LAB	8/1/2003 16:00	ND	ND	406.68	ND	ND	2.30	555.8	1072.731	432.371	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0171.LAB	8/1/2003 16:03	ND	ND	399.27	ND	ND	2.30	555.7	1035.453	426.808	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0172.LAB	8/1/2003 16:05	ND	ND	398.05	ND	ND	2.29	555.9	1080.154	163.711	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0173.LAB	8/1/2003 16:08	ND	ND	400.64	ND	ND	2.29	555.2	1019.55	94.82	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0174.LAB	8/1/2003 16:11	ND	ND	390.24	ND	ND	2.28	555.3	1071.38	88.55	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0175.LAB	8/1/2003 16:13	ND	ND	392.84	ND	ND	2.27	551.9	1157.78	39.13	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0176.LAB	8/1/2003 16:16	ND	ND	404.78	ND	ND	2.28	555.0	1193.22	39.22	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0177.LAB	8/1/2003 16:19	ND	ND	416.78	ND	ND	2.28	554.1	1198.47	ND	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0178.LAB	8/1/2003 16:21	ND	ND	423.33	ND	ND	2.27	554.0	1387.09	84.50	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0179.LAB	8/1/2003 16:24	ND	ND	412.99	212.75	ND	2.26	551.2	1175.25	120.80	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0180.LAB	8/1/2003 16:26	ND	ND	406.94	211.24	ND	2.27	553.8	1243.70	155.65	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Scrubber Outlet 9s.1.3ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)
9S_1_3AB OUTLET 08 01 03 SAMPLE_0181.LAB	8/1/2003 16:29	ND	ND	402.72	224.39	ND	2.26	550.9	1162.57	126.64	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0182.LAB	8/1/2003 16:32	ND	ND	394.94	196.41	ND	2.27	553.2	1244.45	163.52	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0183.LAB	8/1/2003 16:34	ND	ND	401.00	205.40	ND	2.27	553.5	1322.34	94.60	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0184.LAB	8/1/2003 16:37	ND	ND	403.57	ND	ND	2.26	550.6	1215.69	335.47	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0185.LAB	8/1/2003 16:40	ND	ND	393.66	ND	ND	2.27	553.4	1025.68	952.77	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0186.LAB	8/1/2003 16:42	ND	ND	387.01	ND	ND	2.27	553.6	1115.13	990.40	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0187.LAB	8/1/2003 16:45	ND	ND	408.58	ND	ND	2.27	552.8	1304.55	970.19	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0188.LAB	8/1/2003 16:47	ND	ND	412.48	ND	ND	2.28	556.0	1336.48	980.22	149.76	0.997
9S_1_3AB OUTLET 08 01 03 SAMPLE_0189.LAB	8/1/2003 16:50	ND	ND	411.99	ND	ND	2.28	555.1	1120.45	984.67	151.25	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0190.LAB	8/1/2003 16:53	ND	ND	407.83	ND	ND	2.27	552.5	1221.50	974.75	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0191.LAB	8/1/2003 16:55	ND	ND	423.39	ND	ND	2.29	553.5	1038.21	567.16	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0192.LAB	8/1/2003 16:58	ND	ND	431.12	ND	ND	2.30	553.2	947.69	505.83	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0193.LAB	8/1/2003 17:01	ND	ND	426.18	ND	ND	2.30	556.3	1085.18	527.28	149.76	0.997
9S_1_3AB OUTLET 08 01 03 SAMPLE_0194.LAB	8/1/2003 17:03	ND	ND	422.59	181.07	ND	2.29	551.2	1082.87	265.05	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0195.LAB	8/1/2003 17:06	ND	ND	425.89	176.82	ND	2.31	553.9	1207.37	159.77	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0196.LAB	8/1/2003 17:08	ND	ND	427.93	214.45	ND	2.32	554.5	1223.60	151.59	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0197.LAB	8/1/2003 17:11	ND	ND	424.01	188.60	ND	2.32	554.4	1292.83	170.44	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0198.LAB	8/1/2003 17:14	ND	ND	419.54	261.72	ND	2.33	554.1	1368.54	200.42	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0199.LAB	8/1/2003 17:16	ND	ND	416.14	191.17	ND	2.34	554.3	1005.497	398.864	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0200.LAB	8/1/2003 17:19	ND	ND	421.94	ND	ND	2.32	550.9	1155.630	1134.947	149.76	1.008
9S_1_3AB OUTLET 08 01 03 SAMPLE_0201.LAB	8/1/2003 17:22	ND	ND	415.69	ND	ND	2.34	554.3	1012.197	1172.732	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0202.LAB	8/1/2003 17:24	ND	ND	411.04	ND	ND	2.34	553.7	1054.550	1517.719	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0203.LAB	8/1/2003 17:27	ND	ND	420.77	ND	ND	2.34	554.0	1160.816	1886.560	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0204.LAB	8/1/2003 17:29	ND	ND	421.63	ND	ND	2.34	554.1	1191.449	2008.795	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0205.LAB	8/1/2003 17:32	ND	ND	428.36	ND	ND	2.34	554.3	1142.196	1936.783	149.76	1.003
9S_1_3AB OUTLET 08 01 03 SAMPLE_0206.LAB	8/1/2003 17:35	ND	ND	431.34	ND	ND	2.34	554.3	1198.815	1328.744	149.76	1.003
Average _{wet}		ND	ND	393.13	171.80	ND	2.37	554.09	1069.64	406.62	149.77	1.006

Reference Method Calculations

Fab 11X Fab Side

9s.1.3ab Outlet

Run No.	Run 1	Run 2	
Date	8/1/2003	8/1/2003	
Start Time	8:25	13:35	AVERAGE
Stop Time	12:25	17:35	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.90	24.90	24.90
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Dry Gas Meter Calibration Check Value	0.885	0.884	0.884
Average Meter Temperature (°F)	87.0	95.1	91.0
Volume Metered (acf)	197.147	196.582	196.865
Volume Metered (dscf)	158.966	156.183	157.575
Volume of Water Collected (g)	76.5	86.9	81.7
Volume of Water Collected (scf)	3.607	4.097	3.852
Average Delta H (in. H ₂ O)	1.72	1.70	1.71
AVG SQRT of dH (in. H ₂ O)	1.3126	1.3022	1.3074
Measured Moisture (%)	2.2%	2.6%	2.4%
Saturation Moisture (%)	2.3%	2.4%	2.3%
Moisture Used for Calculations (%)	2.3%	2.3%	2.3%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.1	0.1	0.1
Nitrogen Concentration (%)	79.0	79.0	79.0
Dry Molecular Weight (lb/lbmole)	28.85	28.85	28.85
Wet Molecular Weight (lb/lbmole)	28.60	28.59	28.60
Flow Pitot Coefficient	0.84	0.84	0.84
Probe pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.06	-0.06	-0.06
Stack Pressure (in. Hg)	24.90	24.90	24.90
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.6423	0.6324	0.6373
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.6291	0.6069	0.6180
Stack Temperature Isokinetic Traverse (°F)	63.6	64.0	63.8
Stack Temperature Flow Traverse (°F)	62.8	64.6	63.7
Velocity (ft/sec) Isokinetic Traverse	39.55	38.97	39.26
Velocity (ft/sec) Flow Traverse	38.71	37.41	38.06
Nozzle Diameter (in.)	0.250	0.250	0.250
% Isokinetics	99.98	99.8	99.9
Stack Diameter (in.)	48.00	48.00	48.00
Stack Area (ft ²)	12.57	12.57	12.57
Stack Flow Rate Isokinetic Traverse (acfm)	29,819	29,381	29,600
Stack Flow Rate Flow Traverse (acfm)	29,186	28,209	28,698
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	24,426	24,052	24,239
Stack Flow Rate Outlet Flow Traverse (dscfm)	23,947	23,065	23,506
Chlorine			
Collected Cl. micrograms (ug)	96.9	97.2	97.1
Cl ₂ Concentration (ug/dscf)	0.61	0.62	0.62
Cl ₂ Concentration (ppb)	7	7	7
Cl ₂ Emission Rate (lbs/hr)	0.0019	0.0019	0.0019

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/1/2003
Unit Number:	9s.1.3ab Outlet	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.06
Run No.:	1	Operators:	PER
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.90
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack	CO₂: 0.1 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	<u>Y</u> _____
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> _____
		Start:	7:21
		End:	7:35

NE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.36	64
2	0.41	63
3	0.44	63
4	0.43	63
5	0.39	63
6	0.34	63
7	0.35	63
8	0.42	63
9	0.44	63
10	0.46	63
11	0.54	63
12	0.64	63

NW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.43	63
2	0.44	63
3	0.43	63
4	0.39	63
5	0.36	62
6	0.32	62
7	0.28	62
8	0.32	62
9	0.32	62
10	0.36	62
11	0.38	62
12	0.33	63
Total Average:	sqrt dp = 0.6291	62.8

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	8/1/2003
Unit Number:	9s.1.3ab Outlet	Stack Diameter (in.):	48.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.03
Run No.:	2	Operators:	PER
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	24.90
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack	CO₂: 0.1 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	17:55
		End:	18:04

NE Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.34	65
2	0.40	65
3	0.42	65
4	0.41	65
5	0.37	64
6	0.34	64
7	0.33	64
8	0.37	64
9	0.42	63
10	0.48	64
11	0.56	64
12	0.56	64

NW Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.40	66
2	0.37	65
3	0.35	66
4	0.31	64
5	0.29	65
6	0.29	65
7	0.29	67
8	0.32	65
9	0.29	64
10	0.32	64
11	0.36	64
12	0.33	64
Total Average:	sqrt dp = 0.6069	64.6

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Location Notes and Comments				Sample Train No.	AA	Filter No.:	NA	Run No.:	1
Plant Name:	Fab 11X Fab Side					Leak Check Initial:	PER	cfm@	0.006	(in. Hg)	16
Plant Location:	Rio Rancho, NM					Leak Check Final:	PER	cfm@	0.005	(in. Hg)	15
Project No.:	31397-1600-00000					Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.3ab Outlet					24	1	659.7	665.6		
Date:	8/1/2003						2	730.1	758.8		
Technicians:	PER						3	537.0	542.4		
Meter Box No.:	90394					Y_d:	0.999		4	637.8	642.0
Probe / Pitot No.:	401 / HA-1	C_p:	0.84		5	650.8	651.4				
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57		6	785.0	816.7
Nozzle Dia:	0.250	0.251, 0.250, 0.250	Port Width (in.):	2.25	Port Length (in.):	3.00	Start Time:	8:25	Net Impinger Gain (g):	76.5	
Initial Meter Reading (ft³):	468.061	BP (in. Hg):	24.90	Static Pressure (in.):	-0.06	End Time:	12:25	Theta	240		
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
NE 9	10	63	78	72	0.420	1.70	475.850	244	247	44	3
NE 9	20	63	82	73	0.420	1.70	483.890	244	244	45	3
NE 9	30	63	86	75	0.420	1.70	492.000	261	252	48	3
NE 9	40	63	87	76	0.420	1.70	500.180	254	251	51	3
NE 9	50	63	88	78	0.410	1.75	508.410	253	253	51	3
NE 9	60	64	88	79	0.410	1.75	516.630	250	251	54	3
NE 9	70	64	88	80	0.420	1.75	524.850	252	252	54	3
NE 9	80	64	89	80	0.410	1.75	533.090	251	251	55	3
NE 9	90	64	90	81	0.410	1.70	541.320	250	245	53	3
NE 9	100	64	90	83	0.410	1.70	549.540	251	249	52	3
NE 9	110	64	90	83	0.410	1.70	557.790	250	252	53	3
NE 9	120	64	92	85	0.410	1.70	566.000	253	250	52	3
NE 9	130	64	92	85	0.420	1.70	574.290	250	250	52	3
NE 9	140	64	92	85	0.410	1.70	582.500	252	248	50	3
NE 9	150	64	92	86	0.410	1.70	590.710	251	248	51	3
NE 9	160	64	92	86	0.410	1.70	598.880	249	250	52	3
NE 9	170	64	92	85	0.410	1.70	607.000	253	250	51	3
NE 9	180	63	94	86	0.410	1.75	615.240	251	248	53	3
NE 9	190	63	95	87	0.410	1.75	623.500	251	250	54	3
NE 9	200	63	95	88	0.410	1.75	631.780	251	247	51	3
NE 9	210	64	94	89	0.410	1.75	640.210	253	252	53	3
NE 9	220	63	99	92	0.410	1.75	648.550	255	249	53	3
NE 9	230	64	96	91	0.410	1.75	656.880	257	249	54	3
NE 9	240	64	97	91	0.410	1.75	665.208	256	252	54	3
Average / Net		63.6		87.0	0.413	1.7	197.147	251.8	249.6	51.7	3.0

ISOKINETIC
FIELD DATA SHEET

Page 1 of 1

Client:	Intel	Test Location Schematic				Sample Train No.	SF	Filter No.:	NA	Run No.:	2
Plant Name:	Fab 11X Fab Side					Leak Check Initial:	PER	cfm@	0.002	(in. Hg)	16
Plant Location:	Rio Rancho, NM					Leak Check Final:	PER	cfm@	0.040	(in. Hg)	16
Project No.:	31397-1600-00000					Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	9s.1.3ab Outlet						1	591.0	607.4		
Date:	8/1/2003					24	2	614.8	629.0		
Technicians:	PER						3	644.9	650.6		
Meter Box No.:	90394					Y_d:	0.999		4	637.1	652.7
Probe / Pitot No.:	401 / HA-1	C_p:	0.84		5	638.9	640.0				
Nozzle No.:	NA	dH₀:	1.721	Stack Dia. (in.):	48.00	Stack Area (ft²):	12.57		6	916.3	950.2
Nozzle Dia:	0.250	0.251, 0.250, 0.250	Port Width (in.):	2.25	Port Length (in.):	3.00	Start Time:	13:35	Net Impinger Gain (g):	86.9	
Initial Meter Reading (ft³):	665.564	BP (in. Hg):	24.90	Static Pressure (in.):	-0.06	End Time:	17:35	Theta	240		
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
NE 9	10	65	92	93	0.410	1.70	673.830	249	245	43	7.5
NE 9	20	64	94	93	0.410	1.70	682.010	243	244	43	7.5
NE 9	30	64	97	94	0.400	1.70	690.140	244	247	45	7.5
NE 9	40	65	97	94	0.410	1.70	698.360	244	245	48	7.5
NE 9	50	63	101	95	0.400	1.70	706.550	252	245	47	8.0
NE 9	60	63	105	97	0.400	1.70	714.750	253	247	48	8.0
NE 9	70	65	101	99	0.400	1.70	722.960	251	248	52	7.5
NE 9	80	64	98	97	0.410	1.70	731.130	250	248	52	7.5
NE 9	90	65	94	95	0.400	1.60	739.280	250	250	54	7.5
NE 9	100	64	97	95	0.390	1.60	747.380	247	243	47	7.5
NE 9	110	64	99	95	0.400	1.70	755.540	248	243	44	7.5
NE 9	120	63	100	95	0.400	1.70	763.730	248	244	47	7.5
NE 9	130	64	96	95	0.400	1.75	771.990	249	245	53	7.5
NE 9	140	64	95	95	0.390	1.75	780.260	248	245	52	7.5
NE 9	150	64	94	93	0.400	1.70	788.490	248	244	49	7.0
NE 9	160	64	95	94	0.400	1.70	796.710	255	251	48	7.0
NE 9	170	64	93	93	0.400	1.70	804.930	255	254	50	7.0
NE 9	180	64	94	93	0.400	1.70	813.140	255	252	51	7.0
NE 9	190	63	95	93	0.400	1.70	821.350	256	252	52	7.0
NE 9	200	63	95	93	0.400	1.70	829.540	246	252	52	7.0
NE 9	210	64	96	93	0.400	1.70	837.720	243	252	53	7.0
NE 9	220	64	93	92	0.390	1.70	845.880	243	253	54	7.0
NE 9	230	64	91	91	0.400	1.70	854.200	250	243	52	7.0
NE 9	240	64	93	91	0.390	1.70	862.146	250	254	50	7.0
Average / Net		64.0		95.1	0.4	1.7	196.582	249.0	247.8	49.4	7.3

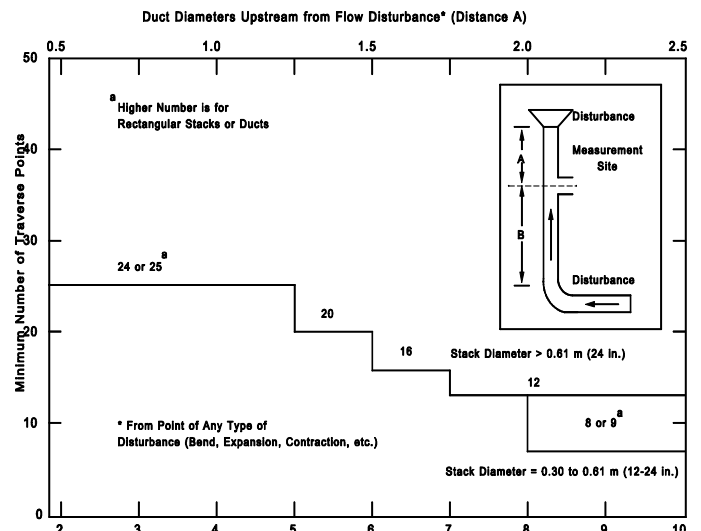
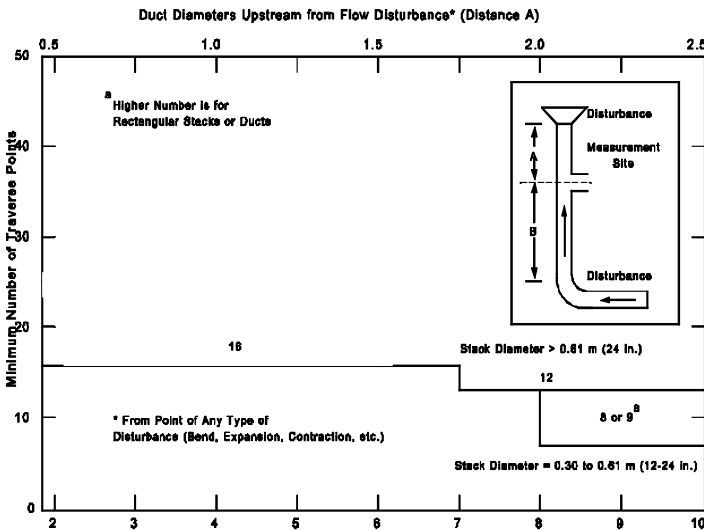
**EPA REFERENCE METHOD 1
FIELD DATA SHEET
CIRCULAR STACKS**

Firm Name: INTEL
 Plant Location: Rio Rancho, NM
 Sampling Location: 9s.1.3ab
 TRC Project No.: 31397-1600-00000
 Date: 7/31/2003
 Technician: B. Bauer
 Circular/Rectangular: C

Stack Diameter: 48.0
 Sample Port Diameter: 2.8
 Sample Port Depth: 3.00
 Diameters Upstream: 2.9
 Diameters Downstream: 3.4
 Flow or Particulate Test: P
 Number of Test Ports: 2

For Flow Traverses

For Particulate Traverses



Traverse Point No.	Number of Traverse Points On a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	4.01
2	6.22
3	8.66
4	11.50
5	15.00
6	20.09
7	33.91
8	39.00
9	42.50
10	45.34
11	47.78
12	49.99
13	
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INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER

FIELD AND SOURCE DOCUMENTATION

APPENDIX A
Field and Measurement Data

SECTION 7
CUB Acid Scrubber Results

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

Scrubber Inlet 8s.4.2.ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCI ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)	Cub Unknown (ppb)
8S_4_2AB INLET 09 24 03 SAMPLE_0015.LAB	9/24/2003 8:13	ND	ND	ND	9301.47	ND	1.65	ND	2298.487	ND	149.76	1.003	0.056
8S_4_2AB INLET 09 24 03 SAMPLE_0016.LAB	9/24/2003 8:16	ND	ND	ND	10082.81	ND	1.70	ND	2147.216	ND	149.76	1.003	0.061
8S_4_2AB INLET 09 24 03 SAMPLE_0017.LAB	9/24/2003 8:18	ND	ND	ND	10195.97	ND	1.69	ND	2186.293	ND	149.76	1.003	0.057
8S_4_2AB INLET 09 24 03 SAMPLE_0018.LAB	9/24/2003 8:21	ND	ND	ND	9636.23	ND	1.65	ND	2352.156	18.789	149.76	0.997	0.052
8S_4_2AB INLET 09 24 03 SAMPLE_0019.LAB	9/24/2003 8:24	ND	ND	ND	9901.95	ND	1.64	ND	2352.143	21.810	149.76	1.003	0.046
8S_4_2AB INLET 09 24 03 SAMPLE_0020.LAB	9/24/2003 8:26	ND	ND	ND	10993.78	ND	1.68	ND	2250.305	21.423	149.76	1.003	0.055
8S_4_2AB INLET 09 24 03 SAMPLE_0021.LAB	9/24/2003 8:29	ND	ND	ND	10855.39	ND	1.69	ND	2289.269	20.674	150.51	1.003	0.056
8S_4_2AB INLET 09 24 03 SAMPLE_0022.LAB	9/24/2003 8:31	ND	ND	ND	10453.16	ND	1.69	ND	2324.252	21.906	149.76	1.003	0.057
8S_4_2AB INLET 09 24 03 SAMPLE_0023.LAB	9/24/2003 8:34	ND	ND	ND	8914.50	ND	1.67	ND	2268.449	23.142	149.76	0.997	0.052
8S_4_2AB INLET 09 24 03 SAMPLE_0024.LAB	9/24/2003 8:37	ND	ND	ND	9391.55	ND	1.69	ND	2243.252	17.810	149.76	0.997	0.055
8S_4_2AB INLET 09 24 03 SAMPLE_0025.LAB	9/24/2003 8:39	ND	ND	ND	10399.64	ND	1.70	ND	2310.530	19.113	149.76	0.997	0.053
8S_4_2AB INLET 09 24 03 SAMPLE_0026.LAB	9/24/2003 8:42	ND	ND	ND	10828.71	ND	1.68	ND	2390.277	18.312	149.76	0.997	0.056
8S_4_2AB INLET 09 24 03 SAMPLE_0027.LAB	9/24/2003 8:44	ND	ND	ND	10979.63	ND	1.67	ND	2414.747	21.055	149.76	0.997	0.050
8S_4_2AB INLET 09 24 03 SAMPLE_0028.LAB	9/24/2003 8:47	ND	ND	ND	10017.77	ND	1.66	ND	2269.099	21.633	149.76	1.003	0.048
8S_4_2AB INLET 09 24 03 SAMPLE_0029.LAB	9/24/2003 8:50	ND	ND	ND	8875.71	ND	1.65	ND	2249.182	18.369	149.76	0.997	0.047
8S_4_2AB INLET 09 24 03 SAMPLE_0030.LAB	9/24/2003 8:52	ND	ND	ND	8733.81	ND	1.66	ND	2285.754	18.878	149.76	0.997	0.050
8S_4_2AB INLET 09 24 03 SAMPLE_0031.LAB	9/24/2003 8:55	ND	ND	ND	9133.09	ND	1.67	ND	2254.625	17.655	149.76	1.003	0.053
8S_4_2AB INLET 09 24 03 SAMPLE_0032.LAB	9/24/2003 8:57	ND	ND	ND	9451.70	ND	1.69	ND	2336.333	ND	149.76	0.997	0.054
8S_4_2AB INLET 09 24 03 SAMPLE_0033.LAB	9/24/2003 9:00	ND	ND	ND	9724.78	ND	1.69	ND	2358.042	21.234	149.76	0.997	0.057
8S_4_2AB INLET 09 24 03 SAMPLE_0034.LAB	9/24/2003 9:03	ND	ND	ND	9304.03	ND	1.68	ND	2382.426	ND	149.76	0.997	0.057
8S_4_2AB INLET 09 24 03 SAMPLE_0035.LAB	9/24/2003 9:05	ND	ND	ND	7559.28	ND	1.61	ND	2492.853	ND	150.51	1.003	0.037
8S_4_2AB INLET 09 24 03 SAMPLE_0036.LAB	9/24/2003 9:08	ND	ND	ND	8082.91	ND	1.62	ND	2467.602	26.406	149.76	1.003	0.029
8S_4_2AB INLET 09 24 03 SAMPLE_0037.LAB	9/24/2003 9:10	ND	ND	ND	8812.06	ND	1.67	ND	2267.751	ND	149.76	1.003	0.059
8S_4_2AB INLET 09 24 03 SAMPLE_0038.LAB	9/24/2003 9:13	ND	ND	ND	8105.74	ND	1.66	ND	2225.749	ND	149.76	1.003	0.057
8S_4_2AB INLET 09 24 03 SAMPLE_0039.LAB	9/24/2003 9:16	ND	ND	ND	6876.62	ND	1.63	ND	2479.301	ND	149.76	1.003	0.029
8S_4_2AB INLET 09 24 03 SAMPLE_0040.LAB	9/24/2003 9:18	ND	ND	ND	7949.31	ND	1.66	ND	2176.332	17.839	149.76	0.997	0.050
8S_4_2AB INLET 09 24 03 SAMPLE_0041.LAB	9/24/2003 9:21	ND	ND	ND	8165.58	ND	1.69	ND	2196.740	ND	149.76	0.997	0.052
8S_4_2AB INLET 09 24 03 SAMPLE_0042.LAB	9/24/2003 9:23	ND	ND	ND	8688.64	ND	1.70	ND	2234.583	ND	149.76	1.003	0.054
8S_4_2AB INLET 09 24 03 SAMPLE_0043.LAB	9/24/2003 9:26	ND	ND	ND	8528.73	ND	1.70	ND	2237.888	ND	149.76	1.003	0.054
8S_4_2AB INLET 09 24 03 SAMPLE_0044.LAB	9/24/2003 9:29	ND	ND	ND	8716.78	ND	1.70	ND	2336.652	ND	149.76	1.003	0.051
8S_4_2AB INLET 09 24 03 SAMPLE_0045.LAB	9/24/2003 9:31	ND	ND	ND	8757.70	ND	1.70	ND	2297.484	ND	149.76	1.003	0.051
8S_4_2AB INLET 09 24 03 SAMPLE_0046.LAB	9/24/2003 9:34	ND	ND	ND	7786.38	ND	1.66	ND	2058.562	ND	149.76	1.003	0.047
8S_4_2AB INLET 09 24 03 SAMPLE_0047.LAB	9/24/2003 9:36	ND	ND	ND	9119.35	ND	1.71	ND	2202.318	ND	149.76	0.997	0.050
8S_4_2AB INLET 09 24 03 SAMPLE_0048.LAB	9/24/2003 9:39	ND	ND	ND	9319.55	ND	1.71	ND	2251.071	18.381	149.76	1.003	0.052
8S_4_2AB INLET 09 24 03 SAMPLE_0049.LAB	9/24/2003 9:42	ND	ND	ND	7871.08	ND	1.66	ND	2090.842	ND	149.76	1.003	0.047
8S_4_2AB INLET 09 24 03 SAMPLE_0050.LAB	9/24/2003 9:44	ND	ND	ND	7667.30	ND	1.67	ND	2182.993	ND	149.76	1.003	0.040
8S_4_2AB INLET 09 24 03 SAMPLE_0051.LAB	9/24/2003 9:47	ND	ND	ND	9305.15	ND	1.71	ND	2290.356	19.133	149.76	1.003	0.051
8S_4_2AB INLET 09 24 03 SAMPLE_0052.LAB	9/24/2003 9:49	ND	ND	ND	8437.13	ND	1.68	ND	2111.903	ND	149.76	0.997	0.049
8S_4_2AB INLET 09 24 03 SAMPLE_0053.LAB	9/24/2003 9:52	ND	ND	ND	8647.57	ND	1.67	ND	2136.029	ND	149.76	1.003	0.045
8S_4_2AB INLET 09 24 03 SAMPLE_0054.LAB	9/24/2003 9:55	ND	ND	ND	9365.92	ND	1.70	ND	2336.229	18.250	149.76	0.997	0.055
8S_4_2AB INLET 09 24 03 SAMPLE_0055.LAB	9/24/2003 9:57	ND	ND	ND	9520.21	ND	1.70	ND	2227.724	ND	149.76	1.003	0.051
8S_4_2AB INLET 09 24 03 SAMPLE_0056.LAB	9/24/2003 10:00	ND	ND	ND	8631.91	ND	1.67	ND	2102.293	ND	149.76	1.003	0.060
8S_4_2AB INLET 09 24 03 SAMPLE_0057.LAB	9/24/2003 10:02	ND	ND	ND	8313.48	ND	1.67	ND	2171.138	ND	149.76	1.003	0.076
8S_4_2AB INLET 09 24 03 SAMPLE_0058.LAB	9/24/2003 10:05	ND	ND	ND	9606.37	ND	1.72	ND	2269.690	ND	150.51	1.003	0.061
8S_4_2AB INLET 09 24 03 SAMPLE_0059.LAB	9/24/2003 10:08	ND	ND	ND	9374.02	ND	1.72	ND	2303.508	19.070	149.76	0.997	0.068
8S_4_2AB INLET 09 24 03 SAMPLE_0060.LAB	9/24/2003 10:10	ND	ND	ND	9083.13	ND	1.71	ND	2407.582	18.537	149.76	1.003	0.067
8S_4_2AB INLET 09 24 03 SAMPLE_0061.LAB	9/24/2003 10:13	ND	ND	ND	3514.81	ND	1.69	ND	2209.591	ND	149.76	1.003	0.079
8S_4_2AB INLET 09 24 03 SAMPLE_0062.LAB	9/24/2003 10:15	ND	538.14	ND	550.72	ND	1.70	ND	2081.788	ND	149.76	1.003	0.101
8S_4_2AB INLET 09 24 03 SAMPLE_0063.LAB	9/24/2003 10:18	ND	2300.60	ND	156.31	ND	1.73	ND	2189.442	ND	149.76	0.997	0.133
8S_4_2AB INLET 09 24 03 SAMPLE_0064.LAB	9/24/2003 10:21	ND	7577.66	413.39	ND	ND	1.66	ND	1909.094	21.557	149.76	1.003	0.165
8S_4_2AB INLET 09 24 03 SAMPLE_0065.LAB	9/24/2003 10:23	ND	9806.37	550.96	ND	ND	1.71	ND	1814.535	21.309	150.51	1.003	0.203
8S_4_2AB INLET 09 24 03 SAMPLE_0066.LAB	9/24/2003 10:26	ND	13312.86	680.33	ND	ND	1.70	ND	1822.731	38.249	149.76	0.997	0.242
8S_4_2AB INLET 09 24 03 SAMPLE_0067.LAB	9/24/2003 10:28	ND	13822.79	782.14	ND	ND	1.72	ND	1766.559	40.764	149.76	0.997	0.266
8S_4_2AB INLET 09 24 03 SAMPLE_0068.LAB	9/24/2003 10:31	ND	13709.80	882.32	ND	ND	1.76	ND	1650.077	35.462	149.76	0.997	0.287
8S_4_2AB INLET 09 24 03 SAMPLE_0069.LAB	9/24/2003 10:34	ND	12770.95	933.91	ND	ND	1.78	ND	1575.068	36.035	149.76	1.003	0.304
8S_4_2AB INLET 09 24 03 SAMPLE_0070.LAB	9/24/2003 10:36	ND	13970.67	986.52	ND	ND	1.80	ND	1526.115	35.709	149.76	0.997	0.341
8S_4_2AB INLET 09 24 03 SAMPLE_0071.LAB	9/24/2003 10:39	ND	14483.78	1045.75	ND	ND	1.79	ND	1480.111	42.055	149.76	1.003	0.358
8S_4_2AB INLET 09 24 03 SAMPLE_0072.LAB	9/24/2003 10:41	ND	14259.12	1089.81	ND	ND	1.82	ND	1553.689	36.111	149.76	1.003	0.365
8S_4_2AB INLET 09 24 03 SAMPLE_0073.LAB	9/24/2003 10:44	ND	15943.40	1134.06	ND	ND	1.82	ND	1479.149	42.382	149.76	1.003	0.396
8S_4_2AB INLET 09 24 03 SAMPLE_0074.LAB	9/24/2003 10:47	ND	15661.27	1171.07	ND	ND	1.85	ND	1562.112	52.906	149.76	1.003	0.404

Scrubber Inlet 8s.4.2.ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCI ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)	Cub Unknown (ppb)
8S_4_2AB INLET 09 24 03 SAMPLE_0075.LAB	9/24/2003 10:49	ND	16353.87	1190.59	ND	ND	1.85	ND	1403.824	54.000	149.76	1.003	0.431
8S_4_2AB INLET 09 24 03 SAMPLE_0076.LAB	9/24/2003 10:52	ND	16514.89	1203.82	ND	ND	1.85	ND	1471.749	50.301	149.76	1.003	0.450
8S_4_2AB INLET 09 24 03 SAMPLE_0077.LAB	9/24/2003 10:54	ND	17054.21	1185.81	ND	ND	1.86	ND	1392.866	57.742	149.76	1.003	0.473
8S_4_2AB INLET 09 24 03 SAMPLE_0078.LAB	9/24/2003 10:57	ND	17244.20	1160.51	ND	ND	1.87	ND	1344.615	55.383	149.76	1.003	0.495
8S_4_2AB INLET 09 24 03 SAMPLE_0079.LAB	9/24/2003 11:00	ND	17508.01	1122.84	ND	ND	1.88	ND	1327.727	59.955	149.76	1.003	0.518
8S_4_2AB INLET 09 24 03 SAMPLE_0080.LAB	9/24/2003 11:02	ND	19414.13	1121.60	ND	ND	1.88	ND	1098.762	62.292	149.76	0.997	0.571
8S_4_2AB INLET 09 24 03 SAMPLE_0081.LAB	9/24/2003 11:05	ND	19152.08	1083.04	ND	ND	1.90	ND	1260.813	63.271	149.76	1.003	0.568
8S_4_2AB INLET 09 24 03 SAMPLE_0082.LAB	9/24/2003 11:07	ND	18940.17	1065.73	ND	ND	1.93	ND	1278.626	61.352	150.51	0.997	0.584
8S_4_2AB INLET 09 24 03 SAMPLE_0083.LAB	9/24/2003 11:10	ND	18652.22	1047.15	ND	ND	1.95	ND	1452.614	59.497	149.76	1.003	0.604
8S_4_2AB INLET 09 24 03 SAMPLE_0084.LAB	9/24/2003 11:13	ND	22529.96	1032.87	ND	ND	1.91	ND	1117.466	72.145	149.76	1.003	0.673
8S_4_2AB INLET 09 24 03 SAMPLE_0085.LAB	9/24/2003 11:15	ND	22172.56	1016.84	ND	ND	1.94	ND	1135.226	73.981	149.76	0.997	0.676
8S_4_2AB INLET 09 24 03 SAMPLE_0086.LAB	9/24/2003 11:18	ND	22137.94	1011.88	ND	ND	1.94	ND	1121.820	74.411	149.76	0.997	0.679
8S_4_2AB INLET 09 24 03 SAMPLE_0087.LAB	9/24/2003 11:20	ND	30011.81	1039.13	ND	ND	1.97	ND	ND	124.951	149.76	0.997	1.004
8S_4_2AB INLET 09 24 03 SAMPLE_0088.LAB	9/24/2003 11:23	ND	42425.18	1125.44	ND	ND	1.93	ND	ND	107.769	149.76	0.997	0.860
8S_4_2AB INLET 09 24 03 SAMPLE_0089.LAB	9/24/2003 11:26	ND	20001.24	1012.22	ND	ND	1.94	ND	1338.172	43.756	149.76	1.003	0.535
8S_4_2AB INLET 09 24 03 SAMPLE_0090.LAB	9/24/2003 11:28	ND	11179.50	928.80	ND	ND	1.99	ND	1448.284	ND	149.76	1.003	0.471
8S_4_2AB INLET 09 24 03 SAMPLE_0091.LAB	9/24/2003 11:31	ND	11569.90	884.20	ND	ND	1.97	ND	1460.906	20.095	149.76	1.003	0.448
8S_4_2AB INLET 09 24 03 SAMPLE_0092.LAB	9/24/2003 11:33	ND	11914.97	843.62	ND	ND	1.97	ND	1534.874	ND	149.76	0.997	0.423
8S_4_2AB INLET 09 24 03 SAMPLE_0093.LAB	9/24/2003 11:36	ND	8508.77	796.37	ND	ND	2.00	ND	1733.255	ND	149.76	0.997	0.354
8S_4_2AB INLET 09 24 03 SAMPLE_0094.LAB	9/24/2003 11:39	ND	6549.89	748.53	ND	ND	2.01	ND	1885.082	ND	149.76	0.997	0.322
8S_4_2AB INLET 09 24 03 SAMPLE_0095.LAB	9/24/2003 11:41	ND	5943.30	710.78	ND	ND	2.00	ND	1867.104	ND	149.76	0.997	0.314
8S_4_2AB INLET 09 24 03 SAMPLE_0096.LAB	9/24/2003 11:44	ND	5167.48	671.76	ND	ND	2.01	ND	1930.996	ND	149.76	0.997	0.294
8S_4_2AB INLET 09 24 03 SAMPLE_0097.LAB	9/24/2003 11:46	ND	4595.61	643.59	ND	ND	2.01	ND	1914.690	ND	149.76	0.997	0.288
8S_4_2AB INLET 09 24 03 SAMPLE_0098.LAB	9/24/2003 11:49	ND	3046.64	634.67	ND	ND	2.15	ND	2232.452	ND	149.76	0.997	0.260
8S_4_2AB INLET 09 24 03 SAMPLE_0099.LAB	9/24/2003 11:52	ND	1376.98	733.89	353.71	ND	3.06	ND	2847.537	ND	149.76	0.997	0.232
8S_4_2AB INLET 09 24 03 SAMPLE_0100.LAB	9/24/2003 11:54	ND	838.08	586.31	345.29	ND	2.44	ND	2428.713	ND	149.76	1.003	0.251
8S_4_2AB INLET 09 24 03 SAMPLE_0101.LAB	9/24/2003 11:57	ND	917.04	551.13	265.60	ND	2.30	ND	2251.893	ND	149.76	0.997	0.230
8S_4_2AB INLET 09 24 03 SAMPLE_0102.LAB	9/24/2003 11:59	ND	1043.44	500.48	239.42	ND	2.16	ND	2367.284	ND	149.76	0.997	0.228
8S_4_2AB INLET 09 24 03 SAMPLE_0103.LAB	9/24/2003 12:02	ND	1028.73	483.22	193.88	ND	2.11	ND	2283.309	ND	149.76	0.997	0.212
8S_4_2AB INLET 09 24 03 SAMPLE_0104.LAB	9/24/2003 12:05	ND	842.39	450.79	266.70	ND	2.10	ND	2369.890	ND	149.76	1.003	0.196
8S_4_2AB INLET 09 24 03 SAMPLE_0105.LAB	9/24/2003 12:07	ND	743.97	459.25	274.43	ND	2.08	ND	2223.815	ND	149.76	0.997	0.190
8S_4_2AB INLET 09 24 03 SAMPLE_0106.LAB	9/24/2003 12:10	ND	729.51	448.87	267.45	ND	2.08	ND	2241.267	ND	149.76	0.997	0.187
8S_4_2AB INLET 09 24 03 SAMPLE_0116.LAB	9/24/2003 12:58	ND	ND	344.63	1624.34	ND	2.21	ND	2725.978	ND	149.76	1.003	0.123
8S_4_2AB INLET 09 24 03 SAMPLE_0117.LAB	9/24/2003 13:01	ND	ND	ND	1750.86	ND	2.24	ND	2713.358	ND	149.76	0.997	0.132
8S_4_2AB INLET 09 24 03 SAMPLE_0118.LAB	9/24/2003 13:03	ND	ND	356.66	1035.63	ND	2.22	ND	2572.778	ND	149.76	0.997	0.114
8S_4_2AB INLET 09 24 03 SAMPLE_0119.LAB	9/24/2003 13:06	ND	ND	353.51	1630.10	ND	2.21	ND	2556.878	ND	149.76	0.997	0.115
8S_4_2AB INLET 09 24 03 SAMPLE_0120.LAB	9/24/2003 13:08	ND	ND	ND	2027.95	ND	2.21	ND	2573.872	ND	149.76	0.997	0.110
8S_4_2AB INLET 09 24 03 SAMPLE_0121.LAB	9/24/2003 13:11	ND	ND	348.20	1700.21	ND	2.19	ND	2437.382	ND	149.76	0.997	0.120
8S_4_2AB INLET 09 24 03 SAMPLE_0122.LAB	9/24/2003 13:14	ND	ND	ND	1123.13	ND	2.17	ND	2380.331	ND	149.76	0.997	0.128
8S_4_2AB INLET 09 24 03 SAMPLE_0123.LAB	9/24/2003 13:16	ND	ND	ND	769.03	ND	2.15	ND	2435.768	ND	149.76	0.997	0.123
8S_4_2AB INLET 09 24 03 SAMPLE_0124.LAB	9/24/2003 13:19	ND	ND	ND	1402.69	ND	2.17	ND	2455.933	ND	149.76	0.997	0.124
8S_4_2AB INLET 09 24 03 SAMPLE_0125.LAB	9/24/2003 13:21	ND	ND	ND	1296.31	ND	2.16	ND	2420.993	ND	149.76	0.997	0.115
8S_4_2AB INLET 09 24 03 SAMPLE_0126.LAB	9/24/2003 13:28	ND	ND	ND	1389.71	ND	2.13	ND	2693.126	ND	149.02	0.997	0.099
8S_4_2AB INLET 09 24 03 SAMPLE_0127.LAB	9/24/2003 13:31	ND	ND	ND	1556.15	ND	2.13	ND	2709.821	ND	149.76	1.003	0.093
8S_4_2AB INLET 09 24 03 SAMPLE_0128.LAB	9/24/2003 13:33	ND	ND	ND	1162.48	ND	2.12	ND	2623.353	ND	149.76	1.003	0.085
8S_4_2AB INLET 09 24 03 SAMPLE_0129.LAB	9/24/2003 13:36	ND	ND	ND	1870.54	ND	2.11	ND	2470.066	ND	149.76	1.003	0.077
8S_4_2AB INLET 09 24 03 SAMPLE_0130.LAB	9/24/2003 13:39	ND	ND	ND	1356.09	ND	2.13	ND	2437.189	ND	149.76	0.997	0.077
8S_4_2AB INLET 09 24 03 SAMPLE_0131.LAB	9/24/2003 13:41	ND	ND	ND	1328.61	ND	2.13	ND	2546.476	ND	149.76	0.997	0.077
8S_4_2AB INLET 09 24 03 SAMPLE_0132.LAB	9/24/2003 13:44	ND	ND	ND	1133.44	ND	2.11	ND	2469.866	ND	149.76	1.003	0.072
8S_4_2AB INLET 09 24 03 SAMPLE_0133.LAB	9/24/2003 13:46	ND	ND	ND	737.80	ND	2.11	ND	2578.364	ND	150.51	0.997	0.077
8S_4_2AB INLET 09 24 03 SAMPLE_0134.LAB	9/24/2003 13:49	ND	ND	ND	910.76	ND	2.09	ND	2668.562	ND	149.76	1.003	0.091
8S_4_2AB INLET 09 24 03 SAMPLE_0135.LAB	9/24/2003 13:52	ND	ND	ND	1398.63	ND	2.11	ND	2450.435	ND	149.76	1.003	0.094
8S_4_2AB INLET 09 24 03 SAMPLE_0136.LAB	9/24/2003 13:54	ND	ND	ND	1820.26	ND	2.12	ND	2499.391	ND	149.76	0.997	0.098
8S_4_2AB INLET 09 24 03 SAMPLE_0137.LAB	9/24/2003 13:57	ND	ND	ND	1207.82	ND	2.04	ND	2538.873	ND	149.76	1.003	0.091
8S_4_2AB INLET 09 24 03 SAMPLE_0138.LAB	9/24/2003 13:59	ND	ND	ND	823.48	ND	2.00	ND	2723.925	ND	149.76	0.997	0.089
8S_4_2AB INLET 09 24 03 SAMPLE_0139.LAB	9/24/2003 14:02	ND	ND	ND	770.57	ND	1.96	ND	2570.345	ND	149.76	0.997	0.085
8S_4_2AB INLET 09 24 03 SAMPLE_0140.LAB	9/24/2003 14:05	ND	ND	ND	488.16	ND	1.96	ND	2495.614	ND	149.76	0.992	0.074
8S_4_2AB INLET 09 24 03 SAMPLE_0141.LAB	9/24/2003 14:07	ND	ND	ND	366.65	ND	1.95	ND	2465.061	ND	149.76	0.997	0.075
8S_4_2AB INLET 09 24 03 SAMPLE_0142.LAB	9/24/2003 14:10	ND	ND	ND	265.47	ND	1.97	ND	2506.842	ND	149.76	0.997	0.073
8S_4_2AB INLET 09 24 03 SAMPLE_0143.LAB	9/24/2003 14:12	ND	ND	ND	334.68	ND	1.99	ND	2465.962	ND	149.76	0.997	0.075

Scrubber Inlet 8s.4.2.ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCI ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)	Cub Unknown (ppb)
8S_4_2AB INLET 09 24 03 SAMPLE_0144.LAB	9/24/2003 14:15	ND	ND	ND	223.44	ND	1.99	ND	2372.351	ND	149.76	0.997	0.072
8S_4_2AB INLET 09 24 03 SAMPLE_0145.LAB	9/24/2003 14:18	ND	339.90	ND	ND	ND	1.98	ND	2382.407	ND	149.76	0.997	0.074
8S_4_2AB INLET 09 24 03 SAMPLE_0146.LAB	9/24/2003 14:20	ND	312.95	ND	ND	ND	2.01	ND	2395.445	ND	150.51	0.997	0.071
8S_4_2AB INLET 09 24 03 SAMPLE_0147.LAB	9/24/2003 14:23	ND	303.30	ND	ND	ND	2.02	ND	2541.623	ND	149.76	0.997	0.072
8S_4_2AB INLET 09 24 03 SAMPLE_0148.LAB	9/24/2003 14:25	ND	336.84	ND	ND	ND	2.05	ND	2704.236	ND	149.76	0.997	0.073
8S_4_2AB INLET 09 24 03 SAMPLE_0149.LAB	9/24/2003 14:28	ND	342.02	ND	ND	ND	2.09	ND	2722.420	ND	149.76	0.992	0.084
8S_4_2AB INLET 09 24 03 SAMPLE_0150.LAB	9/24/2003 14:31	ND	415.90	ND	ND	ND	2.08	ND	2757.484	ND	149.76	0.997	0.079
8S_4_2AB INLET 09 24 03 SAMPLE_0151.LAB	9/24/2003 14:33	ND	451.08	ND	ND	ND	2.11	ND	2636.155	ND	149.76	0.997	0.079
8S_4_2AB INLET 09 24 03 SAMPLE_0152.LAB	9/24/2003 14:36	ND	520.77	ND	ND	ND	2.10	ND	2636.799	ND	149.76	0.997	0.080
8S_4_2AB INLET 09 24 03 SAMPLE_0153.LAB	9/24/2003 14:38	ND	504.37	ND	ND	ND	2.13	ND	2318.201	ND	149.76	0.992	0.078
8S_4_2AB INLET 09 24 03 SAMPLE_0154.LAB	9/24/2003 14:41	ND	476.59	ND	ND	ND	2.13	ND	2362.082	ND	149.76	0.997	0.079
8S_4_2AB INLET 09 24 03 SAMPLE_0155.LAB	9/24/2003 14:44	ND	511.00	ND	ND	ND	2.12	ND	2505.462	ND	149.76	0.992	0.077
8S_4_2AB INLET 09 24 03 SAMPLE_0156.LAB	9/24/2003 14:46	ND	627.06	ND	ND	ND	2.12	ND	2522.636	ND	149.76	0.992	0.078
8S_4_2AB INLET 09 24 03 SAMPLE_0157.LAB	9/24/2003 14:49	ND	554.51	ND	ND	ND	2.11	ND	2432.335	ND	149.76	0.997	0.075
8S_4_2AB INLET 09 24 03 SAMPLE_0158.LAB	9/24/2003 14:51	ND	455.52	ND	ND	ND	2.13	ND	2340.851	ND	149.76	0.997	0.080
8S_4_2AB INLET 09 24 03 SAMPLE_0159.LAB	9/24/2003 14:54	ND	433.12	ND	ND	ND	2.09	ND	2369.503	ND	149.76	0.997	0.077
8S_4_2AB INLET 09 24 03 SAMPLE_0160.LAB	9/24/2003 14:57	ND	631.18	ND	ND	ND	2.04	ND	2363.183	ND	149.76	0.992	0.073
8S_4_2AB INLET 09 24 03 SAMPLE_0161.LAB	9/24/2003 14:59	ND	721.01	ND	ND	ND	1.99	ND	2368.406	ND	149.76	0.997	0.071
8S_4_2AB INLET 09 24 03 SAMPLE_0162.LAB	9/24/2003 15:02	ND	864.37	ND	ND	ND	1.94	ND	2509.911	ND	149.76	0.997	0.068
8S_4_2AB INLET 09 24 03 SAMPLE_0163.LAB	9/24/2003 15:04	ND	885.48	ND	ND	ND	1.93	ND	2605.834	ND	149.76	0.992	0.068
8S_4_2AB INLET 09 24 03 SAMPLE_0164.LAB	9/24/2003 15:07	ND	878.30	ND	ND	ND	1.89	ND	2527.034	ND	149.76	0.997	0.061
8S_4_2AB INLET 09 24 03 SAMPLE_0165.LAB	9/24/2003 15:10	ND	849.39	ND	ND	ND	1.92	ND	2730.168	ND	149.76	0.992	0.069
8S_4_2AB INLET 09 24 03 SAMPLE_0166.LAB	9/24/2003 15:12	ND	876.18	ND	ND	ND	1.90	ND	2662.103	ND	149.76	0.997	0.068
8S_4_2AB INLET 09 24 03 SAMPLE_0167.LAB	9/24/2003 15:15	ND	875.21	ND	ND	ND	1.90	ND	2566.576	ND	150.51	0.997	0.067
8S_4_2AB INLET 09 24 03 SAMPLE_0168.LAB	9/24/2003 15:17	ND	896.61	ND	ND	ND	1.90	ND	2484.149	ND	149.76	0.997	0.063
8S_4_2AB INLET 09 24 03 SAMPLE_0169.LAB	9/24/2003 15:20	ND	913.36	ND	ND	ND	1.88	ND	2511.427	ND	149.76	0.997	0.067
8S_4_2AB INLET 09 24 03 SAMPLE_0170.LAB	9/24/2003 15:23	ND	1194.11	ND	ND	ND	1.84	ND	2340.344	ND	151.25	0.992	0.052
8S_4_2AB INLET 09 24 03 SAMPLE_0171.LAB	9/24/2003 15:25	ND	1162.29	ND	ND	ND	1.83	ND	2371.375	ND	149.76	0.997	0.056
8S_4_2AB INLET 09 24 03 SAMPLE_0172.LAB	9/24/2003 15:28	ND	1403.40	ND	ND	ND	1.82	ND	2305.100	ND	149.76	0.997	0.053
8S_4_2AB INLET 09 24 03 SAMPLE_0173.LAB	9/24/2003 15:30	ND	1536.07	ND	ND	ND	1.82	ND	2250.004	ND	149.76	0.997	0.060
8S_4_2AB INLET 09 24 03 SAMPLE_0174.LAB	9/24/2003 15:33	ND	1345.71	ND	ND	ND	1.85	ND	2419.569	ND	149.76	0.997	0.050
8S_4_2AB INLET 09 24 03 SAMPLE_0175.LAB	9/24/2003 15:36	ND	1567.45	ND	ND	ND	1.83	ND	2327.17	ND	149.76	0.997	0.049
8S_4_2AB INLET 09 24 03 SAMPLE_0176.LAB	9/24/2003 15:38	ND	1294.35	ND	ND	ND	1.86	ND	2528.15	ND	150.51	0.997	0.058
8S_4_2AB INLET 09 24 03 SAMPLE_0177.LAB	9/24/2003 15:41	ND	1297.97	ND	ND	ND	1.86	ND	2435.01	ND	149.76	0.992	0.054
8S_4_2AB INLET 09 24 03 SAMPLE_0178.LAB	9/24/2003 15:43	ND	1473.97	ND	ND	ND	1.85	ND	2394.59	ND	149.76	0.992	0.048
8S_4_2AB INLET 09 24 03 SAMPLE_0179.LAB	9/24/2003 15:46	ND	1743.74	ND	ND	ND	1.84	ND	2391.11	ND	149.76	0.992	0.049
8S_4_2AB INLET 09 24 03 SAMPLE_0180.LAB	9/24/2003 15:49	ND	1370.08	ND	ND	ND	1.84	ND	2484.69	ND	149.76	0.997	0.049
8S_4_2AB INLET 09 24 03 SAMPLE_0181.LAB	9/24/2003 15:51	ND	1273.22	ND	ND	ND	1.85	ND	2453.29	ND	150.51	0.997	0.053
8S_4_2AB INLET 09 24 03 SAMPLE_0182.LAB	9/24/2003 15:54	ND	1173.79	ND	ND	ND	1.85	ND	2569.72	ND	149.76	0.997	0.053
8S_4_2AB INLET 09 24 03 SAMPLE_0183.LAB	9/24/2003 15:56	ND	1216.18	ND	ND	ND	1.84	ND	2564.06	ND	149.76	0.997	0.058
8S_4_2AB INLET 09 24 03 SAMPLE_0184.LAB	9/24/2003 15:59	ND	1022.06	ND	ND	ND	1.87	ND	2359.16	ND	149.76	0.997	0.057
8S_4_2AB INLET 09 24 03 SAMPLE_0185.LAB	9/24/2003 16:02	ND	1102.96	ND	ND	ND	1.87	ND	2365.40	ND	150.51	0.997	0.061
8S_4_2AB INLET 09 24 03 SAMPLE_0186.LAB	9/24/2003 16:04	ND	1597.99	ND	ND	ND	1.84	ND	2384.11	ND	149.76	0.997	0.060
8S_4_2AB INLET 09 24 03 SAMPLE_0187.LAB	9/24/2003 16:07	ND	1252.79	ND	ND	ND	1.88	ND	2323.77	ND	149.76	0.992	0.067
8S_4_2AB INLET 09 24 03 SAMPLE_0188.LAB	9/24/2003 16:09	ND	1063.37	ND	ND	ND	1.87	ND	2264.73	ND	149.76	0.997	0.069
8S_4_2AB INLET 09 24 03 SAMPLE_0189.LAB	9/24/2003 16:12	ND	1027.74	ND	ND	ND	1.87	ND	2277.46	ND	149.76	0.997	0.068
8S_4_2AB INLET 09 24 03 SAMPLE_0190.LAB	9/24/2003 16:15	ND	1001.79	ND	ND	ND	1.86	ND	2201.42	ND	149.76	0.997	0.065
8S_4_2AB INLET 09 24 03 SAMPLE_0191.LAB	9/24/2003 16:17	ND	1555.53	ND	ND	ND	1.83	ND	2343.99	ND	149.76	0.992	0.060
8S_4_2AB INLET 09 24 03 SAMPLE_0192.LAB	9/24/2003 16:20	ND	1646.00	ND	ND	ND	1.82	ND	2177.88	ND	149.76	0.997	0.059
8S_4_2AB INLET 09 24 03 SAMPLE_0193.LAB	9/24/2003 16:23	ND	1783.38	ND	ND	ND	1.85	ND	2253.34	ND	149.76	0.997	0.063
8S_4_2AB INLET 09 24 03 SAMPLE_0194.LAB	9/24/2003 16:25	ND	1278.87	ND	ND	ND	1.89	ND	2328.87	ND	149.76	0.992	0.062
8S_4_2AB INLET 09 24 03 SAMPLE_0195.LAB	9/24/2003 16:28	ND	1507.11	ND	ND	ND	1.83	ND	2169.70	ND	149.76	0.992	0.065
8S_4_2AB INLET 09 24 03 SAMPLE_0196.LAB	9/24/2003 16:30	ND	1957.44	ND	ND	ND	1.83	ND	2127.80	ND	149.76	0.992	0.066
8S_4_2AB INLET 09 24 03 SAMPLE_0197.LAB	9/24/2003 16:33	ND	1467.35	ND	ND	ND	1.86	ND	2300.69	ND	149.76	0.997	0.054
8S_4_2AB INLET 09 24 03 SAMPLE_0198.LAB	9/24/2003 16:36	ND	1210.75	ND	ND	ND	1.88	ND	2287.68	ND	149.76	0.997	0.047
8S_4_2AB INLET 09 24 03 SAMPLE_0199.LAB	9/24/2003 16:38	ND	1131.92	ND	ND	ND	1.87	ND	2325.61	ND	149.76	0.997	0.045
8S_4_2AB INLET 09 24 03 SAMPLE_0200.LAB	9/24/2003 16:41	ND	1699.74	ND	ND	ND	1.84	ND	2226.43	ND	149.76	0.992	0.057
8S_4_2AB INLET 09 24 03 SAMPLE_0201.LAB	9/24/2003 16:43	ND	1192.87	ND	ND	ND	1.86	ND	2368.95	ND	149.76	0.997	0.044
8S_4_2AB INLET 09 24 03 SAMPLE_0202.LAB	9/24/2003 16:46	ND	993.76	ND	ND	ND	1.88	ND	2468.89	ND	149.76	0.992	0.049
8S_4_2AB INLET 09 24 03 SAMPLE_0203.LAB	9/24/2003 16:49	ND	989.86	ND	ND	ND	1.87	ND	2464.90	ND	151.25	0.997	0.056

Scrubber Inlet 8s.4.2.ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl₄ (ppb)	HCl (ppb)	HF (ppb)	NH₃ (ppb)	HCN (ppb)	H₂O (%)	CO₂ (ppm)	COF₂ (ppb)	NF₃ (ppb)	Temp (°C)	Press. (Atm)	Cub Unknown (ppb)
8S_4_2AB INLET 09 24 03 SAMPLE_0204.LAB	9/24/2003 16:51	ND	1077.89	ND	ND	ND	1.87	ND	2614.74	ND	149.76	0.992	0.057
8S_4_2AB INLET 09 24 03 SAMPLE_0205.LAB	9/24/2003 16:54	ND	1202.08	ND	ND	ND	1.85	ND	2486.90	ND	149.76	0.997	0.057
8S_4_2AB INLET 09 24 03 SAMPLE_0206.LAB	9/24/2003 16:56	ND	1135.92	ND	ND	ND	1.87	ND	2363.75	ND	149.76	0.992	0.056
8S_4_2AB INLET 09 24 03 SAMPLE_0207.LAB	9/24/2003 16:59	ND	1069.76	ND	ND	ND	1.88	ND	2298.25	ND	149.76	0.992	0.059
8S_4_2AB INLET 09 24 03 SAMPLE_0208.LAB	9/24/2003 17:02	ND	1234.10	ND	ND	ND	1.87	ND	2302.04	ND	149.76	0.997	0.063
Average _{wet}		ND	3,375	461.99	2564.23	ND	1.90	ND	2236.83	23.00	149.82	0.998	0.15

Reference Method Calculations

CUB

8s.4.2ab Inlet

Run No.	Run 1	Run 2	
Date	9/24/2003	9/24/2003	
Start Time	8:10	13:00	AVERAGE
Stop Time	12:10	17:00	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	24.89	24.89	24.89
Orifice calibration Factor	1.725	1.725	1.725
Dry Gas Meter Calibration Factor	1.006	1.006	1.006
Average Meter Temperature (°F)	85.0	87.7	86.4
Volume Metered (acf)	203.746	206.994	205.370
Volume Metered (dscf)	166.088	167.915	167.001
Volume of Water Collected (g)	60.5	52.5	56.5
Volume of Water Collected (scf)	2.853	2.475	2.664
Average Delta H (in. H ₂ O)	2.00	2.00	2.00
Measured Moisture (%)	1.7%	1.5%	1.6%
Saturation Moisture (%)	2.3%	2.6%	2.4%
Stack Flow Rate <u>Outlet</u> Flow Traverse (dscfm)	5,778	5,645	5,711
Chlorine			
Collected Cl ₂ micrograms (ug)	2830.0	206.0	1518.0
Cl ₂ Concentration (ug/dscf)	17.04	1.23	9.13
Cl ₂ Concentration (ppb)	204	15	109
Cl ₂ Emission Rate (lbs/hr)	0.0130	0.0009	0.0070
Ammonia			
Collected NH ₃ micrograms (ug)	21500	284000	152750.00
NH ₃ Concentration (ug/dscf)	129.45	1,691.34	910.39
NH ₃ Concentration (ppb)	6,460	84,406	45,433
NH ₃ Emission Rate (lbs/hr)	0.0989	1.2629	0.6809

ISOKINETIC
FIELD DATA SHEET

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Client:		Intel		Location Notes and Comments		Sample Train No. B		Filter No.: NA		Run No.: 1			
Plant Name:		CUB				Leak Check Initial: 0.003 cfm@ 16 (in. Hg)							
Plant Location:		Rio Rancho, NM				Leak Check Final: 0.002 cfm@ 8 (in. Hg)							
Project No.:		31397-1600-00000				Total Traverse Points		Impinger		Initial		Final	
Sampling Location:		8s.4.2ab Inlet				24		1		632.8		638.3	
Date:		9/24/2003						2		646.8		653.9	
Technicians:		SCT/BG						3		628.3		634.1	
Meter Box No.: 90401		Y_d: 1.006						4		760.8		765.3	
Probe/Pitot No NA / NA		C_p: NA				5		738.6		747.1			
Nozzle No.: NA		dH₀: 1.725		Stack Dia. (in.): 30.00		Stack Area (ft²): 4.91		6		834.2		863.3	
Nozzle Dia: NA				Port Width (in.): 0.75		Port Length (in.): 1.00		Start Time: 8:10		Net Impinger Gain (g): 60.5			
Initial Meter Reading (ft³):		763.399		BP (in. Hg): 24.89		Static Pressure (in.): 0		End Time: 12:10		Theta 240			
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)						
1	10	75	75	2.00	771.940	55	4.0						
1	20	80	74	2.00	780.290	48	4.0						
1	30	86	75	2.00	788.750	51	4.0						
1	40	88	76	2.00	797.110	53	4.0						
1	50	90	77	2.00	805.580	52	4.0						
1	60	91	78	2.00	814.060	48	3.5						
1	70	91	79	2.00	822.610	48	4.0						
1	80	91	80	2.00	830.420	48	4.0						
1	90	92	80	2.00	839.320	49	4.0						
1	100	92	80	2.00	847.960	49	3.5						
1	110	93	81	2.00	856.520	50	4.0						
1	120	93	82	2.00	864.970	50	4.0						
1	130	93	81	2.00	873.050	50	4.0						
1	140	92	82	2.00	880.540	50	4.0						
1	150	91	82	2.00	889.170	50	3.0						
1	160	92	82	2.00	897.910	50	4.0						
1	170	92	82	2.00	906.500	50	4.0						
1	180	91	82	2.00	915.180	48	4.0						
1	190	92	82	2.00	923.570	48	4.0						
1	200	92	82	2.00	932.560	48	4.0						
1	210	92	82	2.00	941.130	48	4.0						
1	220	91	82	2.00	949.850	48	4.0						
1	230	91	82	2.00	958.440	48	4.0						
1	240	91	82	2.00	967.145	48	4.0						
Average / Net		85.0		2.0	203.746	49.5	3.9						

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic			Sample Train No.	C	Filter No.:	NA	Run No.:	2	
Plant Name:	CUB				Leak Check Initial:	0.001	cfm@	16.5	(in. Hg)		
Plant Location:	Rio Rancho, NM				Leak Check Final:	0.001	cfm@	6.0	(in. Hg)		
Project No.:	31397-1600-00000				Total Traverse Points	Impinger	Initial	Final			
Sampling Location:	8s.4.2ab Inlet				24	1	736.5	756.9			
Date:	9/24/2003					2	641.1	644.9			
Technicians:	SCT/BG					3	654.7	656.3			
Meter Box No.:	90401				Y_d:	1.006		4	746.8	745.9	
Probe / Pitot No.:	NA / NA	C_p:	NA		5	638.7	638.0				
Nozzle No.:	NA	dH₀:	1.725	Stack Dia. (in.):	30.00	Stack Area (ft²):	4.91		6	789.4	817.7
Nozzle Dia:	NA			Port Width (in.):	0.75	Port Length (in.):	1.00	Start Time:	13:00	Net Impinger Gain (g):	52.5
Initial Meter Reading (ft³):	967.523	BP (in. Hg):	24.89	Static Pressure (in.):	0	End Time:	17:00	Theta	240		
Traverse Point	Elapsed Time	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Impinger Temp. (°F)	Pump Vac. (in. Hg)				
1	10	79	78	2.00	975.984	55	2.5				
1	20	86	78	2.00	984.560	44	2.5				
1	30	90	79	2.00	993.150	46	2.5				
1	40	92	80	2.00	1001.733	46	2.5				
1	50	93	81	2.00	1010.229	46	2.5				
1	60	93	81	2.00	1018.970	46	2.5				
1	70	81	94	2.00	1027.633	46	2.5				
1	80	94	82	2.00	1036.270	46	2.5				
1	90	94	83	2.00	1045.000	46	2.5				
1	100	94	83	2.00	1053.852	47	2.5				
1	110	83	94	2.00	1062.200	47	2.5				
1	120	83	94	2.00	1070.150	47	2.5				
1	130	83	95	2.00	1079.441	47	2.5				
1	140	95	83	2.00	1087.620	47	2.5				
1	150	95	84	2.00	1096.750	47	2.5				
1	160	95	84	2.00	1105.400	47	2.5				
1	170	95	83	2.00	1114.020	48	2.5				
1	180	95	83	2.00	1122.680	48	2.5				
1	190	95	84	2.00	1131.340	48	2.5				
1	200	95	84	2.00	1140.080	48	2.5				
1	210	95	84	2.00	1148.620	48	2.5				
1	220	95	83	2.00	1157.250	49	2.5				
1	230	95	83	2.00	1165.880	49	2.5				
1	240	95	83	2.00	1174.517	49	2.5				
Average / Net			87.7	2.0	206.994	47.4	2.5				

Scrubber Outlet 8s.4.2ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)	Cub Unknown (ppb)
8S_4_2AB OUTLET 09 24 03 SAMPLE_0015.LAE	9/24/2003 8:16	ND	465.14	591.35	1127.48	ND	2.48	0.1	ND	ND	150.51	1.006	0.005
8S_4_2AB OUTLET 09 24 03 SAMPLE_0016.LAE	9/24/2003 8:19	ND	463.30	595.32	1109.24	ND	2.49	0.1	ND	ND	150.51	1.001	0.007
8S_4_2AB OUTLET 09 24 03 SAMPLE_0017.LAE	9/24/2003 8:21	ND	448.14	569.39	1113.31	ND	2.48	0.1	ND	ND	150.51	1.006	0.007
8S_4_2AB OUTLET 09 24 03 SAMPLE_0018.LAE	9/24/2003 8:24	ND	437.55	556.71	1105.30	ND	2.48	0.1	ND	ND	150.51	1.006	0.008
8S_4_2AB OUTLET 09 24 03 SAMPLE_0019.LAE	9/24/2003 8:27	ND	455.11	553.76	1090.89	ND	2.47	0.1	ND	ND	150.51	1.006	0.009
8S_4_2AB OUTLET 09 24 03 SAMPLE_0020.LAE	9/24/2003 8:30	ND	449.34	536.87	1084.41	ND	2.49	0.1	ND	ND	150.51	1.001	0.010
8S_4_2AB OUTLET 09 24 03 SAMPLE_0021.LAE	9/24/2003 8:32	ND	468.84	517.40	1044.40	ND	2.48	0.1	ND	ND	150.51	1.001	0.001
8S_4_2AB OUTLET 09 24 03 SAMPLE_0022.LAE	9/24/2003 8:35	ND	453.27	521.15	1007.46	ND	2.47	0.1	ND	ND	150.51	1.001	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0023.LAE	9/24/2003 8:38	ND	444.75	507.28	1023.82	ND	2.48	0.1	ND	ND	150.51	1.001	0.000
8S_4_2AB OUTLET 09 24 03 SAMPLE_0024.LAE	9/24/2003 8:41	ND	422.88	495.07	1030.52	ND	2.46	0.1	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0025.LAE	9/24/2003 8:43	ND	464.17	523.97	1028.03	ND	2.46	0.1	ND	ND	150.51	1.006	0.002
8S_4_2AB OUTLET 09 24 03 SAMPLE_0026.LAE	9/24/2003 8:46	ND	471.29	502.66	1011.20	ND	2.45	0.1	ND	ND	150.51	1.006	0.005
8S_4_2AB OUTLET 09 24 03 SAMPLE_0027.LAE	9/24/2003 8:49	ND	489.49	484.83	980.49	ND	2.45	0.1	ND	ND	150.51	1.006	0.005
8S_4_2AB OUTLET 09 24 03 SAMPLE_0028.LAE	9/24/2003 8:52	ND	468.20	470.76	977.95	ND	2.45	0.1	ND	ND	150.51	1.006	0.001
8S_4_2AB OUTLET 09 24 03 SAMPLE_0029.LAE	9/24/2003 8:55	ND	430.66	466.80	958.02	ND	2.44	0.1	ND	ND	150.51	1.011	0.005
8S_4_2AB OUTLET 09 24 03 SAMPLE_0030.LAE	9/24/2003 8:57	ND	452.57	460.35	952.08	ND	2.45	0.1	ND	ND	150.51	1.006	0.002
8S_4_2AB OUTLET 09 24 03 SAMPLE_0031.LAE	9/24/2003 9:00	ND	464.61	433.87	949.44	ND	2.44	0.1	ND	ND	150.51	1.011	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0032.LAE	9/24/2003 9:03	ND	488.31	441.32	931.53	ND	2.43	0.1	ND	ND	150.51	1.011	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0033.LAE	9/24/2003 9:06	ND	492.15	435.67	923.68	ND	2.44	0.1	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0034.LAE	9/24/2003 9:08	ND	522.61	421.65	924.73	ND	2.46	0.1	ND	ND	150.51	1.001	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0035.LAE	9/24/2003 9:11	ND	528.38	404.81	899.12	ND	2.44	0.1	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0036.LAE	9/24/2003 9:14	ND	536.79	401.57	885.09	ND	2.43	0.1	ND	ND	150.51	1.011	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0037.LAE	9/24/2003 9:17	ND	530.18	395.64	886.38	ND	2.44	0.1	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0038.LAE	9/24/2003 9:19	ND	556.19	382.93	899.58	ND	2.46	0.1	ND	ND	150.51	1.001	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0039.LAE	9/24/2003 9:22	ND	542.05	390.43	875.97	ND	2.44	0.1	ND	ND	150.51	1.011	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0040.LAE	9/24/2003 9:25	ND	547.57	378.98	884.41	ND	2.45	0.1	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0041.LAE	9/24/2003 9:28	ND	541.59	373.99	877.40	ND	2.46	0.1	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0042.LAE	9/24/2003 9:30	ND	541.96	396.96	889.81	ND	2.46	0.1	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0043.LAE	9/24/2003 9:33	ND	558.04	378.87	892.83	ND	2.47	0.0	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0044.LAE	9/24/2003 9:36	ND	554.93	349.59	887.94	ND	2.48	0.0	ND	ND	150.51	1.001	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0045.LAE	9/24/2003 9:39	ND	564.48	346.27	888.70	ND	2.47	0.0	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0046.LAE	9/24/2003 9:42	ND	546.18	361.38	894.82	ND	2.48	0.0	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0047.LAE	9/24/2003 9:44	ND	550.14	363.99	899.31	ND	2.48	0.0	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0048.LAE	9/24/2003 9:47	ND	557.77	351.39	886.00	ND	2.48	0.0	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0049.LAE	9/24/2003 9:50	ND	574.02	ND	888.79	ND	2.47	0.0	ND	ND	150.51	1.011	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0050.LAE	9/24/2003 9:53	ND	590.78	ND	895.87	ND	2.49	0.0	ND	ND	150.51	1.001	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0051.LAE	9/24/2003 9:55	ND	582.24	ND	879.28	ND	2.48	0.0	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0052.LAE	9/24/2003 9:58	ND	566.48	ND	879.99	ND	2.48	0.0	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0053.LAE	9/24/2003 10:01	ND	564.72	ND	887.52	ND	2.48	0.0	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0054.LAE	9/24/2003 10:04	ND	575.76	ND	892.33	ND	2.49	0.0	ND	ND	150.51	1.001	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0055.LAE	9/24/2003 10:06	ND	590.35	ND	880.78	ND	2.50	0.0	ND	ND	150.51	1.001	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0056.LAE	9/24/2003 10:09	ND	563.88	ND	877.78	ND	2.48	0.0	ND	ND	150.51	1.006	ND
8S_4_2AB OUTLET 09 24 03 SAMPLE_0057.LAE	9/24/2003 10:12	ND	708.86	ND	690.99	ND	2.52	0.0	ND	ND	150.51	1.001	0.022
8S_4_2AB OUTLET 09 24 03 SAMPLE_0058.LAE	9/24/2003 10:15	ND	2453.21	403.64	260.81	ND	2.56	0.1	ND	ND	150.51	1.006	0.088
8S_4_2AB OUTLET 09 24 03 SAMPLE_0059.LAE	9/24/2003 10:18	ND	4780.25	450.02	158.02	ND	2.57	0.1	ND	ND	150.51	1.011	0.157
8S_4_2AB OUTLET 09 24 03 SAMPLE_0060.LAE	9/24/2003 10:20	ND	6592.44	489.28	ND	ND	2.60	0.1	ND	26.463	150.51	1.001	0.226
8S_4_2AB OUTLET 09 24 03 SAMPLE_0061.LAE	9/24/2003 10:23	ND	8208.44	514.69	ND	ND	2.58	0.1	ND	44.572	150.51	1.011	0.301
8S_4_2AB OUTLET 09 24 03 SAMPLE_0062.LAE	9/24/2003 10:26	ND	9465.87	577.56	153.12	ND	2.62	0.1	ND	51.393	150.51	1.001	0.382
8S_4_2AB OUTLET 09 24 03 SAMPLE_0063.LAE	9/24/2003 10:29	ND	10403.22	600.60	152.91	ND	2.62	0.1	ND	54.901	150.51	1.006	0.453
8S_4_2AB OUTLET 09 24 03 SAMPLE_0064.LAE	9/24/2003 10:31	ND	11234.17	624.87	158.36	ND	2.63	0.1	ND	60.285	150.51	1.006	0.520
8S_4_2AB OUTLET 09 24 03 SAMPLE_0065.LAE	9/24/2003 10:34	ND	11844.95	635.54	174.55	ND	2.63	0.1	ND	65.151	150.51	1.011	0.583
8S_4_2AB OUTLET 09 24 03 SAMPLE_0066.LAE	9/24/2003 10:37	ND	12369.27	641.27	173.33	ND	2.65	0.1	ND	67.725	150.51	1.006	0.653
8S_4_2AB OUTLET 09 24 03 SAMPLE_0067.LAE	9/24/2003 10:40	ND	12716.87	625.46	185.59	ND	2.65	0.1	ND	61.875	150.51	1.011	0.712
8S_4_2AB OUTLET 09 24 03 SAMPLE_0068.LAE	9/24/2003 10:42	ND	13151.90	623.07	202.37	ND	2.69	0.1	ND	68.963	150.51	1.001	0.787
8S_4_2AB OUTLET 09 24 03 SAMPLE_0069.LAE	9/24/2003 10:45	ND	13456.61	628.74	218.43	ND	2.68	0.1	ND	80.728	150.51	1.006	0.845
8S_4_2AB OUTLET 09 24 03 SAMPLE_0070.LAE	9/24/2003 10:48	ND	13880.04	623.81	211.95	ND	2.67	0.1	ND	93.444	150.51	1.011	0.901
8S_4_2AB OUTLET 09 24 03 SAMPLE_0071.LAE	9/24/2003 10:51	ND	14099.38	613.60	238.15	ND	2.68	0.1	ND	98.698	150.51	1.011	0.951
8S_4_2AB OUTLET 09 24 03 SAMPLE_0072.LAE	9/24/2003 10:53	ND	14655.87	634.52	244.92	ND	2.70	0.1	ND	112.539	150.51	1.006	1.026
8S_4_2AB OUTLET 09 24 03 SAMPLE_0073.LAE	9/24/2003 10:56	ND	15480.69	632.94	267.11	ND	2.73	0.1	ND	119.672	150.51	1.001	1.090
8S_4_2AB OUTLET 09 24 03 SAMPLE_0074.LAE	9/24/2003 10:59	ND	15297.28	624.91	274.87	ND	2.71	0.1	ND	129.470	150.51	1.006	1.134
8S_4_2AB OUTLET 09 24 03 SAMPLE_0075.LAE	9/24/2003 11:02	ND	15416.76	615.48	286.00	ND	2.72	0.1	ND	135.880	150.51	1.006	1.188
8S_4_2AB OUTLET 09 24 03 SAMPLE_0076.LAE	9/24/2003 11:05	ND	15625.14	634.83	270.31	ND	2.73	0.1	ND	153.445	150.51	1.006	1.215
8S_4_2AB OUTLET 09 24 03 SAMPLE_0077.LAE	9/24/2003 11:07	ND	15955.85	616.03	285.24	ND	2.76	0.1	ND	157.936	150.51	1.001	1.270
8S_4_2AB OUTLET 09 24 03 SAMPLE_0078.LAE	9/24/2003 11:10	ND	16321.33	613.21	284.18	ND	2.76	0.1	ND	152.281	150.51	1.006	1.319
8S_4_2AB OUTLET 09 24 03 SAMPLE_0079.LAE	9/24/2003 11:13	ND	16535.28	620.26	290.20	ND	2.77	0.1	ND	159.579	150.51	1.006	1.368
8S_4_2AB OUTLET 09 24 03 SAMPLE_0080.LAE	9/24/2003 11:16	ND	17143.29	604.90	289.41	ND	2.78	0.1	ND	166.322	150.51	1.011	1.420
8S_4_2AB OUTLET 09 24 03 SAMPLE_0081.LAE	9/24/2003 11:18	ND	17469.81	601.63	295.68	ND	2.80	0.1	ND	170.631	150.51	1.006	1.471
8S_4_2AB OUTLET 09 24 03 SAMPLE_0082.LAE	9/24/2003 11:21	ND	36816.68	727.01	538.66	ND	2.97	0.1	ND	349.642	150.51	1.001	2.640
8S_4_2AB OUTLET 09 24 03 SAMPLE_0083.LAE	9/24/2003 11:24	ND	22843.11	667.29	234.20	ND	2.86	0.1	ND	158.137	150.51	1.001	1.244

Scrubber Outlet 8s.4.2ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)	Cub Unknown (ppb)
8S_4_2AB OUTLET 09 24 03 SAMPLE_0084.LAE	9/24/2003 11:27	ND	15346.54	596.07	200.24	ND	2.83	0.1	ND	121.645	150.51	1.001	1.065
8S_4_2AB OUTLET 09 24 03 SAMPLE_0085.LAE	9/24/2003 11:29	ND	10518.58	554.52	210.44	ND	2.80	0.1	ND	107.899	150.51	1.001	0.979
8S_4_2AB OUTLET 09 24 03 SAMPLE_0086.LAE	9/24/2003 11:32	ND	11443.60	535.97	177.35	ND	2.80	0.1	ND	101.361	150.51	1.001	0.892
8S_4_2AB OUTLET 09 24 03 SAMPLE_0087.LAE	9/24/2003 11:35	ND	10689.25	537.40	155.61	ND	2.79	0.1	ND	83.782	150.51	1.006	0.785
8S_4_2AB OUTLET 09 24 03 SAMPLE_0088.LAE	9/24/2003 11:38	ND	9459.75	524.26	151.48	ND	2.80	0.1	ND	72.931	150.51	1.001	0.717
8S_4_2AB OUTLET 09 24 03 SAMPLE_0089.LAE	9/24/2003 11:41	ND	8717.92	497.85	ND	ND	2.79	0.1	ND	63.856	150.51	1.001	0.657
8S_4_2AB OUTLET 09 24 03 SAMPLE_0090.LAE	9/24/2003 11:43	ND	8137.13	488.34	ND	ND	2.80	0.1	ND	56.163	150.51	1.001	0.610
8S_4_2AB OUTLET 09 24 03 SAMPLE_0091.LAE	9/24/2003 11:46	ND	7544.99	463.56	ND	ND	2.80	0.1	ND	50.146	150.51	1.001	0.580
8S_4_2AB OUTLET 09 24 03 SAMPLE_0092.LAE	9/24/2003 11:49	ND	6939.98	453.61	ND	ND	2.80	0.1	ND	37.980	150.51	1.001	0.537
8S_4_2AB OUTLET 09 24 03 SAMPLE_0093.LAE	9/24/2003 11:52	ND	7134.72	476.76	176.81	ND	2.95	0.1	ND	35.828	150.51	1.001	0.516
8S_4_2AB OUTLET 09 24 03 SAMPLE_0094.LAE	9/24/2003 11:54	ND	5751.94	470.82	159.87	ND	3.12	0.1	ND	32.169	150.51	1.006	0.477
8S_4_2AB OUTLET 09 24 03 SAMPLE_0095.LAE	9/24/2003 11:57	ND	6319.31	495.39	ND	ND	3.17	0.1	ND	25.728	150.51	1.006	0.443
8S_4_2AB OUTLET 09 24 03 SAMPLE_0096.LAE	9/24/2003 12:00	ND	6037.42	467.91	ND	ND	3.14	0.1	ND	22.249	150.51	1.001	0.427
8S_4_2AB OUTLET 09 24 03 SAMPLE_0097.LAE	9/24/2003 12:03	ND	5494.88	451.08	ND	ND	3.06	0.1	ND	27.618	150.51	1.006	0.388
8S_4_2AB OUTLET 09 24 03 SAMPLE_0098.LAE	9/24/2003 12:05	ND	5200.31	412.65	ND	ND	3.00	0.1	ND	ND	150.51	1.011	0.366
8S_4_2AB OUTLET 09 24 03 SAMPLE_0099.LAE	9/24/2003 12:08	ND	4931.00	418.37	ND	ND	2.98	0.1	ND	ND	150.51	1.001	0.359
8S_4_2AB OUTLET 09 24 03 SAMPLE_0100.LAE	9/24/2003 12:11	ND	4756.39	391.98	151.47	ND	2.92	0.1	ND	21.785	150.51	1.006	0.351
8S_4_2AB OUTLET 09 24 03 SAMPLE_0110.LAE	9/24/2003 12:59	ND	2630.82	433.62	ND	ND	3.13	0.1	ND	ND	150.51	1.001	0.184
8S_4_2AB OUTLET 09 24 03 SAMPLE_0111.LAE	9/24/2003 13:02	ND	2651.31	426.21	ND	ND	3.13	0.1	ND	ND	150.51	1.001	0.171
8S_4_2AB OUTLET 09 24 03 SAMPLE_0112.LAE	9/24/2003 13:05	ND	2679.76	422.44	ND	ND	3.13	0.1	ND	ND	150.51	1.001	0.166
8S_4_2AB OUTLET 09 24 03 SAMPLE_0113.LAE	9/24/2003 13:08	ND	2425.13	456.87	ND	ND	3.12	0.1	ND	ND	150.51	1.001	0.167
8S_4_2AB OUTLET 09 24 03 SAMPLE_0114.LAE	9/24/2003 13:10	ND	2560.07	433.31	ND	ND	3.10	0.1	ND	ND	150.51	1.006	0.160
8S_4_2AB OUTLET 09 24 03 SAMPLE_0115.LAE	9/24/2003 13:13	ND	2603.53	427.73	ND	ND	3.10	0.1	ND	ND	150.51	1.006	0.154
8S_4_2AB OUTLET 09 24 03 SAMPLE_0116.LAE	9/24/2003 13:16	ND	2700.06	409.39	ND	ND	3.11	0.1	ND	ND	151.25	1.001	0.144
8S_4_2AB OUTLET 09 24 03 SAMPLE_0117.LAE	9/24/2003 13:19	ND	2813.32	409.29	ND	ND	3.10	0.1	ND	ND	150.51	1.001	0.133
8S_4_2AB OUTLET 09 24 03 SAMPLE_0118.LAE	9/24/2003 13:22	ND	2872.21	407.29	ND	ND	3.09	0.1	ND	ND	150.51	1.001	0.118
8S_4_2AB OUTLET 09 24 03 SAMPLE_0119.LAE	9/24/2003 13:24	ND	2828.73	407.34	ND	ND	3.08	0.1	ND	ND	150.51	1.006	0.104
8S_4_2AB OUTLET 09 24 03 SAMPLE_0120.LAE	9/24/2003 13:27	ND	2777.34	398.28	ND	ND	3.08	0.1	ND	ND	150.51	1.006	0.103
8S_4_2AB OUTLET 09 24 03 SAMPLE_0121.LAE	9/24/2003 13:30	ND	2764.55	371.87	ND	ND	3.07	0.1	ND	ND	150.51	1.006	0.101
8S_4_2AB OUTLET 09 24 03 SAMPLE_0122.LAE	9/24/2003 13:33	ND	2775.51	383.23	ND	ND	3.09	0.1	ND	ND	150.51	1.001	0.094
8S_4_2AB OUTLET 09 24 03 SAMPLE_0123.LAE	9/24/2003 13:35	ND	2595.34	369.85	ND	ND	3.08	0.1	ND	ND	150.51	1.001	0.085
8S_4_2AB OUTLET 09 24 03 SAMPLE_0124.LAE	9/24/2003 13:38	ND	2599.64	378.40	ND	ND	3.06	0.1	ND	ND	150.51	1.006	0.080
8S_4_2AB OUTLET 09 24 03 SAMPLE_0125.LAE	9/24/2003 13:41	ND	2675.43	372.61	ND	ND	3.06	0.1	ND	ND	150.51	1.006	0.072
8S_4_2AB OUTLET 09 24 03 SAMPLE_0126.LAE	9/24/2003 13:44	ND	2755.59	356.54	ND	ND	3.06	0.1	ND	ND	150.51	1.006	0.072
8S_4_2AB OUTLET 09 24 03 SAMPLE_0127.LAE	9/24/2003 13:46	ND	2749.41	361.12	ND	ND	3.07	0.1	ND	ND	150.51	1.006	0.072
8S_4_2AB OUTLET 09 24 03 SAMPLE_0128.LAE	9/24/2003 13:49	ND	2726.63	379.64	ND	ND	3.06	0.1	ND	ND	150.51	1.006	0.068
8S_4_2AB OUTLET 09 24 03 SAMPLE_0129.LAE	9/24/2003 13:52	ND	2718.66	389.22	ND	ND	3.06	0.1	ND	ND	150.51	1.006	0.066
8S_4_2AB OUTLET 09 24 03 SAMPLE_0130.LAE	9/24/2003 13:55	ND	2885.68	378.33	ND	ND	3.08	0.1	ND	ND	150.51	1.001	0.069
8S_4_2AB OUTLET 09 24 03 SAMPLE_0131.LAE	9/24/2003 13:58	ND	3149.28	391.96	ND	ND	3.07	0.1	ND	ND	151.25	1.006	0.065
8S_4_2AB OUTLET 09 24 03 SAMPLE_0132.LAE	9/24/2003 14:00	ND	3428.64	386.83	ND	ND	3.05	0.1	ND	ND	150.51	1.001	0.061
8S_4_2AB OUTLET 09 24 03 SAMPLE_0133.LAE	9/24/2003 14:03	ND	3603.51	350.57	ND	ND	2.99	0.1	ND	ND	150.51	1.006	0.056
8S_4_2AB OUTLET 09 24 03 SAMPLE_0134.LAE	9/24/2003 14:06	ND	3615.20	372.70	ND	ND	2.95	0.1	ND	ND	150.51	1.001	0.057
8S_4_2AB OUTLET 09 24 03 SAMPLE_0135.LAE	9/24/2003 14:09	ND	3568.57	ND	ND	ND	2.91	0.1	ND	ND	150.51	1.001	0.058
8S_4_2AB OUTLET 09 24 03 SAMPLE_0136.LAE	9/24/2003 14:11	ND	3560.01	360.83	ND	ND	2.90	0.1	ND	ND	151.25	1.001	0.053
8S_4_2AB OUTLET 09 24 03 SAMPLE_0137.LAE	9/24/2003 14:14	ND	3558.71	354.10	ND	ND	2.87	0.1	ND	ND	150.51	1.006	0.055
8S_4_2AB OUTLET 09 24 03 SAMPLE_0138.LAE	9/24/2003 14:17	ND	3761.46	350.08	ND	ND	2.87	0.1	ND	ND	150.51	1.006	0.053
8S_4_2AB OUTLET 09 24 03 SAMPLE_0139.LAE	9/24/2003 14:20	ND	3835.68	356.58	ND	ND	2.90	0.1	ND	ND	150.51	1.001	0.050

Scrubber Outlet 8s.4.2ab FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 HAP MONITORING

Spectrum	Date & Time	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)	Temp (°C)	Press. (Atm)	Cub Unknown (ppb)
8S_4_2AB OUTLET 09 24 03 SAMPLE_0140.LAE	9/24/2003 14:22	ND	3880.42	345.15	ND	ND	2.89	0.1	ND	ND	150.51	1.006	0.057
8S_4_2AB OUTLET 09 24 03 SAMPLE_0141.LAE	9/24/2003 14:25	ND	3951.82	357.91	ND	ND	2.91	0.1	ND	ND	150.51	1.001	0.054
8S_4_2AB OUTLET 09 24 03 SAMPLE_0142.LAE	9/24/2003 14:28	ND	3841.34	350.80	ND	ND	2.91	0.1	ND	ND	150.51	1.006	0.045
8S_4_2AB OUTLET 09 24 03 SAMPLE_0143.LAE	9/24/2003 14:31	ND	3796.52	347.32	ND	ND	2.92	0.1	ND	ND	150.51	1.006	0.040
8S_4_2AB OUTLET 09 24 03 SAMPLE_0144.LAE	9/24/2003 14:34	ND	3963.24	346.92	ND	ND	2.94	0.1	ND	ND	150.51	1.006	0.042
8S_4_2AB OUTLET 09 24 03 SAMPLE_0145.LAE	9/24/2003 14:36	ND	3995.08	ND	ND	ND	2.97	0.1	ND	ND	150.51	1.001	0.034
8S_4_2AB OUTLET 09 24 03 SAMPLE_0146.LAE	9/24/2003 14:39	ND	4086.50	ND	ND	ND	2.98	0.1	ND	ND	150.51	1.006	0.032
8S_4_2AB OUTLET 09 24 03 SAMPLE_0147.LAE	9/24/2003 14:42	ND	4048.31	348.67	ND	ND	3.01	0.1	ND	ND	150.51	1.001	0.032
8S_4_2AB OUTLET 09 24 03 SAMPLE_0148.LAE	9/24/2003 14:45	ND	3950.38	364.01	ND	ND	3.02	0.1	ND	ND	150.51	1.001	0.029
8S_4_2AB OUTLET 09 24 03 SAMPLE_0149.LAE	9/24/2003 14:47	ND	3713.15	355.20	ND	ND	3.01	0.1	ND	ND	150.51	1.006	0.025
8S_4_2AB OUTLET 09 24 03 SAMPLE_0150.LAE	9/24/2003 14:50	ND	3995.62	372.27	ND	ND	3.03	0.1	ND	ND	150.51	1.006	0.023
8S_4_2AB OUTLET 09 24 03 SAMPLE_0151.LAE	9/24/2003 14:53	ND	3931.13	360.51	ND	ND	3.05	0.1	ND	ND	150.51	1.001	0.015
8S_4_2AB OUTLET 09 24 03 SAMPLE_0152.LAE	9/24/2003 14:56	ND	4252.10	ND	ND	ND	3.05	0.1	ND	ND	150.51	1.006	0.018
8S_4_2AB OUTLET 09 24 03 SAMPLE_0153.LAE	9/24/2003 14:58	ND	4558.27	352.81	ND	ND	3.03	0.1	ND	ND	150.51	1.001	0.016
8S_4_2AB OUTLET 09 24 03 SAMPLE_0154.LAE	9/24/2003 15:01	ND	4552.29	355.32	ND	ND	2.97	0.1	ND	ND	150.51	1.001	0.013
8S_4_2AB OUTLET 09 24 03 SAMPLE_0155.LAE	9/24/2003 15:04	ND	4475.17	ND	ND	ND	2.92	0.1	ND	ND	150.51	1.001	0.018
8S_4_2AB OUTLET 09 24 03 SAMPLE_0156.LAE	9/24/2003 15:07	ND	4178.58	ND	ND	ND	2.88	0.1	ND	ND	150.51	1.001	0.013
8S_4_2AB OUTLET 09 24 03 SAMPLE_0157.LAE	9/24/2003 15:10	ND	4163.00	ND	ND	ND	2.84	0.1	ND	ND	150.51	1.006	0.015
8S_4_2AB OUTLET 09 24 03 SAMPLE_0158.LAE	9/24/2003 15:12	ND	4197.87	343.46	ND	ND	2.83	0.1	ND	ND	150.51	1.001	0.013
8S_4_2AB OUTLET 09 24 03 SAMPLE_0159.LAE	9/24/2003 15:15	ND	4091.76	ND	ND	ND	2.82	0.1	ND	ND	150.51	1.001	0.016
8S_4_2AB OUTLET 09 24 03 SAMPLE_0160.LAE	9/24/2003 15:18	ND	4162.82	ND	ND	ND	2.80	0.1	ND	ND	150.51	1.001	0.020
8S_4_2AB OUTLET 09 24 03 SAMPLE_0161.LAE	9/24/2003 15:21	ND	4141.42	ND	ND	ND	2.76	0.1	ND	ND	150.51	1.006	0.016
8S_4_2AB OUTLET 09 24 03 SAMPLE_0162.LAE	9/24/2003 15:23	ND	4075.37	ND	ND	ND	2.75	0.1	ND	ND	150.51	1.001	0.020
8S_4_2AB OUTLET 09 24 03 SAMPLE_0163.LAE	9/24/2003 15:26	ND	4121.74	ND	ND	ND	2.72	0.1	ND	ND	150.51	1.001	0.032
8S_4_2AB OUTLET 09 24 03 SAMPLE_0164.LAE	9/24/2003 15:29	ND	3880.51	ND	ND	ND	2.69	0.1	ND	ND	150.51	1.006	0.026
8S_4_2AB OUTLET 09 24 03 SAMPLE_0165.LAE	9/24/2003 15:32	ND	3987.88	ND	ND	ND	2.70	0.1	ND	ND	150.51	1.001	0.024
8S_4_2AB OUTLET 09 24 03 SAMPLE_0166.LAE	9/24/2003 15:34	ND	4020.12	ND	ND	ND	2.68	0.1	ND	ND	150.51	1.006	0.023
8S_4_2AB OUTLET 09 24 03 SAMPLE_0167.LAE	9/24/2003 15:37	ND	3970.77	ND	ND	ND	2.69	0.1	ND	ND	150.51	1.001	0.025
8S_4_2AB OUTLET 09 24 03 SAMPLE_0168.LAE	9/24/2003 15:40	ND	3974.92	ND	ND	ND	2.68	0.1	ND	ND	150.51	1.001	0.022
8S_4_2AB OUTLET 09 24 03 SAMPLE_0169.LAE	9/24/2003 15:43	ND	4064.81	ND	ND	ND	2.66	0.1	ND	ND	150.51	1.006	0.020
8S_4_2AB OUTLET 09 24 03 SAMPLE_0170.LAE	9/24/2003 15:46	ND	3987.04	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.006	0.017
8S_4_2AB OUTLET 09 24 03 SAMPLE_0171.LAE	9/24/2003 15:48	ND	3895.10	ND	ND	ND	2.66	0.1	ND	ND	150.51	1.001	0.015
8S_4_2AB OUTLET 09 24 03 SAMPLE_0172.LAE	9/24/2003 15:51	ND	3726.03	ND	ND	ND	2.66	0.1	ND	ND	150.51	1.001	0.019
8S_4_2AB OUTLET 09 24 03 SAMPLE_0173.LAE	9/24/2003 15:54	ND	3633.89	ND	ND	ND	2.64	0.1	ND	ND	150.51	1.006	0.017
8S_4_2AB OUTLET 09 24 03 SAMPLE_0174.LAE	9/24/2003 15:57	ND	3533.00	ND	ND	ND	2.64	0.1	ND	ND	150.51	1.006	0.016
8S_4_2AB OUTLET 09 24 03 SAMPLE_0175.LAE	9/24/2003 15:59	ND	3515.50	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.006	0.016
8S_4_2AB OUTLET 09 24 03 SAMPLE_0176.LAE	9/24/2003 16:02	ND	3739.22	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.006	0.019
8S_4_2AB OUTLET 09 24 03 SAMPLE_0177.LAE	9/24/2003 16:05	ND	3739.10	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.006	0.016
8S_4_2AB OUTLET 09 24 03 SAMPLE_0178.LAE	9/24/2003 16:08	ND	3621.98	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.006	0.018
8S_4_2AB OUTLET 09 24 03 SAMPLE_0179.LAE	9/24/2003 16:10	ND	3567.94	ND	ND	ND	2.66	0.1	ND	ND	150.51	1.001	0.015
8S_4_2AB OUTLET 09 24 03 SAMPLE_0180.LAE	9/24/2003 16:13	ND	3499.92	ND	ND	ND	2.66	0.1	ND	ND	150.51	1.001	0.013
8S_4_2AB OUTLET 09 24 03 SAMPLE_0181.LAE	9/24/2003 16:16	ND	3454.93	ND	ND	ND	2.66	0.1	ND	ND	150.51	1.001	0.011
8S_4_2AB OUTLET 09 24 03 SAMPLE_0182.LAE	9/24/2003 16:19	ND	3455.06	ND	ND	ND	2.66	0.1	ND	ND	150.51	1.001	0.010
8S_4_2AB OUTLET 09 24 03 SAMPLE_0183.LAE	9/24/2003 16:22	ND	3500.39	ND	ND	ND	2.66	0.1	ND	ND	150.51	1.001	0.010
8S_4_2AB OUTLET 09 24 03 SAMPLE_0184.LAE	9/24/2003 16:24	ND	3590.11	ND	ND	ND	2.66	0.1	ND	ND	150.51	1.001	0.011
8S_4_2AB OUTLET 09 24 03 SAMPLE_0185.LAE	9/24/2003 16:27	ND	3448.99	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.001	0.012
8S_4_2AB OUTLET 09 24 03 SAMPLE_0186.LAE	9/24/2003 16:30	ND	3396.32	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.001	0.011
8S_4_2AB OUTLET 09 24 03 SAMPLE_0187.LAE	9/24/2003 16:33	ND	3477.96	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.001	0.013
8S_4_2AB OUTLET 09 24 03 SAMPLE_0188.LAE	9/24/2003 16:35	ND	3351.71	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.001	0.016
8S_4_2AB OUTLET 09 24 03 SAMPLE_0189.LAE	9/24/2003 16:38	ND	3365.02	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.001	0.016
8S_4_2AB OUTLET 09 24 03 SAMPLE_0190.LAE	9/24/2003 16:41	ND	3293.32	ND	ND	ND	2.63	0.1	ND	ND	150.51	1.006	0.015
8S_4_2AB OUTLET 09 24 03 SAMPLE_0191.LAE	9/24/2003 16:44	ND	3345.68	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.001	0.016
8S_4_2AB OUTLET 09 24 03 SAMPLE_0192.LAE	9/24/2003 16:46	ND	3352.67	ND	ND	ND	2.63	0.1	ND	ND	150.51	1.006	0.014
8S_4_2AB OUTLET 09 24 03 SAMPLE_0193.LAE	9/24/2003 16:49	ND	3302.97	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.001	0.012
8S_4_2AB OUTLET 09 24 03 SAMPLE_0194.LAE	9/24/2003 16:52	ND	3319.78	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.001	0.012
8S_4_2AB OUTLET 09 24 03 SAMPLE_0195.LAE	9/24/2003 16:55	ND	3324.50	ND	ND	ND	2.65	0.1	ND	ND	150.51	1.001	0.011
8S_4_2AB OUTLET 09 24 03 SAMPLE_0196.LAE	9/24/2003 16:58	ND	3390.85	ND	ND	ND	2.64	0.1	ND	ND	150.51	1.006	0.013
8S_4_2AB OUTLET 09 24 03 SAMPLE_0197.LAE	9/24/2003 17:00	ND	3449.89	ND	ND	ND	2.63	0.1	ND	ND	150.51	1.006	0.012

Average_{wet} ND 4,770 424.33 360.97 ND 2.74 0.06 ND 34.23 150.52 1.004 0.22

Reference Method Calculations

CUB

8s.4.2ab Outlet

Run No.	Run 1	Run 2	
Date	9/24/2003	9/24/2003	
Start Time	8:10	13:08	AVERAGE
Stop Time	12:10	17:08	
Test Elapsed time (min)	240	240	240
Barometric Pressure (in. Hg)	25.10	25.10	25.10
Orifice calibration Factor	1.721	1.721	1.721
Dry Gas Meter Calibration Factor	0.999	0.999	0.999
Average Meter Temperature (°F)	76.4	98.1	87.2
Volume Metered (acf)	147.403	210.155	178.779
Volume Metered (dscf)	121.899	167.493	144.696
Volume of Water Collected (g)	54.8	93.3	74.0
Volume of Water Collected (scf)	2.584	4.399	3.491
Average Delta H (in. H ₂ O)	0.95	1.89	1.42
AVG SQRT of dH (in. H ₂ O)	0.9751	1.3755	1.1753
Measured Moisture (%)	2.1%	2.6%	2.3%
Saturation Moisture (%)	2.0%	2.3%	2.2%
Moisture Used for Calculations (%)	2.0%	2.3%	2.2%
Oxygen Concentration (%)	20.9	20.9	20.9
Carbon Dioxide Concentration (%)	0.1	0.1	0.1
Nitrogen Concentration (%)	79.0	79.0	79.0
Dry Molecular Weight (lb/lbmole)	28.85	28.85	28.85
Wet Molecular Weight (lb/lbmole)	28.63	28.60	28.61
Pitot Coefficient	0.84	0.84	0.84
Stack Static Pressure (in. H ₂ O)	-0.16	-0.16	-0.16
Stack Pressure (in. Hg)	25.09	25.09	25.09
AVG SQRT of dP Isokinetic Traverse (in. H ₂ O)	0.3877	0.3936	0.3907
AVG SQRT of dP Flow Traverse (in. H ₂ O)	0.3861	0.3795	0.3828
Stack Temperature Isokinetic Traverse (°F)	59.8	63.5	61.7
Stack Temperature Flow Traverse (°F)	62.9	66.7	64.8
Velocity (ft/sec) Isokinetic Traverse	23.69	24.15	23.92
Velocity (ft/sec) Flow Traverse	23.66	23.35	23.50
Nozzle Diameter (in.)	0.280	0.327	0.304
% Isokinetics	100.20	100.03	100.1
Stack Diameter (in.)	30.00	30.00	30.00
Stack Area (ft ²)	4.91	4.91	4.91
Stack Flow Rate Isokinetic Traverse (acfm)	6,977	7,112	7,045
Stack Flow Rate Flow Traverse (acfm)	6,967	6,877	6,922
Stack Flow Rate Outlet Isokinetic Traverse (dscfm)	5,820	5,873	5,847
Stack Flow Rate Outlet Flow Traverse (dscfm)	5,778	5,645	5,711
Chlorine			
Collected Cl ₂ micrograms (ug)	144.0	72.4	108.2
Cl ₂ Concentration (ug/dscf)	1.18	0.43	0.81
Cl ₂ Concentration (ppb)	14	5	10
Cl ₂ Emission Rate (lbs/hr)	0.0009	0.0003	0.0006
Ammonia			
Collected NH ₃ micrograms (ug)	11200	11300	11250.00
NH ₃ Concentration (ug/dscf)	91.88	67.47	79.67
NH ₃ Concentration (ppb)	4,585	3,367	3,976
NH ₃ Emission Rate (lbs/hr)	0.0702	0.0504	0.0603

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant: Intel Rio Rancho, NM	Date: 9/24/2003
Unit Number: 8s.4.2ab Outlet	Stack Diameter (in.): 30.00
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.16
Run No.: 1	Operators: PER/SCT
Project No.: 31397-1600-00000	Barometric Pressure (in.Hg): 25.10
Pitot Tube ID: HA-1	Pre Test PassFail Pitot Leak Check <u>Y</u> <u> </u>
Pitot Tube C_p: 0.84	
Actual Stack CO₂: 0.1 % O₂: 20.9 % H₂O: 2 %	
Comments :	
	Post Test PassFail Pitot Leak Check <u>Y</u> <u> </u>
	Start: 12:37 End: 12:49

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.21	63
2	0.18	62
3	0.16	61
4	0.14	62
5	0.12	62
6	0.11	61
7	0.16	62
8	0.17	63
9	0.15	63
10	0.17	62
11	0.16	62
12	0.12	67

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.19	62
2	0.17	62
3	0.16	62
4	0.15	63
5	0.14	63
6	0.13	63
7	0.12	63
8	0.13	63
9	0.13	64
10	0.14	64
11	0.16	65
12	0.13	66
Total Average:	sqrt dp = 0.3861	62.9

**EPA REFERENCE METHOD 2
VELOCITY TRAVERSE
FIELD DATA SHEET**

Plant:	Intel Rio Rancho, NM	Date:	9/24/2003
Unit Number:	8s.4.2ab Outlet	Stack Diameter (in.):	30.00
Load Condition:	Normal	Stack Gauge Pressure (in.H₂O):	-0.16
Run No.:	2	Operators:	PER/SCT
Project No.:	31397-1600-00000	Barometric Pressure (in.Hg):	25.10
Pitot Tube ID:	HA-1	Pre Test	
Pitot Tube C_p:	0.84	Pass	Fail
Actual Stack	CO₂: 0.1 % O₂: 20.9 % H₂O: 2.3 %	Pitot Leak Check	<u>Y</u> <u> </u>
Comments :		Post Test	
		Pass	Fail
		Pitot Leak Check	<u>Y</u> <u> </u>
		Start:	17:23
		End:	17:34

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.20	68
2	0.17	67
3	0.15	67
4	0.13	67
5	0.11	67
6	0.11	67
7	0.16	66
8	0.17	66
9	0.17	66
10	0.16	68
11	0.16	68
12	0.13	72

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.17	66
2	0.17	66
3	0.16	66
4	0.15	65
5	0.13	66
6	0.11	66
7	0.11	66
8	0.12	66
9	0.13	66
10	0.14	66
11	0.14	66
12	0.13	67
Total Average:	sqrt dp = 0.3795	66.7

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Location Notes and Comments				Sample Train No. AA		Filter No.: NA		Run No.: 1	
Plant Name:	CUB					Leak Check Initial: 0.001 cfm@ 11 (in. Hg)					
Plant Location:	Rio Rancho, NM					Leak Check Final: 0.000 cfm@ 2 (in. Hg)					
Project No.:	31397-1600-00000					Total Traverse Points		Impinger	Initial	Final	
Sampling Location:	8s.4.2ab Outlet					24		1	648.4	656.6	
Date:	9/24/2003							2	735.8	755.0	
Technicians:	PER/SCT							3	535.7	539.4	
Meter Box No.: 90394	Y_d: 0.999			4	640.9	644.9					
Probe/Pitot No 401 / HA-1	C_p: 0.84			5	650.1	650.3					
Nozzle No.: NA	dH₀: 1.721	Stack Dia. (in.): 30.00	Stack Area (ft²): 4.91	6	833.9	853.4					
Nozzle Dia: 0.280	0.280, 0.280, 0.279	Port Width (in.): 4.00	Port Length (in.): 4.50	Start Time: 8:10 Net Impinger Gain (g): 54.8							
Initial Meter Reading (ft³):	318.191	BP (in. Hg): 25.10	Static Pressure (in.): -0.16	End Time: 12:10 Theta 240							
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)
S 2	10	60	55	55	0.160	0.98	324.100	237	248	47	1
S 2	20	60	63	58	0.150	0.92	329.950	237	249	42	1
S 2	30	59	67	59	0.150	0.94	335.980	252	247	46	1
S 2	40	59	70	64	0.150	0.94	342.100	251	248	50	1
S 2	50	59	70	65	0.150	0.94	348.220	250	248	50	1
S 2	60	59	72	66	0.150	0.94	354.220	252	248	50	1
S 2	70	59	73	68	0.140	0.90	360.000	252	247	51	1
S 2	80	59	74	69	0.140	0.90	365.900	251	248	53	1
S 2	90	59	75	72	0.150	0.90	372.000	249	247	55	1
S 2	100	59	74	72	0.140	0.89	378.000	249	247	55	1
S 2	110	59	74	72	0.140	0.89	384.000	247	247	56	1
S 2	120	59	76	72	0.140	0.89	389.780	249	248	52	1
S 2	130	59	77	73	0.150	0.95	396.000	250	248	49	1
S 2	140	59	78	74	0.160	1.00	402.300	251	248	49	1
S 2	150	60	80	76	0.160	1.00	408.700	254	247	51	1
S 2	160	60	81	76	0.160	1.00	415.000	254	249	51	1
S 2	170	61	87	81	0.150	0.97	421.200	252	250	52	1
S 2	180	60	90	81	0.160	1.00	427.580	257	251	53	1
S 2	190	60	90	83	0.160	1.00	433.950	254	247	55	1
S 2	200	60	93	84	0.150	0.98	440.210	257	250	58	1
S 2	210	61	94	87	0.150	0.98	446.630	255	249	56	1
S 2	220	61	92	86	0.150	0.98	452.950	257	246	56	1
S 2	230	61	95	87	0.150	0.97	459.250	258	250	53	1
S 2	240	64	96	89	0.150	0.97	465.594	244	249	52	1
Average / Net		59.8		76.4	0.2	1.0	147.403	250.8	248.2	51.8	1.0

ISOKINETIC
FIELD DATA SHEET

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Client:	Intel	Test Location Schematic changed nozzle to .327 Suspected High Moisture Content and wanted to assure Adequate sample volume.					Sample Train No. SF		Filter No.: NA		Run No.: 2	
Plant Name:	CUB						Leak Check Initial: 0.003 cfm@ 12 (in. Hg)					
Plant Location:	Rio Rancho, NM						Leak Check Final: 0.004 cfm@ 11.5 (in. Hg)					
Project No.:	31397-1600-00000						Total Traverse Points	Impinger	Initial	Final		
Sampling Location:	8s.4.2ab Outlet						24	1	591.3	623.6		
Date:	9/24/2003							2	629.6	644.7		
Technicians:	PER/SCT							3	644.4	651.2		
Meter Box No.: 90394	Y _d : 0.999		4	638.2	642.3							
Probe / Pitot No.: 401 / HA-1	C _p : 0.84		5	642.4	642.0							
Nozzle No.: NA	dH _g : 1.721	Stack Dia. (in.): 30.00	Stack Area (ft²): 4.91		6	879.0	914.4					
Nozzle Dia: 0.327	0.280, 0.280, 0.279	Port Width (in.): 4.00	Port Length (in.): 4.50		Start Time: 13:08		Net Impinger Gain (g): 93.3					
Initial Meter Reading (ft³):	465.659	BP (in. Hg): 25.10	Static Pressure (in.): -0.16		End Time: 17:08		Theta 240					
Traverse Point	Elapsed Time	Stack Temp. (°F)	Meter Inlet Temp. (°F)	Meter Outlet Temp. (°F)	Stack Pressure Head (dP) (in. H₂O)	Orifice Setting (dH) (in. H₂O)	Gas Meter Reading (ft³)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Pump Vac. (in. Hg)	
S 2	10	67	92	92	0.150	1.79	474.200	247	238	58	3.0	
S 2	20	65	96	92	0.150	1.80	482.800	266	268	50	3.0	
S 2	30	67	98	94	0.150	1.80	491.380	247	244	53	3.0	
S 2	40	64	105	94	0.150	1.80	499.880	247	234	57	3.0	
S 2	50	64	108	97	0.150	1.84	508.490	249	235	53	3.0	
S 2	60	64	108	98	0.150	1.85	517.110	249	248	53	3.0	
S 2	70	64	106	99	0.150	1.84	525.890	248	246	52	3.0	
S 2	80	64	105	99	0.150	1.84	534.620	247	246	53	3.0	
S 2	90	64	107	100	0.150	1.84	543.320	246	247	55	3.0	
S 2	100	65	105	100	0.160	1.96	552.030	248	249	52	3.0	
S 2	110	66	105	100	0.160	1.95	560.770	247	247	53	3.0	
S 2	120	65	105	99	0.160	1.96	569.500	247	247	55	3.0	
S 2	130	64	105	99	0.150	1.84	578.240	247	248	53	3.0	
S 2	140	63	104	98	0.150	1.90	586.990	247	249	53	3.0	
S 2	150	62	104	98	0.150	1.84	595.730	247	247	53	3.0	
S 2	160	62	102	98	0.160	1.96	604.570	247	248	55	3.0	
S 2	170	62	102	97	0.160	1.96	613.550	248	247	57	3.0	
S 2	180	62	99	97	0.160	1.95	622.550	246	248	58	3.0	
S 2	190	62	95	93	0.160	1.95	631.450	246	247	57	3.0	
S 2	200	62	93	90	0.160	1.95	640.370	244	248	55	3.0	
S 2	210	62	93	90	0.160	1.95	649.250	245	248	54	3.0	
S 2	220	62	93	90	0.160	1.95	658.120	245	248	52	3.0	
S 2	230	62	92	89	0.160	1.95	666.970	244	248	52	3.0	
S 2	240	61	94	88	0.160	1.95	675.814	246	249	53	3.0	
Average / Net		63.5		98.1	0.2	1.9	210.155	247.5	246.8	54.0	3.0	

EPA REFERENCE METHOD 1

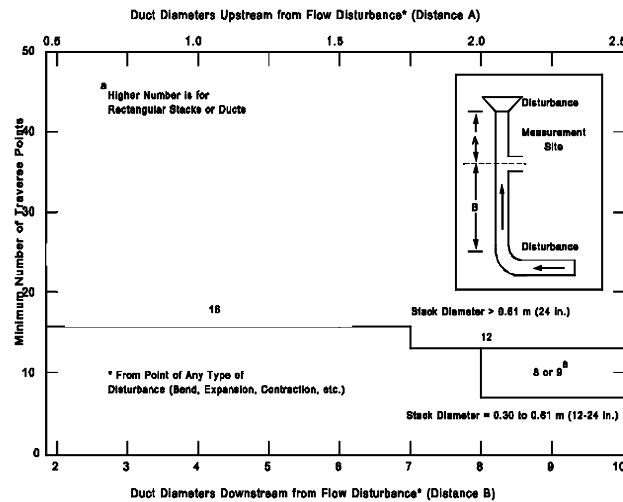
FIELD DATA SHEET

CIRCULAR STACKS

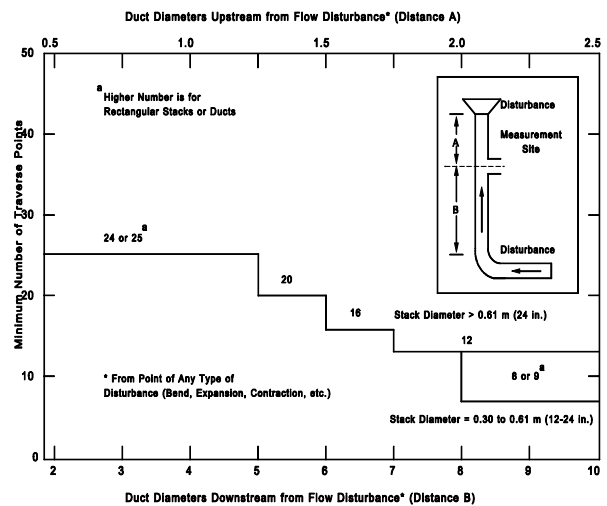
Firm Name: Intel
 Plant Location: Rio Rancho, NM
 Sampling Location: 8s.4.2ab
 TRC Project No.: 31397-1600-00000
 Date: 9/24/2003
 Technician: PER
 Circular/Rectangular: C

Stack Diameter: 30.0
 Sample Port Diameter: 3.5
 Sample Port Depth: 4.5
 Distance Upstream: 60.0
 Distance Downstream: 90.0
 Flow or Particulate Test: F
 Number of Test Ports: 2

For Flow Traverses



For Particulate Traverses



Traverse Point No.	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	0.146	0.067	0.044	0.032	0.026	0.021	0.018	0.016	0.014	0.013	0.011	0.011
2	0.854	0.250	0.146	0.105	0.082	0.067	0.057	0.049	0.044	0.039	0.035	0.032
3		0.750	0.296	0.194	0.146	0.118	0.099	0.085	0.075	0.067	0.060	0.055
4		0.933	0.704	0.323	0.226	0.177	0.146	0.125	0.109	0.097	0.087	0.079
5			0.854	0.677	0.342	0.250	0.201	0.169	0.146	0.129	0.116	0.105
6			0.956	0.806	0.658	0.356	0.269	0.220	0.188	0.165	0.146	0.132
7				0.895	0.774	0.644	0.366	0.283	0.236	0.204	0.180	0.161
8				0.968	0.854	0.750	0.634	0.375	0.296	0.250	0.218	0.194
9					0.918	0.823	0.731	0.625	0.382	0.306	0.262	0.230
10					0.974	0.882	0.799	0.717	0.618	0.388	0.315	0.272
11						0.933	0.854	0.780	0.704	0.612	0.393	0.323
12						0.979	0.901	0.831	0.764	0.694	0.607	0.398
13							0.943	0.875	0.812	0.750	0.685	0.602
14							0.982	0.915	0.854	0.796	0.738	0.677
15								0.951	0.891	0.835	0.782	0.728
16								0.984	0.925	0.871	0.820	0.770
17									0.956	0.903	0.854	0.806
18									0.986	0.933	0.884	0.839
19										0.961	0.913	0.868
20										0.987	0.940	0.895
21											0.965	0.921
22											0.989	0.945
23												0.968
24												0.989

Traverse Points	
No.	Distance from Wall
1	4 10/16
2	6
3	7 9/16
4	9 5/16
5	11 8/16
6	14 11/16
7	23 5/16
8	26 8/16
9	28 11/16
10	30 7/16
11	32
12	33 6/16
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER

FIELD AND SOURCE DOCUMENTATION

APPENDIX A
Field and Measurement Data

SECTION 8
RCTO FT-IR and Flow Measurement Results

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

Fab 7 Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
F7 RCTO R1 08 22 03 SAMPLE_0003.LAB	8/22/2003 6:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.07	0.388	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0004.LAB	8/22/2003 7:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.07	0.385	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0005.LAB	8/22/2003 7:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.08	0.385	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0006.LAB	8/22/2003 7:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.09	0.384	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0007.LAB	8/22/2003 7:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.07	0.382	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0008.LAB	8/22/2003 7:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.07	0.375	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0009.LAB	8/22/2003 7:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.07	0.377	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0010.LAB	8/22/2003 7:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.07	0.381	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0011.LAB	8/22/2003 7:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.10	0.390	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0012.LAB	8/22/2003 7:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.08	0.377	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0013.LAB	8/22/2003 7:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.07	0.373	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0014.LAB	8/22/2003 7:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.10	0.393	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0015.LAB	8/22/2003 7:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.08	0.380	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0016.LAB	8/22/2003 7:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.08	0.380	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0017.LAB	8/22/2003 7:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.09	0.384	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0018.LAB	8/22/2003 7:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.11	0.384	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0019.LAB	8/22/2003 7:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.12	0.384	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0020.LAB	8/22/2003 7:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.10	0.382	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0021.LAB	8/22/2003 7:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.11	0.381	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0022.LAB	8/22/2003 7:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.10	0.380	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0023.LAB	8/22/2003 7:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.11	0.385	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0024.LAB	8/22/2003 7:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.385	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0025.LAB	8/22/2003 7:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.380	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0026.LAB	8/22/2003 7:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.382	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0027.LAB	8/22/2003 8:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.14	0.384	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0028.LAB	8/22/2003 8:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.12	0.378	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0029.LAB	8/22/2003 8:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.383	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0030.LAB	8/22/2003 8:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.384	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0031.LAB	8/22/2003 8:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.12	0.368	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0032.LAB	8/22/2003 8:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.17	0.389	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0033.LAB	8/22/2003 8:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.382	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0034.LAB	8/22/2003 8:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.16	0.379	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0035.LAB	8/22/2003 8:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.17	0.391	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0036.LAB	8/22/2003 8:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.380	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0037.LAB	8/22/2003 8:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.381	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0038.LAB	8/22/2003 8:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.381	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0039.LAB	8/22/2003 8:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.385	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0040.LAB	8/22/2003 8:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.17	0.379	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0041.LAB	8/22/2003 8:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.17	0.379	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0042.LAB	8/22/2003 8:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.17	0.383	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0043.LAB	8/22/2003 8:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.381	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0044.LAB	8/22/2003 8:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.378	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0045.LAB	8/22/2003 8:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.381	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0046.LAB	8/22/2003 8:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.381	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0047.LAB	8/22/2003 8:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.377	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0048.LAB	8/22/2003 8:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.384	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0049.LAB	8/22/2003 8:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.22	0.395	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0050.LAB	8/22/2003 9:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.380	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0051.LAB	8/22/2003 9:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.14	0.373	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0052.LAB	8/22/2003 9:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.380	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0053.LAB	8/22/2003 9:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.17	0.388	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0054.LAB	8/22/2003 9:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.376	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0055.LAB	8/22/2003 9:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.16	0.380	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0056.LAB	8/22/2003 9:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.16	0.377	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0057.LAB	8/22/2003 9:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.381	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0058.LAB	8/22/2003 9:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.14	0.382	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0059.LAB	8/22/2003 9:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.11	0.375	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0060.LAB	8/22/2003 9:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.09	0.375	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0061.LAB	8/22/2003 9:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.11	0.381	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0062.LAB	8/22/2003 9:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.14	0.385	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Fab 7 Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
F7 RCTO R1 08 22 03 SAMPLE_0063.LAB	8/22/2003 9:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.14	0.379	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0064.LAB	8/22/2003 9:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.382	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0065.LAB	8/22/2003 9:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.379	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0066.LAB	8/22/2003 9:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.10	0.375	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0067.LAB	8/22/2003 9:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.11	0.383	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0068.LAB	8/22/2003 9:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.385	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0069.LAB	8/22/2003 9:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.14	0.378	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0070.LAB	8/22/2003 9:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.379	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0071.LAB	8/22/2003 9:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.382	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0072.LAB	8/22/2003 9:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.378	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0073.LAB	8/22/2003 10:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.379	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0074.LAB	8/22/2003 10:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.382	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0075.LAB	8/22/2003 10:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.379	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0076.LAB	8/22/2003 10:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.17	0.379	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0077.LAB	8/22/2003 10:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.368	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0078.LAB	8/22/2003 10:13	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.17	0.381	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0079.LAB	8/22/2003 10:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.386	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0080.LAB	8/22/2003 10:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.382	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0081.LAB	8/22/2003 10:21	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.20	0.373	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0082.LAB	8/22/2003 10:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.22	0.379	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0083.LAB	8/22/2003 10:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.23	0.388	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0084.LAB	8/22/2003 10:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.22	0.376	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0085.LAB	8/22/2003 10:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.21	0.380	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0086.LAB	8/22/2003 10:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.21	0.382	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0087.LAB	8/22/2003 10:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.20	0.382	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0088.LAB	8/22/2003 10:39	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.379	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0089.LAB	8/22/2003 10:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.18	0.381	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0090.LAB	8/22/2003 10:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.376	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0091.LAB	8/22/2003 10:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.377	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0092.LAB	8/22/2003 10:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.21	0.381	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0093.LAB	8/22/2003 10:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.24	0.383	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0094.LAB	8/22/2003 10:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.25	0.380	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0095.LAB	8/22/2003 10:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.22	0.377	149.02	1.008
F7 RCTO R1 08 22 03 SAMPLE_0096.LAB	8/22/2003 11:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.24	0.380	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0097.LAB	8/22/2003 11:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.21	0.376	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0098.LAB	8/22/2003 11:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.20	0.381	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0099.LAB	8/22/2003 11:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.21	0.381	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0100.LAB	8/22/2003 11:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.377	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0101.LAB	8/22/2003 11:13	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.380	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0102.LAB	8/22/2003 11:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19	0.382	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0103.LAB	8/22/2003 11:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.17	0.376	150.51	1.003
F7 RCTO R1 08 22 03 SAMPLE_0104.LAB	8/22/2003 11:21	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.379	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0105.LAB	8/22/2003 11:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.16	0.381	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0106.LAB	8/22/2003 11:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.367	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0107.LAB	8/22/2003 11:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.16	0.381	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0108.LAB	8/22/2003 11:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.13	0.368	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0109.LAB	8/22/2003 11:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.08	0.342	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0110.LAB	8/22/2003 11:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	0.341	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0111.LAB	8/22/2003 11:39	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15	0.379	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0112.LAB	8/22/2003 11:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.11	0.358	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0113.LAB	8/22/2003 11:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.07	0.333	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0114.LAB	8/22/2003 11:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	0.337	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0115.LAB	8/22/2003 11:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	0.337	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0116.LAB	8/22/2003 11:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	0.343	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0117.LAB	8/22/2003 11:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	0.343	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0118.LAB	8/22/2003 11:57	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	0.337	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0119.LAB	8/22/2003 12:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	0.332	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0120.LAB	8/22/2003 12:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.03	0.332	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0121.LAB	8/22/2003 12:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.05	0.336	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0122.LAB	8/22/2003 12:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.333	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Fab 7 Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
F7 RCTO R1 08 22 03 SAMPLE_0123.LAB	8/22/2003 12:10	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.340	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0124.LAB	8/22/2003 12:13	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.334	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0125.LAB	8/22/2003 12:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.05	0.335	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0126.LAB	8/22/2003 12:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.05	0.336	149.02	0.997
F7 RCTO R1 08 22 03 SAMPLE_0127.LAB	8/22/2003 12:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.05	0.336	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0128.LAB	8/22/2003 12:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.333	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0129.LAB	8/22/2003 12:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.03	0.337	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0130.LAB	8/22/2003 12:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.339	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0131.LAB	8/22/2003 12:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.334	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0132.LAB	8/22/2003 12:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	0.337	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0133.LAB	8/22/2003 12:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.03	0.333	149.76	1.008
F7 RCTO R1 08 22 03 SAMPLE_0134.LAB	8/22/2003 12:39	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.334	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0135.LAB	8/22/2003 12:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.03	0.335	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0136.LAB	8/22/2003 12:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.03	0.339	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0137.LAB	8/22/2003 12:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.335	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0138.LAB	8/22/2003 12:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.335	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0139.LAB	8/22/2003 12:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.03	0.335	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0140.LAB	8/22/2003 12:54	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.01	0.326	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0141.LAB	8/22/2003 12:57	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.02	0.336	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0142.LAB	8/22/2003 12:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.04	0.343	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0143.LAB	8/22/2003 13:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.02	0.331	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0144.LAB	8/22/2003 13:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.01	0.324	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0145.LAB	8/22/2003 13:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.02	0.339	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0146.LAB	8/22/2003 13:10	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.02	0.336	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0147.LAB	8/22/2003 13:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.99	0.331	149.02	0.997
F7 RCTO R1 08 22 03 SAMPLE_0148.LAB	8/22/2003 13:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.02	0.344	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0149.LAB	8/22/2003 13:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.00	0.336	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0150.LAB	8/22/2003 13:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.02	0.335	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0151.LAB	8/22/2003 13:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.00	0.334	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0152.LAB	8/22/2003 13:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.00	0.333	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0153.LAB	8/22/2003 13:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.98	0.330	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0154.LAB	8/22/2003 13:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.98	0.331	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0155.LAB	8/22/2003 13:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.99	0.333	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0156.LAB	8/22/2003 13:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.00	0.331	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0157.LAB	8/22/2003 13:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.99	0.333	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0158.LAB	8/22/2003 13:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.98	0.333	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0159.LAB	8/22/2003 13:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.99	0.332	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0160.LAB	8/22/2003 13:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.96	0.331	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0161.LAB	8/22/2003 13:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.98	0.339	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0162.LAB	8/22/2003 13:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.97	0.335	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0163.LAB	8/22/2003 13:54	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.97	0.332	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0164.LAB	8/22/2003 13:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.97	0.338	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0165.LAB	8/22/2003 14:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.95	0.331	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0166.LAB	8/22/2003 14:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.96	0.339	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0167.LAB	8/22/2003 14:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.97	0.335	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0168.LAB	8/22/2003 14:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.95	0.327	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0169.LAB	8/22/2003 14:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.96	0.339	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0170.LAB	8/22/2003 14:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.94	0.328	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0171.LAB	8/22/2003 14:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.96	0.340	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0172.LAB	8/22/2003 14:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.96	0.346	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0173.LAB	8/22/2003 14:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.94	0.334	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0174.LAB	8/22/2003 14:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.93	0.329	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0175.LAB	8/22/2003 14:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.95	0.340	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0176.LAB	8/22/2003 14:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.93	0.334	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0177.LAB	8/22/2003 14:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.92	0.332	149.02	1.003
F7 RCTO R1 08 22 03 SAMPLE_0178.LAB	8/22/2003 14:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.92	0.334	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0179.LAB	8/22/2003 14:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.94	0.345	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0180.LAB	8/22/2003 14:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.93	0.339	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0181.LAB	8/22/2003 14:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.94	0.336	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0182.LAB	8/22/2003 14:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.92	0.338	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Fab 7 Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
F7 RCTO R1 08 22 03 SAMPLE_0183.LAB	8/22/2003 14:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.92	0.337	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0184.LAB	8/22/2003 14:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91	0.333	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0185.LAB	8/22/2003 14:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.93	0.344	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0186.LAB	8/22/2003 14:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.93	0.338	149.76	0.997
F7 RCTO R1 08 22 03 SAMPLE_0187.LAB	8/22/2003 14:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.92	0.333	149.76	1.003
F7 RCTO R1 08 22 03 SAMPLE_0188.LAB	8/22/2003 15:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91	0.335	149.76	1.003
Average _{wet}		ND	ND	ND	ND	ND	ND	ND	ND	ND	2.087	0.362		

EPA REFERENCE METHOD 2 VELOCITY TRAVERSE FIELD DATA SHEET

Plant: Intel: Rio Rancho, New Mexico	Date: 8/22/2003																		
Unit Number: Fab 7 RCTO	Stack Diameter (in.): 44.50																		
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.34																		
Run No.: 1	Operators: SCT/BG																		
Project No.: 31397-1600-0000	Barometric Pressure (in.Hg): 24.95																		
Pitot Tube ID: HA-2	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Pre Test</td> <td></td> </tr> <tr> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u> <u> </u></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">Post Test</td> <td></td> </tr> <tr> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u> <u> </u></td> </tr> <tr> <td>Start:</td> <td style="text-align: center;">11:24</td> </tr> <tr> <td>End:</td> <td style="text-align: center;">11:37</td> </tr> </table>	Pre Test		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u> <u> </u>			Post Test		<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u> <u> </u>	Start:	11:24	End:	11:37
Pre Test																			
<u>Pass</u>	<u>Fail</u>																		
Pitot Leak Check	<u>Y</u> <u> </u>																		
Post Test																			
<u>Pass</u>	<u>Fail</u>																		
Pitot Leak Check	<u>Y</u> <u> </u>																		
Start:	11:24																		
End:	11:37																		
Pitot Tube Coefficient: 0.84																			
Estimated Stack CO₂%: <u>0.25</u> O₂%: <u>20.5</u> H₂O%: <u>1.6</u>																			
Platform Elevation (feet):																			
Comments:																			

North East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.34	151
2	0.38	157
3	0.41	176
4	0.42	193
5	0.44	215
6	0.45	239
7	0.48	237
8	0.45	223
9	0.47	208
10	0.46	199
11	0.43	183
12	0.27	168

North West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.39	238
2	0.39	257
3	0.38	247.0
4	0.38	254
5	0.36	249
6	0.35	253
7	0.36	248
8	0.57	224
9	0.55	215
10	0.52	187
11	0.38	168
12	0.22	145
Total Average:	sqrt dp = 0.63756	209.8

Fab 11W Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11W RCTO OUTLET 07 31 03 SAMPLE_0000.LAB	7/31/2003 8:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	0.260	0.03	1.008
11W RCTO OUTLET 07 31 03 SAMPLE_0001.LAB	7/31/2003 8:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	0.258	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0002.LAB	7/31/2003 8:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.85	0.261	0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0003.LAB	7/31/2003 8:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.83	0.259	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0004.LAB	7/31/2003 8:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	0.261	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0005.LAB	7/31/2003 8:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	0.262	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0006.LAB	7/31/2003 8:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	0.261	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0007.LAB	7/31/2003 8:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.82	0.254	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0008.LAB	7/31/2003 8:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.85	0.261	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0009.LAB	7/31/2003 8:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	0.261	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0010.LAB	7/31/2003 8:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.82	0.252	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0011.LAB	7/31/2003 8:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	0.264	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0012.LAB	7/31/2003 8:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.82	0.253	0.03	1.008
11W RCTO OUTLET 07 31 03 SAMPLE_0013.LAB	7/31/2003 8:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	0.261	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0014.LAB	7/31/2003 8:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.246	0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0015.LAB	7/31/2003 8:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	0.263	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0016.LAB	7/31/2003 8:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.246	0.05	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0017.LAB	7/31/2003 8:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.83	0.262	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0018.LAB	7/31/2003 8:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.255	0.02	1.008
11W RCTO OUTLET 07 31 03 SAMPLE_0019.LAB	7/31/2003 8:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81	0.255	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0020.LAB	7/31/2003 9:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81	0.254	0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0021.LAB	7/31/2003 9:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.251	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0022.LAB	7/31/2003 9:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81	0.254	0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0023.LAB	7/31/2003 9:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.253	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0024.LAB	7/31/2003 9:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.258	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0025.LAB	7/31/2003 9:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.258	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0026.LAB	7/31/2003 9:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.252	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0027.LAB	7/31/2003 9:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.249	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0028.LAB	7/31/2003 9:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81	0.259	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0029.LAB	7/31/2003 9:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.247	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0030.LAB	7/31/2003 9:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.82	0.261	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0031.LAB	7/31/2003 9:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.78	0.245	0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0032.LAB	7/31/2003 9:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81	0.260	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0033.LAB	7/31/2003 9:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.244	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0034.LAB	7/31/2003 9:39	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.252	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0035.LAB	7/31/2003 9:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.254	0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0036.LAB	7/31/2003 9:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.251	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0037.LAB	7/31/2003 9:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.78	0.249	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0038.LAB	7/31/2003 9:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.251	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0039.LAB	7/31/2003 9:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.253	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0040.LAB	7/31/2003 9:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.246	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0041.LAB	7/31/2003 9:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.78	0.245	0.04	1.008
11W RCTO OUTLET 07 31 03 SAMPLE_0042.LAB	7/31/2003 10:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.248	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0043.LAB	7/31/2003 10:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.252	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0044.LAB	7/31/2003 10:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.250	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0045.LAB	7/31/2003 10:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.252	0.01	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0046.LAB	7/31/2003 10:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.244	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0047.LAB	7/31/2003 10:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	0.251	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0048.LAB	7/31/2003 10:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.242	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0049.LAB	7/31/2003 10:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81	0.255	0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0050.LAB	7/31/2003 10:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.78	0.243	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0051.LAB	7/31/2003 10:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.249	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0052.LAB	7/31/2003 10:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.247	0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0053.LAB	7/31/2003 10:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.78	0.243	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0054.LAB	7/31/2003 10:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.250	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0055.LAB	7/31/2003 10:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.239	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0056.LAB	7/31/2003 10:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.248	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0057.LAB	7/31/2003 10:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.241	0.01	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0058.LAB	7/31/2003 10:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.247	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0059.LAB	7/31/2003 10:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.246	0.01	1.003

TRC Environmental Corporaiton
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Fab 11W Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11W RCTO OUTLET 07 31 03 SAMPLE_0060.LAB	7/31/2003 10:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	0.252	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0061.LAB	7/31/2003 10:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.241	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0062.LAB	7/31/2003 10:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.246	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0063.LAB	7/31/2003 10:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.237	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0064.LAB	7/31/2003 11:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.78	0.247	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0065.LAB	7/31/2003 11:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.239	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0066.LAB	7/31/2003 11:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.245	0.01	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0067.LAB	7/31/2003 11:10	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.245	0.02	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0068.LAB	7/31/2003 11:13	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.236	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0069.LAB	7/31/2003 11:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.248	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0070.LAB	7/31/2003 11:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.241	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0071.LAB	7/31/2003 11:21	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.249	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0072.LAB	7/31/2003 11:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.238	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0073.LAB	7/31/2003 11:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.245	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0074.LAB	7/31/2003 11:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.240	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0075.LAB	7/31/2003 11:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.236	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0076.LAB	7/31/2003 11:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.240	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0077.LAB	7/31/2003 11:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.243	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0078.LAB	7/31/2003 11:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.242	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0079.LAB	7/31/2003 11:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.239	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0080.LAB	7/31/2003 11:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.241	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0081.LAB	7/31/2003 11:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.238	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0082.LAB	7/31/2003 11:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.245	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0083.LAB	7/31/2003 11:54	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.236	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0084.LAB	7/31/2003 11:57	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.243	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0085.LAB	7/31/2003 12:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.242	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0086.LAB	7/31/2003 12:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.250	0.02	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0087.LAB	7/31/2003 12:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.238	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0088.LAB	7/31/2003 12:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.243	0.00	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0089.LAB	7/31/2003 12:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.238	-0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0090.LAB	7/31/2003 12:13	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.239	0.02	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0091.LAB	7/31/2003 12:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.241	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0092.LAB	7/31/2003 12:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.239	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0093.LAB	7/31/2003 12:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.245	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0094.LAB	7/31/2003 12:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.242	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0095.LAB	7/31/2003 12:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.244	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0096.LAB	7/31/2003 12:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.237	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0097.LAB	7/31/2003 12:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.241	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0098.LAB	7/31/2003 12:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.242	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0099.LAB	7/31/2003 12:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.247	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0100.LAB	7/31/2003 12:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.239	0.02	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0101.LAB	7/31/2003 12:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.236	0.01	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0102.LAB	7/31/2003 12:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.237	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0103.LAB	7/31/2003 12:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.234	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0104.LAB	7/31/2003 12:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.239	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0105.LAB	7/31/2003 12:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.233	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0106.LAB	7/31/2003 12:57	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.244	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0107.LAB	7/31/2003 13:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.233	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0108.LAB	7/31/2003 13:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.246	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0109.LAB	7/31/2003 13:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.229	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0110.LAB	7/31/2003 13:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.238	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0111.LAB	7/31/2003 13:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.236	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0112.LAB	7/31/2003 13:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.238	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0113.LAB	7/31/2003 13:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.239	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0114.LAB	7/31/2003 13:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.233	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0115.LAB	7/31/2003 13:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.245	0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0116.LAB	7/31/2003 13:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.230	-0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0117.LAB	7/31/2003 13:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.235	0.02	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0118.LAB	7/31/2003 13:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.236	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0119.LAB	7/31/2003 13:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.237	0.00	1.003

TRC Environmental Corporation
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TRC Project No. 31397-1600-00000

Fab 11W Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11W RCTO OUTLET 07 31 03 SAMPLE_0120.LAB	7/31/2003 13:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.242	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0121.LAB	7/31/2003 13:39	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.236	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0122.LAB	7/31/2003 13:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.236	0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0123.LAB	7/31/2003 13:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.236	0.05	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0124.LAB	7/31/2003 13:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.240	0.03	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0125.LAB	7/31/2003 13:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.239	0.05	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0126.LAB	7/31/2003 13:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.240	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0127.LAB	7/31/2003 13:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.241	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0128.LAB	7/31/2003 13:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.240	0.00	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0129.LAB	7/31/2003 14:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.234	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0130.LAB	7/31/2003 14:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.236	0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0131.LAB	7/31/2003 14:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.237	-0.01	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0132.LAB	7/31/2003 14:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.237	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0133.LAB	7/31/2003 14:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.238	-0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0134.LAB	7/31/2003 14:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.236	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0135.LAB	7/31/2003 14:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.238	-0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0136.LAB	7/31/2003 14:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.236	-0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0137.LAB	7/31/2003 14:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.240	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0138.LAB	7/31/2003 14:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.232	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0139.LAB	7/31/2003 14:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.243	0.00	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0140.LAB	7/31/2003 14:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.235	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0141.LAB	7/31/2003 14:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.238	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0142.LAB	7/31/2003 14:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.234	-0.01	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0143.LAB	7/31/2003 14:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.233	-0.02	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0144.LAB	7/31/2003 14:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.230	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0145.LAB	7/31/2003 14:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.234	-0.02	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0146.LAB	7/31/2003 14:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.239	-0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0147.LAB	7/31/2003 14:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.234	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0148.LAB	7/31/2003 14:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.240	-0.01	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0149.LAB	7/31/2003 14:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.235	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0150.LAB	7/31/2003 14:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.237	-0.02	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0151.LAB	7/31/2003 15:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.233	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0152.LAB	7/31/2003 15:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.235	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0153.LAB	7/31/2003 15:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.237	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0154.LAB	7/31/2003 15:10	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.235	-0.02	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0155.LAB	7/31/2003 15:13	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.235	-0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0156.LAB	7/31/2003 15:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	0.227	-0.07	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0157.LAB	7/31/2003 15:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.239	-0.06	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0158.LAB	7/31/2003 15:21	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	0.229	-0.04	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0159.LAB	7/31/2003 15:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.233	-0.06	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0160.LAB	7/31/2003 15:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.237	-0.06	0.997
11W RCTO OUTLET 07 31 03 SAMPLE_0161.LAB	7/31/2003 15:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.234	-0.06	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0162.LAB	7/31/2003 15:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.241	-0.07	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0163.LAB	7/31/2003 15:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.230	-0.07	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0164.LAB	7/31/2003 15:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.242	-0.09	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0165.LAB	7/31/2003 15:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.227	-0.07	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0166.LAB	7/31/2003 15:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.244	-0.08	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0167.LAB	7/31/2003 15:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	0.234	-0.07	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0168.LAB	7/31/2003 15:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.236	-0.07	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0169.LAB	7/31/2003 15:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.232	-0.08	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0170.LAB	7/31/2003 16:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	0.235	-0.08	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0171.LAB	7/31/2003 16:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.234	-0.08	1.003
11W RCTO OUTLET 07 31 03 SAMPLE_0172.LAB	7/31/2003 16:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.235	-0.10	1.003
Average _{wet}		ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.243		

EPA REFERENCE METHOD 2 VELOCITY TRAVERSE FIELD DATA SHEET

Plant: Intel: Rio Rancho, New Mexico	Date: 7/31/2003															
Unit Number: Fab 11 West RCTO	Stack Diameter (in.): 47.50															
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): 0.05															
Run No.: 1	Operators: PER/JEL															
Project No.: 31397-1600-0000	Barometric Pressure (in.Hg): 25.00															
Pitot Tube ID: HA-2	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 25%; text-align: center;">Pre Test</td> <td style="width: 25%;"></td> </tr> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Tube Coefficient: 0.84</td> <td></td> <td></td> </tr> <tr> <td>Estimated Stack CO₂%: <u>0.25</u> O₂%: <u>20.5</u> H₂O%: <u>1.6</u></td> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u> <u> </u></td> </tr> <tr> <td>Platform Elevation (feet):</td> <td></td> <td></td> </tr> </table>		Pre Test			<u>Pass</u>	<u>Fail</u>	Pitot Tube Coefficient: 0.84			Estimated Stack CO₂%: <u>0.25</u> O₂%: <u>20.5</u> H₂O%: <u>1.6</u>	Pitot Leak Check	<u>Y</u> <u> </u>	Platform Elevation (feet):		
	Pre Test															
	<u>Pass</u>	<u>Fail</u>														
Pitot Tube Coefficient: 0.84																
Estimated Stack CO₂%: <u>0.25</u> O₂%: <u>20.5</u> H₂O%: <u>1.6</u>	Pitot Leak Check	<u>Y</u> <u> </u>														
Platform Elevation (feet):																
Comments:																
	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 25%; text-align: center;">Post Test</td> <td style="width: 25%;"></td> </tr> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u> <u> </u></td> <td></td> </tr> <tr> <td>Start:</td> <td style="text-align: center;">16:30</td> <td></td> </tr> <tr> <td>End:</td> <td style="text-align: center;">17:00</td> <td></td> </tr> </table>		Post Test			<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u> <u> </u>		Start:	16:30		End:	17:00	
	Post Test															
	<u>Pass</u>	<u>Fail</u>														
Pitot Leak Check	<u>Y</u> <u> </u>															
Start:	16:30															
End:	17:00															

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.42	153.8
2	0.66	162
3	0.65	163.8
4	0.66	181
5	0.69	190.2
6	0.69	235.2
7	0.74	241.6
8	0.79	181.6
9	0.76	151.4
10	0.68	115.8
11	0.75	112
12	0.71	122.4

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.51	307.2
2	0.61	306.1
3	0.59	309.2
4	0.63	299.4
5	0.62	292.6
6	0.67	248
7	0.76	117.2
8	0.71	105.6
9	0.66	103.6
10	0.61	103.6
11	0.59	103.6
12	0.63	104.4
Total Average:	sqrt dp = 0.80946	183.8

Fab 11S Run 2 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
F11S RCTO OUTLET 09 16 03 SAMPLE_0001.LAB	9/16/2003 7:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.228	150.51	1.001
F11S RCTO OUTLET 09 16 03 SAMPLE_0002.LAB	9/16/2003 7:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0003.LAB	9/16/2003 7:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.227	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0004.LAB	9/16/2003 7:10	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.231	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0005.LAB	9/16/2003 7:13	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0006.LAB	9/16/2003 7:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.231	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0007.LAB	9/16/2003 7:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.51	0.227	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0008.LAB	9/16/2003 7:21	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.52	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0009.LAB	9/16/2003 7:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.52	0.229	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0010.LAB	9/16/2003 7:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.229	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0011.LAB	9/16/2003 7:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0012.LAB	9/16/2003 7:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.230	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0013.LAB	9/16/2003 7:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0014.LAB	9/16/2003 7:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.230	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0015.LAB	9/16/2003 7:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.224	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0016.LAB	9/16/2003 7:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.231	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0017.LAB	9/16/2003 7:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.225	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0018.LAB	9/16/2003 7:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.231	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0019.LAB	9/16/2003 7:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0020.LAB	9/16/2003 7:54	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0021.LAB	9/16/2003 7:57	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.230	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0022.LAB	9/16/2003 8:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0023.LAB	9/16/2003 8:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.230	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0024.LAB	9/16/2003 8:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.227	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0025.LAB	9/16/2003 8:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0026.LAB	9/16/2003 8:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.229	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0027.LAB	9/16/2003 8:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.229	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0028.LAB	9/16/2003 8:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.227	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0029.LAB	9/16/2003 8:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.230	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0030.LAB	9/16/2003 8:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.230	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0031.LAB	9/16/2003 8:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0032.LAB	9/16/2003 8:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.230	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0033.LAB	9/16/2003 8:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0034.LAB	9/16/2003 8:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.229	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0035.LAB	9/16/2003 8:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0036.LAB	9/16/2003 8:39	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0037.LAB	9/16/2003 8:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0038.LAB	9/16/2003 8:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0039.LAB	9/16/2003 8:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0040.LAB	9/16/2003 8:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.230	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0041.LAB	9/16/2003 8:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.227	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0042.LAB	9/16/2003 8:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0043.LAB	9/16/2003 8:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0044.LAB	9/16/2003 9:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0045.LAB	9/16/2003 9:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0046.LAB	9/16/2003 9:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0047.LAB	9/16/2003 9:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.226	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0048.LAB	9/16/2003 9:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.230	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0049.LAB	9/16/2003 9:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.224	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0050.LAB	9/16/2003 9:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.230	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0051.LAB	9/16/2003 9:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.225	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0052.LAB	9/16/2003 9:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57	0.231	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0053.LAB	9/16/2003 9:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.226	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0054.LAB	9/16/2003 9:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0055.LAB	9/16/2003 9:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0056.LAB	9/16/2003 9:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.227	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0057.LAB	9/16/2003 9:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0058.LAB	9/16/2003 9:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.226	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0059.LAB	9/16/2003 9:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.230	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0060.LAB	9/16/2003 9:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.224	150.51	0.996

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Fab 11S Run 2 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
F11S RCTO OUTLET 09 16 03 SAMPLE_0061.LAB	9/16/2003 9:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.229	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0062.LAB	9/16/2003 9:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.225	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0063.LAB	9/16/2003 9:54	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0064.LAB	9/16/2003 9:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0065.LAB	9/16/2003 9:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.224	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0066.LAB	9/16/2003 10:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.230	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0067.LAB	9/16/2003 10:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0068.LAB	9/16/2003 10:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.226	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0069.LAB	9/16/2003 10:10	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0070.LAB	9/16/2003 10:13	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0071.LAB	9/16/2003 10:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57	0.223	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0072.LAB	9/16/2003 10:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.230	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0073.LAB	9/16/2003 10:21	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57	0.226	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0074.LAB	9/16/2003 10:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0075.LAB	9/16/2003 10:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.223	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0076.LAB	9/16/2003 10:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0077.LAB	9/16/2003 10:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.227	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0078.LAB	9/16/2003 10:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.222	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0079.LAB	9/16/2003 10:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.227	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0080.LAB	9/16/2003 10:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0081.LAB	9/16/2003 10:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.226	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0082.LAB	9/16/2003 10:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.227	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0083.LAB	9/16/2003 10:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.224	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0084.LAB	9/16/2003 10:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.226	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0085.LAB	9/16/2003 10:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0086.LAB	9/16/2003 10:57	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.225	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0087.LAB	9/16/2003 11:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.225	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0088.LAB	9/16/2003 11:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.228	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0089.LAB	9/16/2003 11:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0090.LAB	9/16/2003 11:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.223	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0091.LAB	9/16/2003 11:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0092.LAB	9/16/2003 11:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.229	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0093.LAB	9/16/2003 11:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.224	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0094.LAB	9/16/2003 11:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0095.LAB	9/16/2003 11:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0096.LAB	9/16/2003 11:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.225	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0097.LAB	9/16/2003 11:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.229	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0098.LAB	9/16/2003 11:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.222	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0099.LAB	9/16/2003 11:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.229	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0100.LAB	9/16/2003 11:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.230	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0101.LAB	9/16/2003 11:39	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.225	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0102.LAB	9/16/2003 11:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.226	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0103.LAB	9/16/2003 11:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0104.LAB	9/16/2003 11:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.222	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0105.LAB	9/16/2003 11:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.229	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0106.LAB	9/16/2003 11:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.224	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0107.LAB	9/16/2003 11:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.228	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0108.LAB	9/16/2003 11:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.52	0.222	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0109.LAB	9/16/2003 12:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.226	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0110.LAB	9/16/2003 12:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.230	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0111.LAB	9/16/2003 12:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.222	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0112.LAB	9/16/2003 12:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0113.LAB	9/16/2003 12:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0114.LAB	9/16/2003 12:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.223	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0115.LAB	9/16/2003 12:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0116.LAB	9/16/2003 12:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.224	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0117.LAB	9/16/2003 12:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.222	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0118.LAB	9/16/2003 12:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.228	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0119.LAB	9/16/2003 12:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.223	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0120.LAB	9/16/2003 12:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.224	150.51	0.985

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Fab 11S Run 2 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
F11S RCTO OUTLET 09 16 03 SAMPLE_0121.LAB	9/16/2003 12:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.226	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0122.LAB	9/16/2003 12:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.223	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0123.LAB	9/16/2003 12:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.225	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0124.LAB	9/16/2003 12:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.227	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0125.LAB	9/16/2003 12:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.224	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0126.LAB	9/16/2003 12:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.226	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0127.LAB	9/16/2003 12:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.225	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0128.LAB	9/16/2003 12:54	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.225	150.51	0.996
F11S RCTO OUTLET 09 16 03 SAMPLE_0129.LAB	9/16/2003 12:57	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.221	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0130.LAB	9/16/2003 13:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.228	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0131.LAB	9/16/2003 13:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.223	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0132.LAB	9/16/2003 13:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.223	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0133.LAB	9/16/2003 13:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.226	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0134.LAB	9/16/2003 13:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.220	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0135.LAB	9/16/2003 13:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.223	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0136.LAB	9/16/2003 13:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0137.LAB	9/16/2003 13:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.223	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0138.LAB	9/16/2003 13:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.224	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0139.LAB	9/16/2003 13:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.226	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0140.LAB	9/16/2003 13:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.223	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0141.LAB	9/16/2003 13:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.56	0.225	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0142.LAB	9/16/2003 13:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.224	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0143.LAB	9/16/2003 13:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.224	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0144.LAB	9/16/2003 13:39	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0145.LAB	9/16/2003 13:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.223	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0146.LAB	9/16/2003 13:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.227	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0147.LAB	9/16/2003 13:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.224	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0148.LAB	9/16/2003 13:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.224	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0149.LAB	9/16/2003 13:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.227	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0150.LAB	9/16/2003 13:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.224	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0151.LAB	9/16/2003 13:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.55	0.226	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0152.LAB	9/16/2003 14:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.222	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0153.LAB	9/16/2003 14:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.226	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0154.LAB	9/16/2003 14:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53	0.224	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0155.LAB	9/16/2003 14:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.52	0.224	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0156.LAB	9/16/2003 14:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.52	0.228	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0157.LAB	9/16/2003 14:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.51	0.223	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0158.LAB	9/16/2003 14:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.52	0.227	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0159.LAB	9/16/2003 14:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.51	0.224	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0160.LAB	9/16/2003 14:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.50	0.223	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0161.LAB	9/16/2003 14:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.51	0.227	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0162.LAB	9/16/2003 14:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.49	0.222	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0163.LAB	9/16/2003 14:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.51	0.228	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0164.LAB	9/16/2003 14:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.49	0.223	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0165.LAB	9/16/2003 14:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.50	0.226	150.51	0.980
F11S RCTO OUTLET 09 16 03 SAMPLE_0166.LAB	9/16/2003 14:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.49	0.227	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0167.LAB	9/16/2003 14:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.48	0.223	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0168.LAB	9/16/2003 14:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.50	0.228	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0169.LAB	9/16/2003 14:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.49	0.224	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0170.LAB	9/16/2003 14:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.51	0.228	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0171.LAB	9/16/2003 14:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.50	0.223	150.51	0.990
F11S RCTO OUTLET 09 16 03 SAMPLE_0172.LAB	9/16/2003 14:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.50	0.226	150.51	0.985
F11S RCTO OUTLET 09 16 03 SAMPLE_0173.LAB	9/16/2003 14:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.50	0.227	150.51	0.980
F11S RCTO OUTLET 09 16 03 SAMPLE_0174.LAB	9/16/2003 15:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.47	0.222	150.51	0.990
Average _{wet}		ND	ND	ND	ND	ND	ND	ND	ND	ND	1.54	0.226		

Fab 11X Bridge Side Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11X-B RCTO R1 08 20 03 SAMPLE_0001.LAB	8/20/2003 7:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0002.LAB	8/20/2003 7:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0003.LAB	8/20/2003 7:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0004.LAB	8/20/2003 7:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.209	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0005.LAB	8/20/2003 7:54	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0006.LAB	8/20/2003 7:57	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.207	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0007.LAB	8/20/2003 7:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.209	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0008.LAB	8/20/2003 8:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.212	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0009.LAB	8/20/2003 8:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.213	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0010.LAB	8/20/2003 8:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.210	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0011.LAB	8/20/2003 8:10	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.210	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0012.LAB	8/20/2003 8:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.210	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0013.LAB	8/20/2003 8:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.208	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0014.LAB	8/20/2003 8:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.209	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0015.LAB	8/20/2003 8:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.208	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0016.LAB	8/20/2003 8:23	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.209	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0017.LAB	8/20/2003 8:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0018.LAB	8/20/2003 8:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.205	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0019.LAB	8/20/2003 8:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0020.LAB	8/20/2003 8:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0021.LAB	8/20/2003 8:36	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.208	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0022.LAB	8/20/2003 8:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0023.LAB	8/20/2003 8:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.208	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0024.LAB	8/20/2003 8:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.208	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0025.LAB	8/20/2003 8:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0026.LAB	8/20/2003 8:49	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.204	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0027.LAB	8/20/2003 8:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0028.LAB	8/20/2003 8:54	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0029.LAB	8/20/2003 8:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.204	149.02	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0030.LAB	8/20/2003 8:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0031.LAB	8/20/2003 9:02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0032.LAB	8/20/2003 9:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0033.LAB	8/20/2003 9:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0034.LAB	8/20/2003 9:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0035.LAB	8/20/2003 9:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0036.LAB	8/20/2003 9:15	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0037.LAB	8/20/2003 9:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0038.LAB	8/20/2003 9:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0039.LAB	8/20/2003 9:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0040.LAB	8/20/2003 9:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.210	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0041.LAB	8/20/2003 9:28	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.212	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0042.LAB	8/20/2003 9:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.211	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0043.LAB	8/20/2003 9:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0044.LAB	8/20/2003 9:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0045.LAB	8/20/2003 9:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.208	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0046.LAB	8/20/2003 9:41	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.208	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0047.LAB	8/20/2003 9:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.207	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0048.LAB	8/20/2003 9:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0049.LAB	8/20/2003 9:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0050.LAB	8/20/2003 9:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.205	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0051.LAB	8/20/2003 9:54	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0052.LAB	8/20/2003 9:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0053.LAB	8/20/2003 9:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0054.LAB	8/20/2003 10:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0055.LAB	8/20/2003 10:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0056.LAB	8/20/2003 10:07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0057.LAB	8/20/2003 10:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.206	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0058.LAB	8/20/2003 10:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0059.LAB	8/20/2003 10:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0060.LAB	8/20/2003 10:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.205	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Fab 11X Bridge Side Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11X-B RCTO R1 08 20 03 SAMPLE_0061.LAB	8/20/2003 10:20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0062.LAB	8/20/2003 10:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0063.LAB	8/20/2003 10:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0064.LAB	8/20/2003 10:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.204	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0065.LAB	8/20/2003 10:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0066.LAB	8/20/2003 10:33	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.203	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0067.LAB	8/20/2003 10:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0068.LAB	8/20/2003 10:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0069.LAB	8/20/2003 10:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0070.LAB	8/20/2003 10:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.204	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0071.LAB	8/20/2003 10:46	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0072.LAB	8/20/2003 10:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0073.LAB	8/20/2003 10:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.203	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0074.LAB	8/20/2003 10:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0075.LAB	8/20/2003 10:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0076.LAB	8/20/2003 10:59	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.202	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0077.LAB	8/20/2003 11:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0078.LAB	8/20/2003 11:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.203	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0079.LAB	8/20/2003 11:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0080.LAB	8/20/2003 11:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.204	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0081.LAB	8/20/2003 11:12	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0082.LAB	8/20/2003 11:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0083.LAB	8/20/2003 11:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0084.LAB	8/20/2003 11:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0085.LAB	8/20/2003 11:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.206	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0086.LAB	8/20/2003 11:25	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.211	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0087.LAB	8/20/2003 11:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.211	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0088.LAB	8/20/2003 11:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.77	0.207	150.51	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0089.LAB	8/20/2003 11:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0090.LAB	8/20/2003 11:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.76	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0091.LAB	8/20/2003 11:38	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.205	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0092.LAB	8/20/2003 11:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0093.LAB	8/20/2003 11:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0094.LAB	8/20/2003 11:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0095.LAB	8/20/2003 11:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0096.LAB	8/20/2003 11:51	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0097.LAB	8/20/2003 11:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0098.LAB	8/20/2003 11:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0099.LAB	8/20/2003 11:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0100.LAB	8/20/2003 12:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0101.LAB	8/20/2003 12:04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.202	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0102.LAB	8/20/2003 12:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.74	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0103.LAB	8/20/2003 12:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.204	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0104.LAB	8/20/2003 12:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0105.LAB	8/20/2003 12:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.72	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0106.LAB	8/20/2003 12:17	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0107.LAB	8/20/2003 12:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.205	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0108.LAB	8/20/2003 12:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0109.LAB	8/20/2003 12:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0110.LAB	8/20/2003 12:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.205	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0111.LAB	8/20/2003 12:30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0112.LAB	8/20/2003 12:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0113.LAB	8/20/2003 12:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.204	149.76	1.008
11X-B RCTO R1 08 20 03 SAMPLE_0114.LAB	8/20/2003 12:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.202	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0115.LAB	8/20/2003 12:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0116.LAB	8/20/2003 12:43	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.206	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0117.LAB	8/20/2003 12:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0118.LAB	8/20/2003 12:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0119.LAB	8/20/2003 12:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0120.LAB	8/20/2003 12:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.206	149.76	0.997

EPA REFERENCE METHOD 2 VELOCITY TRAVERSE FIELD DATA SHEET

Plant: Intel: Rio Rancho, New Mexico	Date: 9/16/2003																											
Unit Number: Fab 11S RCTO Main Stack	Stack Diameter (in.): 48.00																											
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.2																											
Run No.: 2	Operators: BMB/PR																											
Project No.: 31397-1600-0000	Barometric Pressure (in.Hg): 24.90																											
Pitot Tube ID: HA-1	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Pre Test</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;"><u>Pass</u></td> <td></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">Post Test</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;"><u>Pass</u></td> <td></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u></td> <td style="text-align: center;">—</td> </tr> <tr> <td>Start:</td> <td>13:30</td> <td></td> </tr> <tr> <td>End:</td> <td>13:45</td> <td></td> </tr> </table>	Pre Test			<u>Pass</u>		<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—				Post Test			<u>Pass</u>		<u>Fail</u>	Pitot Leak Check	<u>Y</u>	—	Start:	13:30		End:	13:45	
Pre Test																												
<u>Pass</u>		<u>Fail</u>																										
Pitot Leak Check	<u>Y</u>	—																										
Post Test																												
<u>Pass</u>		<u>Fail</u>																										
Pitot Leak Check	<u>Y</u>	—																										
Start:	13:30																											
End:	13:45																											
Pitot Tube Coefficient: 0.84																												
Estimated Stack CO₂%: <u>0.25</u> O₂%: <u>20.5</u> H₂O%: <u>1.6</u>																												
Platform Elevation (feet):																												
Comments:																												

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.45	155
2	0.58	156
3	0.60	157
4	0.58	157
5	0.58	157
6	0.55	158
7	0.55	159
8	0.56	159
9	0.59	159
10	0.59	158
11	0.57	158
12	0.32	154

South Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.23	157
2	0.51	158
3	0.57	159
4	0.58	160
5	0.58	160
6	0.55	159
7	0.53	160
8	0.50	160
9	0.47	159
10	0.43	159
11	0.23	158
12	0.27	158
Total Average:	sqrt dp = 0.70032	158.1

Fab 11X Bridge Side Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11X-B RCTO R1 08 20 03 SAMPLE_0121.LAB	8/20/2003 12:56	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.70	0.206	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0122.LAB	8/20/2003 12:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0123.LAB	8/20/2003 13:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0124.LAB	8/20/2003 13:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.205	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0125.LAB	8/20/2003 13:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.69	0.205	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0126.LAB	8/20/2003 13:09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0127.LAB	8/20/2003 13:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0128.LAB	8/20/2003 13:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	0.205	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0129.LAB	8/20/2003 13:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0130.LAB	8/20/2003 13:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0131.LAB	8/20/2003 13:22	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.202	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0132.LAB	8/20/2003 13:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0133.LAB	8/20/2003 13:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0134.LAB	8/20/2003 13:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0135.LAB	8/20/2003 13:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0136.LAB	8/20/2003 13:35	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0137.LAB	8/20/2003 13:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0138.LAB	8/20/2003 13:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0139.LAB	8/20/2003 13:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0140.LAB	8/20/2003 13:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.204	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0141.LAB	8/20/2003 13:48	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0142.LAB	8/20/2003 13:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0143.LAB	8/20/2003 13:53	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0144.LAB	8/20/2003 13:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0145.LAB	8/20/2003 13:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0146.LAB	8/20/2003 14:01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0147.LAB	8/20/2003 14:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.205	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0148.LAB	8/20/2003 14:06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0149.LAB	8/20/2003 14:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	0.206	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0150.LAB	8/20/2003 14:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0151.LAB	8/20/2003 14:14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0152.LAB	8/20/2003 14:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.67	0.207	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0153.LAB	8/20/2003 14:19	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.65	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0154.LAB	8/20/2003 14:21	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.64	0.201	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0155.LAB	8/20/2003 14:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.66	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0156.LAB	8/20/2003 14:27	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.65	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0157.LAB	8/20/2003 14:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.65	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0158.LAB	8/20/2003 14:32	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.64	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0159.LAB	8/20/2003 14:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.64	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0160.LAB	8/20/2003 14:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.63	0.206	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0161.LAB	8/20/2003 14:40	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.204	149.02	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0162.LAB	8/20/2003 14:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0163.LAB	8/20/2003 14:45	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0164.LAB	8/20/2003 14:47	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0165.LAB	8/20/2003 14:50	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.202	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0166.LAB	8/20/2003 14:52	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.202	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0167.LAB	8/20/2003 14:55	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0168.LAB	8/20/2003 14:58	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	0.202	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0169.LAB	8/20/2003 15:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	0.204	149.02	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0170.LAB	8/20/2003 15:03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0171.LAB	8/20/2003 15:05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0172.LAB	8/20/2003 15:08	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	0.205	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0173.LAB	8/20/2003 15:11	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0174.LAB	8/20/2003 15:13	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.203	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0175.LAB	8/20/2003 15:16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.203	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0176.LAB	8/20/2003 15:18	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.206	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0177.LAB	8/20/2003 15:21	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57	0.203	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0178.LAB	8/20/2003 15:24	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.205	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0179.LAB	8/20/2003 15:26	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0180.LAB	8/20/2003 15:29	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	0.206	149.76	1.003

TRC Environmental Corporation
DRC Measurements Division
Littleton, Colorado
TRC Project No. 31397-1600-00000

Fab 11X Bridge Side Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11X-B RCTO R1 08 20 03 SAMPLE_0181.LAB	8/20/2003 15:31	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.207	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0182.LAB	8/20/2003 15:34	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.61	0.208	149.76	0.997
11X-B RCTO R1 08 20 03 SAMPLE_0183.LAB	8/20/2003 15:37	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	0.208	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0184.LAB	8/20/2003 15:39	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	0.206	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0185.LAB	8/20/2003 15:42	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58	0.204	149.76	1.003
11X-B RCTO R1 08 20 03 SAMPLE_0186.LAB	8/20/2003 15:44	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	0.204	149.76	1.003
	Average _{wet}	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71	0.205		

EPA REFERENCE METHOD 2 VELOCITY TRAVERSE FIELD DATA SHEET

Plant: Intel: Rio Rancho, New Mexico	Date: 8/20/2003															
Unit Number: Fab 11X-Bridge Side RCTO Outlet	Stack Diameter (in.): 41.50															
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): -0.33															
Run No.: 1	Operators: BMB/JL															
Project No.: 31397-1600-0000	Barometric Pressure (in.Hg): 24.51															
Pitot Tube ID: HA-2	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"></td> <td style="width: 25%; text-align: center;">Pre Test</td> <td style="width: 25%;"></td> </tr> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Tube Coefficient: 0.84</td> <td></td> <td></td> </tr> <tr> <td>Estimated Stack CO₂%: <u>0.25</u> O₂%: <u>20.5</u> H₂O%: <u>1.6</u></td> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u> <u> </u></td> </tr> <tr> <td>Platform Elevation (feet):</td> <td></td> <td></td> </tr> </table>		Pre Test			<u>Pass</u>	<u>Fail</u>	Pitot Tube Coefficient: 0.84			Estimated Stack CO₂%: <u>0.25</u> O₂%: <u>20.5</u> H₂O%: <u>1.6</u>	Pitot Leak Check	<u>Y</u> <u> </u>	Platform Elevation (feet):		
	Pre Test															
	<u>Pass</u>	<u>Fail</u>														
Pitot Tube Coefficient: 0.84																
Estimated Stack CO₂%: <u>0.25</u> O₂%: <u>20.5</u> H₂O%: <u>1.6</u>	Pitot Leak Check	<u>Y</u> <u> </u>														
Platform Elevation (feet):																
Comments:																
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"></td> <td style="width: 25%; text-align: center;">Post Test</td> <td style="width: 25%;"></td> </tr> <tr> <td></td> <td style="text-align: center;"><u>Pass</u></td> <td style="text-align: center;"><u>Fail</u></td> </tr> <tr> <td>Pitot Leak Check</td> <td style="text-align: center;"><u>Y</u> <u> </u></td> <td></td> </tr> <tr> <td>Start:</td> <td style="text-align: center;">14:45</td> <td></td> </tr> <tr> <td>End:</td> <td style="text-align: center;">15:00</td> <td></td> </tr> </table>		Post Test			<u>Pass</u>	<u>Fail</u>	Pitot Leak Check	<u>Y</u> <u> </u>		Start:	14:45		End:	15:00	
	Post Test															
	<u>Pass</u>	<u>Fail</u>														
Pitot Leak Check	<u>Y</u> <u> </u>															
Start:	14:45															
End:	15:00															

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.29	129
2	0.33	129
3	0.34	132
4	0.34	133
5	0.34	129
6	0.25	121

West Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.33	128
2	0.35	132
3	0.33	139
4	0.34	132
5	0.34	127
6	0.24	122
Total Average: sqrt dp = 0.56324		129.4

Fab 11X Fab Side Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11X-F RCTO 07 29 03 SAMPLE_0159.LAB	7/29/2003 14:01	0.77	0.60	ND	ND	ND	ND	ND	ND	ND	1.59	0.210	149.76	0.950
11X-F RCTO 07 29 03 SAMPLE_0160.LAB	7/29/2003 14:03	0.83	0.61	ND	ND	ND	ND	ND	ND	ND	1.58	0.207	149.76	0.960
11X-F RCTO 07 29 03 SAMPLE_0161.LAB	7/29/2003 14:06	0.77	0.60	ND	ND	ND	ND	ND	ND	ND	1.59	0.208	149.76	0.955
11X-F RCTO 07 29 03 SAMPLE_0162.LAB	7/29/2003 14:08	0.79	0.59	ND	ND	ND	ND	ND	ND	ND	1.59	0.207	149.76	0.992
11X-F RCTO 07 29 03 SAMPLE_0163.LAB	7/29/2003 14:11	0.83	0.62	ND	ND	ND	ND	ND	ND	ND	1.60	0.209	149.76	0.987
11X-F RCTO 07 29 03 SAMPLE_0164.LAB	7/29/2003 14:14	0.80	0.65	ND	ND	ND	ND	ND	ND	ND	1.61	0.210	149.76	0.987
11X-F RCTO 07 29 03 SAMPLE_0165.LAB	7/29/2003 14:16	0.79	0.61	ND	ND	ND	ND	ND	ND	ND	1.59	0.206	149.76	0.992
11X-F RCTO 07 29 03 SAMPLE_0166.LAB	7/29/2003 14:19	0.73	0.66	ND	ND	ND	ND	ND	ND	ND	1.60	0.209	149.76	0.992
11X-F RCTO 07 29 03 SAMPLE_0167.LAB	7/29/2003 14:22	0.80	0.65	ND	ND	ND	ND	ND	ND	ND	1.61	0.211	149.76	0.987
11X-F RCTO 07 29 03 SAMPLE_0168.LAB	7/29/2003 14:24	0.77	0.62	ND	ND	ND	ND	ND	ND	ND	1.61	0.210	149.76	0.987
11X-F RCTO 07 29 03 SAMPLE_0169.LAB	7/29/2003 14:27	0.85	0.56	ND	ND	ND	ND	ND	ND	ND	1.58	0.206	149.76	1.013
11X-F RCTO 07 29 03 SAMPLE_0170.LAB	7/29/2003 14:29	0.83	0.59	ND	ND	ND	ND	ND	ND	ND	1.59	0.208	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0171.LAB	7/29/2003 14:32	0.81	0.61	ND	ND	ND	ND	ND	ND	ND	1.58	0.206	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0172.LAB	7/29/2003 14:35	0.74	0.59	ND	ND	ND	ND	ND	ND	ND	1.59	0.207	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0173.LAB	7/29/2003 14:37	0.79	0.61	ND	ND	ND	ND	ND	ND	ND	1.59	0.208	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0174.LAB	7/29/2003 14:40	0.82	0.57	ND	ND	ND	ND	ND	ND	ND	1.59	0.210	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0175.LAB	7/29/2003 14:42	0.80	0.59	ND	ND	ND	ND	ND	ND	ND	1.59	0.210	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0176.LAB	7/29/2003 14:45	0.73	0.61	ND	ND	ND	ND	ND	ND	ND	1.58	0.208	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0177.LAB	7/29/2003 14:48	0.73	0.66	ND	ND	ND	ND	ND	ND	ND	1.59	0.208	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0178.LAB	7/29/2003 14:50	0.75	0.65	ND	ND	ND	ND	ND	ND	ND	1.58	0.208	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0179.LAB	7/29/2003 14:53	0.69	0.62	ND	ND	ND	ND	ND	ND	ND	1.59	0.208	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0180.LAB	7/29/2003 14:55	0.72	0.62	ND	ND	ND	ND	ND	ND	ND	1.58	0.208	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0181.LAB	7/29/2003 14:58	0.71	0.67	ND	ND	ND	ND	ND	ND	ND	1.59	0.209	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0182.LAB	7/29/2003 15:01	0.71	0.67	ND	ND	ND	ND	ND	ND	ND	1.59	0.210	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0183.LAB	7/29/2003 15:03	0.72	0.65	ND	ND	ND	ND	ND	ND	ND	1.58	0.208	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0184.LAB	7/29/2003 15:06	0.73	0.63	ND	ND	ND	ND	ND	ND	ND	1.58	0.208	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0185.LAB	7/29/2003 15:08	0.71	0.64	ND	ND	ND	ND	ND	ND	ND	1.58	0.207	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0186.LAB	7/29/2003 15:11	0.72	0.64	ND	ND	ND	ND	ND	ND	ND	1.59	0.207	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0187.LAB	7/29/2003 15:14	0.70	0.66	ND	ND	ND	ND	ND	ND	ND	1.59	0.209	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0188.LAB	7/29/2003 15:16	0.66	0.77	ND	ND	ND	ND	ND	ND	ND	1.58	0.208	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0189.LAB	7/29/2003 15:19	0.62	0.79	ND	ND	ND	ND	ND	ND	ND	1.59	0.209	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0190.LAB	7/29/2003 15:21	0.63	0.84	ND	ND	ND	ND	ND	ND	ND	1.58	0.207	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0191.LAB	7/29/2003 15:24	0.61	0.86	ND	ND	ND	ND	ND	ND	ND	1.57	0.207	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0192.LAB	7/29/2003 15:27	0.92	1.15	ND	ND	ND	ND	ND	ND	ND	1.57	0.206	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0193.LAB	7/29/2003 15:29	6.93	1.35	ND	ND	ND	ND	ND	ND	ND	1.58	0.208	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0194.LAB	7/29/2003 15:32	9.50	1.48	ND	ND	ND	ND	ND	ND	ND	1.57	0.206	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0195.LAB	7/29/2003 15:35	14.97	2.09	ND	ND	ND	ND	ND	ND	ND	1.57	0.208	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0196.LAB	7/29/2003 15:37	19.39	2.45	ND	ND	ND	ND	ND	ND	ND	1.56	0.206	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0198.LAB	7/29/2003 15:45	1.46	1.57	ND	ND	ND	ND	ND	ND	ND	1.53	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0199.LAB	7/29/2003 15:47	1.16	1.22	ND	ND	ND	ND	ND	ND	ND	1.54	0.206	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0200.LAB	7/29/2003 15:50	1.05	0.83	ND	ND	ND	ND	ND	ND	ND	1.53	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0201.LAB	7/29/2003 15:53	1.00	0.52	ND	ND	ND	ND	ND	ND	ND	1.53	0.205	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0202.LAB	7/29/2003 15:55	0.94	0.43	ND	ND	ND	ND	ND	ND	ND	1.54	0.207	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0203.LAB	7/29/2003 15:58	0.95	0.35	ND	ND	ND	ND	ND	ND	ND	1.54	0.207	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0204.LAB	7/29/2003 16:01	0.89	0.41	ND	ND	ND	ND	ND	ND	ND	1.55	0.207	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0205.LAB	7/29/2003 16:03	0.81	0.42	ND	ND	ND	ND	ND	ND	ND	1.54	0.206	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0206.LAB	7/29/2003 16:06	0.84	0.38	ND	ND	ND	ND	ND	ND	ND	1.54	0.205	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0207.LAB	7/29/2003 16:08	0.84	0.38	ND	ND	ND	ND	ND	ND	ND	1.54	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0208.LAB	7/29/2003 16:11	0.84	0.41	ND	ND	ND	ND	ND	ND	ND	1.55	0.207	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0209.LAB	7/29/2003 16:14	0.81	0.41	ND	ND	ND	ND	ND	ND	ND	1.55	0.207	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0210.LAB	7/29/2003 16:16	0.85	0.41	ND	ND	ND	ND	ND	ND	ND	1.56	0.208	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0211.LAB	7/29/2003 16:19	0.86	0.40	ND	ND	ND	ND	ND	ND	ND	1.55	0.207	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0212.LAB	7/29/2003 16:21	0.88	0.37	ND	ND	ND	ND	ND	ND	ND	1.55	0.206	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0213.LAB	7/29/2003 16:24	0.86	0.41	ND	ND	ND	ND	ND	ND	ND	1.55	0.206	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0214.LAB	7/29/2003 16:27	0.84	0.35	ND	ND	ND	ND	ND	ND	ND	1.55	0.207	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0215.LAB	7/29/2003 16:29	0.85	0.36	ND	ND	ND	ND	ND	ND	ND	1.54	0.206	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0216.LAB	7/29/2003 16:32	0.84	0.33	ND	ND	ND	ND	ND	ND	ND	1.54	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0217.LAB	7/29/2003 16:34	0.79	0.40	ND	ND	ND	ND	ND	ND	ND	1.55	0.208	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0218.LAB	7/29/2003 16:37	0.82	0.35	ND	ND	ND	ND	ND	ND	ND	1.55	0.208	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0219.LAB	7/29/2003 16:40	0.79	0.37	ND	ND	ND	ND	ND	ND	ND	1.53	0.205	149.76	1.008

Fab 11X Fab Side Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11X-F RCTO 07 29 03 SAMPLE_0220.LAB	7/29/2003 16:42	0.78	0.37	ND	ND	ND	ND	ND	ND	ND	1.54	0.207	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0221.LAB	7/29/2003 16:45	0.79	0.41	ND	ND	ND	ND	ND	ND	ND	1.54	0.207	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0222.LAB	7/29/2003 16:47	1.27	0.42	ND	ND	ND	ND	ND	ND	ND	1.53	0.205	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0223.LAB	7/29/2003 16:50	6.49	0.79	ND	ND	ND	ND	ND	ND	ND	1.53	0.205	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0224.LAB	7/29/2003 16:53	9.94	0.89	ND	ND	ND	ND	ND	ND	ND	1.54	0.207	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0225.LAB	7/29/2003 16:55	17.30	1.33	ND	ND	ND	ND	ND	ND	ND	1.53	0.208	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0226.LAB	7/29/2003 16:58	18.74	1.61	ND	ND	ND	ND	ND	ND	ND	1.53	0.208	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0227.LAB	7/29/2003 17:01	18.91	1.91	ND	ND	ND	ND	ND	ND	ND	1.53	0.207	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0228.LAB	7/29/2003 17:03	19.47	2.49	ND	ND	ND	ND	ND	ND	ND	1.53	0.206	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0229.LAB	7/29/2003 17:06	18.60	2.79	ND	ND	ND	ND	ND	ND	ND	1.53	0.206	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0230.LAB	7/29/2003 17:08	20.02	3.26	ND	ND	ND	ND	ND	ND	ND	1.51	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0231.LAB	7/29/2003 17:11	13.55	2.77	ND	ND	ND	ND	ND	ND	ND	1.53	0.206	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0232.LAB	7/29/2003 17:14	4.21	2.51	ND	ND	ND	ND	ND	ND	ND	1.52	0.205	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0233.LAB	7/29/2003 17:16	2.14	2.21	ND	ND	ND	ND	ND	ND	ND	1.53	0.205	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0234.LAB	7/29/2003 17:19	1.65	1.81	ND	ND	ND	ND	ND	ND	ND	1.53	0.205	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0235.LAB	7/29/2003 17:21	1.50	1.33	ND	ND	ND	ND	ND	ND	ND	1.52	0.205	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0236.LAB	7/29/2003 17:24	1.41	1.10	ND	ND	ND	ND	ND	ND	ND	1.53	0.205	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0237.LAB	7/29/2003 17:27	1.37	0.82	ND	ND	ND	ND	ND	ND	ND	1.54	0.207	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0238.LAB	7/29/2003 17:29	1.59	1.01	ND	ND	ND	ND	ND	ND	ND	1.53	0.206	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0239.LAB	7/29/2003 17:32	6.19	1.06	ND	ND	ND	ND	ND	ND	ND	1.53	0.207	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0240.LAB	7/29/2003 17:34	11.07	1.42	ND	ND	ND	ND	ND	ND	ND	1.53	0.208	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0241.LAB	7/29/2003 17:37	18.13	1.73	ND	ND	ND	ND	ND	ND	ND	1.52	0.206	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0242.LAB	7/29/2003 17:40	18.17	2.16	ND	ND	ND	ND	ND	ND	ND	1.52	0.205	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0243.LAB	7/29/2003 17:42	17.99	2.48	ND	ND	ND	ND	ND	ND	ND	1.53	0.206	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0244.LAB	7/29/2003 17:45	13.00	2.47	ND	ND	ND	ND	ND	ND	ND	1.53	0.205	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0245.LAB	7/29/2003 17:48	4.57	2.23	ND	ND	ND	ND	ND	ND	ND	1.52	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0246.LAB	7/29/2003 17:50	2.26	2.06	ND	ND	ND	ND	ND	ND	ND	1.54	0.207	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0247.LAB	7/29/2003 17:53	1.75	1.69	ND	ND	ND	ND	ND	ND	ND	1.54	0.205	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0248.LAB	7/29/2003 17:55	1.56	1.21	ND	ND	ND	ND	ND	ND	ND	1.51	0.200	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0249.LAB	7/29/2003 17:58	1.44	0.95	ND	ND	ND	ND	ND	ND	ND	1.53	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0250.LAB	7/29/2003 18:01	1.32	0.85	ND	ND	ND	ND	ND	ND	ND	1.53	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0251.LAB	7/29/2003 18:03	1.35	0.79	ND	ND	ND	ND	ND	ND	ND	1.53	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0252.LAB	7/29/2003 18:06	1.29	0.76	ND	ND	ND	ND	ND	ND	ND	1.53	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0253.LAB	7/29/2003 18:08	1.20	0.78	ND	ND	ND	ND	ND	ND	ND	1.53	0.201	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0254.LAB	7/29/2003 18:11	1.19	0.75	ND	ND	ND	ND	ND	ND	ND	1.52	0.202	149.02	1.008
11X-F RCTO 07 29 03 SAMPLE_0255.LAB	7/29/2003 18:14	1.20	0.88	ND	ND	ND	ND	ND	ND	ND	1.53	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0256.LAB	7/29/2003 18:16	1.27	1.51	ND	ND	ND	ND	ND	ND	ND	1.53	0.204	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0257.LAB	7/29/2003 18:19	1.27	1.18	ND	ND	ND	ND	ND	ND	ND	1.52	0.204	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0258.LAB	7/29/2003 18:21	1.27	0.68	ND	ND	ND	ND	ND	ND	ND	1.51	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0259.LAB	7/29/2003 18:24	1.22	0.35	ND	ND	ND	ND	ND	ND	ND	1.51	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0260.LAB	7/29/2003 18:27	1.24	0.35	ND	ND	ND	ND	ND	ND	ND	1.54	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0261.LAB	7/29/2003 18:29	1.18	0.44	ND	ND	ND	ND	ND	ND	ND	1.55	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0262.LAB	7/29/2003 18:32	1.19	0.46	ND	ND	ND	ND	ND	ND	ND	1.55	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0263.LAB	7/29/2003 18:35	1.18	0.45	ND	ND	ND	ND	ND	ND	ND	1.54	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0264.LAB	7/29/2003 18:37	1.19	0.41	ND	ND	ND	ND	ND	ND	ND	1.54	0.205	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0265.LAB	7/29/2003 18:40	1.16	0.47	ND	ND	ND	ND	ND	ND	ND	1.52	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0266.LAB	7/29/2003 18:42	1.15	0.40	ND	ND	ND	ND	ND	ND	ND	1.52	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0267.LAB	7/29/2003 18:45	1.13	0.45	ND	ND	ND	ND	ND	ND	ND	1.52	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0268.LAB	7/29/2003 18:48	1.08	0.50	ND	ND	ND	ND	ND	ND	ND	1.52	0.201	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0269.LAB	7/29/2003 18:50	1.10	0.49	ND	ND	ND	ND	ND	ND	ND	1.52	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0270.LAB	7/29/2003 18:53	1.12	0.43	ND	ND	ND	ND	ND	ND	ND	1.52	0.204	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0271.LAB	7/29/2003 18:55	1.04	0.49	ND	ND	ND	ND	ND	ND	ND	1.52	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0272.LAB	7/29/2003 18:58	1.01	0.52	ND	ND	ND	ND	ND	ND	ND	1.51	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0273.LAB	7/29/2003 19:01	1.04	0.51	ND	ND	ND	ND	ND	ND	ND	1.50	0.200	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0274.LAB	7/29/2003 19:03	1.01	0.51	ND	ND	ND	ND	ND	ND	ND	1.50	0.201	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0275.LAB	7/29/2003 19:06	1.03	0.52	ND	ND	ND	ND	ND	ND	ND	1.51	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0276.LAB	7/29/2003 19:08	1.01	0.50	ND	ND	ND	ND	ND	ND	ND	1.52	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0277.LAB	7/29/2003 19:11	0.98	0.51	ND	ND	ND	ND	ND	ND	ND	1.51	0.201	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0278.LAB	7/29/2003 19:14	0.97	0.53	ND	ND	ND	ND	ND	ND	ND	1.51	0.200	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0279.LAB	7/29/2003 19:16	0.90	0.56	ND	ND	ND	ND	ND	ND	ND	1.51	0.201	149.76	1.003

Fab 11X Fab Side Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11X-F RCTO 07 29 03 SAMPLE_0280.LAB	7/29/2003 19:19	0.92	0.55	ND	ND	ND	ND	ND	ND	ND	1.51	0.203	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0281.LAB	7/29/2003 19:21	0.93	0.53	ND	ND	ND	ND	ND	ND	ND	1.51	0.201	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0282.LAB	7/29/2003 19:24	0.87	0.55	ND	ND	ND	ND	ND	ND	ND	1.51	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0283.LAB	7/29/2003 19:27	0.88	0.52	ND	ND	ND	ND	ND	ND	ND	1.51	0.202	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0284.LAB	7/29/2003 19:29	0.86	0.52	ND	ND	ND	ND	ND	ND	ND	1.51	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0285.LAB	7/29/2003 19:32	0.87	0.52	ND	ND	ND	ND	ND	ND	ND	1.51	0.200	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0286.LAB	7/29/2003 19:35	0.83	0.54	ND	ND	ND	ND	ND	ND	ND	1.52	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0287.LAB	7/29/2003 19:37	0.84	0.57	ND	ND	ND	ND	ND	ND	ND	1.52	0.201	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0288.LAB	7/29/2003 19:40	0.83	0.55	ND	ND	ND	ND	ND	ND	ND	1.51	0.201	149.02	1.008
11X-F RCTO 07 29 03 SAMPLE_0289.LAB	7/29/2003 19:42	0.81	0.51	ND	ND	ND	ND	ND	ND	ND	1.51	0.200	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0290.LAB	7/29/2003 19:45	0.77	0.53	ND	ND	ND	ND	ND	ND	ND	1.52	0.201	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0291.LAB	7/29/2003 19:48	0.74	0.57	ND	ND	ND	ND	ND	ND	ND	1.53	0.200	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0292.LAB	7/29/2003 19:50	0.73	0.55	ND	ND	ND	ND	ND	ND	ND	1.53	0.201	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0293.LAB	7/29/2003 19:53	0.74	0.59	ND	ND	ND	ND	ND	ND	ND	1.55	0.201	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0294.LAB	7/29/2003 19:55	0.72	0.58	ND	ND	ND	ND	ND	ND	ND	1.57	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0295.LAB	7/29/2003 19:58	0.72	0.59	ND	ND	ND	ND	ND	ND	ND	1.57	0.201	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0296.LAB	7/29/2003 20:01	0.68	0.58	ND	ND	ND	ND	ND	ND	ND	1.58	0.199	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0297.LAB	7/29/2003 20:03	0.73	0.66	ND	ND	ND	ND	ND	ND	ND	1.63	0.201	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0298.LAB	7/29/2003 20:06	0.67	0.68	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0299.LAB	7/29/2003 20:08	0.73	0.66	ND	ND	ND	ND	ND	ND	ND	1.69	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0300.LAB	7/29/2003 20:11	0.70	0.67	ND	ND	ND	ND	ND	ND	ND	1.70	0.201	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0301.LAB	7/29/2003 20:14	0.64	0.73	ND	ND	ND	ND	ND	ND	ND	1.71	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0302.LAB	7/29/2003 20:16	0.67	0.65	ND	ND	ND	ND	ND	ND	ND	1.71	0.201	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0303.LAB	7/29/2003 20:19	0.64	0.70	ND	ND	ND	ND	ND	ND	ND	1.72	0.204	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0304.LAB	7/29/2003 20:21	0.62	0.69	ND	ND	ND	ND	ND	ND	ND	1.72	0.201	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0305.LAB	7/29/2003 20:24	0.65	0.70	ND	ND	ND	ND	ND	ND	ND	1.72	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0306.LAB	7/29/2003 20:27	0.60	0.67	ND	ND	ND	ND	ND	ND	ND	1.72	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0307.LAB	7/29/2003 20:29	0.57	0.69	ND	ND	ND	ND	ND	ND	ND	1.72	0.204	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0308.LAB	7/29/2003 20:32	0.59	0.63	ND	ND	ND	ND	ND	ND	ND	1.69	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0309.LAB	7/29/2003 20:34	0.53	0.64	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0310.LAB	7/29/2003 20:37	0.54	0.63	ND	ND	ND	ND	ND	ND	ND	1.64	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0311.LAB	7/29/2003 20:40	0.56	0.60	ND	ND	ND	ND	ND	ND	ND	1.63	0.200	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0312.LAB	7/29/2003 20:42	0.51	0.66	ND	ND	ND	ND	ND	ND	ND	1.67	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0313.LAB	7/29/2003 20:45	0.55	0.65	ND	ND	ND	ND	ND	ND	ND	1.67	0.202	149.02	1.008
11X-F RCTO 07 29 03 SAMPLE_0314.LAB	7/29/2003 20:48	0.53	0.66	ND	ND	ND	ND	ND	ND	ND	1.69	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0315.LAB	7/29/2003 20:50	0.55	0.61	ND	ND	ND	ND	ND	ND	ND	1.70	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0316.LAB	7/29/2003 20:53	0.49	0.70	ND	ND	ND	ND	ND	ND	ND	1.72	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0317.LAB	7/29/2003 20:55	0.54	0.66	ND	ND	ND	ND	ND	ND	ND	1.70	0.200	149.02	1.008
11X-F RCTO 07 29 03 SAMPLE_0318.LAB	7/29/2003 20:58	0.51	0.65	ND	ND	ND	ND	ND	ND	ND	1.71	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0319.LAB	7/29/2003 21:01	0.52	0.68	ND	ND	ND	ND	ND	ND	ND	1.71	0.201	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0320.LAB	7/29/2003 21:03	0.50	0.65	ND	ND	ND	ND	ND	ND	ND	1.72	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0321.LAB	7/29/2003 21:06	0.47	0.64	ND	ND	ND	ND	ND	ND	ND	1.69	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0322.LAB	7/29/2003 21:08	0.43	0.60	ND	ND	ND	ND	ND	ND	ND	1.66	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0323.LAB	7/29/2003 21:11	0.42	0.58	ND	ND	ND	ND	ND	ND	ND	1.65	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0324.LAB	7/29/2003 21:14	0.47	0.58	ND	ND	ND	ND	ND	ND	ND	1.63	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0325.LAB	7/29/2003 21:16	0.44	0.58	ND	ND	ND	ND	ND	ND	ND	1.60	0.200	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0326.LAB	7/29/2003 21:19	0.46	0.55	ND	ND	ND	ND	ND	ND	ND	1.60	0.203	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0327.LAB	7/29/2003 21:21	0.44	0.53	ND	ND	ND	ND	ND	ND	ND	1.59	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0328.LAB	7/29/2003 21:24	0.43	0.58	ND	ND	ND	ND	ND	ND	ND	1.58	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0329.LAB	7/29/2003 21:27	0.47	0.54	ND	ND	ND	ND	ND	ND	ND	1.58	0.204	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0330.LAB	7/29/2003 21:29	0.47	0.51	ND	ND	ND	ND	ND	ND	ND	1.59	0.205	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0331.LAB	7/29/2003 21:32	0.46	0.53	ND	ND	ND	ND	ND	ND	ND	1.58	0.203	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0332.LAB	7/29/2003 21:34	0.45	0.53	ND	ND	ND	ND	ND	ND	ND	1.58	0.204	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0333.LAB	7/29/2003 21:37	0.45	0.54	ND	ND	ND	ND	ND	ND	ND	1.56	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0334.LAB	7/29/2003 21:40	0.54	0.48	ND	ND	ND	ND	ND	ND	ND	1.56	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0335.LAB	7/29/2003 21:42	0.56	0.48	ND	ND	ND	ND	ND	ND	ND	1.56	0.204	149.02	1.003
11X-F RCTO 07 29 03 SAMPLE_0336.LAB	7/29/2003 21:45	0.54	0.50	ND	ND	ND	ND	ND	ND	ND	1.56	0.204	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0337.LAB	7/29/2003 21:47	0.55	0.48	ND	ND	ND	ND	ND	ND	ND	1.55	0.203	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0338.LAB	7/29/2003 21:50	0.53	0.48	ND	ND	ND	ND	ND	ND	ND	1.55	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0339.LAB	7/29/2003 21:53	0.50	0.48	ND	ND	ND	ND	ND	ND	ND	1.55	0.201	149.76	1.003

Fab 11X Fab Side Run 1 RTO FTIR Results
INTEL RIO RANCHO 3rd QUARTER 2003 VOC MONITORING

Spectrum	Date & Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBUAC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (°C)	Press. (Atm)
11X-F RCTO 07 29 03 SAMPLE_0340.LAB	7/29/2003 21:55	0.52	0.48	ND	ND	ND	ND	ND	ND	ND	1.54	0.202	149.76	1.008
11X-F RCTO 07 29 03 SAMPLE_0341.LAB	7/29/2003 21:58	0.47	0.50	ND	ND	ND	ND	ND	ND	ND	1.55	0.202	149.76	1.003
11X-F RCTO 07 29 03 SAMPLE_0342.LAB	7/29/2003 22:00	0.52	0.50	ND	ND	ND	ND	ND	ND	ND	1.54	0.202	149.76	1.008
Average _{wet}		2.32	0.79	ND	ND	ND	ND	ND	ND	ND	1.57	0.204		

EPA REFERENCE METHOD 2 VELOCITY TRAVERSE FIELD DATA SHEET

Plant: Intel: Rio Rancho, New Mexico	Date: 7/29/2003
Unit Number: Fab 11X-F RCTO	Stack Diameter (in.): 48.00
Load Condition: Normal	Stack Gauge Pressure (in.H₂O): 0.69
Run No.: 1	Operators: BMB/BG
Project No.: 31397-1100-0000	Barometric Pressure (in.Hg): 24.90
Pitot Tube ID: HA-2	Pre Test <u>Pass</u> <u>Fail</u> Pitot Leak Check <u>Y</u> <u> </u> Post Test <u>Pass</u> <u>Fail</u> Pitot Leak Check <u>Y</u> <u> </u> Start: 13:30 End: 13:45
Pitot Tube Coefficient: 0.84	
Estimated Stack CO₂%: <u>0.25</u> O₂%: <u>20.5</u> H₂O%: <u>1.6</u>	
Platform Elevation (feet):	
Comments:	

East Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.76	114.4
2	0.91	122.6
3	0.90	125.6
4	0.79	124.6
5	0.80	106.6
6	0.69	101.8

North Port

Traverse Point Number	Velocity Head (in. H ₂ O)	Stack Temp. (°F)
1	0.75	115.6
2	0.80	121.6
3	0.83	127.0
4	0.69	145.6
5	0.68	130.6
6	0.55	112.2
Total Average:	sqrt dp = 0.87139	120.7

**INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER**

FIELD AND SOURCE DOCUMENTATION

APPENDIX A
Field and Measurement Data

SECTION 9
FT-IR Monitoring Quality Assurance Data

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

FTIR Spike Results
Intel Rio Rancho
Scrubber Testing Q3 2003
9s.1.2b

FTIR Model Number: 2030
FTIR Serial Number: MG-07-102

Spike Gas Carbon Tetrachloride
Cylinder No. ALM064781

Constituents	Conc. (ppb)	Accuracy
Carbon Tetrachloride	10400	+/- 2%
SF ₆	1.602	

Spectral Filename	Date	Time	Run #	Spike % Recovery	SF ₆ Spike Result	Carbon Tetrachloride Spike			Acceptable Range = +/- 30%	
						Dilution Factor	Measured Result	Expected Result		
9S_1_2B 07 30 03 SPIKE TO PROBE_0002.LAB	07/30/03	7:35:39	1	105.753%	0.132	0.082635	908.839	859.402	601.582	1117.223
9S_1_2B 07 30 03 SPIKE TO PROBE_0003.LAB	07/30/03	7:38:15		106.515%	0.133	0.082861	917.893	861.752	603.227	1120.278
9S_1_2B 07 30 03 SPIKE TO PROBE_0004.LAB	07/30/03	7:40:51	2	106.524%	0.133	0.082948	918.937	862.661	603.863	1121.460
9S_1_2B 07 30 03 SPIKE TO PROBE_0005.LAB	07/30/03	7:43:27		107.703%	0.132	0.082192	920.638	854.793	598.355	1111.231
9S_1_2B 07 30 03 SPIKE TO PROBE_0006.LAB	07/30/03	7:46:03	3	105.471%	0.133	0.082732	907.490	860.415	602.290	1118.539
9S_1_2B 07 30 03 SPIKE TO PROBE_0007.LAB	07/30/03	7:48:39		106.428%	0.130	0.080959	896.100	841.978	589.385	1094.571
9S_1_2B 07 30 03 SPIKE TO PROBE_0008.LAB	07/30/03	7:51:15	4	106.638%	0.131	0.081794	907.120	850.658	595.460	1105.855
9S_1_2B 07 30 03 SPIKE TO PROBE_0009.LAB	07/30/03	7:53:51		102.425%	0.137	0.085449	910.219	888.668	622.067	1155.268
9S_1_2B 07 30 03 SPIKE TO PROBE_0010.LAB	07/30/03	7:56:27	5	101.485%	0.140	0.087435	922.824	909.325	636.527	1182.122
9S_1_2B 07 30 03 SPIKE TO PROBE_0011.LAB	07/30/03	7:59:03		106.501%	0.135	0.084167	932.244	875.340	612.738	1137.942
9S_1_2B 07 30 03 SPIKE TO PROBE_0012.LAB	07/30/03	8:01:39	6	109.627%	0.130	0.081335	927.323	845.886	592.120	1099.652
9S_1_2B 07 30 03 SPIKE TO PROBE_0013.LAB	07/30/03	8:04:15		108.553%	0.132	0.082141	927.334	854.267	597.987	1110.547
9S_1_2B 07 30 03 SPIKE TO PROBE_0014.LAB	07/30/03	8:06:51	7	101.713%	0.141	0.087827	929.047	913.402	639.381	1187.422
Average of 7 Runs				105.32%	0.134	0.08382	917.37	871.68	610.17	1133.18
				Limit = +/- 30%						

SF6 Direct to Instrument 1.597485
1.600126
1.603755
1.603915
1.602318

Scrubber FTIR Detection Limit Results
INTEL RIO RANCHO 2003 SCRUBBER HAP MONITORING

FTIR: MKS On-Line Model 2030

Compound Name	CCl ₄ (ppb)	HCl (ppb)	HF (ppb)	NH ₃ (ppb)	HCN (ppb)	H ₂ O (%)	CO ₂ (ppm)	COF ₂ (ppb)	NF ₃ (ppb)
	-41.186636	-37.327871	702.859884	92.143805	-114.722428	0.916334	400.152485	-296.337657	-29.798139
	-43.678109	-83.53113	629.5793	97.096406	-111.853475	0.909893	401.617531	-351.974885	-34.215468
	-31.436409	-58.167476	590.974353	81.338363	-114.728566	0.926397	402.455098	-457.49509	-29.336301
	-36.042917	-92.276492	556.882409	83.758692	-116.695796	0.928222	418.144389	-428.997165	-33.68324
	-31.746837	-86.651173	501.96002	91.420514	-106.728755	0.919127	401.958344	-373.18192	-35.812081
	-49.39995	-92.675114	501.23131	82.088695	-109.581583	0.929797	407.40148	-435.086683	-30.469968
	-43.729273	-124.691577	461.749387	82.371962	-111.423174	0.925068	398.699941	-516.815848	-35.795811
	-38.162185	-118.328573	429.71773	89.028728	-107.358017	0.925985	400.218765	-360.329233	-37.377802
	-27.08209	-127.611163	415.182943	95.105853	-117.28083	0.904022	400.191993	-357.156102	-36.211351
	-23.167284	-154.937073	388.073848	95.620402	-111.762577	0.892597	401.989898	-130.393257	-37.398518
	-3.525739	-189.129413	375.243261	91.965558	-100.228347	0.875559	398.392319	129.916086	-35.588358
	-15.368992	-175.287441	360.577028	85.679352	-97.811818	0.858818	398.222796	800.63874	-29.479937
	-51.54983	-193.973196	350.989579	85.977045	-97.086286	0.861919	398.988887	785.435079	-26.137461
	-19.209763	-199.252717	339.705922	92.370692	-95.482488	0.867644	408.909582	710.849024	-30.651221
	-54.66374	-191.881618	350.149679	81.009359	-119.14197	0.921931	402.567493	-76.292156	-31.880072
	-44.487924	-194.679812	350.00943	78.259949	-98.701917	0.929258	401.185422	-312.222815	-37.299186
	5.564568	-236.208501	331.328422	79.606885	-115.452803	0.915256	398.116838	-221.154024	-33.227811
	-16.195841	-215.610041	290.675418	89.261227	-109.842133	0.865641	401.535725	281.380849	-30.471814
	-20.536142	-221.234742	299.793999	75.894668	-110.614916	0.863083	399.679859	309.267158	-27.425923
	-6.676356	-234.966158	307.487057	81.712252	-109.541171	0.882061	401.48287	26.422783	-39.069207
	-3.338997	-222.569318	309.041511	71.590459	-130.642615	0.904294	401.913517	-427.703687	-34.955058
Average	-28.36287838	-154.80907614	421.10535667	85.87146981	-109.84198405	0.90109076	402.08691581	-81.01099062	-33.15641557
Square of Differences	164.44875947	13801.83356182	79385.61367283	39.34218874	23.81873317	0.00023236	3.74202256	46365.57325473	11.27802153
	234.55628891	5080.54560634	43461.38504895	125.99919248	4.04609585	0.00007748	0.22032210	73421.43205809	1.12159205
	9.44659047	9339.59887817	28855.47591529	20.54905735	23.87868318	0.00064041	0.13555813	141740.27708669	14.59327534
	58.98299319	3910.32407958	18435.40794033	4.46383007	46.97473828	0.00073610	257.84244526	121094.37756029	0.27754398
	11.45117594	4645.49976083	6537.47658275	30.79189143	9.69219510	0.00032531	0.01653071	85363.85197533	7.05255887
	442.55838230	3860.62925157	6420.16839758	14.30938526	0.06780871	0.00082405	28.24459253	125369.59593505	7.21700055
	236.12608359	907.06375462	1651.93720174	12.24655491	2.50016167	0.00057491	11.47159836	189925.87371683	6.96640823
	96.02641021	1330.82710956	74.17297443	9.96827928	6.17009229	0.00061972	3.48998745	78018.68052678	17.82010338
	1.64041888	739.72647933	35.07498364	85.27383291	55.33642910	0.00000859	3.59073245	76256.12253960	9.33263047
	26.99420097	0.01638320	1091.08056480	95.04167885	3.68867729	0.00007214	0.00941246	2438.60823292	17.99543301
	616.88349263	1177.88552199	2103.33181894	37.13791087	92.42201728	0.00065187	13.65004558	44490.23165106	5.91434398
	168.84108328	419.36342722	3663.67857118	0.03690925	144.72489513	0.00178699	14.93142190	777306.24750064	13.51649469
	537.63472538	1533.82828418	4916.22227780	0.01114612	162.70783268	0.00153443	9.59778250	750728.79155830	49.26572328
	83.77952118	1975.23721264	6625.86796405	42.23988908	206.19512674	0.00111869	46.54877395	627042.28275248	6.27599984
	691.73532190	1374.37335975	5034.70819314	23.64012152	86.48973871	0.00043432	0.23095444	22.26740016	1.62905291
	260.01709622	1589.67557779	5054.63078859	57.93524903	124.10109383	0.00079339	0.81269109	53458.90773357	17.16254682
	1151.07161793	6625.86636707	8059.89799814	39.24502284	31.48128932	0.00020065	15.76151781	19640.06980521	0.00509731
	148.03679863	3696.75732756	17011.96890059	11.49045381	0.00000002	0.00125669	0.30381131	131327.84542248	7.20708560
	61.25780238	4412.36908456	14716.44549893	99.53657435	0.59742380	0.00144459	5.79392248	152317.03328951	32.83854511
	470.30525298	6425.15777185	12909.11801914	17.29909279	0.09048849	0.00036213	0.36487134	11542.01571403	34.96110248
	626.19463937	4591.45037654	12558.30550560	203.94726974	432.66624802	0.00001026	0.03006715	120195.82572390	3.23511459
Detection Limit									
RMSD	17.04055199	60.72499649	115.1814239	6.798128351	8.331380063	0.025546473	4.455008212	415.6501454	3.556788774
*3	51.122	182.175	345.544	20.394	24.994	0.077	13.365	1246.950	10.670
STD	299.3123948	3350.577782	18421.89288	50.63268285	103.6693661	0.000522128	55.73611178	235340.958	12.65682818
*5	1496.562	16752.889	92109.464	253.163	518.347	0.003	278.681	1176704.790	63.284
Max	5.564568	-37.327871	702.859884	97.096406	-95.482488	0.929797	418.144389	800.63874	-26.137461
Min	-54.663740	-236.208501	290.675418	71.590459	-130.642615	0.858818	398.116838	-516.815848	-39.069207
ABS Diff	60.228308	198.88063	412.184466	25.505947	35.160127	0.070979	20.027551	1317.454588	12.931746
2*	120.457	397.761	824.369	51.012	70.320	0.142	40.055	2634.909	25.863

FTIR QUALITY ASSURANCE SUMMARY
CALIBRATION TRANSFER STANDARD RESULTS
INTEL RIO RANCHO 2003 THIRD QUARTER MONITORING
Acid Scrubbers

Source Location	Date	Time		ETHYLENE*				Cylinder		FTIR Serial No.
				822.26- 935.32 cm-1 (ppm)	935.56- 961.35 cm-1 (ppm)	961.60- 1129.62 cm-1 (ppm)	2905.03- 3286.88 cm-1 (ppm)	Conc. (ppm)	Number	
F7 Scrubber 7s.1.5 Inlet	08/25/2003	07:51 to 08:02	Pre-Test	99.93	99.61	99.58	101.01	100 +/- 2	ALM049794	MG-07-112
F7 Scrubber 7s.1.5 Inlet	08/25/2003	22:20 to 22:31	Post-Test	99.92	99.78	99.90	100.14	100 +/- 2	ALM049794	MG-07-112
F7 Scrubber 7s.1.5 Outlet	08/25/2003	07:08 to 07:21	Pre-Test	99.54	99.67	99.70	100.57	100 +/- 2	ALM049794	MG-07-102
F7 Scrubber 7s.1.5 Outlet	08/25/2003	21:33 to 21:43	Post-Test	99.72	99.50	99.93	99.95	100 +/- 2	ALM049794	MG-07-102
F7 Scrubber 9s.1.2h	08/26/2003	07:20 to 07:27	Pre-Test	99.41	99.22	99.01	100.15	100 +/- 2	ALM049794	MG-07-102
F7 Scrubber 9s.1.2h	08/26/2003	18:36 to 18:47	Post-Test	99.77	99.97	99.04	100.86	100 +/- 2	ALM049794	MG-07-102
F11W Scrubber 9s.1.1e	08/05/2003	10:51 to 11:04	Pre-Test	99.92	99.64	99.92	100.36	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.1e	08/05/2003	20:35 to 20:46	Post-Test	99.93	100.04	100.33	103.35	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.1d	08/06/2003	07:00 to 07:11	Pre-Test	100.07	99.82	100.11	100.89	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.1d	08/06/2003	21:34 to 21:45	Post-Test	99.44	99.40	99.56	96.47	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.1c	08/07/2003	07:38 to 07:52	Pre-Test	99.89	99.78	100.06	100.23	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.1c	08/07/2003	18:02 to 18:14	Post-Test	100.85	100.37	100.86	102.83	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.1b	08/08/2003	09:47 to 09:58	Pre-Test	99.78	99.75	99.93	100.96	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.1b	08/08/2003	18:54 to 19:05	Post-Test	99.42	99.11	99.38	102.65	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.2c	08/11/2003	09:14 to 09:25	Pre-Test	99.82	99.69	100.01	100.72	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.2c	08/11/2003	18:49 to 19:00	Post-Test	100.41	100.14	100.62	102.35	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.2e-f Inlet	08/15/2003	07:41 to 07:52	Pre-Test	99.50	99.07	98.42	99.57	100 +/- 2	ALM030418	MG-07-102
F11W Scrubber 9s.1.2e-f Inlet	08/15/2003	17:19 to 17:30	Post-Test	98.78	98.51	97.93	99.28	100 +/- 2	ALM030418	MG-07-102
F11W Scrubber 9s.1.2e-f Outlet	08/15/2003	07:42 to 07:53	Pre-Test	99.85	99.57	99.72	99.93	100 +/- 2	ALM030418	MG-07-112
F11W Scrubber 9s.1.2e-f Outlet	08/15/2003	17:14 to 17:25	Post-Test	99.74	99.44	99.29	101.95	100 +/- 2	ALM030418	MG-07-112
F11N Scrubber 10s.1.1c	08/07/2003	07:38 to 07:52	Pre-Test	99.89	99.78	100.06	100.23	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.1.1c	08/07/2003	18:02 to 18:08	Post-Test	100.85	100.37	100.86	102.83	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.1.1d	08/06/2003	07:00 to 07:11	Pre-Test	100.09	99.86	100.11	100.93	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.1.1d	01/00/1900	21:34 to 21:45	Post-Test	99.32	99.29	99.41	96.25	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.1.1e	09/03/2003	06:16 to 06:27	Pre-Test	99.15	99.16	97.92	100.48	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.1.1e	09/03/2003	16:29 to 16:39	Post-Test	101.47	100.34	99.26	97.65	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.1.1f	09/04/2003	07:11 to 07:21	Pre-Test	98.84	98.85	98.34	100.95	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.1.1f	09/04/2003	16:25 to 00:00	Post-Test	99.93	99.51	98.88	99.35	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.1.1g	09/08/2003	07:21 to 07:31	Pre-Test	99.79	99.33	98.66	99.62	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.1.1g	09/08/2003	16:24 to 16:14	Post-Test	101.15	99.73	98.31	96.27	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.4.2a/b Inlet	09/05/2003	08:24 to 08:35	Pre-Test	100.39	100.27	100.38	101.23	100 +/- 2	ALM030418	MG-07-112
F11N Scrubber 10s.4.2a/b Inlet	09/06/2003	12:40 to 12:29	Post-Test	100.26	99.87	99.64	101.21	100 +/- 2	ALM030418	MG-07-112
F11N Scrubber 10s.4.2a/b Outlet	09/05/2003	09:07 to 09:17	Pre-Test	99.23	98.90	98.35	100.03	100 +/- 2	ALM030418	MG-07-102
F11N Scrubber 10s.4.2a/b Outlet	09/06/2003	12:29 to 12:40	Post-Test	98.64	98.64	98.64	98.64	100 +/- 2	ALM030418	MG-07-102
F11S Scrubber 11s.1.3	09/11/2003	07:40 to 07:51	Pre-Test	99.35	99.24	98.50	100.23	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.3	09/11/2003	16:46 to 16:54	Post-Test	99.60	99.45	98.79	99.46	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.5	09/12/2003	07:27 to 07:38	Pre-Test	97.85	98.70	96.79	99.28	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.5	09/12/2003	16:37 to 16:47	Post-Test	99.26	98.88	98.87	100.92	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.7	09/15/2003	07:21 to 07:31	Pre-Test	99.25	99.06	98.48	99.56	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.7	09/15/2003	16:31 to 16:41	Post-Test	98.79	98.49	97.95	99.22	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.9	09/16/2003	08:11 to 12:50	Pre-Test	99.11	98.97	98.06	99.57	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.9	09/16/2003	17:29 to 17:39	Post-Test	99.05	98.71	98.55	100.06	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.11	09/17/2003	06:18 to 06:28	Pre-Test	98.80	98.69	97.94	100.25	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.11	09/17/2003	16:10 to 16:20	Post-Test	98.64	98.58	97.93	100.46	100 +/- 2	ALM049794	MG-07-102
F11S Scrubber 11s.1.14 Inlet	09/19/2003	06:33 to 06:44	Pre-Test	99.96	99.72	100.09	100.31	100 +/- 2	ALM013057	MG-07-112
F11S Scrubber 11s.1.14 Inlet	09/19/2003	17:03 to 17:14	Post-Test	100.25	100.10	100.32	101.27	100 +/- 2	ALM013057	MG-07-112
F11S Scrubber 11s.1.14 Outlet	09/19/2003	07:44 to 07:54	Pre-Test	99.15	98.72	98.40	100.28	100 +/- 2	ALM013057	MG-07-102

TRC Environmental Corporation
Measurements Division
Littleton, Colorado
Project No. 31397-1600-00000

**FTIR QUALITY ASSURANCE SUMMARY
CALIBRATION TRANSFER STANDARD RESULTS
INTEL RIO RANCHO 2003 THIRD QUARTER MONITORING
Acid Scrubbers**

Source Location	Date	Time		ETHYLENE*				Cylinder		FTIR Serial No.
				822.26- 935.32 cm-1 (ppm)	935.56- 961.35 cm-1 (ppm)	961.60- 1129.62 cm-1 (ppm)	2905.03- 3286.88 cm-1 (ppm)	Conc. (ppm)	Number	
F11S Scrubber 11s.1.14 Outlet	09/19/2003	17:00 to 17:10	Post-Test	98.78	98.49	97.86	99.70	100 +/- 2	ALM013057	MG-07-102
F11X-B Scrubber 11s.1.12	08/22/2003	07:51 to 08:02	Pre-Test	100.37	100.14	100.32	100.02	100 +/- 2	ALM013057	MG-07-112
F11X-B Scrubber 11s.1.12	08/22/2003	19:07 to 19:18	Post-Test	100.28	99.99	100.36	101.39	100 +/- 2	ALM013057	MG-07-112
F11X-B Scrubber 11s.1.10	08/21/2003	06:55 to 07:06	Pre-Test	100.42	100.35	100.55	100.10	100 +/- 2	ALM013057	MG-07-112
F11X-B Scrubber 11s.1.10	08/21/2003	18:51 to 19:02	Post-Test	100.27	99.78	100.10	104.02	100 +/- 2	ALM013057	MG-07-112
F11X-B Scrubber 11s.1.6 Inlet	08/19/2003	08:08 to 08:18	Pre-Test	99.45	99.18	98.75	100.35	100 +/- 2	ALM013057	MG-07-102
F11X-B Scrubber 11s.1.6 Inlet	08/19/2003	17:26 to 17:36	Post-Test	100.10	99.00	98.75	97.18	100 +/- 2	ALM013057	MG-07-102
F11X-B Scrubber 11s.1.6 Outlet	08/19/2003	08:04 to 08:15	Pre-Test	100.15	100.14	100.49	100.24	100 +/- 2	ALM013057	MG-07-112
F11X-B Scrubber 11s.1.6 Outlet	08/19/2003	17:26 to 17:37	Post-Test	100.15	99.88	100.28	102.14	100 +/- 2	ALM013057	MG-07-112
F11X-F Scrubber 9s.1.2a	08/04/2003	06:51 to 07:02	Pre-Test	98.72	98.65	97.90	99.59	100 +/- 2	ALM051796	MG-07-102
F11X-F Scrubber 9s.1.2a	08/04/2003	16:26 to 16:36	Post-Test	98.92	98.54	97.74	97.35	100 +/- 2	ALM051796	MG-07-102
F11X-F Scrubber 9s.1.2b	07/30/2003	07:15 to 07:23	Pre-Test	99.05	99.10	98.73	100.53	100 +/- 2	ALM051796	MG-07-102
F11X-F Scrubber 9s.1.2b	07/30/2003	17:05 to 17:16	Post-Test	98.73	98.74	97.20	99.52	100 +/- 2	ALM051796	MG-07-102
F11X-F Scrubber 9s.1.3ab Inlet	08/01/2003	17:46 to 17:54	Pre-Test	99.75	99.64	99.72	101.49	100 +/- 2	ALM051796	MG-07-112
F11X-F Scrubber 9s.1.3ab Inlet	08/01/2003	17:46 to 17:57	Post-Test	99.89	99.73	100.06	102.15	100 +/- 2	ALM051796	MG-07-112
F11X-F Scrubber 9s.1.3ab Outlet	08/01/2003	07:28 to 07:41	Pre-Test	98.90	98.57	98.26	99.52	100 +/- 2	ALM051796	MG-07-102
F11X-F Scrubber 9s.1.3ab Outlet	08/01/2003	17:46 to 17:56	Post-Test	99.13	98.76	97.69	97.87	100 +/- 2	ALM051796	MG-07-102
Cub Scrubber 8s.4.2ab Inlet	09/24/2003	05:56 to 06:07	Pre-Test	99.74	99.46	98.59	99.61	100 +/- 2	ALL9279	MG-07-102
Cub Scrubber 8s.4.2ab Inlet	01/00/1900	00:00 to 17:21	Post-Test	0.00	0.00	0.00	0.00	100 +/- 2	ALL9279	MG-07-102
Cub Scrubber 8s.4.2ab Outlet	09/24/2003	05:59 to 06:10	Pre-Test	100.17	99.92	100.18	100.76	100 +/- 2	ALL9279	MG-07-112
Cub Scrubber 8s.4.2ab Outlet	01/00/1900	00:00 to 17:22	Post-Test	0.00	0.00	0.00	0.00	100 +/- 2	ALL9279	MG-07-112
Limits				+/- 5%	+/- 5%	+/- 5%	+/- 5%			

* Ethylene used as the calibration transfer standard, 4 distinct wave number regions used for analysis

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
7S_1_5 INLET 08 25 03 N2 TO PROBE_0001.LAB	8/25/2003	8:05:58 AM	0.01	0.00	0.24	0.04					150.51	0.9955
7S_1_5 INLET 08 25 03 N2 TO PROBE_0002BKG.LAB	8/25/2003	8:09:01 AM	0.00	0.00	0.00	0.00					150.51	1.0008
7S_1_5 INLET 08 25 03 N2 TO PROBE_0003.LAB	8/25/2003	8:11:50 AM	0.00	0.00	0.00	0.00					150.51	1.0060
7S_1_5 INLET 08 25 03 N2 TO PROBE_0004.LAB	8/25/2003	8:14:36 AM	0.00	0.00	-0.01	-0.03					150.51	0.9955
7S_1_5 INLET 08 25 03 N2 TO PROBE_0005.LAB	8/25/2003	8:17:22 AM	0.00	0.00	0.00	-0.04					150.51	1.0008
7S_1_5 INLET 08 25 03 CTS TO PROBE_0000.LAB	8/25/2003	7:51:00 AM	0.01	0.00	0.21	-0.01	99.33	98.93	98.96	100.30	150.51	1.0060
7S_1_5 INLET 08 25 03 CTS TO PROBE_0001.LAB	8/25/2003	7:53:46 AM	0.01	0.00	0.21	0.01	99.39	99.03	99.05	100.48	150.51	1.0060
7S_1_5 INLET 08 25 03 CTS TO PROBE_0002.LAB	8/25/2003	7:56:32 AM	0.01	0.00	0.21	0.01	99.91	99.57	99.60	101.06	150.51	1.0008
7S_1_5 INLET 08 25 03 CTS TO PROBE_0003.LAB	8/25/2003	7:59:18 AM	0.01	0.00	0.20	0.00	100.41	100.16	100.07	101.59	150.51	0.9955
7S_1_5 INLET 08 25 03 CTS TO PROBE_0004.LAB	8/25/2003	8:02:04 AM	0.01	0.00	0.20	-0.01	99.99	99.67	99.58	100.88	150.51	1.0008
Average							99.93	99.61	99.58	101.01		
7S_1_5 INLET 08 25 03 MID TEST N2 TO PROBE_0000.LAB	8/25/2003	2:24:42 PM	0.02	0.00	0.09	-0.02					150.51	1.0008
7S_1_5 INLET 08 25 03 MID TEST N2 TO PROBE_0001.LAB	8/25/2003	2:27:28 PM	0.01	0.00	0.07	-0.02					150.51	1.0008
7S_1_5 INLET 08 25 03 MID TEST N2 TO PROBE_0002BKG.LAB	8/25/2003	2:32:12 PM	0.00	0.00	0.00	0.00					150.51	0.9955
7S_1_5 INLET 08 25 03 MID TEST N2 TO PROBE_0003.LAB	8/25/2003	2:35:01 PM	0.00	0.00	-0.01	-0.01					150.51	0.9955
7S_1_5 INLET 08 25 03 MID TEST N2 TO PROBE_0004.LAB	8/25/2003	2:37:47 PM	0.00	0.00	-0.03	-0.01					150.51	0.9955
7S_1_5 INLET 08 25 03 POST TEST CTS TO PROBE_0000.LAB	8/25/2003	10:20:06 PM	-0.01	0.00	-0.04	-0.07	99.82	99.75	99.91	100.08	150.51	1.0008
7S_1_5 INLET 08 25 03 POST TEST CTS TO PROBE_0001.LAB	8/25/2003	10:22:52 PM	-0.01	0.00	-0.04	-0.06	99.35	99.23	99.32	99.51	150.51	1.0060
7S_1_5 INLET 08 25 03 POST TEST CTS TO PROBE_0002.LAB	8/25/2003	10:25:38 PM	-0.01	0.00	-0.03	-0.05	100.34	100.16	100.29	100.57	150.51	0.9955
7S_1_5 INLET 08 25 03 POST TEST CTS TO PROBE_0003.LAB	8/25/2003	10:28:23 PM	-0.01	0.00	-0.05	-0.07	99.78	99.62	99.75	99.94	150.51	1.0008
7S_1_5 INLET 08 25 03 POST TEST CTS TO PROBE_0004.LAB	8/25/2003	10:31:09 PM	-0.01	0.00	-0.04	-0.06	100.30	100.14	100.22	100.59	150.51	0.9955
Average							99.92	99.78	99.90	100.14		
7S_1_5 INLET 08 25 03 POST TEST N2 TO PROBE_0000.LAB	8/25/2003	10:35:14 PM	-0.01	0.00	0.01	-0.04	0.02	0.18	0.19	-0.98	150.51	0.9955
7S_1_5 INLET 08 25 03 POST TEST N2 TO PROBE_0001.LAB	8/25/2003	10:38:00 PM	-0.01	0.00	0.00	-0.04	-0.09	0.10	0.21	-1.38	150.51	1.0008
7S_1_5 INLET 08 25 03 POST TEST N2 TO PROBE_0002.LAB	8/25/2003	10:40:46 PM	-0.01	0.00	-0.01	-0.04	-0.09	0.09	0.25	-1.60	150.51	0.9955
7S_1_5 INLET 08 25 03 POST TEST N2 TO PROBE_0003.LAB	8/25/2003	10:43:32 PM	-0.01	0.00	0.00	-0.04	-0.06	0.07	0.00	-1.55	150.51	1.0060
7S_1_5 INLET 08 25 03 POST TEST N2 TO PROBE_0004.LAB	8/25/2003	10:46:17 PM	-0.01	0.00	0.00	-0.04	-0.08	0.05	-0.03	-1.55	150.51	0.9955

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
7S_1_5 OUTLET 08 25 03 N2 TO PROBE_0001.LAB	8/25/2003	7:28:57 AM	0.02	0.00	0.06	0.04					149.76	0.9973
7S_1_5 OUTLET 08 25 03 N2 TO PROBE_0002BKG.LAB	8/25/2003	7:32:49 AM	0.00	0.00	0.00	0.00					149.76	0.9973
7S_1_5 OUTLET 08 25 03 N2 TO PROBE_0003.LAB	8/25/2003	7:35:27 AM	0.00	0.00	-0.01	-0.01					149.76	0.9920
7S_1_5 OUTLET 08 25 03 N2 TO PROBE_0004.LAB	8/25/2003	7:38:03 AM	0.00	0.00	-0.01	0.00					149.02	0.9973
7S_1_5 OUTLET 08 25 03 N2 TO PROBE_0005BKG.LAB	8/25/2003	7:40:50 AM	0.00	0.00	0.00	0.00					149.02	0.9973
7S_1_5 OUTLET 08 25 03 CTS TO PROBE_0003.LAB	8/25/2003	7:08:45 AM	0.02	0.00	0.04	0.06	100.73	101.12	100.92	101.94	149.76	1.0184
7S_1_5 OUTLET 08 25 03 CTS TO PROBE_0004.LAB	8/25/2003	7:11:21 AM	0.02	0.00	0.04	0.06	99.07	99.18	99.23	100.13	149.76	1.0184
7S_1_5 OUTLET 08 25 03 CTS TO PROBE_0005.LAB	8/25/2003	7:13:57 AM	0.02	0.00	0.03	0.05	99.12	99.18	99.20	100.14	149.76	1.0184
7S_1_5 OUTLET 08 25 03 CTS TO PROBE_0006.LAB	8/25/2003	7:16:33 AM	0.02	0.00	0.02	0.07	99.38	99.48	99.66	100.49	149.76	1.0132
7S_1_5 OUTLET 08 25 03 CTS TO PROBE_0007.LAB	8/25/2003	7:19:08 AM	0.02	0.00	0.03	0.06	99.53	99.54	99.61	100.38	149.76	1.0132
7S_1_5 OUTLET 08 25 03 CTS TO PROBE_0008.LAB	8/25/2003	7:21:44 AM	0.02	0.00	0.05	0.05	99.42	99.51	99.60	100.33	149.76	1.0132
Average							99.54	99.67	99.70	100.57		
7S_1_5 OUTLET 08 25 03 MID TEST N2 TO PROBE_0002.LAB	8/25/2003	2:12:17 PM	0.01	0.00	-0.02	-0.02					149.76	0.9920
7S_1_5 OUTLET 08 25 03 MID TEST N2 TO PROBE_0003BKG.LAB	8/25/2003	2:15:10 PM	0.00	0.00	0.00	0.00					149.76	0.9973
7S_1_5 OUTLET 08 25 03 MID TEST N2 TO PROBE_0004.LAB	8/25/2003	2:17:48 PM	0.01	0.00	0.00	0.03					149.76	0.9973
7S_1_5 OUTLET 08 25 03 MID TEST N2 TO PROBE_0005.LAB	8/25/2003	2:20:24 PM	0.01	0.00	-0.01	0.00					149.76	0.9973
7S_1_5 OUTLET 08 25 03 POST TEST CTS TO PROBE_0000.LAB	8/25/2003	9:33:18 PM	0.02	0.00	-0.06	0.01	99.79	99.57	100.02	100.15	149.76	0.9920
7S_1_5 OUTLET 08 25 03 POST TEST CTS TO PROBE_0001.LAB	8/25/2003	9:35:54 PM	0.02	0.00	-0.06	0.03	99.74	99.56	100.01	99.97	149.76	0.9920
7S_1_5 OUTLET 08 25 03 POST TEST CTS TO PROBE_0002.LAB	8/25/2003	9:38:30 PM	0.01	0.00	-0.07	0.05	99.84	99.59	99.99	99.92	149.76	0.9920
7S_1_5 OUTLET 08 25 03 POST TEST CTS TO PROBE_0003.LAB	8/25/2003	9:41:06 PM	0.01	0.00	-0.05	0.05	99.86	99.65	100.09	100.14	149.76	0.9920
7S_1_5 OUTLET 08 25 03 POST TEST CTS TO PROBE_0004.LAB	8/25/2003	9:43:42 PM	0.01	0.00	-0.07	0.07	99.36	99.15	99.55	99.57	149.76	0.9973
Average							99.72	99.50	99.93	99.95		
7S_1_5 OUTLET 08 25 03 POST TEST N2 TO PROBE_0000.LAB	8/25/2003	9:47:20 PM	0.01	0.00	-0.04	0.13	-0.02	0.05	0.20	-1.26	149.76	0.9973
7S_1_5 OUTLET 08 25 03 POST TEST N2 TO PROBE_0001.LAB	8/25/2003	9:49:53 PM	0.01	0.00	-0.04	0.10	-0.04	0.01	0.19	-1.19	149.76	0.9920
7S_1_5 OUTLET 08 25 03 POST TEST N2 TO PROBE_0002.LAB	8/25/2003	9:52:29 PM	0.01	0.00	-0.04	0.09	0.07	-0.01	1.06	-0.98	149.76	0.9920
7S_1_5 OUTLET 08 25 03 POST TEST N2 TO PROBE_0003.LAB	8/25/2003	9:55:05 PM	0.01	0.00	-0.02	0.07	0.11	-0.04	0.97	-0.78	149.76	0.9973
7S_1_5 OUTLET 08 25 03 POST TEST N2 TO PROBE_0004.LAB	8/25/2003	9:57:41 PM	0.01	0.00	-0.05	0.13	0.09	-0.05	0.95	-1.32	149.76	0.9973

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
9S_1_2H OUTLET 08 26 03 PRE TEST N2 TO PROBE_0001.LAB	8/26/2003	7:38:05 AM	0.02	0.00	0.05	0.16					149.76	1.0026
9S_1_2H OUTLET 08 26 03 PRE TEST N2 TO PROBE_0002.LAB	8/26/2003	7:53:45 AM	0.02	0.00	0.11	0.14					150.51	1.0079
9S_1_2H OUTLET 08 26 03 PRE TEST N2 TO PROBE_0003BKG.LAB	8/26/2003	7:56:23 AM	0.00	0.00	0.00	0.00					149.76	1.0079
9S_1_2H OUTLET 08 26 03 PRE TEST N2 TO PROBE_0004.LAB	8/26/2003	7:59:01 AM	0.00	0.00	0.00	-0.02					149.02	1.0026
9S_1_2H OUTLET 08 26 03 PRE TEST N2 TO PROBE_0005BKG.LAB	8/26/2003	8:03:16 AM	0.00	0.00	0.00	0.00					149.76	1.0079
9S_1_2H OUTLET 08 26 03 PRE TEST N2 TO PROBE_0006.LAB	8/26/2003	8:05:54 AM	0.00	0.00	-0.01	-0.02					149.76	1.0079
9S_1_2H OUTLET 08 26 03 PRE TEST CTS TO PROBE_0000.LAB	8/26/2003	7:20:00 AM	0.03	0.00	0.07	0.11	99.67	99.56	99.70	100.16	149.76	1.0079
9S_1_2H OUTLET 08 26 03 PRE TEST CTS TO PROBE_0001.LAB	8/26/2003	7:22:37 AM	0.02	0.00	0.04	0.11	100.21	100.05	100.12	100.76	149.76	1.0026
9S_1_2H OUTLET 08 26 03 PRE TEST CTS TO PROBE_0002.LAB	8/26/2003	7:25:13 AM	0.02	0.00	0.05	0.06	98.86	98.65	98.12	99.86	149.76	1.0079
9S_1_2H OUTLET 08 26 03 PRE TEST CTS TO PROBE_0003.LAB	8/26/2003	7:27:48 AM	0.02	0.00	0.02	0.07	98.88	98.63	98.11	99.81	149.76	1.0079
Average							99.41	99.22	99.01	100.15		
9S_1_2H OUTLET 08 26 03 MID TEST N2 TO PROBE_0000.LAB	8/26/2003	1:40:33 PM	0.01	0.00	0.02	0.03					149.76	1.0026
9S_1_2H OUTLET 08 26 03 MID TEST N2 TO PROBE_0001.LAB	8/26/2003	1:43:09 PM	0.01	0.00	0.01	0.03					149.76	1.0026
9S_1_2H OUTLET 08 26 03 MID TEST N2 TO PROBE_0002BKG.LAB	8/26/2003	1:46:51 PM	0.00	0.00	0.00	0.00					149.02	1.0026
9S_1_2H OUTLET 08 26 03 MID TEST N2 TO PROBE_0003.LAB	8/26/2003	1:49:29 PM	0.00	0.00	-0.02	0.03					149.76	1.0026
9S_1_2H OUTLET 08 26 03 MID TEST N2 TO PROBE_0004.LAB	8/26/2003	1:52:05 PM	0.00	0.00	-0.01	0.00					149.02	1.0079
9S_1_2H OUTLET 08 26 03 POST TEST CTS TO PROBE_0000.LAB	8/26/2003	6:36:37 PM	0.01	0.00	-0.06	-0.06	100.00	100.20	99.36	100.88	149.76	1.0026
9S_1_2H OUTLET 08 26 03 POST TEST CTS TO PROBE_0001.LAB	8/26/2003	6:39:13 PM	0.01	0.00	-0.08	-0.08	99.71	99.91	98.94	100.90	149.76	1.0026
9S_1_2H OUTLET 08 26 03 POST TEST CTS TO PROBE_0002.LAB	8/26/2003	6:41:50 PM	0.00	0.00	-0.06	-0.06	99.81	99.98	99.00	100.99	149.76	1.0026
9S_1_2H OUTLET 08 26 03 POST TEST CTS TO PROBE_0003.LAB	8/26/2003	6:44:24 PM	0.00	0.00	-0.08	-0.07	99.97	100.14	99.21	101.04	149.76	1.0026
9S_1_2H OUTLET 08 26 03 POST TEST CTS TO PROBE_0004.LAB	8/26/2003	6:47:00 PM	0.00	0.00	-0.08	-0.07	99.34	99.63	98.70	100.48	149.76	1.0079
Average							99.77	99.97	99.04	100.86		
9S_1_2H OUTLET 08 26 03 POST TEST N2 TO PROBE_0000.LAB	8/26/2003	6:50:43 PM	0.00	0.00	-0.06	-0.02	0.15	0.09	0.03	0.45	149.76	1.0079
9S_1_2H OUTLET 08 26 03 POST TEST N2 TO PROBE_0001.LAB	8/26/2003	6:53:19 PM	0.00	0.00	-0.05	0.00	0.13	0.04	0.00	0.43	149.02	1.0026
9S_1_2H OUTLET 08 26 03 POST TEST N2 TO PROBE_0002.LAB	8/26/2003	6:55:55 PM	0.00	0.00	-0.04	0.02	0.07	0.01	-0.11	0.18	149.76	1.0079
9S_1_2H OUTLET 08 26 03 POST TEST N2 TO PROBE_0003.LAB	8/26/2003	6:58:31 PM	0.00	0.00	-0.05	0.01	0.01	-0.01	-0.01	0.39	149.76	1.0026
9S_1_2H OUTLET 08 26 03 POST TEST N2 TO PROBE_0004.LAB	8/26/2003	7:01:07 PM	0.00	0.00	-0.05	0.00	0.06	0.00	-0.05	0.34	149.02	1.0026

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
9S_1_1E OUTLET 08 05 03 PRE TEST N2 TO PROBE_0002BKG.LAB	8/5/2003	10:31:26 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	151.25	1.0165
9S_1_1E OUTLET 08 05 03 PRE TEST N2 TO PROBE_0003.LAB	8/5/2003	10:34:15 AM	0.00	0.00	0.00	0.02	-0.01	-0.02	0.05	0.11	151.25	1.0165	
9S_1_1E OUTLET 08 05 03 PRE TEST N2 TO PROBE_0004.LAB	8/5/2003	10:37:02 AM	0.00	0.00	0.00	0.03	0.03	-0.01	0.08	0.16	151.25	1.0060	
9S_1_1E OUTLET 08 05 03 PRE TEST N2 TO PROBE_0005.LAB	8/5/2003	10:39:49 AM	0.00	0.00	0.01	0.04	-0.02	-0.02	0.04	0.12	151.25	1.0112	
9S_1_1E OUTLET 08 05 03 PRE TEST N2 TO PROBE_0006BKG.LAB	8/5/2003	10:43:38 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	150.51	1.0060	
9S_1_1E OUTLET 08 05 03 PRE TEST N2 TO PROBE_0007.LAB	8/5/2003	10:46:28 AM	0.00	0.00	0.00	-0.01	-0.05	0.01	-0.04	-0.14	150.51	1.0112	
9S_1_1E OUTLET 08 05 03 PRE TEST CTS TO PROBE_0000.LAB	8/5/2003	10:51:33 AM	0.00	0.00	-0.06	-0.03	102.61	102.87	102.83	103.53	150.51	1.0060	
9S_1_1E OUTLET 08 05 03 PRE TEST CTS TO PROBE_0001.LAB	8/5/2003	10:54:20 AM	0.00	0.00	-0.06	-0.04	99.84	99.72	100.03	100.25	150.51	1.0060	
9S_1_1E OUTLET 08 05 03 PRE TEST CTS TO PROBE_0002.LAB	8/5/2003	10:59:04 AM	0.00	0.00	-0.04	-0.04	100.16	99.88	100.02	100.34	151.25	1.0008	
9S_1_1E OUTLET 08 05 03 PRE TEST CTS TO PROBE_0003.LAB	8/5/2003	11:01:51 AM	0.00	0.00	-0.05	-0.03	99.75	99.42	99.73	100.25	150.51	1.0008	
9S_1_1E OUTLET 08 05 03 PRE TEST CTS TO PROBE_0004.LAB	8/5/2003	11:04:38 AM	0.00	0.00	-0.05	-0.05	99.94	99.54	99.89	100.59	151.25	1.0008	
Average							99.92	99.64	99.92	100.36			
9S_1_1E OUTLET 08 05 03 MID TEST N2 TO PROBE_0000.LAB	8/5/2003	3:46:05 PM	0.02	0.00	0.07	-0.30						150.51	0.9903
9S_1_1E OUTLET 08 05 03 MID TEST N2 TO PROBE_0001BKG.LAB	8/5/2003	3:48:58 PM	0.00	0.00	0.00	0.00						150.51	0.9955
9S_1_1E OUTLET 08 05 03 MID TEST N2 TO PROBE_0002.LAB	8/5/2003	3:51:47 PM	0.00	0.00	0.04	0.05						150.51	0.9903
9S_1_1E OUTLET 08 05 03 MID TEST N2 TO PROBE_0003BKG.LAB	8/5/2003	3:54:47 PM	0.00	0.00	0.00	0.00						151.25	0.9955
9S_1_1E OUTLET 08 05 03 MID TEST N2 TO PROBE_0004.LAB	8/5/2003	3:57:38 PM	0.00	0.00	-0.02	-0.01						150.51	0.9903
9S_1_1E OUTLET 08 05 03 POST TEST CTS TO PROBE_0000.LAB	8/5/2003	8:35:52 PM	-0.01	0.00	-0.02	0.32	100.61	100.69	100.95	103.73	150.51	0.9903	
9S_1_1E OUTLET 08 05 03 POST TEST CTS TO PROBE_0001.LAB	8/5/2003	8:38:39 PM	-0.02	0.00	-0.02	0.34	99.78	99.95	100.28	103.22	150.51	0.9955	
9S_1_1E OUTLET 08 05 03 POST TEST CTS TO PROBE_0002.LAB	8/5/2003	8:41:25 PM	-0.02	0.00	-0.04	0.34	99.75	99.85	100.14	103.23	150.51	0.9955	
9S_1_1E OUTLET 08 05 03 POST TEST CTS TO PROBE_0003.LAB	8/5/2003	8:44:12 PM	-0.02	0.00	-0.03	0.33	99.59	99.68	99.95	103.21	150.51	0.9955	
9S_1_1E OUTLET 08 05 03 POST TEST CTS TO PROBE_0004.LAB	8/5/2003	8:46:59 PM	-0.02	0.00	-0.02	0.31	99.66	99.59	99.95	103.09	150.51	0.9955	
Average							99.93	100.04	100.33	103.35			
9S_1_1E OUTLET 08 05 03 POST TEST N2 TO PROBE_0000.LAB	8/5/2003	8:52:07 PM	-0.02	0.00	0.02	0.29	-0.14	0.13	-0.06	2.50	150.51	1.0008	
9S_1_1E OUTLET 08 05 03 POST TEST N2 TO PROBE_0001BKG.LAB	8/5/2003	8:55:16 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	150.51	0.9903	
9S_1_1E OUTLET 08 05 03 POST TEST N2 TO PROBE_0002.LAB	8/5/2003	8:58:06 PM	0.00	0.00	0.03	0.02	-0.08	0.01	0.01	-0.23	150.51	0.9955	
9S_1_1E OUTLET 08 05 03 POST TEST N2 TO PROBE_0003.LAB	8/5/2003	9:00:53 PM	0.00	0.00	0.01	0.01	-0.07	0.00	-0.04	-0.22	150.51	0.9955	
9S_1_1E OUTLET 08 05 03 POST TEST N2 TO PROBE_0004.LAB	8/5/2003	9:03:39 PM	0.00	0.00	0.02	0.01	-0.11	-0.01	0.00	-0.26	150.51	0.9903	
9S_1_1E OUTLET 08 05 03 POST TEST N2 TO PROBE_0005.LAB	8/5/2003	9:06:26 PM	0.00	0.00	0.03	0.02	-0.20	-0.01	0.04	-0.51	150.51	0.9955	

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
 FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0002.LAB	8/6/2003	6:46:31 AM	-0.01	0.00	0.04	-0.01	0.15	0.00	0.05	-0.27		150.51	1.0060
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0003.LAB	8/6/2003	6:49:17 AM	-0.01	0.00	0.03	-0.03	0.24	0.01	0.08	-0.40		150.51	1.0060
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0004.LAB	8/6/2003	6:52:03 AM	-0.01	0.00	0.03	-0.02	0.18	0.03	0.06	-0.57		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0005BKG.LAB	8/6/2003	6:55:37 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0000.LAB	8/6/2003	7:00:31 AM	0.00	0.00	-0.10	-0.04	100.17	100.00	100.11	101.10		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0001.LAB	8/6/2003	7:03:16 AM	0.00	0.00	-0.09	-0.04	100.33	100.07	100.42	101.18		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0002.LAB	8/6/2003	7:06:02 AM	0.00	0.00	-0.08	-0.04	99.82	99.52	99.78	100.64		150.51	1.0060
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0003.LAB	8/6/2003	7:08:48 AM	0.00	0.00	-0.09	0.01	100.12	99.90	100.17	100.91		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0004.LAB	8/6/2003	7:11:34 AM	0.00	0.00	-0.08	-0.01	99.99	99.79	100.07	100.81		150.51	1.0008
Average							100.07	99.82	100.11	100.89			
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0000.LAB	8/6/2003	12:28:14 PM	0.04	0.00	-0.11	-0.04						151.25	1.0008
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0001BKG.LAB	8/6/2003	12:32:43 PM	0.00	0.00	0.00	0.00						150.51	1.0008
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0002.LAB	8/6/2003	12:35:36 PM	0.00	0.00	0.04	0.05						150.51	1.0008
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0003BKG.LAB	8/6/2003	12:39:08 PM	0.00	0.00	0.00	0.00						151.25	1.0008
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0004.LAB	8/6/2003	12:41:59 PM	0.00	0.00	-0.01	0.02						150.51	1.0008
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0001.LAB	8/6/2003	9:34:33 PM	-0.05	0.00	-0.08	0.05	100.03	99.97	100.30	97.59		150.51	0.9955
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0002.LAB	8/6/2003	9:34:49 PM	-0.04	0.00	-0.09	0.07	99.19	99.05	99.28	96.51		150.51	1.0060
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0003.LAB	8/6/2003	9:37:31 PM	-0.05	0.00	-0.08	0.05	99.12	99.14	99.37	96.47		150.51	1.0060
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0004.LAB	8/6/2003	9:40:17 PM	-0.05	0.00	-0.09	0.06	99.35	99.40	99.43	96.12		150.51	1.0060
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0005.LAB	8/6/2003	9:43:03 PM	-0.05	0.00	-0.09	0.05	99.43	99.47	99.51	96.04		150.51	1.0060
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0006.LAB	8/6/2003	9:45:49 PM	-0.05	0.00	-0.08	0.05	99.50	99.41	99.46	96.10		150.51	1.0060
Average							99.44	99.40	99.56	96.47			
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0000.LAB	8/6/2003	5:16:55 PM	0.02	0.00	0.03	-0.16	0.17	-0.01	0.21	0.91		150.51	1.0008
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0001BKG.LAB	8/6/2003	5:21:30 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0002.LAB	8/6/2003	5:24:22 PM	0.00	0.00	0.00	0.02	-0.06	-0.02	-0.04	0.02		151.25	0.9955
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0003BKG.LAB	8/6/2003	5:28:29 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		151.25	0.9955
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0004.LAB	8/6/2003	5:31:20 PM	0.00	0.00	0.01	0.00	-0.03	-0.01	-0.07	0.34		150.51	0.9955
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0005BKG.LAB	8/6/2003	5:34:58 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		151.25	1.0008

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
9S_1_1C OUTLET 08 07 03 PRE TEST N2 TO PROBE_0000.LAB	8/7/2003	7:10:38 AM	0.01	0.00	0.04	-0.02	0.03	0.07	0.05	-0.46		150.51	1.0060
9S_1_1C OUTLET 08 07 03 PRE TEST N2 TO PROBE_0001BKG.LAB	8/7/2003	7:14:19 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST N2 TO PROBE_0002.LAB	8/7/2003	7:17:07 AM	0.00	0.00	-0.01	-0.02	-0.04	-0.01	0.03	-0.07		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST N2 TO PROBE_0003.LAB	8/7/2003	7:19:53 AM	0.00	0.00	-0.02	-0.02	0.00	0.02	0.03	-0.15		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0000.LAB	8/7/2003	7:38:07 AM	0.00	0.00	-0.13	-0.07	100.35	100.13	100.47	100.81		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0001.LAB	8/7/2003	7:43:43 AM	0.00	0.00	-0.12	-0.07	100.26	100.02	100.28	100.41		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0002.LAB	8/7/2003	7:46:29 AM	0.00	0.00	-0.12	-0.07	100.13	100.07	100.34	100.49		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0003.LAB	8/7/2003	7:49:14 AM	0.00	0.00	-0.12	-0.03	99.43	99.38	99.61	99.83		150.51	1.0060
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0004.LAB	8/7/2003	7:52:00 AM	0.00	0.00	-0.11	-0.04	99.31	99.31	99.58	99.58		150.51	1.0060
Average							99.89	99.78	100.06	100.23			
9S_1_1C OUTLET 08 07 03 MID N2 TO PROBE_0000.LAB	8/7/2003	1:24:51 PM	0.03	0.00	-0.11	0.00						150.51	1.0008
9S_1_1C OUTLET 08 07 03 MID N2 TO PROBE_0001.LAB	8/7/2003	1:27:38 PM	0.03	0.00	-0.09	0.02						150.51	0.9955
9S_1_1C OUTLET 08 07 03 MID N2 TO PROBE_0002BKG.LAB	8/7/2003	1:30:58 PM	0.00	0.00	0.00	0.00						150.51	1.0060
9S_1_1C OUTLET 08 07 03 MID N2 TO PROBE_0003.LAB	8/7/2003	1:33:48 PM	0.00	0.00	0.00	-0.04						151.25	1.0060
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0002.LAB	8/7/2003	6:02:51 PM	0.02	0.00	0.02	-0.09	100.40	99.88	100.48	102.19		150.51	1.0008
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0003.LAB	8/7/2003	6:05:38 PM	0.02	0.00	0.02	-0.07	101.13	100.55	101.05	102.99		151.25	0.9955
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0004.LAB	8/7/2003	6:08:26 PM	0.01	0.00	0.00	-0.07	101.29	100.72	101.19	103.19		151.25	0.9955
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0005.LAB	8/7/2003	6:11:13 PM	0.01	0.00	-0.01	-0.08	101.05	100.62	101.06	103.12		150.51	0.9955
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0006.LAB	8/7/2003	6:14:00 PM	0.02	0.00	-0.01	-0.05	100.39	100.06	100.51	102.68		150.51	1.0008
Average							100.85	100.37	100.86	102.83			
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0001.LAB	8/7/2003	6:19:35 PM	0.01	0.00	0.06	0.02	0.16	0.04	0.14	2.23		150.51	1.0008
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0002.LAB	8/7/2003	6:22:22 PM	0.01	0.00	0.07	0.03	0.17	0.03	0.01	2.06		151.25	1.0008
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0003.LAB	8/7/2003	6:25:09 PM	0.01	0.00	0.06	0.01	0.12	0.02	0.03	1.91		150.51	0.9955
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0004.LAB	8/7/2003	6:27:57 PM	0.01	0.00	0.05	0.03	0.04	0.00	0.00	1.85		150.51	0.9955
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0005.LAB	8/7/2003	6:30:44 PM	0.01	0.00	0.04	0.02	0.11	0.01	0.01	1.76		151.25	0.9955

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
9S_1_1B OUTLET 08 08 03 PRE N2 TO PROBE_0000.LAB	8/8/2003	9:27:35 AM	-0.02	0.00	-0.04	-0.04	-0.08	0.05	0.26		-3.42	151.25	0.9955
9S_1_1B OUTLET 08 08 03 PRE N2 TO PROBE_0001BKG.LAB	8/8/2003	9:30:41 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	151.25	1.0008
9S_1_1B OUTLET 08 08 03 PRE N2 TO PROBE_0002.LAB	8/8/2003	9:33:30 AM	0.00	0.00	-0.01	0.01	0.03	0.01	0.03		-0.07	150.51	1.0008
9S_1_1B OUTLET 08 08 03 PRE N2 TO PROBE_0003.LAB	8/8/2003	9:36:16 AM	0.00	0.00	-0.01	0.00	0.02	0.00	-0.01		0.07	150.51	1.0008
9S_1_1B OUTLET 08 08 03 PRE N2 TO PROBE_0004.LAB	8/8/2003	9:39:02 AM	0.00	0.00	-0.01	0.00	0.05	0.00	0.04		0.05	150.51	1.0008
9S_1_1B OUTLET 08 08 03 PRE N2 TO PROBE_0005.LAB	8/8/2003	9:41:49 AM	0.00	0.00	-0.01	0.01	-0.09	0.00	0.00		-0.15	150.51	1.0060
9S_1_1B OUTLET 08 08 03 PRE CTS TO PROBE_0001.LAB	8/8/2003	9:47:22 AM	0.00	0.00	-0.07	-0.02	100.21	100.20	100.40		101.32	150.51	0.9955
9S_1_1B OUTLET 08 08 03 PRE CTS TO PROBE_0002.LAB	8/8/2003	9:50:08 AM	0.00	0.00	-0.08	-0.03	99.86	99.82	100.03		101.00	150.51	1.0008
9S_1_1B OUTLET 08 08 03 PRE CTS TO PROBE_0003.LAB	8/8/2003	9:52:54 AM	0.00	0.00	-0.06	-0.03	99.69	99.73	99.81		100.94	150.51	1.0008
9S_1_1B OUTLET 08 08 03 PRE CTS TO PROBE_0004.LAB	8/8/2003	9:55:41 AM	0.00	0.00	-0.07	-0.02	99.07	99.03	99.18		100.20	150.51	1.0060
9S_1_1B OUTLET 08 08 03 PRE CTS TO PROBE_0005.LAB	8/8/2003	9:58:27 AM	0.00	0.00	-0.06	-0.02	100.08	99.99	100.21		101.36	150.51	0.9955
Average							99.78	99.75	99.93	100.96			
9S_1_1B OUTLET 08 08 03 MID N2 TO PROBE_0000.LAB	8/8/2003	2:06:56 PM	0.04	0.00	0.07	-0.07						150.51	0.9955
9S_1_1B OUTLET 08 08 03 MID N2 TO PROBE_0001BKG.LAB	8/8/2003	2:10:55 PM	0.00	0.00	0.00	0.00						150.51	1.0008
9S_1_1B OUTLET 08 08 03 MID N2 TO PROBE_0002.LAB	8/8/2003	2:13:46 PM	0.00	0.00	-0.01	0.01						150.51	0.9955
9S_1_1B OUTLET 08 08 03 MID N2 TO PROBE_0003.LAB	8/8/2003	2:16:33 PM	0.00	0.00	-0.02	0.01						150.51	1.0008
9S_1_1B OUTLET 08 08 03 POST CTS TO PROBE R2_0001.LAB	8/8/2003	6:54:25 PM	0.00	0.00	-0.02	0.15	99.54	99.30	99.62		102.95	150.51	0.9955
9S_1_1B OUTLET 08 08 03 POST CTS TO PROBE R2_0002.LAB	8/8/2003	6:57:12 PM	-0.01	0.00	-0.03	0.17	99.46	99.23	99.43		102.79	150.51	0.9955
9S_1_1B OUTLET 08 08 03 POST CTS TO PROBE R2_0003.LAB	8/8/2003	7:00:00 PM	-0.01	0.00	-0.03	0.16	99.04	98.71	98.96		102.18	150.51	1.0008
9S_1_1B OUTLET 08 08 03 POST CTS TO PROBE R2_0004.LAB	8/8/2003	7:02:47 PM	-0.01	0.00	-0.04	0.16	99.54	99.18	99.47		102.65	150.51	0.9955
9S_1_1B OUTLET 08 08 03 POST CTS TO PROBE R2_0005.LAB	8/8/2003	7:05:34 PM	-0.01	0.00	-0.04	0.13	99.53	99.12	99.42		102.67	150.51	0.9955
Average							99.42	99.11	99.38	102.65			
9S_1_1B OUTLET 08 08 03 POST N2 TO PROBE_0000.LAB	8/8/2003	7:10:04 PM	-0.01	0.00	0.03	0.19	0.04	0.00	-0.19		2.75	150.51	0.9955
9S_1_1B OUTLET 08 08 03 POST N2 TO PROBE_0001.LAB	8/8/2003	7:14:31 PM	-0.01	0.00	0.03	0.19	-0.11	-0.02	-0.28		2.70	150.51	0.9955
9S_1_1B OUTLET 08 08 03 POST N2 TO PROBE_0002.LAB	8/8/2003	7:17:18 PM	-0.01	0.00	0.02	0.18	-0.09	-0.04	-0.28		2.69	150.51	0.9955

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
 FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
9S_1_2C OUTLET 08 11 03 PRE TEST N2 TO PROBE_0001.LAB	8/11/2003	8:51:23 AM	0.03	0.00	0.02	0.01	0.12	-0.01	0.17	0.90		150.51	1.0060
9S_1_2C OUTLET 08 11 03 PRE TEST N2 TO PROBE_0002BKG.LAB	8/11/2003	8:54:24 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
9S_1_2C OUTLET 08 11 03 PRE TEST N2 TO PROBE_0003.LAB	8/11/2003	8:57:13 AM	0.00	0.00	0.01	0.02	0.01	-0.04	0.00	0.12		150.51	0.9955
9S_1_2C OUTLET 08 11 03 PRE TEST N2 TO PROBE_0004.LAB	8/11/2003	8:59:59 AM	0.00	0.00	0.03	-0.02	-0.14	-0.04	0.00	0.30		150.51	1.0060
9S_1_2C OUTLET 08 11 03 PRE TEST N2 TO PROBE_0005.LAB	8/11/2003	9:05:52 AM	0.00	0.00	0.01	-0.02	-0.16	-0.05	0.09	0.22		149.76	1.0008
9S_1_2C OUTLET 08 11 03 PRE TEST N2 TO PROBE_0006.LAB	8/11/2003	9:08:38 AM	0.00	0.00	0.03	0.02	-0.13	-0.05	0.06	0.48		150.51	1.0060
9S_1_2C OUTLET 08 11 03 PRE TEST CTS TO PROBE_0001.LAB	8/11/2003	9:14:12 AM	0.00	0.00	-0.03	0.01	99.63	99.45	99.80	100.41		150.51	1.0060
9S_1_2C OUTLET 08 11 03 PRE TEST CTS TO PROBE_0002.LAB	8/11/2003	9:16:58 AM	0.01	0.00	-0.03	0.01	99.45	99.38	99.76	100.40		150.51	1.0060
9S_1_2C OUTLET 08 11 03 PRE TEST CTS TO PROBE_0003.LAB	8/11/2003	9:19:45 AM	0.01	0.00	-0.03	-0.01	99.96	99.84	100.17	100.88		150.51	1.0008
9S_1_2C OUTLET 08 11 03 PRE TEST CTS TO PROBE_0004.LAB	8/11/2003	9:22:31 AM	0.01	0.00	-0.03	0.01	99.91	99.82	100.09	100.82		150.51	1.0008
9S_1_2C OUTLET 08 11 03 PRE TEST CTS TO PROBE_0005.LAB	8/11/2003	9:25:18 AM	0.01	0.00	-0.05	-0.02	99.96	99.73	100.02	100.80		150.51	1.0008
Average							99.82	99.69	100.01	100.72			
9S_1_2C OUTLET 08 11 03 BACKGROUND_0000.LAB	8/11/2003	2:22:16 PM	0.27	0.01	0.28	0.21						150.51	0.9955
9S_1_2C OUTLET 08 11 03 BACKGROUND_0001.LAB	8/11/2003	2:25:03 PM	0.04	0.00	0.08	0.06						150.51	0.9955
9S_1_2C OUTLET 08 11 03 BACKGROUND_0002BKG.LAB	8/11/2003	2:27:55 PM	0.00	0.00	0.00	0.00						150.51	0.9955
9S_1_2C OUTLET 08 11 03 BACKGROUND_0003.LAB	8/11/2003	2:30:45 PM	0.00	0.00	0.00	0.00						150.51	1.0008
9S_1_2C OUTLET 08 11 03 BACKGROUND_0004.LAB	8/11/2003	2:33:33 PM	0.00	0.00	-0.01	0.00						150.51	1.0008
9S_1_2C OUTLET 08 11 03 POST CTS TO PROBE R2_0001.LAB	8/11/2003	6:49:45 PM	-0.01	0.00	-0.04	0.00	100.05	99.79	100.19	101.76		150.51	0.9955
9S_1_2C OUTLET 08 11 03 POST CTS TO PROBE R2_0002.LAB	8/11/2003	6:52:32 PM	-0.01	0.00	-0.05	0.00	100.80	100.51	101.01	102.59		150.51	0.9903
9S_1_2C OUTLET 08 11 03 POST CTS TO PROBE R2_0003.LAB	8/11/2003	6:55:18 PM	-0.02	0.00	-0.04	0.01	100.31	99.93	100.43	102.33		150.51	0.9955
9S_1_2C OUTLET 08 11 03 POST CTS TO PROBE R2_0004.LAB	8/11/2003	6:58:04 PM	-0.02	0.00	-0.05	0.02	100.69	100.47	101.00	102.82		150.51	0.9903
9S_1_2C OUTLET 08 11 03 POST CTS TO PROBE R2_0005.LAB	8/11/2003	7:00:50 PM	-0.02	0.00	-0.04	0.03	100.19	100.01	100.46	102.27		150.51	0.9955
Average							100.41	100.14	100.62	102.35			
9S_1_2C OUTLET 08 11 03 POST N2 TO PROBE R2_0001.LAB	8/11/2003	7:06:23 PM	-0.02	0.00	0.04	0.07	-0.01	0.04	0.27	0.83		150.51	1.0008
9S_1_2C OUTLET 08 11 03 POST N2 TO PROBE R2_0002.LAB	8/11/2003	7:09:09 PM	-0.02	0.00	0.05	0.06	-0.13	0.03	0.12	0.92		150.51	0.9903
9S_1_2C OUTLET 08 11 03 POST N2 TO PROBE R2_0003.LAB	8/11/2003	7:11:56 PM	-0.02	0.00	0.05	0.08	-0.04	0.02	0.11	0.77		150.51	0.9955
9S_1_2C OUTLET 08 11 03 POST N2 TO PROBE R2_0004.LAB	8/11/2003	7:14:42 PM	-0.02	0.00	0.06	0.07	-0.14	0.01	0.14	0.86		150.51	0.9955
9S_1_2C OUTLET 08 11 03 POST N2 TO PROBE R2_0005.LAB	8/11/2003	7:17:28 PM	-0.02	0.00	0.04	0.06	-0.10	0.01	0.12	0.81		150.51	0.9903
9S_1_2C OUTLET 08 11 03 POST N2 TO PROBE R2_0006.LAB	8/11/2003	7:20:14 PM	-0.02	0.00	0.06	0.07	-0.02	0.00	0.13	0.68		150.51	1.0008
9S_1_2C OUTLET 08 11 03 POST N2 TO PROBE R2_0007.LAB	8/11/2003	7:23:01 PM	-0.02	0.00	0.03	0.05	0.01	0.02	0.16	0.83		150.51	0.9955

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
 FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H2O (%)	CO2 (ppm)	CO (ppm)	CH4 (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
9S1.2F INLET 08 15 03 PRE N2 TO PROBE_0000.LAB	8/15/2003	7:26:20 AM	0.01	0.00	0.01	-0.03	0.07	-0.01	-0.31	-0.61	149.76	1.0026	
9S1.2F INLET 08 15 03 PRE N2 TO PROBE_0001BKG.LAB	8/15/2003	7:29:43 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	149.02	1.0026	
9S1.2F INLET 08 15 03 PRE N2 TO PROBE_0002.LAB	8/15/2003	7:32:22 AM	0.00	0.00	-0.01	-0.01	0.04	0.01	-0.06	0.07	149.76	1.0026	
9S1.2F INLET 08 15 03 PRE N2 TO PROBE_0003.LAB	8/15/2003	7:34:58 AM	0.00	0.00	0.00	0.01	-0.01	0.00	-0.01	0.03	149.76	1.0026	
9S1.2F INLET 08 15 03 PRE N2 TO PROBE_0004.LAB	8/15/2003	7:37:34 AM	0.00	0.00	-0.02	0.00	0.01	0.01	0.02	-0.07	149.76	1.0026	
9S1.2F INLET 08 15 03 PRE CTS TO PROBE_0000.LAB	8/15/2003	7:41:51 AM	0.00	0.00	0.03	0.07	99.58	99.13	98.44	99.92	149.76	0.9973	
9S1.2F INLET 08 15 03 PRE CTS TO PROBE_0001.LAB	8/15/2003	7:44:27 AM	0.00	0.00	0.02	0.08	99.17	98.75	98.10	99.26	149.76	1.0026	
9S1.2F INLET 08 15 03 PRE CTS TO PROBE_0002.LAB	8/15/2003	7:47:03 AM	0.00	0.00	0.02	0.08	99.84	99.39	98.84	99.72	149.76	0.9973	
9S1.2F INLET 08 15 03 PRE CTS TO PROBE_0003.LAB	8/15/2003	7:49:39 AM	0.00	0.00	0.02	0.09	99.71	99.31	98.64	99.76	149.76	0.9973	
9S1.2F INLET 08 15 03 PRE CTS TO PROBE_0004.LAB	8/15/2003	7:52:16 AM	0.00	0.00	0.02	0.08	99.19	98.77	98.07	99.17	149.76	1.0026	
Average							99.50	99.07	98.42	99.57			
9S1.2F INLET 08 15 03 MID N2 TO PROBE_0000.LAB	8/15/2003	12:25:59 PM	0.01	0.00	0.03	0.00					149.76	0.9973	
9S1.2F INLET 08 15 03 MID N2 TO PROBE_0001.LAB	8/15/2003	12:28:35 PM	0.01	0.00	0.04	-0.05					149.76	1.0026	
9S1.2F INLET 08 15 03 MID N2 TO PROBE_0002.LAB	8/15/2003	12:31:12 PM	0.00	0.00	0.04	-0.06					149.76	1.0026	
9S1.2F INLET 08 15 03 MID N2 TO PROBE_0003BKG.LAB	8/15/2003	12:36:14 PM	0.00	0.00	0.00	0.00					149.76	0.9973	
9S1.2F INLET 08 15 03 MID N2 TO PROBE_0004.LAB	8/15/2003	12:38:53 PM	0.00	0.00	-0.01	-0.01					149.76	0.9973	
9S1.2F INLET 08 15 03 POST CTS TO PROBE_0000.LAB	8/15/2003	5:19:35 PM	0.00	0.00	0.02	0.01	98.77	98.49	97.94	99.27	149.76	0.9973	
9S1.2F INLET 08 15 03 POST CTS TO PROBE_0001.LAB	8/15/2003	5:22:11 PM	0.00	0.00	0.03	0.04	99.32	99.02	98.48	99.82	149.76	0.9920	
9S1.2F INLET 08 15 03 POST CTS TO PROBE_0002.LAB	8/15/2003	5:24:47 PM	0.00	0.00	0.03	0.03	98.72	98.50	97.91	99.32	149.76	0.9973	
9S1.2F INLET 08 15 03 POST CTS TO PROBE_0003.LAB	8/15/2003	5:27:24 PM	0.00	0.00	0.02	0.04	98.30	98.01	97.41	98.76	149.76	1.0026	
9S1.2F INLET 08 15 03 POST CTS TO PROBE_0004.LAB	8/15/2003	5:30:00 PM	0.00	0.00	0.03	0.04	98.80	98.52	97.91	99.22	149.76	0.9973	
Average							98.78	98.51	97.93	99.28			
9S1.2F INLET 08 15 03 POST N2 TO PROBE_0000.LAB	8/15/2003	5:34:51 PM	0.00	0.00	0.00	-0.02	0.019136	0.026082	-0.09	-0.96	149.76	1.00	
9S1.2F INLET 08 15 03 POST N2 TO PROBE_0001.LAB	8/15/2003	5:37:27 PM	0.00	0.00	-0.01	-0.03	-0.00858	-0.01125	-0.16	-0.99	149.76	1.00	
9S1.2F INLET 08 15 03 POST N2 TO PROBE_0002.LAB	8/15/2003	5:40:04 PM	0.00	0.00	0.00	-0.03	0.014546	-0.02501	-0.13	-1.01	149.76	1.00	

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
9S.1.2F OUTLET 08 15 03 PRE TEST N2 TO PROBE_0000.LAB	8/15/2003	7:26:55 AM	0.27	0.01	1.47	0.40	83.46	81.70	83.75	83.01		150.51	0.8541
9S.1.2F OUTLET 08 15 03 PRE TEST N2 TO PROBE_0001.LAB	8/15/2003	7:29:40 AM	0.16	0.01	5.77	0.35	4.38	3.93	5.33	3.87		150.51	0.9588
9S.1.2F OUTLET 08 15 03 PRE TEST N2 TO PROBE_0002.LAB	8/15/2003	7:32:26 AM	-0.02	0.00	0.00	0.01	0.01	0.00	0.19	-0.02		150.51	0.9588
9S.1.2F OUTLET 08 15 03 PRE TEST N2 TO PROBE_0003BKG.LAB	8/15/2003	7:35:18 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	0.9588
9S.1.2F OUTLET 08 15 03 PRE TEST N2 TO PROBE_0004.LAB	8/15/2003	7:38:05 AM	0.00	0.00	-0.02	0.01	0.10	0.00	-0.01	-0.28		150.51	0.9588
9S.1.2F OUTLET 08 15 03 PRE TEST CTS TO PROBE_0000.LAB	8/15/2003	7:42:37 AM	0.00	0.00	-0.06	-0.04	99.73	99.49	99.83	100.10		150.51	1.0008
9S.1.2F OUTLET 08 15 03 PRE TEST CTS TO PROBE_0001.LAB	8/15/2003	7:45:22 AM	0.00	0.00	-0.05	-0.03	99.77	99.56	99.84	100.11		150.51	1.0008
9S.1.2F OUTLET 08 15 03 PRE TEST CTS TO PROBE_0002.LAB	8/15/2003	7:48:07 AM	0.00	0.00	-0.08	-0.04	99.56	99.23	99.30	99.48		150.51	1.0060
9S.1.2F OUTLET 08 15 03 PRE TEST CTS TO PROBE_0003.LAB	8/15/2003	7:50:53 AM	0.00	0.00	-0.07	-0.05	100.05	99.79	99.81	100.03		150.51	1.0008
9S.1.2F OUTLET 08 15 03 PRE TEST CTS TO PROBE_0004.LAB	8/15/2003	7:53:38 AM	0.00	0.00	-0.09	-0.05	100.13	99.79	99.82	99.94		150.51	1.0008
Average							99.85	99.57	99.72	99.93			
9S.1.2F OUTLET 08 15 03 MID N2 TO PROBE_0000.LAB	8/15/2003	12:53:05 PM	0.04	0.00	-0.02	0.05						150.51	1.0060
9S.1.2F OUTLET 08 15 03 MID N2 TO PROBE_0001BKG.LAB	8/15/2003	12:56:40 PM	0.00	0.00	0.00	0.00						150.51	1.0060
9S.1.2F OUTLET 08 15 03 MID N2 TO PROBE_0002.LAB	8/15/2003	12:59:29 PM	-0.01	0.00	-0.01	0.03						150.51	1.0008
9S.1.2F OUTLET 08 15 03 POST CTS TO PROBE_0001.LAB	8/15/2003	5:14:05 PM	0.02	0.00	-0.04	0.03	99.71	99.34	99.24	101.83		150.51	1.0060
9S.1.2F OUTLET 08 15 03 POST CTS TO PROBE_0002.LAB	8/15/2003	5:16:52 PM	0.02	0.00	-0.02	0.01	99.36	99.09	98.96	101.68		150.51	1.0060
9S.1.2F OUTLET 08 15 03 POST CTS TO PROBE_0003.LAB	8/15/2003	5:19:38 PM	0.01	0.00	-0.01	-0.01	100.02	99.63	99.48	102.11		150.51	1.0008
9S.1.2F OUTLET 08 15 03 POST CTS TO PROBE_0004.LAB	8/15/2003	5:22:25 PM	0.01	0.00	-0.02	0.02	99.48	99.27	99.07	101.74		150.51	1.0060
9S.1.2F OUTLET 08 15 03 POST CTS TO PROBE_0005.LAB	8/15/2003	5:25:11 PM	0.01	0.00	-0.02	0.01	100.13	99.88	99.72	102.38		150.51	1.0008
Average							99.74	99.44	99.29	101.95			
9S.1.2F OUTLET 08 15 03 POST N2 TO PROBE_0001.LAB	8/15/2003	5:30:44 PM	0.01	0.00	0.05	0.00	0.272763	0.112197	0.02	0.67		150.51	1.00
9S.1.2F OUTLET 08 15 03 POST N2 TO PROBE_0002.LAB	8/15/2003	5:33:30 PM	0.01	0.00	0.04	0.02	0.275238	0.076009	-0.08	0.55		150.51	1.00
9S.1.2F OUTLET 08 15 03 POST N2 TO PROBE_0003.LAB	8/15/2003	5:36:17 PM	0.01	0.00	0.06	0.02	0.260473	0.048887	-0.22	0.61		150.51	1.01
9S.1.2F OUTLET 08 15 03 POST N2 TO PROBE_0004.LAB	8/15/2003	5:39:03 PM	0.01	0.00	0.04	0.04	0.171744	0.050006	-0.24	0.58		150.51	1.00
9S.1.2F OUTLET 08 15 03 POST N2 TO PROBE_0005.LAB	8/15/2003	5:41:50 PM	0.01	0.00	0.03	0.04	0.085875	0.052412	-0.33	0.78		150.51	1.00

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
 FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
9S_1_1C OUTLET 08 07 03 PRE TEST N2 TO PROBE_0000.LAB	8/7/2003	7:10:38 AM	0.01	0.00	0.04	-0.02	0.03	0.07	0.05	-0.46		150.51	1.0060
9S_1_1C OUTLET 08 07 03 PRE TEST N2 TO PROBE_0001BKG.LAB	8/7/2003	7:14:19 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST N2 TO PROBE_0002.LAB	8/7/2003	7:17:07 AM	0.00	0.00	-0.01	-0.02	-0.04	-0.01	0.03	-0.07		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST N2 TO PROBE_0003.LAB	8/7/2003	7:19:53 AM	0.00	0.00	-0.02	-0.02	0.00	0.02	0.03	-0.15		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST N2 TO PROBE_0004.LAB	8/7/2003	7:22:38 AM	0.00	0.00	-0.01	0.00	0.04	0.00	0.05	-0.19		150.51	1.0060
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0000.LAB	8/7/2003	7:38:07 AM	0.00	0.00	-0.13	-0.07	100.35	100.13	100.47	100.81		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0001.LAB	8/7/2003	7:43:43 AM	0.00	0.00	-0.12	-0.07	100.26	100.02	100.28	100.41		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0002.LAB	8/7/2003	7:46:29 AM	0.00	0.00	-0.12	-0.07	100.13	100.07	100.34	100.49		150.51	1.0008
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0003.LAB	8/7/2003	7:49:14 AM	0.00	0.00	-0.12	-0.03	99.43	99.38	99.61	99.83		150.51	1.0060
9S_1_1C OUTLET 08 07 03 PRE TEST CTS TO PROBE_0004.LAB	8/7/2003	7:52:00 AM	0.00	0.00	-0.11	-0.04	99.31	99.31	99.58	99.58		150.51	1.0060
Average							99.89	99.78	100.06	100.23			
9S_1_1C OUTLET 08 07 03 MID N2 TO PROBE_0000.LAB	8/7/2003	1:24:51 PM	0.03	0.00	-0.11	0.00						150.51	1.00
9S_1_1C OUTLET 08 07 03 MID N2 TO PROBE_0001.LAB	8/7/2003	1:27:38 PM	0.03	0.00	-0.09	0.02						150.51	1.00
9S_1_1C OUTLET 08 07 03 MID N2 TO PROBE_0002BKG.LAB	8/7/2003	1:30:58 PM	0.00	0.00	0.00	0.00						150.51	1.01
9S_1_1C OUTLET 08 07 03 MID N2 TO PROBE_0003.LAB	8/7/2003	1:33:48 PM	0.00	0.00	0.00	-0.04						151.25	1.01
9S_1_1C OUTLET 08 07 03 MID N2 TO PROBE_0004.LAB	8/7/2003	1:36:35 PM	1.19	0.02	0.04	0.78						151.25	1.00
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0002.LAB	8/7/2003	6:02:51 PM	0.02	0.00	0.02	-0.09	100.40	99.88	100.48	102.19		150.51	1.00
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0003.LAB	8/7/2003	6:05:38 PM	0.02	0.00	0.02	-0.07	101.13	100.55	101.05	102.99		151.25	1.00
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0004.LAB	8/7/2003	6:08:26 PM	0.01	0.00	0.00	-0.07	101.29	100.72	101.19	103.19		151.25	1.00
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0005.LAB	8/7/2003	6:11:13 PM	0.01	0.00	-0.01	-0.08	101.05	100.62	101.06	103.12		150.51	1.00
9S_1_1C OUTLET 08 07 03 POST CTS TO PROBE_0006.LAB	8/7/2003	6:14:00 PM	0.02	0.00	-0.01	-0.05	100.39	100.06	100.51	102.68		150.51	1.00
Average							100.85	100.37	100.86	102.83			
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0001.LAB	8/7/2003	6:19:35 PM	0.01	0.00	0.06	0.02	0.16	0.04	0.14	2.23		150.51	1.00
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0002.LAB	8/7/2003	6:22:22 PM	0.01	0.00	0.07	0.03	0.17	0.03	0.01	2.06		151.25	1.00
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0003.LAB	8/7/2003	6:25:09 PM	0.01	0.00	0.06	0.01	0.12	0.02	0.03	1.91		150.51	1.00
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0004.LAB	8/7/2003	6:27:57 PM	0.01	0.00	0.05	0.03	0.04	0.00	0.00	1.85		150.51	1.00
9S_1_1C OUTLET 08 07 03 POST N2 TO PROBE_0005.LAB	8/7/2003	6:30:44 PM	0.01	0.00	0.04	0.02	0.11	0.01	0.01	1.76		151.25	1.00

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0000.LAB	8/6/2003	6:41:00 AM	-0.01	0.00	0.05	0.01	0.20	0.00	0.06	0.03		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0001.LAB	8/6/2003	6:43:45 AM	-0.01	0.00	0.05	0.01	0.15	0.01	0.08	-0.08		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0002.LAB	8/6/2003	6:46:31 AM	-0.01	0.00	0.04	-0.01	0.15	0.00	0.05	-0.27		150.51	1.0060
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0003.LAB	8/6/2003	6:49:17 AM	-0.01	0.00	0.03	-0.03	0.24	0.01	0.08	-0.40		150.51	1.0060
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0004.LAB	8/6/2003	6:52:03 AM	-0.01	0.00	0.03	-0.02	0.18	0.03	0.06	-0.57		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST N2 TO PROBE_0005BKG.LAB	8/6/2003	6:55:37 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0000.LAB	8/6/2003	7:00:31 AM	0.00	0.00	-0.10	-0.04	100.17	100.00	100.11	101.10		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0001.LAB	8/6/2003	7:03:16 AM	0.00	0.00	-0.09	-0.04	100.33	100.07	100.42	101.18		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0002.LAB	8/6/2003	7:06:02 AM	0.00	0.00	-0.08	-0.04	99.82	99.52	99.78	100.64		150.51	1.0060
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0003.LAB	8/6/2003	7:08:48 AM	0.00	0.00	-0.09	0.01	100.12	99.90	100.17	100.91		150.51	1.0008
9S_1_1D OUTLET 08 06 03 PRE TEST CTS TO PROBE_0004.LAB	8/6/2003	7:11:34 AM	0.00	0.00	-0.08	-0.01	99.99	99.79	100.07	100.81		150.51	1.0008
Average							100.09	99.86	100.11	100.93			
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0000.LAB	8/6/2003	12:28:14 PM	0.04	0.00	-0.11	-0.04						151.25	1.0008
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0001BKG.LAB	8/6/2003	12:32:43 PM	0.00	0.00	0.00	0.00						150.51	1.0008
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0002.LAB	8/6/2003	12:35:36 PM	0.00	0.00	0.04	0.05						150.51	1.0008
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0003BKG.LAB	8/6/2003	12:39:08 PM	0.00	0.00	0.00	0.00						151.25	1.0008
9S_1_1D OUTLET 08 06 03 MID TEST N2 TO PROBE_0004.LAB	8/6/2003	12:41:59 PM	0.00	0.00	-0.01	0.02						150.51	1.0008
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0002.LAB	8/6/2003	9:34:49 PM	-0.04	0.00	-0.09	0.07	99.19	99.05	99.28	96.51		150.51	1.0060
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0003.LAB	8/6/2003	9:37:31 PM	-0.05	0.00	-0.08	0.05	99.12	99.14	99.37	96.47		150.51	1.0060
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0004.LAB	8/6/2003	9:40:17 PM	-0.05	0.00	-0.09	0.06	99.35	99.40	99.43	96.12		150.51	1.0060
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0005.LAB	8/6/2003	9:43:03 PM	-0.05	0.00	-0.09	0.05	99.43	99.47	99.51	96.04		150.51	1.0060
9S_1_1D OUTLET 08 06 03 POST TEST CTS TO PROBE_0006.LAB	8/6/2003	9:45:49 PM	-0.05	0.00	-0.08	0.05	99.50	99.41	99.46	96.10		150.51	1.0060
Average							99.32	99.29	99.41	96.25			
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0000.LAB	8/6/2003	5:16:55 PM	0.02	0.00	0.03	-0.16	0.17	-0.01	0.21	0.91		150.51	1.0008
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0001BKG.LAB	8/6/2003	5:21:30 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0002.LAB	8/6/2003	5:24:22 PM	0.00	0.00	0.00	0.02	-0.06	-0.02	-0.04	0.02		151.25	0.9955
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0003BKG.LAB	8/6/2003	5:28:29 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		151.25	0.9955
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0004.LAB	8/6/2003	5:31:20 PM	0.00	0.00	0.01	0.00	-0.03	-0.01	-0.07	0.34		150.51	0.9955
9S_1_1D OUTLET 08 06 03 POST TEST N2 TO PROBE_0005BKG.LAB	8/6/2003	5:34:58 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		151.25	1.0008

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
10S_1_1E 09 03 03 PRE TEST N2 TO PROBE_0000.LAB	9/3/2003	6:32:33 AM	-0.01	0.00		-0.01					149.76	1.0079
10S_1_1E 09 03 03 PRE TEST N2 TO PROBE_0001BKG.LAB	9/3/2003	6:35:32 AM	0.00	0.00		0.00					149.76	1.0079
10S_1_1E 09 03 03 PRE TEST N2 TO PROBE_0002.LAB	9/3/2003	6:38:10 AM	0.00	0.00		0.00					149.76	1.0132
10S_1_1E 09 03 03 PRE TEST N2 TO PROBE_0003.LAB	9/3/2003	6:40:45 AM	0.00	0.00		0.00					149.76	1.0132
10S_1_1E 09 03 03 PRE TEST N2 TO PROBE_0004.LAB	9/3/2003	6:43:21 AM	0.00	0.00		0.02					149.76	1.0079
10S_1_1E 09 03 03 PRE TEST CTS TO PROBE_0000.LAB	9/3/2003	6:16:42 AM	0.00	0.00		0.00	98.42	98.49	97.31	100.23	149.76	1.0079
10S_1_1E 09 03 03 PRE TEST CTS TO PROBE_0001.LAB	9/3/2003	6:19:18 AM	0.00	0.00		0.04	99.28	99.33	98.04	100.96	149.76	1.0026
10S_1_1E 09 03 03 PRE TEST CTS TO PROBE_0002.LAB	9/3/2003	6:21:53 AM	0.00	0.00		0.07	99.54	99.52	98.23	100.84	149.76	1.0026
10S_1_1E 09 03 03 PRE TEST CTS TO PROBE_0003.LAB	9/3/2003	6:24:28 AM	-0.01	0.00		0.08	99.13	99.12	97.91	100.20	149.76	1.0079
10S_1_1E 09 03 03 PRE TEST CTS TO PROBE_0004.LAB	9/3/2003	6:27:04 AM	-0.01	0.00		0.09	99.40	99.32	98.09	100.16	149.76	1.0079
Average							99.15	99.16	97.92	100.48		
10S_1_1E 09 03 03 MID_0000.LAB	9/3/2003	11:51:33 AM	1.76	0.03		1.29					149.76	1.0132
10S_1_1E 09 03 03 MID_0001.LAB	9/3/2003	11:54:09 AM	0.03	0.00		0.09					149.76	1.0079
10S_1_1E 09 03 03 MID_0002BKG.LAB	9/3/2003	11:56:58 AM	0.00	0.00		0.00					149.76	1.0132
10S_1_1E 09 03 03 MID_0003.LAB	9/3/2003	11:59:37 AM	0.00	0.00		0.01					149.76	1.0132
10S_1_1E 09 03 03 MID_0004.LAB	9/3/2003	12:02:14 PM	0.00	0.00		0.03					149.76	1.0184
10S_1_1E 09 03 03 POST CTS TO PROBE_0002.LAB	9/3/2003	4:29:23 PM	0.02	0.00		-0.41	101.10	100.00	98.92	98.13	149.76	0.9973
10S_1_1E 09 03 03 POST CTS TO PROBE_0003.LAB	9/3/2003	4:32:01 PM	0.01	0.00		-0.30	101.62	100.55	99.43	98.12	149.76	0.9920
10S_1_1E 09 03 03 POST CTS TO PROBE_0004.LAB	9/3/2003	4:34:39 PM	0.01	0.00		-0.30	101.40	100.32	99.14	97.85	149.76	0.9920
10S_1_1E 09 03 03 POST CTS TO PROBE_0005.LAB	9/3/2003	4:37:17 PM	0.01	0.00		-0.21	101.33	100.14	99.13	97.06	149.76	0.9973
10S_1_1E 09 03 03 POST CTS TO PROBE_0006.LAB	9/3/2003	4:39:55 PM	0.01	0.00		-0.07	101.92	100.70	99.70	97.08	149.76	0.9920
Average							101.47	100.34	99.26	97.65		
10S_1_1E 09 03 03 POST N2 TO PROBE_0001.LAB	9/3/2003	4:45:11 PM	0.01	0.00		-0.18	1.24	0.15	-0.62	-2.10	149.76	0.9920
10S_1_1E 09 03 03 POST N2 TO PROBE_0002.LAB	9/3/2003	4:47:49 PM	0.02	0.00		-0.13	1.08	0.00	-0.83	-2.59	149.76	0.9868
10S_1_1E 09 03 03 POST N2 TO PROBE_0003.LAB	9/3/2003	4:50:27 PM	0.01	0.00		-0.13	1.02	-0.01	-0.84	-2.57	149.76	0.9920
10S_1_1E 09 03 03 POST N2 TO PROBE_0004BKG.LAB	9/3/2003	4:53:45 PM	0.00	0.00		0.00	0.00	0.00	0.00	0.00	149.76	0.9920
10S_1_1E 09 03 03 POST N2 TO PROBE_0005.LAB	9/3/2003	4:56:26 PM	0.00	0.00		-0.01	-0.05	-0.02	-0.06	-0.07	149.76	0.9920

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
10S_1_1F 09 04 03 PRE N2 TO PROBE_0000.LAB	9/4/2003	6:46:24 AM	0.01	0.00		0.10	-0.27	0.00	-0.72	-0.63	149.76	1.0079
10S_1_1F 09 04 03 PRE N2 TO PROBE_0001.LAB	9/4/2003	6:49:00 AM	0.01	0.00		0.10	-0.33	0.00	-0.74	-0.73	149.76	1.0079
10S_1_1F 09 04 03 PRE N2 TO PROBE_0002BKG.LAB	9/4/2003	6:52:10 AM	0.00	0.00		0.00	0.00	0.00	0.00	0.00	149.76	1.0079
10S_1_1F 09 04 03 PRE N2 TO PROBE_0003.LAB	9/4/2003	6:54:48 AM	0.00	0.00		-0.04	-0.09	0.02	0.00	0.31	149.76	1.0079
10S_1_1F 09 04 03 PRE N2 TO PROBE_0004.LAB	9/4/2003	6:57:23 AM	0.00	0.00		-0.03	0.13	0.02	-0.09	0.25	149.76	1.0079
10S_1_1F 09 04 03 PRE CTS TO PROBE_0008.LAB	9/4/2003	7:11:11 AM	0.00	0.00		-0.08	98.75	98.69	98.12	100.91	149.76	1.0079
10S_1_1F 09 04 03 PRE CTS TO PROBE_0009.LAB	9/4/2003	7:13:46 AM	0.00	0.00		-0.08	99.02	98.81	98.33	101.04	149.76	1.0079
10S_1_1F 09 04 03 PRE CTS TO PROBE_0010.LAB	9/4/2003	7:16:21 AM	-0.01	0.00		-0.07	98.96	98.79	98.34	100.96	149.76	1.0079
10S_1_1F 09 04 03 PRE CTS TO PROBE_0011.LAB	9/4/2003	7:18:57 AM	0.00	0.00		-0.06	98.98	98.86	98.31	100.98	149.76	1.0079
10S_1_1F 09 04 03 PRE CTS TO PROBE_0012.LAB	9/4/2003	7:21:32 AM	0.00	0.00		-0.07	98.84	98.85	98.34	100.95	149.76	1.0079
Average							98.91	98.80	98.29	100.97		
10S_1_1F 09 04 03 MID_0004.LAB	9/4/2003	11:51:40 AM	0.02	0.00		0.06					149.76	1.0079
10S_1_1F 09 04 03 MID_0005.LAB	9/4/2003	11:54:16 AM	0.02	0.00		0.06					149.76	1.0079
10S_1_1F 09 04 03 MID_0006.LAB	9/4/2003	11:56:53 AM	0.01	0.00		0.06					149.76	1.0132
10S_1_1F 09 04 03 MID_0007BKG.LAB	9/4/2003	12:00:37 PM	0.00	0.00		0.00					149.76	1.0132
10S_1_1F 09 04 03 MID_0008.LAB	9/4/2003	12:03:17 PM	0.00	0.00		-0.01					149.76	1.0079
10S_1_1F 09 04 03 POST CTS TO PROBE_0002.LAB	9/4/2003	4:17:10 PM	0.02	0.00		0.06	100.47	100.01	99.67	99.44	149.76	1.0026
10S_1_1F 09 04 03 POST CTS TO PROBE_0003.LAB	9/4/2003	4:19:48 PM	0.01	0.00		0.05	100.00	99.51	99.00	99.21	149.76	1.0079
10S_1_1F 09 04 03 POST CTS TO PROBE_0004.LAB	9/4/2003	4:22:25 PM	0.01	0.00		0.05	99.95	99.54	99.04	99.49	149.76	1.0079
10S_1_1F 09 04 03 POST CTS TO PROBE_0005.LAB	9/4/2003	4:25:02 PM	0.01	0.00		0.06	99.97	99.67	99.14	99.67	149.76	1.0079
10S_1_1F 09 04 03 POST CTS TO PROBE_0006.LAB	9/4/2003	4:27:40 PM	0.01	0.00		0.04	99.26	98.82	97.56	98.94	149.76	1.0079
Average							99.93	99.51	98.88	99.35		
10S_1_1F 09 04 03 POST N2 TO PROBE_0000.LAB	9/4/2003	4:30:17 PM	0.02	0.00		0.00	15.58	12.00	14.73	14.84	149.76	1.0079
10S_1_1F 09 04 03 POST N2 TO PROBE_0001.LAB	9/4/2003	4:32:55 PM	0.01	0.00		-0.02	0.18	0.06	-0.81	-1.09	149.76	1.0026
10S_1_1F 09 04 03 POST N2 TO PROBE_0002BKG.LAB	9/4/2003	4:36:29 PM	0.00	0.00		0.00	0.00	0.00	0.00	0.00	149.76	1.0079
10S_1_1F 09 04 03 POST N2 TO PROBE_0003.LAB	9/4/2003	4:39:09 PM	0.03	0.00		0.04	0.07	0.00	0.05	0.08	149.76	1.0079
10S_1_1F 09 04 03 POST N2 TO PROBE_0004.LAB	9/4/2003	4:41:46 PM	1.74	0.03		1.15	0.32	0.09	0.00	0.32	149.76	1.0079

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)		
10S_1_1G OUTLET 09 08 03 N2 TO PROBE_0000.LAB	9/8/2003	7:06:28 AM	0.02	0.00		0.10	0.27	0.03	-0.27	-1.41	149.76	1.0132
10S_1_1G OUTLET 09 08 03 N2 TO PROBE_0001BKG.LAB	9/8/2003	7:09:11 AM	0.00	0.00		0.00	0.00	0.00	0.00	0.00	149.76	1.0079
10S_1_1G OUTLET 09 08 03 N2 TO PROBE_0002.LAB	9/8/2003	7:11:48 AM	0.00	0.00		0.00	0.10	-0.04	0.09	-0.31	149.76	1.0079
10S_1_1G OUTLET 09 08 03 N2 TO PROBE_0003.LAB	9/8/2003	7:14:23 AM	0.00	0.00		-0.08	0.14	0.01	0.04	0.02	149.76	1.0132
10S_1_1G OUTLET 09 08 03 N2 TO PROBE_0004.LAB	9/8/2003	7:16:58 AM	0.00	0.00		-0.09	0.17	0.01	0.07	0.20	149.76	1.0132
10S_1_1G OUTLET 09 08 03 CTS TO PROBE_0000.LAB	9/8/2003	7:21:12 AM	0.00	0.00		-0.04	99.27	98.94	98.40	100.00	149.76	1.0026
10S_1_1G OUTLET 09 08 03 CTS TO PROBE_0001.LAB	9/8/2003	7:23:47 AM	0.00	0.00		-0.03	99.49	99.09	98.58	99.91	149.76	1.0026
10S_1_1G OUTLET 09 08 03 CTS TO PROBE_0002.LAB	9/8/2003	7:26:21 AM	0.00	0.00		0.00	99.03	98.71	98.07	99.35	149.76	1.0079
10S_1_1G OUTLET 09 08 03 CTS TO PROBE_0003.LAB	9/8/2003	7:28:56 AM	0.00	0.00		-0.01	99.76	99.27	98.69	99.69	149.76	1.0026
10S_1_1G OUTLET 09 08 03 CTS TO PROBE_0004.LAB	9/8/2003	7:31:31 AM	0.00	0.00		-0.01	99.79	99.33	98.66	99.62	149.76	1.0026
Average							99.47	99.07	98.48	99.71		
10S_1_1G OUTLET 09 08 03 MID N2 TO PROBE_0000.LAB	9/8/2003	11:51:00 AM	0.04	0.00		0.08					149.76	1.0079
10S_1_1G OUTLET 09 08 03 MID N2 TO PROBE_0001.LAB	9/8/2003	11:53:36 AM	0.04	0.00		0.09					149.76	1.0079
10S_1_1G OUTLET 09 08 03 MID N2 TO PROBE_0002BKG.LAB	9/8/2003	11:56:20 AM	0.00	0.00		0.00					149.76	1.0079
10S_1_1G OUTLET 09 08 03 MID N2 TO PROBE_0003.LAB	9/8/2003	11:58:59 AM	0.00	0.00		0.00					149.76	1.0079
10S_1_1G OUTLET 09 08 03 MID N2 TO PROBE_0004.LAB	9/8/2003	12:01:35 PM	0.00	0.00		0.00					149.76	1.0079
10S_1_1G OUTLET 09 08 03 POST CTS TO PROBE_0000.LAB	9/8/2003	4:14:27 PM	0.03	0.00		-0.19	101.38	100.02	98.69	96.38	149.76	1.0026
10S_1_1G OUTLET 09 08 03 POST CTS TO PROBE_0001.LAB	9/8/2003	4:17:05 PM	0.02	0.00		-0.16	101.36	99.95	98.70	96.61	149.76	1.0026
10S_1_1G OUTLET 09 08 03 POST CTS TO PROBE_0002.LAB	9/8/2003	4:19:42 PM	0.02	0.00		-0.10	101.44	100.06	98.79	96.64	149.76	1.0026
10S_1_1G OUTLET 09 08 03 POST CTS TO PROBE_0003.LAB	9/8/2003	4:22:19 PM	0.02	0.00		-0.11	100.74	99.29	97.59	95.80	149.76	1.0026
10S_1_1G OUTLET 09 08 03 POST CTS TO PROBE_0004.LAB	9/8/2003	4:24:57 PM	0.02	0.00		-0.09	100.81	99.31	97.77	95.90	149.76	1.0026
Average							101.15	99.73	98.31	96.27		
10S_1_1G OUTLET 09 08 03 POST N2 TO PROBE_0000.LAB	9/8/2003	4:29:25 PM	0.02	0.00		-0.10	1.05	0.05	-1.25	-4.83	149.76	1.0026
10S_1_1G OUTLET 09 08 03 POST N2 TO PROBE_0001BKG.LAB	9/8/2003	4:34:15 PM	0.00	0.00		0.00	0.00	0.00	0.00	0.00	149.76	1.0079
10S_1_1G OUTLET 09 08 03 POST N2 TO PROBE_0002.LAB	9/8/2003	4:36:55 PM	0.00	0.00		-0.07	-0.08	0.01	-0.01	0.64	149.76	1.0079
10S_1_1G OUTLET 09 08 03 POST N2 TO PROBE_0003.LAB	9/8/2003	4:39:32 PM	0.00	0.00		-0.11	-0.12	0.01	0.00	1.20	149.76	1.0079
10S_1_1G OUTLET 09 08 03 POST N2 TO PROBE_0004.LAB	9/8/2003	4:42:10 PM	0.00	0.00		-0.12	-0.08	-0.02	0.03	1.31	149.76	1.0079

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
10S.4.2AB INLET 09 05 03 PRE N2 TO PROBE_0000.LAB	9/5/2003	8:45:52 AM	0.01	0.00		0.03	-0.12	0.01	0.14	-0.02	150.51	0.9903	
10S.4.2AB INLET 09 05 03 PRE N2 TO PROBE_0001.LAB	9/5/2003	8:48:38 AM	0.01	0.00		0.02	-0.17	0.02	0.07	-0.35	150.51	0.9903	
10S.4.2AB INLET 09 05 03 PRE N2 TO PROBE_0002BKG.LAB	9/5/2003	8:51:45 AM	0.00	0.00		0.00	0.00	0.00	0.00	0.00	150.51	0.9955	
10S.4.2AB INLET 09 05 03 PRE N2 TO PROBE_0003.LAB	9/5/2003	8:54:33 AM	0.00	0.00		-0.02	-0.20	0.00	-0.09	-0.08	150.51	0.9903	
10S.4.2AB INLET 09 05 03 PRE N2 TO PROBE_0004.LAB	9/5/2003	8:57:18 AM	0.00	0.00		-0.02	-0.07	-0.01	-0.05	-0.21	150.51	0.9903	
10S.4.2AB INLET 09 05 03 PRE CTS TO INSTRUMENT_0000.LAB	9/5/2003	8:24:06 AM	0.00	0.00		-0.01	100.12	100.08	100.28	101.05	150.51	1.0165	
10S.4.2AB INLET 09 05 03 PRE CTS TO INSTRUMENT_0001.LAB	9/5/2003	8:26:51 AM	0.00	0.00		-0.02	100.31	100.24	100.36	101.14	150.51	1.0165	
10S.4.2AB INLET 09 05 03 PRE CTS TO INSTRUMENT_0002.LAB	9/5/2003	8:29:37 AM	0.00	0.00		-0.03	100.45	100.25	100.40	101.24	150.51	1.0165	
10S.4.2AB INLET 09 05 03 PRE CTS TO INSTRUMENT_0003.LAB	9/5/2003	8:32:22 AM	0.00	0.00		-0.01	100.45	100.31	100.36	101.34	150.51	1.0165	
10S.4.2AB INLET 09 05 03 PRE CTS TO INSTRUMENT_0004.LAB	9/5/2003	8:35:08 AM	0.00	0.00		-0.03	100.35	100.28	100.38	101.17	150.51	1.0165	
Average							100.39	100.27	100.38	101.23			
10S.4.2AB INLET 09 05 03 MID N2 TO PROBE_0000.LAB	9/5/2003	2:55:17 PM	0.03	0.00		0.02					150.51	0.9850	
10S.4.2AB INLET 09 05 03 MID N2 TO PROBE_0001.LAB	9/5/2003	2:58:04 PM	0.03	0.00		0.03					150.51	0.9850	
10S.4.2AB INLET 09 05 03 MID N2 TO PROBE_0002BKG.LAB	9/5/2003	3:01:13 PM	0.00	0.00		0.00					150.51	0.9903	
10S.4.2AB INLET 09 05 03 MID N2 TO PROBE_0003.LAB	9/5/2003	3:04:02 PM	0.00	0.00		0.02					150.51	0.9955	
10S.4.2AB INLET 09 05 03 MID N2 TO PROBE_0004.LAB	9/5/2003	3:06:48 PM	0.00	0.00		0.02					150.51	0.9850	
10S.4.2AB INLET 09 06 03 POST CTS TO PROBE_0002.LAB	9/6/2003	12:29:33 PM	0.03	0.00		-0.05	100.90	100.51	100.33	101.61	150.51	0.9850	
10S.4.2AB INLET 09 06 03 POST CTS TO PROBE_0003.LAB	9/6/2003	12:32:20 PM	0.03	0.00		-0.05	100.33	99.95	99.61	101.11	150.51	0.9903	
10S.4.2AB INLET 09 06 03 POST CTS TO PROBE_0004.LAB	9/6/2003	12:35:07 PM	0.03	0.00		-0.06	99.67	99.34	98.95	100.57	150.51	0.9955	
10S.4.2AB INLET 09 06 03 POST CTS TO PROBE_0005.LAB	9/6/2003	12:37:54 PM	0.03	0.00		-0.07	100.56	100.14	99.91	101.54	150.51	0.9850	
10S.4.2AB INLET 09 06 03 POST CTS TO PROBE_0006.LAB	9/6/2003	12:40:41 PM	0.03	0.00		-0.08	99.83	99.42	99.40	101.23	150.51	0.9903	
Average							100.26	99.87	99.64	101.21			
10S.4.2AB INLET 09 06 03 POST N2 TO PROBE_0000.LAB	9/6/2003	12:45:01 PM	0.03	0.00		-0.04	0.10	0.03	-0.42	1.62	150.51	0.9903	
10S.4.2AB INLET 09 06 03 POST N2 TO PROBE_0001.LAB	9/6/2003	12:47:48 PM	0.03	0.00		-0.06	0.05	0.00	-0.44	1.57	150.51	0.9850	
10S.4.2AB INLET 09 06 03 POST N2 TO PROBE_0002BKG.LAB	9/6/2003	12:53:17 PM	0.00	0.00		0.00	0.00	0.00	0.00	0.00	150.51	0.9850	
10S.4.2AB INLET 09 06 03 POST N2 TO PROBE_0003.LAB	9/6/2003	12:56:07 PM	0.00	0.00		0.02	-0.12	-0.02	-0.03	0.32	150.51	0.9850	
10S.4.2AB INLET 09 06 03 POST N2 TO PROBE_0004.LAB	9/6/2003	12:58:54 PM	0.00	0.00		0.00	-0.12	-0.01	-0.04	0.24	150.51	0.9955	

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

**FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING**

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
10S_4_3AB OUTLET 09 05 03 PRE N2 TO PROBE_0000.LAB	9/5/2003	8:46:04 AM	0.01	0.00		-0.03	-0.07	0.01	0.02		0.58	149.76	1.0026
10S_4_3AB OUTLET 09 05 03 PRE N2 TO PROBE_0001.LAB	9/5/2003	8:48:40 AM	0.01	0.00		-0.04	-0.06	0.00	0.01		0.58	149.76	1.0079
10S_4_3AB OUTLET 09 05 03 PRE N2 TO PROBE_0002BKG.LAB	9/5/2003	8:51:56 AM	0.00	0.00		0.00	0.00	0.00	0.00		0.00	149.76	1.0026
10S_4_3AB OUTLET 09 05 03 PRE N2 TO PROBE_0003.LAB	9/5/2003	8:54:35 AM	0.00	0.00		-0.01	0.00	0.00	0.00		-0.12	149.76	1.0026
10S_4_3AB OUTLET 09 05 03 PRE N2 TO PROBE_0004.LAB	9/5/2003	8:57:11 AM	0.00	0.00		0.00	0.03	0.00	-0.06		-0.02	149.76	1.0026
10S_4_3AB OUTLET 09 05 03 PRE CTS TO PROBE_0002.LAB	9/5/2003	9:04:58 AM	0.00	0.00		0.02	99.70	99.39	98.86		100.61	149.76	0.9973
10S_4_3AB OUTLET 09 05 03 PRE CTS TO PROBE_0003.LAB	9/5/2003	9:07:34 AM	0.00	0.00		0.03	99.23	98.90	98.38		100.00	149.76	1.0026
10S_4_3AB OUTLET 09 05 03 PRE CTS TO PROBE_0004.LAB	9/5/2003	9:10:10 AM	0.00	0.00		0.03	99.28	98.91	98.34		99.92	149.76	1.0026
10S_4_3AB OUTLET 09 05 03 PRE CTS TO PROBE_0005.LAB	9/5/2003	9:12:46 AM	0.00	0.00		0.03	99.14	98.83	98.28		100.07	149.76	1.0026
10S_4_3AB OUTLET 09 05 03 PRE CTS TO PROBE_0006.LAB	9/5/2003	9:15:22 AM	0.00	0.00		0.03	99.17	98.88	98.34		100.09	149.76	1.0026
10S_4_3AB OUTLET 09 05 03 PRE CTS TO PROBE_0007.LAB	9/5/2003	9:17:58 AM	0.00	0.00		0.03	99.33	98.98	98.39		100.04	149.76	1.0026
Average							99.23	98.90	98.35	100.03			
10S_4_3AB OUTLET 09 05 03 MID N2 TO PROBE_0000.LAB	9/5/2003	2:55:23 PM	0.02	0.00		0.10						149.76	1.0026
10S_4_3AB OUTLET 09 05 03 MID N2 TO PROBE_0001.LAB	9/5/2003	2:58:00 PM	0.02	0.00		0.12						149.76	1.0026
10S_4_3AB OUTLET 09 05 03 MID N2 TO PROBE_0002BKG.LAB	9/5/2003	3:00:48 PM	0.00	0.00		0.00						149.76	1.0026
10S_4_3AB OUTLET 09 05 03 MID N2 TO PROBE_0003.LAB	9/5/2003	3:03:27 PM	0.00	0.00		0.00						149.76	1.0026
10S_4_3AB OUTLET 09 05 03 MID N2 TO PROBE_0004.LAB	9/5/2003	3:06:03 PM	0.00	0.00		-0.01						149.76	1.0026
10S_4_3AB OUTLET 09 06 03 POST CTS TO PROBE_0002.LAB	9/6/2003	12:29:47 PM	0.02	0.00	-0.24	0.02	98.57	98.85	96.61		99.93	149.76	0.9973
10S_4_3AB OUTLET 09 06 03 POST CTS TO PROBE_0003.LAB	9/6/2003	12:32:23 PM	0.02	0.00	-0.25	0.03	98.27	98.32	96.26		99.26	149.76	1.0026
10S_4_3AB OUTLET 09 06 03 POST CTS TO PROBE_0004.LAB	9/6/2003	12:35:00 PM	0.02	0.00	-0.24	0.05	98.88	98.86	96.80		99.88	149.76	0.9973
10S_4_3AB OUTLET 09 06 03 POST CTS TO PROBE_0005.LAB	9/6/2003	12:37:36 PM	0.02	0.00	-0.25	0.03	98.45	98.39	96.40		99.36	149.76	1.0026
10S_4_3AB OUTLET 09 06 03 POST CTS TO PROBE_0006.LAB	9/6/2003	12:40:13 PM	0.02	0.00	-0.25	0.04	99.01	98.92	96.89		99.90	149.76	0.9973
Average							98.64	98.67	96.59	99.67			
10S_4_3AB OUTLET 09 06 03 POST N2 TO PROBE_0001.LAB	9/6/2003	12:47:49 PM	0.02	0.00	-0.19	0.11	-0.22	0.05	-1.73		-1.09	149.76	0.9973
10S_4_3AB OUTLET 09 06 03 POST N2 TO PROBE_0002.LAB	9/6/2003	12:50:26 PM	0.02	0.00	-0.20	0.10	-0.27	0.02	-1.83		-0.99	149.76	0.9973
10S_4_3AB OUTLET 09 06 03 POST N2 TO PROBE_0003BKG.LAB	9/6/2003	12:53:11 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	149.76	1.0026
10S_4_3AB OUTLET 09 06 03 POST N2 TO PROBE_0004.LAB	9/6/2003	12:55:50 PM	0.00	0.00	-0.02	0.01	-0.01	-0.01	-0.01		-0.07	149.76	1.0026
10S_4_3AB OUTLET 09 06 03 POST N2 TO PROBE_0005.LAB	9/6/2003	12:58:26 PM	0.00	0.00	-0.02	-0.01	0.08	0.01	-0.02		0.09	151.25	0.9973

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
11S_1_3 09 11 03 PRE N2 TO PROBE_0000.LAB	9/11/2003	7:05:43 AM	0.01	0.00		-0.01	0.31	0.01	-0.30		-0.01	149.76	1.01
11S_1_3 09 11 03 PRE N2 TO PROBE_0001BKG.LAB	9/11/2003	7:08:28 AM	0.00	0.00		0.00	0.00	0.00	0.00		0.00	149.76	1.01
11S_1_3 09 11 03 PRE N2 TO PROBE_0002.LAB	9/11/2003	7:11:07 AM	0.00	0.00		0.00	-0.04	-0.01	-0.03		-0.03	149.76	1.01
11S_1_3 09 11 03 PRE N2 TO PROBE_0003.LAB	9/11/2003	7:13:43 AM	0.00	0.00		0.00	-0.04	-0.03	-0.01		-0.02	149.76	1.01
11S_1_3 09 11 03 PRE N2 TO PROBE_0004.LAB	9/11/2003	7:16:19 AM	0.00	0.00		-0.02	-0.10	-0.02	-0.04		0.04	149.76	1.01
11S_1_3 09 11 03 PRE CTS TO PROBE_0005.LAB	9/11/2003	7:40:51 AM	0.00	0.00		0.03	99.53	99.37	98.63		100.35	149.76	1.01
11S_1_3 09 11 03 PRE CTS TO PROBE_0006.LAB	9/11/2003	7:43:27 AM	0.00	0.00		0.03	99.43	99.26	98.55		100.35	149.76	1.01
11S_1_3 09 11 03 PRE CTS TO PROBE_0007.LAB	9/11/2003	7:46:03 AM	0.00	0.00		0.02	99.65	99.44	98.70		100.33	149.76	1.01
11S_1_3 09 11 03 PRE CTS TO PROBE_0008.LAB	9/11/2003	7:48:39 AM	0.00	0.00		0.02	98.96	98.93	98.14		99.83	149.76	1.01
11S_1_3 09 11 03 PRE CTS TO PROBE_0009.LAB	9/11/2003	7:51:15 AM	0.00	0.00		0.01	99.35	99.33	98.62		100.42	149.76	1.01
Average							99.35	99.24	98.50		100.23		
11S_1_3 09 11 03 MID N2 TO PROBE_0000.LAB	9/11/2003	12:19:33 PM	0.00	0.00		0.01						149.76	1.0079
11S_1_3 09 11 03 MID N2 TO PROBE_0001BKG.LAB	9/11/2003	12:24:40 PM	0.00	0.00		0.00						149.76	1.0079
11S_1_3 09 11 03 MID N2 TO PROBE_0002.LAB	9/11/2003	12:27:19 PM	0.00	0.00		0.01						149.76	1.0079
11S_1_3 09 11 03 MID N2 TO PROBE_0003.LAB	9/11/2003	12:29:54 PM	0.00	0.00		0.00						149.76	1.0079
11S_1_3 09 11 03 POST CTS TO PROBE_0000.LAB	9/11/2003	4:46:28 PM	0.00	0.00		0.07	99.99	99.70	99.01		99.49	149.76	1.0026
11S_1_3 09 11 03 POST CTS TO PROBE_0001.LAB	9/11/2003	4:46:31 PM	0.00	0.00		0.03	100.05	99.79	99.09		99.70	149.76	1.0026
11S_1_3 09 11 03 POST CTS TO PROBE_0002.LAB	9/11/2003	4:49:07 PM	0.00	0.00		-0.03	99.16	99.13	98.51		99.62	149.76	1.0079
11S_1_3 09 11 03 POST CTS TO PROBE_0003.LAB	9/11/2003	4:51:43 PM	0.00	0.00		0.01	99.29	99.32	98.67		99.29	149.76	1.0079
11S_1_3 09 11 03 POST CTS TO PROBE_0004.LAB	9/11/2003	4:54:19 PM	0.00	0.00		0.02	99.53	99.32	98.68		99.20	149.76	1.0079
Average							99.60	99.45	98.79		99.46		
11S_1_3 09 11 03 POST N2 TO PROBE_0000.LAB	9/11/2003	5:02:06 PM	0.00	0.00		0.00	32.92	26.02	33.12		34.14	149.76	1.0026
11S_1_3 09 11 03 POST N2 TO PROBE_0001.LAB	9/11/2003	5:04:42 PM	-0.01	0.00		-0.01	-0.01	0.03	0.01		-0.12	149.76	1.0026
11S_1_3 09 11 03 POST N2 TO PROBE_0002BKG.LAB	9/11/2003	5:08:52 PM	0.00	0.00		0.00	0.00	0.00	0.00		0.00	149.76	1.0026
11S_1_3 09 11 03 POST N2 TO PROBE_0003.LAB	9/11/2003	5:11:30 PM	0.00	0.00		0.00	0.03	0.01	0.01		0.10	149.76	1.0026
11S_1_3 09 11 03 POST N2 TO PROBE_0004.LAB	9/11/2003	5:14:06 PM	0.00	0.00		-0.02	-0.02	0.00	0.02		0.07	149.76	1.0026

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
11S_1_5 09 12 03 PRE N2 TO PROBE_0000.LAB	9/12/2003	7:10:18 AM	0.02	0.00		-0.03	77.26	75.34	76.25	77.27		149.76	1.1029
11S_1_5 09 12 03 PRE N2 TO PROBE_0001.LAB	9/12/2003	7:11:56 AM	0.41	0.01		0.35	0.63	0.49	0.03	0.42		149.76	1.0976
11S_1_5 09 12 03 PRE N2 TO PROBE_0002.LAB	9/12/2003	7:14:32 AM	0.00	0.00		-0.06	0.13	0.01	-0.47	-0.14		149.76	1.0976
11S_1_5 09 12 03 PRE N2 TO PROBE_0003BKG.LAB	9/12/2003	7:17:21 AM	0.00	0.00		0.00	0.00	0.00	0.00	0.00		149.76	1.0976
11S_1_5 09 12 03 PRE N2 TO PROBE_0004.LAB	9/12/2003	7:19:59 AM	0.00	0.00		0.09	0.01	-0.04	-0.05	-0.87		149.76	1.0976
11S_1_5 09 12 03 PRE CTS TO PROBE_0001.LAB	9/12/2003	7:27:47 AM	0.00	0.00		0.07	98.30	99.22	97.33	99.19		149.76	1.0976
11S_1_5 09 12 03 PRE CTS TO PROBE_0002.LAB	9/12/2003	7:30:23 AM	0.00	0.00		0.09	97.56	98.41	96.46	98.74		149.76	1.1029
11S_1_5 09 12 03 PRE CTS TO PROBE_0003.LAB	9/12/2003	7:32:59 AM	0.00	0.00		0.03	97.86	98.70	96.75	99.53		149.76	1.0976
11S_1_5 09 12 03 PRE CTS TO PROBE_0004.LAB	9/12/2003	7:35:35 AM	0.00	0.00		0.02	97.75	98.60	96.72	99.49		149.76	1.0976
11S_1_5 09 12 03 PRE CTS TO PROBE_0005.LAB	9/12/2003	7:38:11 AM	0.00	0.00		0.02	97.77	98.59	96.67	99.46		149.76	1.0976
Average							97.85	98.70	96.79	99.28			
11S_1_5 09 12 03 MID N2 TO PROBE_0001.LAB	9/12/2003	11:53:13 AM	2.10	0.04		1.48						149.76	0.9973
11S_1_5 09 12 03 MID N2 TO PROBE_0002.LAB	9/12/2003	11:55:49 AM	0.07	0.00		0.20						149.76	0.9973
11S_1_5 09 12 03 MID N2 TO PROBE_0003.LAB	9/12/2003	11:58:25 AM	0.01	0.00		0.19						149.76	0.9973
11S_1_5 09 12 03 MID N2 TO PROBE_0004BKG.LAB	9/12/2003	12:01:07 PM	0.00	0.00		0.00						149.76	0.9973
11S_1_5 09 12 03 MID N2 TO PROBE_0005.LAB	9/12/2003	12:03:46 PM	-0.02	0.00		-0.08						149.76	0.9973
11S_1_5 09 12 03 CTS TO PROBE_0000.LAB	9/12/2003	4:37:07 PM	0.02	0.00		0.00	98.88	98.54	98.49	100.66		149.76	0.9973
11S_1_5 09 12 03 CTS TO PROBE_0001.LAB	9/12/2003	4:39:44 PM	0.01	0.00		0.03	99.60	99.20	99.21	101.13		149.76	0.9920
11S_1_5 09 12 03 CTS TO PROBE_0002.LAB	9/12/2003	4:42:20 PM	0.01	0.00		0.03	99.10	98.66	98.68	100.71		149.76	0.9973
11S_1_5 09 12 03 CTS TO PROBE_0003.LAB	9/12/2003	4:44:56 PM	0.01	0.00		0.02	99.09	98.74	98.76	100.78		149.76	0.9973
11S_1_5 09 12 03 CTS TO PROBE_0004.LAB	9/12/2003	4:47:32 PM	0.01	0.00		0.02	99.63	99.29	99.23	101.31		149.76	0.9920
Average							99.26	98.88	98.87	100.92			
11S_1_5 09 12 03 N2 TO PROBE_0000.LAB	9/12/2003	4:53:24 PM	0.01	0.00		0.07	0.27	0.10	0.62	-0.21		149.76	0.9973
11S_1_5 09 12 03 N2 TO PROBE_0001.LAB	9/12/2003	4:56:00 PM	0.01	0.00		0.04	0.14	0.07	0.54	0.02		149.76	0.9973
11S_1_5 09 12 03 N2 TO PROBE_0002BKG.LAB	9/12/2003	4:59:55 PM	0.00	0.00		0.00	0.00	0.00	0.00	0.00		149.76	0.9973
11S_1_5 09 12 03 N2 TO PROBE_0003.LAB	9/12/2003	5:02:34 PM	0.00	0.00		0.02	0.01	0.00	-0.10	-0.11		149.76	0.9973
11S_1_5 09 12 03 N2 TO PROBE_0004.LAB	9/12/2003	5:05:10 PM	0.00	0.00		0.02	0.02	0.00	-0.04	-0.20		149.76	0.9973

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
11S_1_7 09 15 03 PRE N2 TO PROBE_0001.LAB	9/15/2003	7:05:00 AM	0.01	0.00	0.03	0.10	0.06	-0.02	-0.18		-3.28	149.76	0.9920
11S_1_7 09 15 03 PRE N2 TO PROBE_0002BKG.LAB	9/15/2003	7:08:18 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	149.76	0.9920
11S_1_7 09 15 03 PRE N2 TO PROBE_0003.LAB	9/15/2003	7:10:56 AM	0.00	0.00	-0.01	-0.01	0.09	-0.01	-0.06		0.00	149.76	0.9920
11S_1_7 09 15 03 PRE N2 TO PROBE_0004.LAB	9/15/2003	7:13:32 AM	0.00	0.00	-0.01	-0.01	0.05	-0.02	-0.01		-0.15	149.76	0.9973
11S_1_7 09 15 03 PRE N2 TO PROBE_0005.LAB	9/15/2003	7:16:08 AM	0.00	0.00	-0.01	-0.03	-0.03	0.00	0.00		0.12	149.76	0.9920
11S_1_7 09 15 03 PRE CTS TO PROBE_0000.LAB	9/15/2003	7:21:23 AM	0.00	0.00	0.01	-0.13	99.48	99.31	98.83		100.64	149.76	0.9868
11S_1_7 09 15 03 PRE CTS TO PROBE_0001.LAB	9/15/2003	7:23:59 AM	0.00	0.00	0.02	-0.10	99.17	99.01	98.44		99.72	149.76	0.9920
11S_1_7 09 15 03 PRE CTS TO PROBE_0002.LAB	9/15/2003	7:26:35 AM	0.00	0.00	0.02	-0.11	99.19	99.02	98.48		99.62	149.76	0.9920
11S_1_7 09 15 03 PRE CTS TO PROBE_0003.LAB	9/15/2003	7:29:12 AM	0.00	0.00	0.02	-0.08	99.27	99.11	98.52		99.37	149.76	0.9920
11S_1_7 09 15 03 PRE CTS TO PROBE_0004.LAB	9/15/2003	7:31:48 AM	0.00	0.00	0.01	-0.11	99.36	99.09	98.48		99.53	149.76	0.9920
Average							99.25	99.06	98.48		99.56		
11S_1_7 09 15 03 RUN 1 MID_0000.LAB	9/15/2003	11:52:32 AM	0.91	0.02	0.75	0.59						149.76	1.0026
11S_1_7 09 15 03 RUN 1 MID_0001.LAB	9/15/2003	11:55:08 AM	0.00	0.00	0.01	-0.11						149.76	1.0079
11S_1_7 09 15 03 RUN 1 MID_0002BKG.LAB	9/15/2003	11:57:56 AM	0.00	0.00	0.00	0.00						149.76	1.0079
11S_1_7 09 15 03 RUN 1 MID_0003.LAB	9/15/2003	12:00:34 PM	0.00	0.00	0.00	-0.01						149.76	1.0026
11S_1_7 09 15 03 RUN 1 MID_0004.LAB	9/15/2003	12:03:11 PM	0.00	0.00	0.00	0.00						149.76	1.0026
11S_1_7 09 15 03 POST CTS TO PROBE_0003.LAB	9/15/2003	4:31:08 PM	-0.01	0.00	0.01	-0.06	99.00	98.68	98.08		99.49	149.76	0.9973
11S_1_7 09 15 03 POST CTS TO PROBE_0004.LAB	9/15/2003	4:33:44 PM	-0.01	0.00	0.02	-0.06	98.42	98.17	97.58		98.97	149.76	1.0026
11S_1_7 09 15 03 POST CTS TO PROBE_0005.LAB	9/15/2003	4:36:20 PM	-0.01	0.00	0.01	-0.06	98.48	98.17	97.74		98.89	149.76	1.0026
11S_1_7 09 15 03 POST CTS TO PROBE_0006.LAB	9/15/2003	4:38:57 PM	-0.01	0.00	0.01	-0.06	98.97	98.71	98.16		99.38	149.76	0.9973
11S_1_7 09 15 03 POST CTS TO PROBE_0007.LAB	9/15/2003	4:41:33 PM	-0.01	0.00	0.01	-0.06	99.09	98.70	98.19		99.39	149.76	0.9973
Average							98.79	98.49	97.95		99.22		
11S_1_7 09 15 03 POST N2 TO PROBE_0000.LAB	9/15/2003	4:46:16 PM	-0.02	0.00	-0.02	-0.10	0.08	0.04	-0.10		-1.10	149.76	0.9973
11S_1_7 09 15 03 POST N2 TO PROBE_0001BKG.LAB	9/15/2003	4:49:05 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	149.76	0.9973
11S_1_7 09 15 03 POST N2 TO PROBE_0002.LAB	9/15/2003	4:51:44 PM	0.00	0.00	0.00	-0.01	0.09	-0.02	0.03		0.01	149.76	0.9973
11S_1_7 09 15 03 POST N2 TO PROBE_0003.LAB	9/15/2003	4:54:20 PM	0.00	0.00	0.00	-0.01	0.05	-0.02	0.00		-0.12	149.76	0.9920

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
11S_1_9 09 16 03 PRE TEST N2 TO PROBE_0000.LAB	9/16/2003	8:26:20 AM	0.00	0.00	-0.02	-0.06	0.09	0.03	-0.12		0.34	149.76	1.0079
11S_1_9 09 16 03 PRE TEST N2 TO PROBE_0001BKG.LAB	9/16/2003	8:29:24 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	149.76	1.0026
11S_1_9 09 16 03 PRE TEST N2 TO PROBE_0002.LAB	9/16/2003	8:32:02 AM	0.00	0.00	0.01	0.00	-0.10	-0.01	-0.09		0.02	149.76	1.0026
11S_1_9 09 16 03 PRE TEST N2 TO PROBE_0003.LAB	9/16/2003	8:34:38 AM	0.00	0.00	0.01	0.01	-0.04	-0.02	-0.10		0.03	149.76	1.0026
11S_1_9 09 16 03 PRE TEST N2 TO PROBE_0004.LAB	9/16/2003	8:37:13 AM	0.00	0.00	0.03	-0.02	-0.04	-0.02	-0.09		0.02	150.51	1.0079
11S_1_9 09 16 03 PRE TEST CTS TO PROBE_0000.LAB	9/16/2003	8:11:39 AM	0.01	0.00	0.02	0.01	98.87	98.60	97.80		99.36	149.76	1.0184
11S_1_9 09 16 03 PRE TEST CTS TO PROBE_0001.LAB	9/16/2003	8:14:15 AM	0.01	0.00	0.00	0.02	99.23	99.15	98.27		99.59	149.76	1.0184
11S_1_9 09 16 03 PRE TEST CTS TO PROBE_0002.LAB	9/16/2003	8:16:51 AM	0.00	0.00	0.01	-0.01	99.32	99.29	98.35		99.76	149.76	1.0184
11S_1_9 09 16 03 PRE TEST CTS TO PROBE_0003.LAB	9/16/2003	8:19:26 AM	0.00	0.00	0.02	-0.01	99.11	98.92	98.03		99.70	149.76	1.0184
11S_1_9 09 16 03 PRE TEST CTS TO PROBE_0004.LAB	9/16/2003	8:22:02 AM	0.00	0.00	0.01	0.01	98.76	98.53	97.61		99.23	149.76	1.0237
Average							99.11	98.97	98.06		99.57		
11S_1_9 09 16 03 MID N2 TO PROBE_0000.LAB	9/16/2003	12:44:52 PM	0.00	0.00	0.06	-0.05						149.76	1.0026
11S_1_9 09 16 03 MID N2 TO PROBE_0001BKG.LAB	9/16/2003	12:47:41 PM	0.00	0.00	0.00	0.00						149.76	1.0026
11S_1_9 09 16 03 MID N2 TO PROBE_0002.LAB	9/16/2003	12:50:19 PM	0.00	0.00	-0.02	0.01						149.76	1.0026
11S_1_9 09 16 03 MID N2 TO PROBE_0003.LAB	9/16/2003	12:52:54 PM	0.00	0.00	-0.02	0.00						149.76	0.9973
11S_1_9 09 16 03 POST TEST CTS TO PROBE_0000.LAB	9/16/2003	5:29:38 PM	-0.01	0.00	-0.01	-0.08	99.02	98.46	98.58		99.88	149.76	0.9920
11S_1_9 09 16 03 POST TEST CTS TO PROBE_0001.LAB	9/16/2003	5:32:13 PM	-0.01	0.00	0.01	-0.09	98.98	98.52	98.37		99.95	150.51	0.9920
11S_1_9 09 16 03 POST TEST CTS TO PROBE_0002.LAB	9/16/2003	5:34:49 PM	-0.01	0.00	0.01	-0.12	99.40	99.04	98.82		100.56	150.51	0.9868
11S_1_9 09 16 03 POST TEST CTS TO PROBE_0003.LAB	9/16/2003	5:37:25 PM	-0.01	0.00	0.01	-0.12	98.73	98.47	98.34		100.08	149.76	0.9920
11S_1_9 09 16 03 POST TEST CTS TO PROBE_0004.LAB	9/16/2003	5:39:57 PM	-0.01	0.00	-0.01	-0.05	99.12	99.06	98.65		99.83	150.51	0.9920
Average							99.05	98.71	98.55		100.06		
11S_1_9 09 16 03 POST N2 TO PROBE_0002.LAB	9/16/2003	5:17:57 PM	-0.01	0.00	-0.07	-0.02	0.10	0.00	-0.56		-0.64	149.76	0.9920
11S_1_9 09 16 03 POST N2 TO PROBE_0003.LAB	9/16/2003	5:20:30 PM	-0.03	0.00	-0.09	-0.14	0.18	0.01	-0.40		-0.41	149.76	0.9920
11S_1_9 09 16 03 POST N2 TO PROBE_0004.LAB	9/16/2003	5:23:06 PM	-0.03	0.00	-0.04	-0.14	0.07	0.00	0.41		-0.14	149.76	0.9868
11S_1_9 09 16 03 POST N2 TO PROBE_0005.LAB	9/16/2003	5:25:41 PM	-0.02	0.00	-0.03	-0.10	0.09	0.00	0.43		0.04	150.51	0.9920

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
11S_1_11 09 17 03 PRE TEST N2 TO PROBE_0003.LAB	9/17/2003	6:40:25 AM	0.00	0.00	0.01	0.00						149.76	1.0026
11S_1_11 09 17 03 PRE TEST N2 TO PROBE_0004.LAB	9/17/2003	6:43:01 AM	0.00	0.00	0.00	0.01						150.51	1.0026
11S_1_11 09 17 03 PRE TEST N2 TO PROBE_0005.LAB	9/17/2003	6:45:37 AM	0.00	0.00	0.01	0.01						149.76	1.0026
11S_1_11 09 17 03 PRE TEST N2 TO PROBE_0006BKG.LAB	9/17/2003	6:48:58 AM	0.00	0.00	0.00	0.00						149.76	1.0026
11S_1_11 09 17 03 PRE TEST N2 TO PROBE_0007.LAB	9/17/2003	6:51:36 AM	0.00	0.00	0.01	0.01						149.76	1.0026
11S_1_11 09 17 03 PRE TEST CTS TO PROBE_0000.LAB	9/17/2003	6:18:05 AM	0.00	0.00	0.01	0.03	98.52	98.49	97.79		100.17	150.51	1.0079
11S_1_11 09 17 03 PRE TEST CTS TO PROBE_0001.LAB	9/17/2003	6:20:41 AM	0.00	0.00	0.00	0.04	98.90	98.79	98.08		100.39	149.76	1.0026
11S_1_11 09 17 03 PRE TEST CTS TO PROBE_0002.LAB	9/17/2003	6:23:17 AM	0.00	0.00	-0.01	0.04	99.07	98.96	98.18		100.53	150.51	1.0026
11S_1_11 09 17 03 PRE TEST CTS TO PROBE_0003.LAB	9/17/2003	6:25:53 AM	0.00	0.00	0.01	0.03	98.96	98.77	98.01		100.34	149.76	1.0026
11S_1_11 09 17 03 PRE TEST CTS TO PROBE_0004.LAB	9/17/2003	6:28:29 AM	0.00	0.00	0.00	0.03	98.57	98.45	97.63		99.83	150.51	1.0079
Average					0.00		98.80	98.69	97.94		100.25		
11S_1_11 09 17 03 MID_0000.LAB	9/17/2003	11:44:07 AM	2.05	0.04	0.15	1.29						149.76	1.0026
11S_1_11 09 17 03 MID_0001.LAB	9/17/2003	11:46:30 AM	-0.01	0.00	-0.05	-0.02						149.76	1.0026
11S_1_11 09 17 03 MID_0002BKG.LAB	9/17/2003	11:49:55 AM	0.00	0.00	0.00	0.00						149.76	1.0026
11S_1_11 09 17 03 MID_0003.LAB	9/17/2003	11:52:34 AM	0.01	0.00	0.02	0.01						149.76	1.0026
11S_1_11 09 17 03 MID_0004.LAB	9/17/2003	11:55:10 AM	0.01	0.00	0.01	0.05						149.76	1.0026
11S_1_11 09 17 03 POST CTS TO PROBE_0000.LAB	9/17/2003	4:10:11 PM	0.02	0.00	0.01	0.06	98.74	98.75	98.06		100.65	149.76	0.9973
11S_1_11 09 17 03 POST CTS TO PROBE_0001.LAB	9/17/2003	4:12:47 PM	0.02	0.00	0.01	0.06	98.44	98.39	97.79		100.23	150.51	1.0026
11S_1_11 09 17 03 POST CTS TO PROBE_0002.LAB	9/17/2003	4:15:23 PM	0.02	0.00	0.02	0.06	98.81	98.78	98.11		100.62	149.76	0.9973
11S_1_11 09 17 03 POST CTS TO PROBE_0003.LAB	9/17/2003	4:17:59 PM	0.02	0.00	0.02	0.06	98.38	98.23	97.61		100.09	149.76	1.0026
11S_1_11 09 17 03 POST CTS TO PROBE_0004.LAB	9/17/2003	4:20:35 PM	0.02	0.00	0.02	0.06	98.82	98.75	98.08		100.71	149.76	0.9973
Average							98.64	98.58	97.93		100.46		
11S_1_11 09 17 03 POST N2 TO PROBE_0000.LAB	9/17/2003	4:24:24 PM	0.02	0.00	0.00	0.02	0.08	0.08	-0.18		0.33	149.76	0.9973
11S_1_11 09 17 03 POST N2 TO PROBE_0001.LAB	9/17/2003	4:27:00 PM	0.02	0.00	0.00	0.02	0.00	0.06	-0.11		0.32	149.76	0.9973
11S_1_11 09 17 03 POST N2 TO PROBE_0002BKG.LAB	9/17/2003	4:30:45 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	149.76	0.9973
11S_1_11 09 17 03 POST N2 TO PROBE_0003.LAB	9/17/2003	4:33:23 PM	0.00	0.00	0.00	-0.02	0.05	0.00	0.07		-0.08	149.76	1.0026
11S_1_11 09 17 03 POST N2 TO PROBE_0004.LAB	9/17/2003	4:35:59 PM	0.00	0.00	0.00	-0.02	0.07	0.01	0.06		-0.18	149.76	0.9973

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
11S_1_14 INLET 09 19 03 PRE TEST N2 TO PROBE_0000.LAB	9/19/2003	6:48:39 AM	0.00	0.00		-0.01					150.51	1.0060
11S_1_14 INLET 09 19 03 PRE TEST N2 TO PROBE_0001.LAB	9/19/2003	6:51:24 AM	0.00	0.00		-0.02					150.51	1.0112
11S_1_14 INLET 09 19 03 PRE TEST N2 TO PROBE_0002.LAB	9/19/2003	6:54:10 AM	0.00	0.00		-0.01					150.51	1.0060
11S_1_14 INLET 09 19 03 PRE TEST N2 TO PROBE_0003BKG.LAB	9/19/2003	6:58:18 AM	0.00	0.00		0.00					150.51	1.0112
11S_1_14 INLET 09 19 03 PRE TEST N2 TO PROBE_0004.LAB	9/19/2003	7:01:06 AM	0.00	0.00		0.00					150.51	1.0060
11S_1_14 INLET 09 19 03 PRE TEST CTS TO PROBE_0000.LAB	9/19/2003	6:33:02 AM	0.01	0.00		-0.02	100.13	99.84	100.37	100.55	150.51	1.0008
11S_1_14 INLET 09 19 03 PRE TEST CTS TO PROBE_0001.LAB	9/19/2003	6:35:47 AM	0.01	0.00		-0.03	99.90	99.62	99.97	100.22	150.51	1.0060
11S_1_14 INLET 09 19 03 PRE TEST CTS TO PROBE_0002.LAB	9/19/2003	6:38:33 AM	0.00	0.00		-0.03	100.47	100.27	100.68	100.90	150.51	1.0008
11S_1_14 INLET 09 19 03 PRE TEST CTS TO PROBE_0003.LAB	9/19/2003	6:41:18 AM	0.00	0.00		-0.02	100.00	99.73	100.12	100.30	150.51	1.0060
11S_1_14 INLET 09 19 03 PRE TEST CTS TO PROBE_0004.LAB	9/19/2003	6:44:03 AM	0.00	0.00		-0.02	99.49	99.24	99.59	99.84	150.51	1.0112
Average							99.96	99.72	100.09	100.31		
11S_1_14 INLET 09 19 03 MID TEST N2 TO PROBE_0000.LAB	9/19/2003	12:23:43 PM	0.01	0.00		0.00					150.51	1.0060
11S_1_14 INLET 09 19 03 MID TEST N2 TO PROBE_0001BKG.LAB	9/19/2003	12:27:36 PM	0.00	0.00		0.00					150.51	1.0008
11S_1_14 INLET 09 19 03 MID TEST N2 TO PROBE_0002.LAB	9/19/2003	12:30:24 PM	0.00	0.00		0.00					150.51	1.0060
11S_1_14 INLET 09 19 03 MID TEST N2 TO PROBE_0003.LAB	9/19/2003	12:33:09 PM	0.00	0.00		0.00					150.51	0.9955
11S_1_14 INLET 09 19 03 POST CTS TO PROBE_0000.LAB	9/19/2003	5:03:09 PM	0.00	0.00		0.02	99.96	99.95	100.16	101.12	150.51	1.0008
11S_1_14 INLET 09 19 03 POST CTS TO PROBE_0001.LAB	9/19/2003	5:05:54 PM	0.00	0.00		0.02	100.15	100.02	100.40	101.07	150.51	1.0008
11S_1_14 INLET 09 19 03 POST CTS TO PROBE_0002.LAB	9/19/2003	5:08:40 PM	0.00	0.00		-0.01	100.83	100.56	100.73	101.72	150.51	0.9955
11S_1_14 INLET 09 19 03 POST CTS TO PROBE_0003.LAB	9/19/2003	5:11:25 PM	0.00	0.00		0.00	99.67	99.47	99.65	100.68	150.51	1.0060
11S_1_14 INLET 09 19 03 POST CTS TO PROBE_0004.LAB	9/19/2003	5:14:11 PM	0.00	0.00		0.00	100.66	100.51	100.68	101.76	150.51	0.9955
Average							100.25	100.10	100.32	101.27		
11S_1_14 INLET 09 19 03 POST N2 TO PROBE_0000.LAB	9/19/2003	5:19:24 PM	0.00	0.00		0.01	0.03	0.07	-0.06	0.22	150.51	1.0008
11S_1_14 INLET 09 19 03 POST N2 TO PROBE_0001.LAB	9/19/2003	5:22:10 PM	0.00	0.00		0.01	-0.14	0.06	-0.19	0.10	150.51	1.0008
11S_1_14 INLET 09 19 03 POST N2 TO PROBE_0002.LAB	9/19/2003	5:24:55 PM	0.00	0.00		0.01	-0.06	0.02	-0.13	0.18	150.51	1.0008
11S_1_14 INLET 09 19 03 POST N2 TO PROBE_0003.LAB	9/19/2003	5:27:40 PM	0.00	0.00		0.01	-0.12	0.03	-0.15	0.18	150.51	0.9955
11S_1_14 INLET 09 19 03 POST N2 TO PROBE_0004.LAB	9/19/2003	5:30:26 PM	0.00	0.00		0.00	-0.10	0.01	-0.17	0.04	150.51	0.9955

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
11S_1_14 OUTLET 09 19 03 N2 TO PROBE_0000.LAB	9/19/2003	7:31:21 AM	0.00	0.00	0.04	-0.08	0.00	0.02	0.41	5.12		150.51	0.9973
11S_1_14 OUTLET 09 19 03 N2 TO PROBE_0001.LAB	9/19/2003	7:33:57 AM	0.00	0.00	0.06	-0.07	-0.07	0.07	0.55	5.03		149.76	1.0026
11S_1_14 OUTLET 09 19 03 N2 TO PROBE_0002BKG.LAB	9/19/2003	7:37:20 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		149.76	0.9920
11S_1_14 OUTLET 09 19 03 N2 TO PROBE_0003.LAB	9/19/2003	7:39:58 AM	0.00	0.00	-0.01	-0.01	0.03	0.00	0.11	0.06		149.76	0.9920
11S_1_14 OUTLET 09 19 03 CTS TO PROBE_0000.LAB	9/19/2003	7:44:17 AM	0.00	0.00	0.00	-0.02	98.50	98.26	97.74	99.89		149.76	0.9973
11S_1_14 OUTLET 09 19 03 CTS TO PROBE_0001.LAB	9/19/2003	7:46:52 AM	0.00	0.00	-0.01	0.02	98.66	98.23	97.88	99.88		150.51	0.9973
11S_1_14 OUTLET 09 19 03 CTS TO PROBE_0002.LAB	9/19/2003	7:49:28 AM	0.00	0.00	-0.01	0.00	99.05	98.71	98.39	100.19		150.51	0.9920
11S_1_14 OUTLET 09 19 03 CTS TO PROBE_0003.LAB	9/19/2003	7:52:03 AM	0.00	0.00	-0.01	0.01	99.12	98.68	98.29	100.18		150.51	0.9920
11S_1_14 OUTLET 09 19 03 CTS TO PROBE_0004.LAB	9/19/2003	7:54:39 AM	0.00	0.00	0.01	-0.04	99.77	99.25	99.03	100.88		150.51	0.9657
Average							99.15	98.72	98.40	100.28			
11S_1_14 OUTLET 09 19 03 MID TEST N2 TO PROE_0005.LAB	9/19/2003	12:32:48 PM	0.00	0.00	-0.01	-0.02						149.76	0.9920
11S_1_14 OUTLET 09 19 03 MID TEST N2 TO PROE_0006.LAB	9/19/2003	12:35:23 PM	0.00	0.00	-0.04	-0.03						149.76	0.9920
11S_1_14 OUTLET 09 19 03 MID TEST N2 TO PROE_0007.LAB	9/19/2003	12:37:59 PM	0.00	0.00	-0.02	-0.04						150.51	0.9920
11S_1_14 OUTLET 09 19 03 MID TEST N2 TO PROE_0008.LAB	9/19/2003	12:40:34 PM	0.00	0.00	-0.01	-0.03						149.76	0.9920
11S_1_14 OUTLET 09 19 03 MID TEST N2 TO PROE_0009BKG.LAB	9/19/2003	12:44:38 PM	0.00	0.00	0.00	0.00						150.51	0.9920
11S_1_14 OUTLET 09 19 03 POST TEST CTS TO PROBE_0000.LAB	9/19/2003	5:00:12 PM	0.01	0.00	0.05	0.05	99.08	98.91	98.25	100.06		149.76	0.9868
11S_1_14 OUTLET 09 19 03 POST TEST CTS TO PROBE_0001.LAB	9/19/2003	5:02:48 PM	0.01	0.00	0.05	0.09	98.51	98.17	97.59	99.43		149.76	0.9920
11S_1_14 OUTLET 09 19 03 POST TEST CTS TO PROBE_0002.LAB	9/19/2003	5:05:23 PM	0.01	0.00	0.06	0.04	98.82	98.44	97.71	99.76		150.51	0.9920
11S_1_14 OUTLET 09 19 03 POST TEST CTS TO PROBE_0003.LAB	9/19/2003	5:07:59 PM	0.01	0.00	0.04	0.04	98.48	98.15	97.52	99.35		149.76	0.9920
11S_1_14 OUTLET 09 19 03 POST TEST CTS TO PROBE_0004.LAB	9/19/2003	5:10:34 PM	0.00	0.00	0.05	0.03	99.00	98.81	98.21	99.90		149.76	0.9868
Average							98.78	98.49	97.86	99.70			
11S_1_14 OUTLET 09 19 03 POST TEST N2 TO PROBE_0000.LAB	9/19/2003	5:14:11 PM	0.00	0.00	0.00	0.06	0.07	0.10	-0.05	-0.41		149.76	0.9868
11S_1_14 OUTLET 09 19 03 POST TEST N2 TO PROBE_0001.LAB	9/19/2003	5:16:47 PM	0.00	0.00	0.00	0.05	0.04	0.03	-0.11	-0.44		149.76	0.9868
11S_1_14 OUTLET 09 19 03 POST TEST N2 TO PROBE_0002.LAB	9/19/2003	5:19:22 PM	0.00	0.00	0.01	0.02	0.05	0.05	-0.06	-0.19		149.76	0.9920
11S_1_14 OUTLET 09 19 03 POST TEST N2 TO PROBE_0003.LAB	9/19/2003	5:21:58 PM	0.00	0.00	0.01	0.00	0.04	0.05	-0.16	-0.10		150.51	0.9868
11S_1_14 OUTLET 09 19 03 POST TEST N2 TO PROBE_0004.LAB	9/19/2003	5:24:34 PM	0.00	0.00	0.01	-0.01	0.01	0.04	-0.13	-0.18		150.51	0.9920

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

**FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING**

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
11S.1.6 INLET 08 19 03 PRE N2 TO PROBE_0000.LAB	8/19/2003	7:32:13 AM	-0.01	0.00	0.78	-0.23	-0.67	0.09	0.25	2.72		149.76	1.0026
11S.1.6 INLET 08 19 03 PRE N2 TO PROBE_0001BKG.LAB	8/19/2003	7:35:02 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		149.76	1.0026
11S.1.6 INLET 08 19 03 PRE N2 TO PROBE_0002.LAB	8/19/2003	7:37:40 AM	0.00	0.00	0.01	0.01	-0.05	0.01	0.00	-0.39		149.76	1.0026
11S.1.6 INLET 08 19 03 PRE N2 TO PROBE_0003.LAB	8/19/2003	7:40:16 AM	0.00	0.00	0.00	0.00	-0.04	0.02	0.11	-0.37		149.76	1.0026
11S.1.6 INLET 08 19 03 PRE N2 TO PROBE_0004BKG.LAB	8/19/2003	7:43:18 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		149.76	0.9973
11S.1.6 INLET 08 19 03 PRE N2 TO PROBE_0005.LAB	8/19/2003	7:45:57 AM	0.00	0.00	-0.01	-0.02	0.11	0.03	-0.04	0.33		149.76	1.0026
11S.1.6 INLET 08 19 03 PRE CTS TO PROBE_0002.LAB	8/19/2003	8:08:37 AM	-0.01	0.00	-0.08	0.04	99.14	98.94	98.43	100.11		149.76	1.0026
11S.1.6 INLET 08 19 03 PRE CTS TO PROBE_0003.LAB	8/19/2003	8:11:12 AM	-0.01	0.00	-0.09	0.06	99.95	99.70	99.23	100.88		149.76	0.9920
11S.1.6 INLET 08 19 03 PRE CTS TO PROBE_0004.LAB	8/19/2003	8:13:48 AM	-0.01	0.00	-0.11	0.05	99.28	98.96	98.49	100.13		149.02	0.9920
11S.1.6 INLET 08 19 03 PRE CTS TO PROBE_0005.LAB	8/19/2003	8:16:24 AM	-0.01	0.00	-0.10	0.03	99.48	99.13	98.77	100.32		149.76	0.9920
11S.1.6 INLET 08 19 03 PRE CTS TO PROBE_0006.LAB	8/19/2003	8:18:59 AM	-0.01	0.00	-0.10	0.05	99.41	99.14	98.81	100.30		149.76	0.9920
Average							99.45	99.18	98.75	100.35			
11S.1.6 INLET 08 19 03 MID N2 TO PROBE_0000.LAB	8/19/2003	12:57:52 PM	0.02	0.00	-0.25	0.14						149.76	1.0026
11S.1.6 INLET 08 19 03 MID N2 TO PROBE_0001.LAB	8/19/2003	1:00:29 PM	0.02	0.00	-0.24	0.13						149.76	0.9973
11S.1.6 INLET 08 19 03 MID N2 TO PROBE_0002BKG.LAB	8/19/2003	1:03:47 PM	0.00	0.00	0.00	0.00						149.76	0.9973
11S.1.6 INLET 08 19 03 MID N2 TO PROBE_0003.LAB	8/19/2003	1:06:27 PM	0.00	0.00	-0.03	0.01						149.02	0.9973
11S.1.6 INLET 08 19 03 POST CTS TO PROBE_0000.LAB	8/19/2003	5:26:08 PM	0.02	0.00	-0.68	-0.08	99.81	98.68	98.52	96.94		149.76	1.0026
11S.1.6 INLET 08 19 03 POST CTS TO PROBE_0001.LAB	8/19/2003	5:28:45 PM	0.01	0.00	-0.68	-0.07	100.19	99.21	99.01	97.44		149.76	1.0026
11S.1.6 INLET 08 19 03 POST CTS TO PROBE_0002.LAB	8/19/2003	5:31:22 PM	0.01	0.00	-0.66	-0.07	100.20	99.02	98.76	97.19		149.76	1.0026
11S.1.6 INLET 08 19 03 POST CTS TO PROBE_0003.LAB	8/19/2003	5:33:58 PM	0.01	0.00	-0.65	-0.05	100.09	98.96	98.57	97.05		149.76	1.0026
11S.1.6 INLET 08 19 03 POST CTS TO PROBE_0004.LAB	8/19/2003	5:36:35 PM	0.01	0.00	-0.62	-0.01	100.18	99.15	98.88	97.28		149.76	1.0026
Average							100.10	99.00	98.75	97.18			
11S.1.6 INLET 08 19 03 POST N2 TO PROBE_0000.LAB	8/19/2003	5:43:17 PM	0.00	0.00	-0.52	0.09	0.78	0.04	-0.06	-2.89		149.76	1.0026
11S.1.6 INLET 08 19 03 POST N2 TO PROBE_0001.LAB	8/19/2003	5:45:53 PM	0.00	0.00	-0.47	0.11	0.57	-0.04	-0.15	-3.23		149.76	1.0079
11S.1.6 INLET 08 19 03 POST N2 TO PROBE_0002.LAB	8/19/2003	5:48:30 PM	0.00	0.00	-0.44	0.11	0.43	-0.06	-0.25	-3.14		149.76	1.0079

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

**FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING**

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
11S.1.6 OUTLET 08 19 03 PRE N2 TO PROBE_0005.LAB	8/19/2003	7:44:39 AM	-0.01	0.00	-0.02	-0.01	0.18	0.00	-0.03	-0.10		150.51	1.0060
11S.1.6 OUTLET 08 19 03 PRE N2 TO PROBE_0006BKG.LAB	8/19/2003	7:48:56 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
11S.1.6 OUTLET 08 19 03 PRE N2 TO PROBE_0007.LAB	8/19/2003	7:51:45 AM	0.00	0.00	0.00	-0.01	-0.04	-0.02	-0.01	-0.17		150.51	1.0008
11S.1.6 OUTLET 08 19 03 PRE N2 TO PROBE_0008.LAB	8/19/2003	7:54:28 AM	0.00	0.00	0.00	-0.02	0.05	-0.01	0.06	-0.40		150.51	1.0008
11S.1.6 OUTLET 08 19 03 PRE N2 TO PROBE_0009.LAB	8/19/2003	7:57:14 AM	0.00	0.00	0.01	-0.01	0.02	0.00	0.07	-0.68		150.51	1.0060
11S.1.6 OUTLET 08 19 03 PRE CTS TO PROBE_0000.LAB	8/19/2003	8:01:46 AM	0.00	0.00	-0.04	-0.05	99.78	99.71	99.78	99.85		150.51	1.0008
11S.1.6 OUTLET 08 19 03 PRE CTS TO PROBE_0001.LAB	8/19/2003	8:04:32 AM	0.00	0.00	-0.04	-0.05	99.78	99.44	99.59	99.31		150.51	1.0060
11S.1.6 OUTLET 08 19 03 PRE CTS TO PROBE_0002.LAB	8/19/2003	8:07:18 AM	0.00	0.00	-0.06	-0.08	100.21	100.15	100.48	99.98		150.51	1.0008
11S.1.6 OUTLET 08 19 03 PRE CTS TO PROBE_0003.LAB	8/19/2003	8:10:04 AM	0.00	0.00	-0.08	-0.06	100.38	100.55	100.97	100.75		150.51	0.9955
11S.1.6 OUTLET 08 19 03 PRE CTS TO PROBE_0004.LAB	8/19/2003	8:12:50 AM	0.00	0.00	-0.06	-0.06	100.44	100.59	101.03	100.83		150.51	0.9955
11S.1.6 OUTLET 08 19 03 PRE CTS TO PROBE_0005.LAB	8/19/2003	8:15:36 AM	-0.01	0.00	-0.05	-0.04	99.95	99.96	100.38	100.32		150.51	1.0008
Average							100.15	100.14	100.49	100.24			
11S.1.6 OUTLET 08 19 03 MID N2 TO PROBE_0000.LAB	8/19/2003	12:57:55 PM	0.02	0.00	-0.04	-0.04						150.51	1.0008
11S.1.6 OUTLET 08 19 03 MID N2 TO PROBE_0001.LAB	8/19/2003	1:00:41 PM	0.01	0.00	-0.04	-0.08						150.51	0.9955
11S.1.6 OUTLET 08 19 03 MID N2 TO PROBE_0002BKG.LAB	8/19/2003	1:04:03 PM	0.00	0.00	0.00	0.00						150.51	1.0008
11S.1.6 OUTLET 08 19 03 MID N2 TO PROBE_0003.LAB	8/19/2003	1:06:53 PM	0.00	0.00	-0.01	0.00						150.51	1.0060
11S.1.6 OUTLET 08 19 03 POST CTS TO PROBE_0000.LAB	8/19/2003	5:26:17 PM	0.02	0.00	-0.02	0.01	99.90	99.67	100.02	101.55		150.51	1.0008
11S.1.6 OUTLET 08 19 03 POST CTS TO PROBE_0001.LAB	8/19/2003	5:29:03 PM	0.01	0.00	-0.02	-0.01	100.14	99.78	100.16	101.74		150.51	1.0008
11S.1.6 OUTLET 08 19 03 POST CTS TO PROBE_0002.LAB	8/19/2003	5:31:50 PM	0.01	0.00	0.00	0.02	100.01	99.69	100.13	101.96		150.51	1.0008
11S.1.6 OUTLET 08 19 03 POST CTS TO PROBE_0003.LAB	8/19/2003	5:34:37 PM	0.01	0.00	0.01	0.05	100.25	100.11	100.45	102.56		150.51	0.9955
11S.1.6 OUTLET 08 19 03 POST CTS TO PROBE_0004.LAB	8/19/2003	5:37:24 PM	0.00	0.00	0.02	0.02	100.43	100.16	100.62	102.88		150.51	0.9955
Average							100.15	99.88	100.28	102.14			
11S.1.6 OUTLET 08 19 03 POST N2 TO PROBE_0000.LAB	8/19/2003	5:43:21 PM	0.00	0.00	0.07	0.06	0.28	0.17	0.22	1.37		150.51	0.9955
11S.1.6 OUTLET 08 19 03 POST N2 TO PROBE_0001.LAB	8/19/2003	5:46:07 PM	0.00	0.00	0.09	0.05	0.22	0.09	0.18	1.37		150.51	0.9955
11S.1.6 OUTLET 08 19 03 POST N2 TO PROBE_0002.LAB	8/19/2003	5:48:54 PM	0.00	0.00	0.09	0.06	0.26	0.04	0.15	1.43		150.51	1.0008

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
11S.1.10 OUTLET 08 21 03 PRE N2 TO PROBE_0001BKG.LAB	8/21/2003	6:37:37 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
11S.1.10 OUTLET 08 21 03 PRE N2 TO PROBE_0002.LAB	8/21/2003	6:40:25 AM	0.00	0.00	-0.01	0.00	0.03	-0.01	0.06	-0.08		150.51	1.0008
11S.1.10 OUTLET 08 21 03 PRE N2 TO PROBE_0003.LAB	8/21/2003	6:43:11 AM	0.00	0.00	0.01	-0.02	-0.04	0.00	0.07	-0.19		150.51	0.9955
11S.1.10 OUTLET 08 21 03 PRE N2 TO PROBE_0004BKG.LAB	8/21/2003	6:46:52 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		150.51	1.0008
11S.1.10 OUTLET 08 21 03 PRE N2 TO PROBE_0005.LAB	8/21/2003	6:49:42 AM	0.00	0.00	0.00	-0.02	-0.13	0.02	0.08	-0.15		150.51	1.0008
11S.1.10 OUTLET 08 21 03 PRE CTS TO PROBE_0000.LAB	8/21/2003	6:55:00 AM	0.00	0.00	-0.06	-0.06	100.51	100.47	100.65	100.38		150.51	0.9955
11S.1.10 OUTLET 08 21 03 PRE CTS TO PROBE_0001.LAB	8/21/2003	6:57:45 AM	0.00	0.00	-0.07	-0.07	100.12	100.04	100.25	99.85		150.51	1.0008
11S.1.10 OUTLET 08 21 03 PRE CTS TO PROBE_0002.LAB	8/21/2003	7:00:31 AM	0.00	0.00	-0.05	-0.06	100.17	100.03	100.24	99.75		150.51	1.0008
11S.1.10 OUTLET 08 21 03 PRE CTS TO PROBE_0003.LAB	8/21/2003	7:03:17 AM	0.00	0.00	-0.05	-0.07	100.77	100.62	100.79	100.29		150.51	0.9955
11S.1.10 OUTLET 08 21 03 PRE CTS TO PROBE_0004.LAB	8/21/2003	7:06:03 AM	0.00	0.00	-0.07	-0.06	100.61	100.69	100.92	100.51		150.51	0.9955
Average							100.42	100.35	100.55	100.10			
11S_1_10 OUTLET 08 21 03 MID TEST N2 TO PROBE_0000.LAB	8/21/2003	2:22:45 PM	0.02	0.00	-0.02	-0.05						150.51	1.0008
11S_1_10 OUTLET 08 21 03 MID TEST N2 TO PROBE_0001BKG.LAB	8/21/2003	2:26:49 PM	0.00	0.00	0.00	0.00						150.51	0.9955
11S_1_10 OUTLET 08 21 03 MID TEST N2 TO PROBE_0002.LAB	8/21/2003	2:29:42 PM	0.00	0.00	0.00	0.00						150.51	0.9955
11S_1_10 OUTLET 08 21 03 MID TEST N2 TO PROBE_0003.LAB	8/21/2003	2:32:29 PM	0.01	0.00	-0.01	0.00						150.51	0.9955
11S_1_10 OUTLET 08 21 03 MID TEST N2 TO PROBE_0004.LAB	8/21/2003	2:35:16 PM	0.01	0.00	-0.02	0.01						150.51	0.9955
11S_1_10 OUTLET 08 21 03 POST TEST CTS TO PROBE_0000.LAB	8/21/2003	6:51:40 PM	0.04	0.00	-0.01	0.04	100.19	99.64	99.97	103.65		150.51	0.9955
11S_1_10 OUTLET 08 21 03 POST TEST CTS TO PROBE_0001.LAB	8/21/2003	6:54:27 PM	0.03	0.00	-0.01	0.05	100.26	99.79	100.05	103.92		150.51	0.9955
11S_1_10 OUTLET 08 21 03 POST TEST CTS TO PROBE_0002.LAB	8/21/2003	6:57:14 PM	0.03	0.00	-0.02	0.06	100.22	99.72	100.06	103.94		150.51	0.9955
11S_1_10 OUTLET 08 21 03 POST TEST CTS TO PROBE_0003.LAB	8/21/2003	7:00:01 PM	0.03	0.00	-0.01	0.06	100.57	100.16	100.49	104.51		150.51	0.9903
11S_1_10 OUTLET 08 21 03 POST TEST CTS TO PROBE_0004.LAB	8/21/2003	7:02:48 PM	0.02	0.00	0.00	0.06	100.11	99.61	99.95	104.06		150.51	0.9955
Average							100.27	99.78	100.10	104.02			
11S_1_10 OUTLET 08 21 03 POST TEST N2 TO PROBE_0000.LAB	8/21/2003	7:08:12 PM	0.02	0.00	0.03	0.08	0.41	0.15	0.13	3.32		150.51	1.0008
11S_1_10 OUTLET 08 21 03 POST TEST N2 TO PROBE_0001.LAB	8/21/2003	7:10:59 PM	0.02	0.00	0.04	0.10	0.21	0.08	-0.02	3.23		150.51	0.9955
11S_1_10 OUTLET 08 21 03 POST TEST N2 TO PROBE_0002.LAB	8/21/2003	7:13:46 PM	0.02	0.00	0.04	0.09	0.28	0.03	-0.09	3.26		150.51	0.9903
11S_1_10 OUTLET 08 21 03 POST TEST N2 TO PROBE_0003.LAB	8/21/2003	7:16:33 PM	0.02	0.00	0.03	0.09	0.27	0.02	-0.11	3.28		150.51	0.9955
11S_1_10 OUTLET 08 21 03 POST TEST N2 TO PROBE_0004.LAB	8/21/2003	7:19:20 PM	0.02	0.00	0.03	0.09	0.37	0.01	-0.18	3.30		150.51	0.9955

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	ETHYLENE*								Temp (°C)	Pressure (atm)
			H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
11S_1_12 OUTLET 08 22 03 PRE TEST N2 TO PROBE_0000BKG.LAB	8/22/2003	8:06:18 AM	0.00	0.00	0.00	0.00					150.51	0.9955
11S_1_12 OUTLET 08 22 03 PRE TEST N2 TO PROBE_0001.LAB	8/22/2003	8:09:08 AM	0.00	0.00	0.00	0.02					150.51	0.9955
11S_1_12 OUTLET 08 22 03 PRE TEST N2 TO PROBE_0002.LAB	8/22/2003	8:11:54 AM	0.00	0.00	0.00	0.00					150.51	0.9955
11S_1_12 OUTLET 08 22 03 PRE TEST N2 TO PROBE_0003.LAB	8/22/2003	8:14:40 AM	0.00	0.00	0.00	0.00					150.51	1.0008
11S_1_12 OUTLET 08 22 03 PRE TEST N2 TO PROBE_0004.LAB	8/22/2003	8:17:26 AM	0.00	0.00	0.00	-0.01					150.51	1.0008
11S_1_12 OUTLET 08 22 03 PRE TEST CTS TO PROBE_0000.LAB	8/22/2003	7:51:13 AM	0.00	0.00	0.06	0.01	100.27	99.97	100.36	101.27	150.51	0.9903
11S_1_12 OUTLET 08 22 03 PRE TEST CTS TO PROBE_0001.LAB	8/22/2003	7:53:59 AM	0.00	0.00	0.05	0.00	99.54	99.33	99.60	99.69	150.51	1.0008
11S_1_12 OUTLET 08 22 03 PRE TEST CTS TO PROBE_0002.LAB	8/22/2003	7:56:45 AM	-0.01	0.00	0.05	0.01	100.42	100.17	100.30	100.06	150.51	0.9955
11S_1_12 OUTLET 08 22 03 PRE TEST CTS TO PROBE_0003.LAB	8/22/2003	7:59:31 AM	-0.01	0.00	0.05	0.00	101.02	100.75	100.90	100.40	150.51	0.9903
11S_1_12 OUTLET 08 22 03 PRE TEST CTS TO PROBE_0004.LAB	8/22/2003	8:02:18 AM	-0.01	0.00	0.05	-0.02	100.51	100.32	100.50	99.94	150.51	0.9955
Average							100.37	100.14	100.32	100.02		
11S_1_12 OUTLET 08 22 03 MID TEST N2 TO PROBE_0002.LAB	8/22/2003	2:35:59 PM	0.01	0.00	-0.02	0.00					150.51	0.9903
11S_1_12 OUTLET 08 22 03 MID TEST N2 TO PROBE_0003BKG.LAB	8/22/2003	2:39:36 PM	0.00	0.00	0.00	0.00					150.51	0.9903
11S_1_12 OUTLET 08 22 03 MID TEST N2 TO PROBE_0004.LAB	8/22/2003	2:42:28 PM	0.00	0.00	0.01	0.01					150.51	0.9955
11S_1_12 OUTLET 08 22 03 MID TEST N2 TO PROBE_0005.LAB	8/22/2003	2:45:15 PM	0.00	0.00	0.00	0.00					150.51	0.9955
11S_1_12 OUTLET 08 22 03 MID TEST N2 TO PROBE_0006BKG.LAB	8/22/2003	2:48:28 PM	0.00	0.00	0.00	0.00					150.51	0.9955
11S_1_12 OUTLET 08 22 03 POST TEST CTS TO PROBE_0000.LAB	8/22/2003	7:07:20 PM	0.01	0.00	0.00	0.03	100.17	99.74	99.84	100.80	150.51	0.9955
11S_1_12 OUTLET 08 22 03 POST TEST CTS TO PROBE_0001.LAB	8/22/2003	7:10:07 PM	0.01	0.00	-0.04	0.01	100.24	99.96	100.33	101.20	150.51	0.9955
11S_1_12 OUTLET 08 22 03 POST TEST CTS TO PROBE_0002.LAB	8/22/2003	7:12:53 PM	0.00	0.00	-0.03	0.02	100.19	99.96	100.37	101.38	150.51	0.9955
11S_1_12 OUTLET 08 22 03 POST TEST CTS TO PROBE_0003.LAB	8/22/2003	7:15:40 PM	0.00	0.00	-0.03	0.01	100.72	100.41	100.94	102.00	150.51	0.9903
11S_1_12 OUTLET 08 22 03 POST TEST CTS TO PROBE_0004.LAB	8/22/2003	7:18:27 PM	0.00	0.00	-0.04	0.04	100.08	99.89	100.33	101.56	150.51	0.9955
Average							100.28	99.99	100.36	101.39		
11S_1_12 OUTLET 08 22 03 POST TEST N2 TO PROBE_0000.LAB	8/22/2003	7:22:31 PM	0.00	0.00	0.01	0.05	0.36	0.18	0.18	1.83	150.51	0.9955
11S_1_12 OUTLET 08 22 03 POST TEST N2 TO PROBE_0001.LAB	8/22/2003	7:25:18 PM	0.00	0.00	0.02	0.08	0.27	0.07	0.11	1.74	150.51	0.9955
11S_1_12 OUTLET 08 22 03 POST TEST N2 TO PROBE_0002.LAB	8/22/2003	7:28:05 PM	0.00	0.00	0.02	0.06	0.14	0.03	0.12	1.67	150.51	0.9955
11S_1_12 OUTLET 08 22 03 POST TEST N2 TO PROBE_0003.LAB	8/22/2003	7:30:52 PM	0.00	0.00	0.02	0.05	0.16	-0.01	0.04	1.63	150.51	0.9955
11S_1_12 OUTLET 08 22 03 POST TEST N2 TO PROBE_0004.LAB	8/22/2003	7:33:39 PM	0.00	0.00	0.02	0.07	0.13	0.01	0.05	1.62	151.25	0.9903

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

**FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING**

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0000.LAB	8/1/2003	6:02:19 PM	0.01	0.00	0.01	-0.02	0.07	0.06	-0.23		1.78	150.51	1.0008
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0001.LAB	8/1/2003	6:05:06 PM	0.01	0.00	0.02	0.00	0.03	0.03	-0.25		1.76	150.51	0.9955
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0002.LAB	8/1/2003	6:07:53 PM	0.01	0.00	0.02	-0.01	0.03	0.02	-0.26		1.67	151.25	0.9903
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0003.LAB	8/1/2003	6:13:26 PM	0.01	0.00	0.01	-0.03	-0.05	0.02	-0.33		1.64	150.51	1.0008
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0004.LAB	8/1/2003	6:16:13 PM	0.01	0.00	0.01	-0.02	-0.03	0.02	-0.20		1.62	150.51	0.9903
9S13AB INLET 08 01 03 POST TEST CTS TO PROBE_0000.LAB	8/1/2003	5:46:36 PM	0.03	0.00	0.04	-0.08	99.72	99.56	99.54		101.18	150.51	1.0008
9S13AB INLET 08 01 03 POST TEST CTS TO PROBE_0001.LAB	8/1/2003	5:49:24 PM	0.02	0.00	0.03	-0.06	99.53	99.52	99.56		101.33	150.51	1.0008
9S13AB INLET 08 01 03 POST TEST CTS TO PROBE_0002.LAB	8/1/2003	5:52:11 PM	0.02	0.00	0.04	-0.06	100.13	100.02	100.15		101.96	150.51	0.9955
9S13AB INLET 08 01 03 POST TEST CTS TO PROBE_0003.LAB	8/1/2003	5:54:58 PM	0.01	0.00	0.04	-0.07	99.63	99.47	99.64		101.50	150.51	1.0008
Average							99.75	99.64	99.72		101.49		
9S13AB INLET 08 01 03 MID TEST N2 TO PROBE_0000.LAB	8/1/2003	12:47:15 PM	0.01	0.00		-0.07						150.51	0.9955
9S13AB INLET 08 01 03 MID TEST N2 TO PROBE_0001BKG.LAB	8/1/2003	12:51:07 PM	0.00	0.00		0.00						150.51	0.9903
9S13AB INLET 08 01 03 MID TEST N2 TO PROBE_0002.LAB	8/1/2003	12:53:56 PM	0.00	0.00		0.01						150.51	0.9903
9S13AB INLET 08 01 03 POST TEST CTS TO PROBE_0000.LAB	8/1/2003	5:46:36 PM	0.02	0.00		-0.03	99.74	99.55	99.80		101.70	150.51	1.0008
9S13AB INLET 08 01 03 POST TEST CTS TO PROBE_0001.LAB	8/1/2003	5:49:24 PM	0.02	0.00		0.00	99.60	99.51	99.81		101.92	150.51	1.0008
9S13AB INLET 08 01 03 POST TEST CTS TO PROBE_0002.LAB	8/1/2003	5:52:11 PM	0.02	0.00		0.00	100.18	100.01	100.39		102.53	150.51	0.9955
9S13AB INLET 08 01 03 POST TEST CTS TO PROBE_0003.LAB	8/1/2003	5:54:58 PM	0.02	0.00		0.00	99.69	99.46	99.88		102.05	150.51	1.0008
9S13AB INLET 08 01 03 POST TEST CTS TO PROBE_0004.LAB	8/1/2003	5:57:45 PM	0.02	0.00		0.00	100.28	100.13	100.42		102.54	150.51	0.9955
Average							99.89	99.73	100.06		102.15		
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0000.LAB	8/1/2003	6:02:19 PM	0.02	0.00		0.00	0.07	0.06	-0.06		2.28	150.51	1.0008
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0001.LAB	8/1/2003	6:05:06 PM	0.02	0.00		0.02	0.00	0.03	-0.10		2.26	150.51	0.9955
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0002.LAB	8/1/2003	6:07:53 PM	0.01	0.00		0.01	0.00	0.02	-0.09		2.17	151.25	0.9903
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0003.LAB	8/1/2003	6:13:26 PM	0.01	0.00		0.00	-0.09	0.02	-0.17		2.13	150.51	1.0008
9S13AB INLET 08 01 03 POST TEST N2 TO PROBE_0004.LAB	8/1/2003	6:16:13 PM	0.01	0.00		0.00	-0.07	0.02	-0.04		2.04	150.51	0.9903

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CH ₄ (ppm)	SF ₆ (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
9S_1_3AB OUTLET 08 01 03 PRE TEST N2 TO PROBE_0000.LAB	8/1/2003	7:06:19 AM	0.01	0.00	-0.03	0.00	0.00	0.02	0.07		0.30	149.76	1.0079
9S_1_3AB OUTLET 08 01 03 PRE TEST N2 TO PROBE_0001BKG.LAB	8/1/2003	7:10:23 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	149.76	1.0079
9S_1_3AB OUTLET 08 01 03 PRE TEST N2 TO PROBE_0002.LAB	8/1/2003	7:13:02 AM	-0.01	0.00	-0.02	0.00	0.06	0.10	-0.53		0.07	149.76	1.0026
9S_1_3AB OUTLET 08 01 03 PRE TEST N2 TO PROBE_0003BKG.LAB	8/1/2003	7:16:08 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	149.76	1.0079
9S_1_3AB OUTLET 08 01 03 PRE TEST N2 TO PROBE_0004.LAB	8/1/2003	7:18:47 AM	0.01	0.00	-0.04	0.00	0.00	-0.05	0.39		0.19	149.76	1.0079
9S_1_3AB OUTLET 08 01 03 PRE TEST N2 TO PROBE_0005.LAB	8/1/2003	7:21:24 AM	0.01	0.00	-0.04	0.00	-0.02	-0.04	0.42		0.14	149.76	1.0026
9S_1_3AB OUTLET 08 01 03 PRE TEST CTS TO PROBE_0001.LAB	8/1/2003	7:28:25 AM	0.01	0.00	0.00	-0.10	99.35	99.06	98.86		99.96	149.76	1.0026
9S_1_3AB OUTLET 08 01 03 PRE TEST CTS TO PROBE_0002.LAB	8/1/2003	7:31:02 AM	0.01	0.00	-0.01	-0.10	98.84	98.54	98.23		99.52	149.76	1.0079
9S_1_3AB OUTLET 08 01 03 PRE TEST CTS TO PROBE_0003.LAB	8/1/2003	7:33:38 AM	0.01	0.00	0.01	-0.10	98.98	98.59	98.27		99.49	149.76	1.0079
9S_1_3AB OUTLET 08 01 03 PRE TEST CTS TO PROBE_0004.LAB	8/1/2003	7:36:14 AM	0.01	0.00	0.01	-0.10	98.87	98.59	98.24		99.58	149.76	1.0079
9S_1_3AB OUTLET 08 01 03 PRE TEST CTS TO PROBE_0005.LAB	8/1/2003	7:38:51 AM	0.01	0.00	0.01	-0.10	98.86	98.60	98.26		99.55	149.76	1.0079
9S_1_3AB OUTLET 08 01 03 PRE TEST CTS TO PROBE_0006.LAB	8/1/2003	7:41:27 AM	0.01	0.00	0.03	-0.10	98.92	98.55	98.30		99.47	149.76	1.0079
Average							98.90	98.57	98.26		99.52		
9S_1_3AB OUTLET 08 01 03 MID TEST N2 TO PROBE_0000.LAB	8/1/2003	12:47:08 PM	0.03	0.00	0.08	-0.01						149.76	1.0079
9S_1_3AB OUTLET 08 01 03 MID TEST N2 TO PROBE_0001BKG.LAB	8/1/2003	12:50:53 PM	0.00	0.00	0.00	0.00						149.76	1.0026
9S_1_3AB OUTLET 08 01 03 MID TEST N2 TO PROBE_0002.LAB	8/1/2003	12:53:32 PM	0.00	0.00	-0.01	0.00						149.76	1.0079
9S_1_3AB OUTLET 08 01 03 POST TEST CTS TO PROBE_0000.LAB	8/1/2003	5:46:29 PM	0.01	0.00	0.05	-0.11	99.25	98.91	97.83		98.04	149.76	0.9973
9S_1_3AB OUTLET 08 01 03 POST TEST CTS TO PROBE_0001.LAB	8/1/2003	5:49:07 PM	0.01	0.00	0.05	-0.11	99.24	98.95	97.96		98.12	149.76	0.9973
9S_1_3AB OUTLET 08 01 03 POST TEST CTS TO PROBE_0002.LAB	8/1/2003	5:51:44 PM	0.01	0.00	0.07	-0.11	98.87	98.45	97.38		97.55	149.76	1.0026
9S_1_3AB OUTLET 08 01 03 POST TEST CTS TO PROBE_0003.LAB	8/1/2003	5:54:21 PM	0.01	0.00	0.06	-0.11	99.39	99.01	97.88		98.08	149.76	0.9973
9S_1_3AB OUTLET 08 01 03 POST TEST CTS TO PROBE_0004.LAB	8/1/2003	5:56:59 PM	0.01	0.00	0.07	-0.11	98.91	98.48	97.41		97.57	149.76	1.0026
Average							99.13	98.76	97.69		97.87		
9S_1_3AB OUTLET 08 01 03 POST TEST N2 TO PROBE_0000.LAB	8/1/2003	6:02:14 PM	0.01	0.00	0.09	0.00	0.29	0.08	-0.34		-1.64	149.76	0.9973
9S_1_3AB OUTLET 08 01 03 POST TEST N2 TO PROBE_0001.LAB	8/1/2003	6:04:51 PM	0.01	0.00	0.12	0.00	0.11	0.02	-0.40		-2.15	149.76	0.9973
9S_1_3AB OUTLET 08 01 03 POST TEST N2 TO PROBE_0002.LAB	8/1/2003	6:07:28 PM	0.01	0.00	0.09	0.00	0.12	0.01	-0.44		-1.74	149.76	1.0026
9S_1_3AB OUTLET 08 01 03 POST TEST N2 TO PROBE_0003.LAB	8/1/2003	6:10:06 PM	0.01	0.00	0.07	0.00	0.19	0.03	-0.45		-1.43	149.76	1.0026
9S_1_3AB OUTLET 08 01 03 POST TEST N2 TO PROBE_0004.LAB	8/1/2003	6:12:43 PM	0.01	0.00	0.06	0.00	0.17	0.03	-0.43		-1.41	149.76	0.9973
9S_1_3AB OUTLET 08 01 03 POST TEST N2 TO PROBE_0005.LAB	8/1/2003	6:15:20 PM	0.01	0.00	0.06	0.00	0.17	0.03	-0.45		-1.62	149.76	1.0026

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
9S_1_2A OUTLET 08 04 03 PRE TEST N2 TO PROBE_0000.LAB	8/4/2003	6:36:58 AM	0.01	0.00		-0.03	0.14	0.05	0.04	0.29		149.76	1.0026
9S_1_2A OUTLET 08 04 03 PRE TEST N2 TO PROBE_0001BKG.LAB	8/4/2003	6:39:41 AM	0.00	0.00		0.00	0.00	0.00	0.00	0.00		149.76	1.0026
9S_1_2A OUTLET 08 04 03 PRE TEST N2 TO PROBE_0002.LAB	8/4/2003	6:42:19 AM	0.00	0.00		0.00	-0.01	-0.01	0.03	-0.01		149.76	1.0079
9S_1_2A OUTLET 08 04 03 PRE TEST N2 TO PROBE_0003.LAB	8/4/2003	6:44:56 AM	0.00	0.00		0.01	-0.04	0.00	-0.04	-0.10		149.76	1.0079
9S_1_2A OUTLET 08 04 03 PRE TEST N2 TO PROBE_0004.LAB	8/4/2003	6:47:32 AM	0.00	0.00		0.01	0.01	-0.02	0.01	-0.07		149.76	1.0079
9S_1_2A OUTLET 08 04 03 PRE TEST CTS TO PROBE_0000.LAB	8/4/2003	6:51:35 AM	0.00	0.00		0.06	98.96	98.79	98.11	99.88		149.76	1.0026
9S_1_2A OUTLET 08 04 03 PRE TEST CTS TO PROBE_0001.LAB	8/4/2003	6:54:11 AM	0.00	0.00		0.08	98.42	98.37	97.63	99.34		149.76	1.0079
9S_1_2A OUTLET 08 04 03 PRE TEST CTS TO PROBE_0002.LAB	8/4/2003	6:56:48 AM	0.00	0.00		0.08	98.86	98.89	98.23	99.81		149.76	1.0026
9S_1_2A OUTLET 08 04 03 PRE TEST CTS TO PROBE_0003.LAB	8/4/2003	6:59:24 AM	0.00	0.00		0.07	99.08	98.94	98.14	99.88		149.76	1.0026
9S_1_2A OUTLET 08 04 03 PRE TEST CTS TO PROBE_0004.LAB	8/4/2003	7:02:00 AM	0.00	0.00		0.08	98.52	98.40	97.62	99.32		149.76	1.0079
Average							98.72	98.65	97.90	99.59			
9S_1_2A OUTLET 08 04 03 MID TEST N2 TO PROBE_0000.LAB	8/4/2003	11:56:20 AM	0.01	0.00		0.03						149.76	1.0079
9S_1_2A OUTLET 08 04 03 MID TEST N2 TO PROBE_0001BKG.LAB	8/4/2003	11:59:51 AM	0.00	0.00		0.00						149.76	1.0026
9S_1_2A OUTLET 08 04 03 MID TEST N2 TO PROBE_0002.LAB	8/4/2003	12:02:29 PM	0.00	0.00		0.00						149.76	1.0079
9S_1_2A OUTLET 08 04 03 POST TEST CTS TO PROBE_0001.LAB	8/4/2003	4:26:28 PM	0.01	0.00		0.14	98.85	98.47	97.63	97.56		149.76	1.0026
9S_1_2A OUTLET 08 04 03 POST TEST CTS TO PROBE_0002.LAB	8/4/2003	4:29:04 PM	0.02	0.00		0.13	99.37	98.97	98.20	97.85		149.76	0.9973
9S_1_2A OUTLET 08 04 03 POST TEST CTS TO PROBE_0003.LAB	8/4/2003	4:31:41 PM	0.02	0.00		0.13	98.79	98.45	97.61	97.25		149.76	1.0026
9S_1_2A OUTLET 08 04 03 POST TEST CTS TO PROBE_0004.LAB	8/4/2003	4:34:17 PM	0.01	0.00		0.14	98.84	98.41	97.57	97.03		149.76	1.0026
9S_1_2A OUTLET 08 04 03 POST TEST CTS TO PROBE_0005.LAB	8/4/2003	4:36:54 PM	0.01	0.00		0.14	98.75	98.39	97.69	97.04		149.76	1.0026
Average							98.92	98.54	97.74	97.35			
9S_1_2A OUTLET 08 04 03 POST TEST N2 TO PROBE_0002.LAB	8/4/2003	4:47:08 PM	0.01	0.00		0.14	0.17	0.02	-0.33	-2.30		149.76	1.0026
9S_1_2A OUTLET 08 04 03 POST TEST N2 TO PROBE_0003.LAB	8/4/2003	4:49:44 PM	0.01	0.00		0.13	0.17	0.00	-0.25	-2.34		149.76	1.0026
9S_1_2A OUTLET 08 04 03 POST TEST N2 TO PROBE_0004.LAB	8/4/2003	4:52:21 PM	0.01	0.00		0.15	0.15	0.00	-0.36	-2.48		149.76	1.0026
9S_1_2A OUTLET 08 04 03 POST TEST N2 TO PROBE_0005.LAB	8/4/2003	4:54:58 PM	0.02	0.00		0.16	0.13	-0.01	-0.36	-2.56		149.76	1.0026
9S_1_2A OUTLET 08 04 03 POST TEST N2 TO PROBE_0006.LAB	8/4/2003	4:57:34 PM	0.02	0.00		0.16	0.17	-0.01	-0.32	-2.55		149.76	0.9973

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

**FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING**

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
9S_1_2B 07 30 03 PRE TEST N2 TO PROBE_0000.LAB	7/30/2003	6:46:57 AM	0.01	0.00		-0.04	-0.14	0.04	-0.66	-0.15	149.76	1.01
9S_1_2B 07 30 03 PRE TEST N2 TO PROBE_0001BKG.LAB	7/30/2003	6:49:56 AM	0.00	0.00		0.00	0.00	0.00	0.00	0.00	149.76	1.01
9S_1_2B 07 30 03 PRE TEST N2 TO PROBE_0002.LAB	7/30/2003	6:52:34 AM	0.00	0.00		-0.01	0.00	0.00	0.28	0.16	149.76	1.01
9S_1_2B 07 30 03 PRE TEST N2 TO PROBE_0003.LAB	7/30/2003	6:55:10 AM	0.00	0.00		0.07	-0.01	-0.02	0.41	-0.15	149.76	1.01
9S_1_2B 07 30 03 PRE TEST N2 TO PROBE_0004.LAB	7/30/2003	6:57:46 AM	0.00	0.00		0.02	-0.02	-0.02	0.47	0.16	149.76	1.01
9S_1_2B 07 30 03 PRE TEST CTS TO PROBE_0003.LAB	7/30/2003	7:15:57 AM	-0.02	0.00		-0.07	99.78	99.63	98.58	101.29	149.76	1.01
9S_1_2B 07 30 03 PRE TEST CTS TO PROBE_0004.LAB	7/30/2003	7:18:33 AM	-0.02	0.00		-0.10	98.98	99.07	98.38	100.60	149.76	1.01
9S_1_2B 07 30 03 PRE TEST CTS TO PROBE_0005.LAB	7/30/2003	7:21:09 AM	-0.01	0.00		-0.06	99.50	99.47	99.15	100.87	149.76	1.01
9S_1_2B 07 30 03 PRE TEST CTS TO PROBE_0006.LAB	7/30/2003	7:23:45 AM	0.00	0.00		-0.04	98.68	98.77	98.66	100.13	149.76	1.01
Average							99.05	99.10	98.73	100.53		
9S_1_2B 07 30 03 MID TEST N2 TO PROBE_0000.LAB	7/30/2003	12:21:53 PM	0.02	0.00		-0.08					149.76	0.9973
9S_1_2B 07 30 03 MID TEST N2 TO PROBE_0001BKG.LAB	7/30/2003	12:25:29 PM	0.00	0.00		0.00					149.76	1.0026
9S_1_2B 07 30 03 MID TEST N2 TO PROBE_0002.LAB	7/30/2003	12:28:07 PM	0.00	0.00		-0.01					149.02	1.0026
9S_1_2B 07 30 03 POST TEST CTS TO PROBE_0000.LAB	7/30/2003	5:05:59 PM	0.01	0.00		-0.02	98.92	98.93	97.35	99.65	149.76	1.00
9S_1_2B 07 30 03 POST TEST CTS TO PROBE_0001.LAB	7/30/2003	5:08:35 PM	0.01	0.00		-0.03	98.84	98.92	97.41	99.77	149.76	1.00
9S_1_2B 07 30 03 POST TEST CTS TO PROBE_0002.LAB	7/30/2003	5:11:12 PM	0.01	0.00		-0.03	98.85	98.87	97.36	99.74	149.76	1.00
9S_1_2B 07 30 03 POST TEST CTS TO PROBE_0003.LAB	7/30/2003	5:13:48 PM	0.00	0.00		-0.02	98.84	98.87	97.34	99.63	149.76	1.00
9S_1_2B 07 30 03 POST TEST CTS TO PROBE_0004.LAB	7/30/2003	5:16:24 PM	0.00	0.00		-0.01	98.18	98.12	96.54	98.80	149.02	1.00
Average							98.73	98.74	97.20	99.52		
9S_1_2B 07 30 03 POST TEST N2 TO PROBE_0000.LAB	7/30/2003	5:20:47 PM	0.00	0.00	0.06	-0.17	0.08	-0.93	-0.72	149.76	1.00	
9S_1_2B 07 30 03 POST TEST N2 TO PROBE_0001.LAB	7/30/2003	5:23:23 PM	0.00	0.00	0.05	-0.14	0.07	-0.96	-0.67	149.76	1.00	
9S_1_2B 07 30 03 POST TEST N2 TO PROBE_0002.LAB	7/30/2003	5:25:59 PM	0.00	0.00	0.05	-0.14	0.03	-0.98	-0.82	149.76	1.00	
9S_1_2B 07 30 03 POST TEST N2 TO PROBE_0003.LAB	7/30/2003	5:28:35 PM	0.00	0.00	0.04	-0.22	0.02	-1.03	-0.66	149.76	1.00	
9S_1_2B 07 30 03 POST TEST N2 TO PROBE_0004.LAB	7/30/2003	5:31:11 PM	0.00	0.00	0.03	-0.27	0.03	-0.99	-0.72	149.76	1.00	

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

**FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING**

**FTIR Model No.: 2030
FTIR Serial No.: MG-07-102**

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
8S_4_2AB INLET 09 24 03 PRE TEST N2 TO PROBE_0000.LAB	9/24/2003	6:13:48 AM	0.00	0.00		-0.10					149.76	1.0079
8S_4_2AB INLET 09 24 03 PRE TEST N2 TO PROBE_0001BKG.LAB	9/24/2003	6:16:31 AM	0.00	0.00		0.00					149.76	1.0079
8S_4_2AB INLET 09 24 03 PRE TEST N2 TO PROBE_0002.LAB	9/24/2003	6:19:09 AM	0.00	0.00		0.01					149.76	1.0026
8S_4_2AB INLET 09 24 03 PRE TEST N2 TO PROBE_0003.LAB	9/24/2003	6:21:45 AM	0.00	0.00		0.00					149.76	1.0079
8S_4_2AB INLET 09 24 03 PRE TEST N2 TO PROBE_0004.LAB	9/24/2003	6:24:21 AM	0.00	0.00		-0.01					149.76	1.0079
8S_4_2AB INLET 09 24 03 PRE TEST CTS TO PROBE_0000.LAB	9/24/2003	5:56:59 AM	0.00	0.00		-0.03	99.57	99.39	98.50	100.23	149.76	1.0079
8S_4_2AB INLET 09 24 03 PRE TEST CTS TO PROBE_0001.LAB	9/24/2003	5:59:34 AM	0.00	0.00		-0.02	99.37	98.97	98.14	99.56	149.76	1.0132
8S_4_2AB INLET 09 24 03 PRE TEST CTS TO PROBE_0002.LAB	9/24/2003	6:02:10 AM	0.00	0.00		0.02	99.68	99.26	98.42	99.41	149.76	1.0132
8S_4_2AB INLET 09 24 03 PRE TEST CTS TO PROBE_0003.LAB	9/24/2003	6:04:46 AM	0.00	0.00		0.00	99.77	99.51	98.65	99.37	149.76	1.0132
8S_4_2AB INLET 09 24 03 PRE TEST CTS TO PROBE_0004.LAB	9/24/2003	6:07:22 AM	0.00	0.00		-0.06	100.33	100.10	99.14	100.09	149.76	1.0079
Average							99.74	99.46	98.59	99.61		
8S_4_2AB INLET 09 24 03 MID TEST N2 TO PROBE_0001.LAB	9/24/2003	12:20:23 PM	0.00	0.00		0.01					149.76	1.0026
8S_4_2AB INLET 09 24 03 MID TEST N2 TO PROBE_0002.LAB	9/24/2003	12:22:59 PM	0.00	0.00		0.04					149.76	0.9973
8S_4_2AB INLET 09 24 03 MID TEST N2 TO PROBE_0003.LAB	9/24/2003	12:25:35 PM	0.00	0.00		0.06					149.76	0.9973
8S_4_2AB INLET 09 24 03 MID TEST N2 TO PROBE_0004BKG.LAB	9/24/2003	12:30:16 PM	0.00	0.00		0.00					149.76	0.9973
8S_4_2AB INLET 09 24 03 MID TEST N2 TO PROBE_0005.LAB	9/24/2003	12:32:54 PM	0.00	0.00		-0.05					149.76	0.9920
8S_4_2AB INLET 09 24 03 POST TEST CTS TO PROBE_0000.LAB	9/24/2003	5:11:10 PM	0.01	0.00		-0.04	99.54	99.40	98.92	100.84	149.76	0.9920
8S_4_2AB INLET 09 24 03 POST TEST CTS TO PROBE_0001.LAB	9/24/2003	5:13:47 PM	0.00	0.00		-0.05	98.94	98.77	98.31	100.28	149.76	0.9973
8S_4_2AB INLET 09 24 03 POST TEST CTS TO PROBE_0002.LAB	9/24/2003	5:16:23 PM	0.00	0.00		-0.04	98.89	98.68	98.23	100.31	149.76	0.9973
8S_4_2AB INLET 09 24 03 POST TEST CTS TO PROBE_0003.LAB	9/24/2003	5:18:59 PM	0.00	0.00		-0.09	99.16	98.93	98.45	100.31	149.76	0.9973
8S_4_2AB INLET 09 24 03 POST TEST CTS TO PROBE_0004.LAB	9/24/2003	5:21:35 PM	0.00	0.00		-0.09	99.98	99.95	99.37	101.44	150.51	0.9920
Average							99.30	99.15	98.66	100.64		
8S_4_2AB INLET 09 24 03 POST TEST N2 TO PROBE_0000.LAB	9/24/2003	5:27:55 PM	0.00	0.00		-0.05	0.15	0.12	0.12	0.50	149.76	0.9973
8S_4_2AB INLET 09 24 03 POST TEST N2 TO PROBE_0001.LAB	9/24/2003	5:30:31 PM	0.00	0.00		-0.10	0.12	0.09	0.05	0.66	149.76	0.9920
8S_4_2AB INLET 09 24 03 POST TEST N2 TO PROBE_0002.LAB	9/24/2003	5:33:07 PM	0.00	0.00		0.01	0.12	0.07	0.10	-0.05	149.76	0.9973
8S_4_2AB INLET 09 24 03 POST TEST N2 TO PROBE_0003.LAB	9/24/2003	5:35:43 PM	0.00	0.00		-0.06	0.03	0.07	0.05	0.46	149.76	0.9920
8S_4_2AB INLET 09 24 03 POST TEST N2 TO PROBE_0004.LAB	9/24/2003	5:38:20 PM	0.00	0.00		-0.06	0.12	0.05	0.05	0.48	150.51	0.9973

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
8S_4_2AB OUTLET 09 24 03 PRE TEST N2 TO PROBE_0000.LAB	9/24/2003	6:14:31 AM	0.01	0.00		0.00					150.51	1.0008
8S_4_2AB OUTLET 09 24 03 PRE TEST N2 TO PROBE_0001BKG.LAB	9/24/2003	6:18:30 AM	0.00	0.00		0.00					150.51	1.0112
8S_4_2AB OUTLET 09 24 03 PRE TEST N2 TO PROBE_0002.LAB	9/24/2003	6:21:19 AM	0.00	0.00		0.02					150.51	1.0060
8S_4_2AB OUTLET 09 24 03 PRE TEST N2 TO PROBE_0003.LAB	9/24/2003	6:24:04 AM	0.00	0.00		0.01					150.51	1.0060
8S_4_2AB OUTLET 09 24 03 PRE TEST N2 TO PROBE_0004.LAB	9/24/2003	6:26:50 AM	0.00	0.00		-0.01					150.51	1.0112
8S_4_2AB OUTLET 09 24 03 PRE TEST CTS TO PROBE_0000.LAB	9/24/2003	5:59:13 AM	0.01	0.00		-0.05	100.34	100.09	100.32	100.88	150.51	1.0008
8S_4_2AB OUTLET 09 24 03 PRE TEST CTS TO PROBE_0001.LAB	9/24/2003	6:01:59 AM	0.01	0.00		-0.02	99.79	99.51	99.75	100.48	150.51	1.0060
8S_4_2AB OUTLET 09 24 03 PRE TEST CTS TO PROBE_0002.LAB	9/24/2003	6:04:45 AM	0.01	0.00		-0.05	99.83	99.58	99.89	100.41	150.51	1.0060
8S_4_2AB OUTLET 09 24 03 PRE TEST CTS TO PROBE_0003.LAB	9/24/2003	6:07:30 AM	0.01	0.00		-0.05	100.42	100.16	100.48	101.02	150.51	1.0008
8S_4_2AB OUTLET 09 24 03 PRE TEST CTS TO PROBE_0004.LAB	9/24/2003	6:10:16 AM	0.01	0.00		-0.04	100.49	100.25	100.47	100.98	150.51	1.0008
Average							100.17	99.92	100.18	100.76		
8S_4_2AB OUTLET 09 24 03 MID TEST N2 TO PROBE_0001.LAB	9/24/2003	12:20:59 PM	0.01	0.00		-0.01					150.51	1.0008
8S_4_2AB OUTLET 09 24 03 MID TEST N2 TO PROBE_0002.LAB	9/24/2003	12:23:45 PM	0.01	0.00		0.02					150.51	1.0008
8S_4_2AB OUTLET 09 24 03 MID TEST N2 TO PROBE_0003.LAB	9/24/2003	12:26:31 PM	0.01	0.00		0.01					150.51	1.0060
8S_4_2AB OUTLET 09 24 03 MID TEST N2 TO PROBE_0004BKG.LAB	9/24/2003	12:30:31 PM	0.00	0.00		0.00					150.51	1.0060
8S_4_2AB OUTLET 09 24 03 MID TEST N2 TO PROBE_0005.LAB	9/24/2003	12:33:20 PM	0.00	0.00		0.01					150.51	1.0008
8S_4_2AB OUTLET 09 24 03 POST TEST CTS TO PROBE_0000.LAB	9/24/2003	5:11:11 PM	0.01	0.00		-0.04	100.78	100.74	100.75	101.85	150.51	0.9955
8S_4_2AB OUTLET 09 24 03 POST TEST CTS TO PROBE_0001.LAB	9/24/2003	5:13:57 PM	0.00	0.00		-0.06	100.16	100.05	100.20	101.09	150.51	1.0060
8S_4_2AB OUTLET 09 24 03 POST TEST CTS TO PROBE_0002.LAB	9/24/2003	5:16:43 PM	0.00	0.00		-0.04	100.33	100.13	100.25	101.27	150.51	1.0060
8S_4_2AB OUTLET 09 24 03 POST TEST CTS TO PROBE_0003.LAB	9/24/2003	5:19:29 PM	0.00	0.00		-0.05	100.93	100.65	100.71	101.73	150.51	1.0008
8S_4_2AB OUTLET 09 24 03 POST TEST CTS TO PROBE_0004.LAB	9/24/2003	5:22:15 PM	0.00	0.00		-0.05	100.78	100.67	100.76	101.79	150.51	1.0008
Average							100.60	100.45	100.53	101.55		
8S_4_2AB OUTLET 09 24 03 POST TEST N2 TO PROBE_0000.LAB	9/24/2003	5:29:19 PM	0.00	0.00		0.00	0.10	0.08	0.05	-0.26	150.51	1.0008
8S_4_2AB OUTLET 09 24 03 POST TEST N2 TO PROBE_0001.LAB	9/24/2003	5:32:05 PM	0.00	0.00		-0.02	0.06	0.05	0.02	-0.25	150.51	1.0008
8S_4_2AB OUTLET 09 24 03 POST TEST N2 TO PROBE_0002.LAB	9/24/2003	5:34:52 PM	0.00	0.00		-0.02	0.09	0.03	-0.06	-0.26	150.51	1.0008
8S_4_2AB OUTLET 09 24 03 POST TEST N2 TO PROBE_0003.LAB	9/24/2003	5:37:38 PM	0.00	0.00		-0.02	0.11	0.00	-0.11	-0.16	150.51	1.0008
8S_4_2AB OUTLET 09 24 03 POST TEST N2 TO PROBE_0004.LAB	9/24/2003	5:40:24 PM	-0.01	0.00		-0.02	0.07	0.01	-0.09	-0.36	150.51	1.0008

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

Client:	Site:	Project No.:
Intel	Rio Rancho, NM	31397-1600-00000

System Serial

No.:	Interferometer No.:	Electronics No.'s:	ICU#00			Detector Type:	Det. Serial No.:	Det. Mfg. Date
MG-07-112	IF-06-133	Comm: 8022C-175	Proc: 8022C-182	Mod: 8021C-198	SAQ: 8023C-199	0.25 mm LN2 MCT	D-4863 (16 um)	36923

Acceptance		90 +/-10						
Theoretical	15798.282	88	0.983	Yes	1.288	-3.98	3.42	

Location	Date	Time	Known Laser Freq:	Laser Phase Angle:	Peak Signal @ 1200 cm-1:	Saturated Below 400 cm-1	Preamp +AC	Check AC	Preamp Check - AC	Preamp Check DC
9s.1.3ab Inlet	8/1/03	6:00	15798.2170	91.06	0.877	Yes	1.128	-2.788	1.688	
9s.1.1e Outlet	8/5/03	9:15	15798.2109	88.94	0.881	Yes	1.135	-3.111	1.732	
9s.1.1d Outlet	8/6/03	5:57	15798.2109	86.82	0.840	Yes	1.133	-3.166	1.703	
9s.1.1c Outlet	8/7/03	6:30	15798.2109	93.88	0.980	Yes	1.069	-2.804	1.841	
9s.1.1b Outlet	8/8/03	8:45	15798.2109	93.88	0.898	Yes	1.138	-3.002	1.806	
9s.1.2c Outlet	8/11/03	7:45	15798.2110	89.64	0.906	Yes	1.133	-3.077	1.877	
9s.1.2e/f Spike	8/12/03	6:45	15798.2110	89.64	0.902	Yes	1.132	-3.113	1.817	
9s.1.2e/f Outlet	8/15/03	6:00	15798.2110	93.88	0.910	Yes	1.135	-2.87	1.883	
11s.1.6 Outlet	8/19/03	6:15	15798.2110	84.00	0.850	Yes	1.005	-2.351	1.771	
11s.1.10 Outlet	8/21/03	5:28	15798.2110	88.94	0.889	Yes	1.095	-3.066	1.724	
11s.1.12 Outlet	8/22/03	7:11	15798.2110	87.53	0.885	Yes	1.107	-2.795	1.709	
7s_1_5 Inlet	8/25/03	6:16	15798.2030	94.59	0.896	Yes	1.149	-3.036	1.830	
10s.4.2ab Inlet	9/5/03	7:45	15798.2030	88.94	0.894	Yes	1.102	-2.812	0.859	
11s.1.14 Inlet	9/19/03	5:53	15798.203	88.24	0.898	Yes	1.156	-3.086	1.907	
8s.4.2ab Outlet	9/24/03	5:15	15798.203	92.47	0.888	Yes	1.091	-2.858	1.793	

Client:	Site:	Project No.:
Intel	Rio Rancho, NM	31397-1600-00000

System Serial No.:	Interferometer No.:	Pre-Amp (gain)	Window Type	Window Size	Mirror Type	Mirror Size	Laser Type:	Apodization:	Omega Controller:
MG-07-112	IF-06-133	8027-324 (2x)	KBr	25 x 5 mm	Au	5.11 m	HeNe	Med Norton Beer	POL=0 POH=373

Acceptance	0.46 => <= 0.48	+/- 0.01							
Theoretical	0.46 cm-1	3920.095	0.2004	0.0024	0.198	15798.2635	3920.0946	15798.2528	

Location	Date	Time	Water Line (FWHH)	Freq (cm-1)	Peak	Baseline	Amplitude	Laser Frequency	Auto Corr. Water Line	Auto Corr. Laser Frequency
9s.1.3ab Inlet	8/1/03	6:00	0.4612	3920.0880	0.2793	0.0070	0.2702	15798.2171	3920.0946	15798.1874
9s.1.1e Outlet	8/5/03	9:15	0.4625	3920.0907	0.3258	0.0060	0.3189	15798.2109	3920.0946	15798.1998
9s.1.1d Outlet	8/6/03	5:57	0.4650	3920.0910	0.3073	0.0049	0.2992	15798.2109	3920.0946	15798.1947
9s.1.1c Outlet	8/7/03	6:30	0.4654	3920.0930	0.2589	0.0065	0.2523	15798.2109	3920.0946	15798.1892
9s.1.1b Outlet	8/8/03	8:45	0.4643	3920.0908	0.2595	0.0078	0.2529	15798.2109	3920.0946	15798.1960
9s.1.2c Outlet	8/11/03	7:45	0.4643	3920.0907	0.2271	0.0061	0.2210	15798.2109	3920.0946	15798.1898
9s.1.2e/f Spike	8/12/03	6:45	0.4617	3920.0877	0.2660	0.0069	0.2601	15798.2109	3920.0946	15798.1960
9s.1.2e/f Outlet	8/15/03	6:00	0.4645	3920.0929	0.2235	0.0038	0.2197	15798.2109	3920.0946	15798.1928
11s.1.6 Outlet	8/19/03	6:15	0.4592	3920.0931	0.3687	0.0079	0.0113	15798.2109	3920.0946	15798.1794
11s.1.10 Outlet	8/21/03	5:28	0.4597	3920.0909	0.3482	0.0079	0.3379	15798.2275	3920.0946	15798.2014
11s.1.12 Outlet	8/22/03	7:11	0.4627	3920.0910	0.3588	0.0064	0.3505	15798.2275	3920.0946	15798.2055
7s_1_5 Inlet	8/25/03	6:16	0.4621	3920.0930	0.2693	0.0043	0.2652	15798.2030	3920.0946	15798.1914
10s.4.2ab Inlet	9/5/03	7:45	0.4627	3920.0928	0.2073	0.0044	0.2044	15798.2034	3920.0946	15798.1878
11s.1.14 Inlet	9/19/03	5:53	0.4719	3920.0877	0.1462	0.0020	0.1452	157298.2034	3920.0946	15798.1948
8s.4.2ab Outlet	9/24/03	5:15	0.4666	3920.0906	0.2217	0.0059	0.2117	157298.2034	3920.0946	15798.1915

Client:	Site:	Project No.:
Intel	Rio Rancho, NM	31397-1600-00000

System Serial

No.:	Interferometer No.:	Electronics No.'s:	ICU#00			Detector Type:	Det. Serial No.:	Det. Mfg. Date
MG-07-112	IF-06-133	Comm: 8022C-175	Proc: 8022C-182	Mod: 8021C-198	SAQ: 8023C-199	0.25 mm LN2 MCT	D-4863 (16 um)	36923

Acceptance		90 +/-10						
Theoretical	15798.282	88	0.983	Yes	1.288	-3.98	3.42	

Location	Date	Time	Known Laser Freq:	Laser Phase Angle:	Peak Signal @ 1200 cm-1:	Saturated Below 400 cm-1	Preamp +AC	Check AC	Preamp Check - AC	Preamp Check DC
9s.1.3ab Inlet	8/1/03	6:00	15798.2170	91.06	0.877	Yes	1.128	-2.788	1.688	
9s.1.1e Outlet	8/5/03	9:15	15798.2109	88.94	0.881	Yes	1.135	-3.111	1.732	
9s.1.1d Outlet	8/6/03	5:57	15798.2109	86.82	0.840	Yes	1.133	-3.166	1.703	
9s.1.1c Outlet	8/7/03	6:30	15798.2109	93.88	0.980	Yes	1.069	-2.804	1.841	
9s.1.1b Outlet	8/8/03	8:45	15798.2109	93.88	0.898	Yes	1.138	-3.002	1.806	
9s.1.2c Outlet	8/11/03	7:45	15798.2110	89.64	0.906	Yes	1.133	-3.077	1.877	
9s.1.2e/f Spike	8/12/03	6:45	15798.2110	89.64	0.902	Yes	1.132	-3.113	1.817	
9s.1.2e/f Outlet	8/15/03	6:00	15798.2110	93.88	0.910	Yes	1.135	-2.87	1.883	
11s.1.6 Outlet	8/19/03	6:15	15798.2110	84.00	0.850	Yes	1.005	-2.351	1.771	
11s.1.10 Outlet	8/21/03	5:28	15798.2110	88.94	0.889	Yes	1.095	-3.066	1.724	
11s.1.12 Outlet	8/22/03	7:11	15798.2110	87.53	0.885	Yes	1.107	-2.795	1.709	
7s_1_5 Inlet	8/25/03	6:16	15798.2030	94.59	0.896	Yes	1.149	-3.036	1.830	
10s.4.2ab Inlet	9/5/03	7:45	15798.2030	88.94	0.894	Yes	1.102	-2.812	0.859	
11s.1.14 Inlet	9/19/03	5:53	15798.203	88.24	0.898	Yes	1.156	-3.086	1.907	
8s.4.2ab Outlet	9/24/03	5:15	15798.203	92.47	0.888	Yes	1.091	-2.858	1.793	

Client:	Site:	Project No.:
Intel	Rio Rancho, NM	31397-1600-00000

System Serial No.:	Interferometer No.:	Pre-Amp (gain)	Window Type	Window Size	Mirror Type	Mirror Size	Laser Type:	Apodization:	Omega Controller:
MG-07-112	IF-06-133	8027-324 (2x)	KBr	25 x 5 mm	Au	5.11 m	HeNe	Med Norton Beer	POL=0 POH=373

Acceptance	0.46 => <= 0.48	+/- 0.01							
Theoretical	0.46 cm-1	3920.095	0.2004	0.0024	0.198	15798.2635	3920.0946	15798.2528	

Location	Date	Time	Water Line (FWHH)	Freq (cm-1)	Peak	Baseline	Amplitude	Laser Frequency	Auto Corr. Water Line	Auto Corr. Laser Frequency
9s.1.3ab Inlet	8/1/03	6:00	0.4612	3920.0880	0.2793	0.0070	0.2702	15798.2171	3920.0946	15798.1874
9s.1.1e Outlet	8/5/03	9:15	0.4625	3920.0907	0.3258	0.0060	0.3189	15798.2109	3920.0946	15798.1998
9s.1.1d Outlet	8/6/03	5:57	0.4650	3920.0910	0.3073	0.0049	0.2992	15798.2109	3920.0946	15798.1947
9s.1.1c Outlet	8/7/03	6:30	0.4654	3920.0930	0.2589	0.0065	0.2523	15798.2109	3920.0946	15798.1892
9s.1.1b Outlet	8/8/03	8:45	0.4643	3920.0908	0.2595	0.0078	0.2529	15798.2109	3920.0946	15798.1960
9s.1.2c Outlet	8/11/03	7:45	0.4643	3920.0907	0.2271	0.0061	0.2210	15798.2109	3920.0946	15798.1898
9s.1.2e/f Spike	8/12/03	6:45	0.4617	3920.0877	0.2660	0.0069	0.2601	15798.2109	3920.0946	15798.1960
9s.1.2e/f Outlet	8/15/03	6:00	0.4645	3920.0929	0.2235	0.0038	0.2197	15798.2109	3920.0946	15798.1928
11s.1.6 Outlet	8/19/03	6:15	0.4592	3920.0931	0.3687	0.0079	0.0113	15798.2109	3920.0946	15798.1794
11s.1.10 Outlet	8/21/03	5:28	0.4597	3920.0909	0.3482	0.0079	0.3379	15798.2275	3920.0946	15798.2014
11s.1.12 Outlet	8/22/03	7:11	0.4627	3920.0910	0.3588	0.0064	0.3505	15798.2275	3920.0946	15798.2055
7s_1_5 Inlet	8/25/03	6:16	0.4621	3920.0930	0.2693	0.0043	0.2652	15798.2030	3920.0946	15798.1914
10s.4.2ab Inlet	9/5/03	7:45	0.4627	3920.0928	0.2073	0.0044	0.2044	15798.2034	3920.0946	15798.1878
11s.1.14 Inlet	9/19/03	5:53	0.4719	3920.0877	0.1462	0.0020	0.1452	157298.2034	3920.0946	15798.1948
8s.4.2ab Outlet	9/24/03	5:15	0.4666	3920.0906	0.2217	0.0059	0.2117	157298.2034	3920.0946	15798.1915

Client:	Site:	Project No.:
Intel	Rio Rancho, NM	31397-1600-00000

System Serial			Instrument Set	Linearizer	Linearizer	Linearizer	Linearizer		
No.:	Interferometer No.:	Sampling Mode:	Resolution:	Offset:	Linear:	Quad:	Cubic:	Optics	Detector
MG-07-112	IF-06-133	Mid IR	0.5 cm-1	1072	1000	334	38	0.0 scfh	0.0 scfh
Acceptance Theoretical		15798.2595	256	2:23:00	Nitrogen	Yes	Ethylene	100	
					Background Taken Before Initial		CTS		
Location	Date	Time	Calc. Laser Frequency	Scans/ Sample	Sampling Interval	Background	CTS	CTS Conc. (ppm):	Cylinder No.
9s.1.3ab Inlet	8/1/03	6:00	15798.2122	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM051796
9s.1.1e Outlet	8/5/03	9:15	15798.2266	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM030418
9s.1.1d Outlet	8/6/03	5:57	15798.2122	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM030418
9s.1.1c Outlet	8/7/03	6:30	15798.2162	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM030418
9s.1.1b Outlet	8/8/03	8:45	15798.2195	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM030418
9s.1.2c Outlet	8/11/03	7:45	15798.2174	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM030418
9s.1.2e/f Spike	8/12/03	6:45	15798.2141	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM030418
9s.1.2e/f Outlet	8/15/03	6:00	15798.1982	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM030418
11s.1.6 Outlet	8/19/03	6:15	15798.2041	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM013057
11s.1.10 Outlet	8/21/03	5:28	15798.2247	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM013057
11s.1.12 Outlet	8/22/03	7:11	15798.2205	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM013057
7s_1_5 Inlet	8/25/03	6:16	15798.2003	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM049794
10s.4.2ab Inlet	9/5/03	7:45	15798.1963	256	2:23:00	Nitrogen	Yes	Ethylene	100 ALM030418
11s.1.14 Inlet	9/19/03	5:53	15798.2151	256	2:23:00	Nitrogen	Yes	Ethylene	100 AAL9279
8s.4.2ab Outlet	9/24/03	5:15	15798.2118	256	2:23:00	Nitrogen	Yes	Ethylene	100 AAL9279

Client:	Site:	Project No.:
Intel	Rio Rancho, NM	31397-1600-00000

System Serial

No.:
MG-07-112

Interferometer No.:
IF-06-133

Pressure Transducer Model No:
750B13TFE3RF

Pressure Transducer

Serial No:
764418

Transducer Slope:
0.679601

Acceptance
Theoretical

c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\

CD-RW\

250

Location	Date	Time	Primary Storage Directory:	Backup Storage Disk:	Cell Temp (oC)
9s.1.3ab Inlet	8/1/03	6:00	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\9s_1_3ab Inlet 08 01 03	CD-RW\	150
9s.1.1e Outlet	8/5/03	9:15	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\ 9s_1_1e Outlet 08 05 03	CD\R	150
9s.1.1d Outlet	8/6/03	5:57	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\9s_1_1d Outlet 08 06 03	CD\R	150
9s.1.1c Outlet	8/7/03	6:30	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\ 9s_1_1c Outlet 08 07 03	CD\R	150
9s.1.1b Outlet	8/8/03	8:45	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\ 9s_1_1b Outlet 08 08 04	CD\R	150
9s.1.2c Outlet	8/11/03	7:45	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\ 9s_1_2c Outlet 08 11 03	CD\R	150
9s.1.2e/f Spike	8/12/03	6:45	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\ 9s_1_2ef Spike 08 12 03	CD\R	150
9s.1.2e/f Outlet	8/15/03	6:00	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\ 9s_1_2ef Outlet 08 15 0:	CD\R	150
11s.1.6 Outlet	8/19/03	6:15	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\11s_1_6 Outlet 08 19 03	CD\R	150
11s.1.10 Outlet	8/21/03	5:28	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\ 11s_1_10 Outlet 08 21 0	CD\R	150
11s.1.12 Outlet	8/22/03	7:11	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\ 11s_1_12 Outlet 08 22	CD\R	150
7s_1_5 Inlet	8/25/03	6:16	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\7S_1_5 Inlet 08 25 03	CD\R	150
10s.4.2ab Inlet	9/5/03	7:45	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_4_3ab Inlet 09 05 0:	CD\R	150
11s.1.14 Inlet	9/19/03	5:53	c:\Projects\Intel rr 31397/Q3-03 haps (WA 1600)\Data\FTIR Results\Scrubber Spectra\11S_1_14 Inlet 09 19 03	CD\R	150
8s.4.2ab Outlet	9/24/03	5:15	c:\Projects\Intel rr 31397/Q3-03 haps (WA 1600)\Data\FTIR Results\Scrubber Spectra\ 8S_4_2ab Outlet 09 24 03	CD\R	150

Client:	Site:	Project No.:
Intel	Rio Rancho, NM	31397-1600-00000

System Serial No.:	Interferometer No.:	Transducer Offset:	Low cm-1 Limit	High cm-1 Limit
MG-07-112	IF-06-133	0	100	5000

Acceptance
Theoretical

150	250	7	NA	NA	NA	150

Location	Date	Time	FTIR Transfer Line Temp (oC)	Source to Pump Line Temp (oF):	Pump Temp (oC):	FTIR Line Temp (oF):	Pump Flow Rate (acfm)	Probe Temp (oF):	Hot Box Temp (oF):
9s.1.3ab Inlet	8/1/03	6:00	150	250	150	250	7	250	150
9s.1.1e Outlet	8/5/03	9:15	150	250	150	250	7	NA	150
9s.1.1d Outlet	8/6/03	5:57	150	250	150	250	7	NA	150
9s.1.1c Outlet	8/7/03	6:30	150	250	150	250	7	NA	150
9s.1.1b Outlet	8/8/03	8:45	150	250	150	250	7	NA	150
9s.1.2c Outlet	8/11/03	7:45	150	250	150	250	7	NA	150
9s.1.2e/f Spike	8/12/03	6:45	150	250	150	250	7	NA	150
9s.1.2e/f Outlet	8/15/03	6:00	150	250	150	250	7	NA	150
11s.1.6 Outlet	8/19/03	6:15	150	249/250	150	250	7	NA	150
11s.1.10 Outlet	8/21/03	5:28	150	249/250	149	256	7	NA	150
11s.1.12 Outlet	8/22/03	7:11	150	250	150	250	7	255	150
7s_1_5 Inlet	8/25/03	6:16	150	251	150	251	7	NA	NA
10s.4.2ab Inlet	9/5/03	7:45	150	249	150	250	7	NA	NA
11s.1.14 Inlet	9/19/03	5:53	150	249	150	253	7	NA	NA
8s.4.2ab Outlet	9/24/03	5:15	149	253	150	250	7	254	163

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial

No.: MG-07-102 **Interferometer No.:** IF-06-062 **Electronics No.'s:** Comm: 8022C-175 **ICU#00** Proc: 8024C-178 Mod: 8021C-233 SAQ: 8023C-204 **Detector Type:** 0.25 mm LN2 MCT **Det. Serial No.:** D-4222 (16 um) **Det. Mfg. Date** 36861

Acceptance
Theoretical

15798.29 90 +/-10
92

1.285

Yes

1.288

-3.98

3.42

Location	Date	Time	Known Laser Freq:	Laser Phase Angle:	Peak Signal @ 1200 cm-1:	Saturated Below 400 cm-1	Preamp Check +AC	Preamp Check - AC	Preamp Check DC
9s.1.2b Outlet	7/30/03	5:54	15798.298	96.706	1.090	Yes	2.022	-2.554	5.064
9s.1.3ab Outlet	8/1/03	5:57	15798.298	96.706	1.084	Yes	1.893	-2.734	5.047
9s.1.2a Outlet	8/4/03	5:57	15798.298	96.706	1.105	Yes	1.871	-2.713	5.150
9s.1.2e/f Inlet	8/13/03	6:00	15798.211	93.88	0.910	Yes	1.135	-2.87	1.883
7s.1.5 Outlet	8/25/03	6:16	15798.293	94.588	1.039	Yes	1.916	-2.441	4.807
9s.1.2h Outlet	8/26/03	6:38	15798.293	94.588	1.031	Yes	1.938	-2.485	4.771
10s.1.1c Outlet	8/28/03	8:15	15798.293	95.294	1.029	Yes	1.877	-2.452	4.777
10s.1.1d Outlet	9/2/03	5:40	15798.293	99.529	0.978	Yes	1.793	-2.579	4.862
10s.1.1e Outlet	9/3/03	5:30	15798.357	100.235	1.037	Yes	1.941	-2.810	4.766
10s.1.1f Outlet	9/4/03	6:00	15798.357	100.235	0.996	Yes	1.938	-2.727	4.670
10s.4.3ab Outlet	9/5/03	7:45	15798.357	100.940	1.025	Yes	1.943	-2.533	4.752
10s.1.1g Outlet	9/8/03	6:25	15798.296	100.940	0.955	Yes	1.504	-2.277	4.416
11s.1.3 Outlet	9/11/03	6:10	15798.2960	99.529	1.020	Yes	1.891	-2.732	4.792
11s.1.5 Outlet	9/12/03	6:10	15798.2960	99.529	1.040	Yes	1.95	-2.86	4.886
11s.1.7 Outlet	9/15/03	6:15	15798.2960	99.529	1.070	Yes	1.93	-2.864	4.951
11s.1.9 Outlet	9/16/03	6:35	15798.2960	100.235	1.035	Yes	1.977	-2.592	4.831
11s.1.11 Outlet	9/17/03	5:39	15798.296	99.529	1.068	Yes	1.949	-2.801	4.972
11s.1.14 Spike	9/18/03		15798.296	99.544		Yes	1.956	-2.604	4.823
11s.1.6 Inlet	9/19/03	6:36	15798.296	99.529	1.020	Yes	1.891	-2.732	4.792
11s.1.14 Outlet	9/19/03	6:05	15798.296	102.35	1.078	Yes	1.928	-2.563	5.154
8s.4.2ab Inlet	9/24/03	5:15	15798.394	100.94	1.048	Yes	1.942	-2.842	4.901

Client: Intel Site: Rio Rancho, NM Project No.: 31397-1600-00000

System Serial No.: MG-07-102 Interferometer No.: IF-06-062 Pre-Amp (gain): 8027-283 (2x) Window Type: KBr Window Size: 25 x 5 mm Mirror Type: Au Mirror Size: 5.11 m Laser Type: HeNe Apodization: Med Norton Beer Omega Controller: POL=0 POH=373

Acceptance Theoretical 0.46 => <= 0.48 +/- 0.01 0.48 cm-1 3920.095 0.2004 0.0024 0.198 15798.29 3920.0946 15798.2832

Location	Date	Time	Water Line (FWHH)	Freq (cm-1)	Peak	Baseline	Amplitude	Original Laser Frequency	Auto Corr. Water Line	Auto Corr. Laser Frequency
9s.1.2b Outlet	7/30/03	5:54	0.4755	3920.0887	0.2419	0.0054	0.2366	15798.2975	3920.0946	15798.2487
9s.1.3ab Outlet	8/1/03	5:57	0.4792	3920.0913	0.2153	0.0040	0.2110	15798.2975	3920.0946	15798.2716
9s.1.2a Outlet	8/4/03	5:57	0.4761	3920.0913	0.2063	0.0042	0.2012	15798.2975	3920.0946	15798.2648
9s.1.2e/f Inlet	8/13/03	6:00	0.4645	3920.0929	0.2235	0.0038	0.2197	15798.2109	3920.0946	15798.1928
7s.1.5 Outlet	8/25/03	6:16	0.4768	3920.0914	0.2635	0.0072	0.2563	15798.2932	3920.0946	15798.2720
9s.1.2h Outlet	8/26/03	6:38	0.4743	3920.0885	0.2674	0.0037	0.2616	15798.2932	3920.0946	15798.2440
10s.1.1c Outlet	8/28/03	8:15	0.4776	3920.0916	0.3011	0.0060	0.2961	15798.2932	3920.0946	15798.2657
10s.1.1d Outlet	9/2/03	5:40	0.4872	3920.0895	0.2956	0.0054	0.2930	15798.3565	3920.0946	15798.3277
10s.1.1e Outlet	9/3/03	5:30	0.4763	3920.0914	0.2304	0.0047	0.2236	15798.2964	3920.0946	15798.2853
10s.1.1f Outlet	9/4/03	6:00	0.4791	3920.0913	0.1856	0.0042	0.1815	15798.2964	3920.0946	15798.2695
10s.4.3ab Outlet	9/5/03	7:45	0.4795	3920.0914	0.2504	0.0043	0.2452	15798.2964	3920.0946	15798.2916
10s.1.1g Outlet	9/8/03	6:25	0.4742	3920.0886	0.2154	0.0039	0.2084	15798.2964	3920.0946	15798.2636
11s.1.3 Outlet	9/11/03	6:10	0.4721	3920.0886	0.2474	0.0055	0.2426	15798.2964	3920.0946	15798.2601
11s.1.5 Outlet	9/12/03	6:10	0.4733	3920.0913	0.1913	0.004	0.1873	15798.2964	3920.0946	15798.3013
11s.1.7 Outlet	9/15/03	6:15	0.4755	3920.0913	0.2322	0.0043	0.2258	15798.2964	3920.0946	15798.3036
11s.1.9 Outlet	9/16/03	6:35	0.476	3920.0942	0.2155	0.0048	0.2122	15798.2964	3920.0946	15798.3169
11s.1.11 Outlet	9/17/03	5:39	0.4773	3920.0891	0.2147	0.0051	0.2116	15798.2406	3920.0946	15798.3164
11s.1.14 Spike	9/18/03		0.476	3920.0931	0.2144	0.0054	0.2124	15798.2414	3920.0946	15798.3165
11s.1.6 Inlet	9/19/03	6:36	0.4721	3920.0886	0.2474	0.0055	0.2426	15798.2964	3920.0946	15798.2601
11s.1.14 Outlet	9/19/03	6:05	0.4819	3920.0913	0.1060	0.0031	0.1050	15798.2431	3920.0946	15798.2756
8s.4.2ab Inlet	9/24/03	5:15	0.4772	3920.0899	0.1749	0.0036	0.1703	15798.3940	3920.0946	15798.3721

Client: Intel Site: Rio Rancho, NM Project No.: 31397-1600-00000

System Serial No.: MG-07-102 Interferometer No.: IF-06-062 Pre-Amp (gain): 8027-283 (2x) Window Type: KBr Window Size: 25 x 5 mm Mirror Type: Au Mirror Size: 5.11 m Laser Type: HeNe Apodization: Med Norton Beer Omega Controller: POL=0 POH=373

Acceptance Theoretical 0.46 => <= 0.48 +/- 0.01 0.48 cm⁻¹ 3920.095 0.2004 0.0024 0.198 15798.29 3920.0946 15798.2832

Location	Date	Time	Water Line (FWHH)	Freq (cm-1)	Peak	Baseline	Amplitude	Original Laser Frequency	Auto Corr. Water Line	Auto Corr. Laser Frequency
9s.1.2b Outlet	7/30/03	5:54	0.4755	3920.0887	0.2419	0.0054	0.2366	15798.2975	3920.0946	15798.2487
9s.1.3ab Outlet	8/1/03	5:57	0.4792	3920.0913	0.2153	0.0040	0.2110	15798.2975	3920.0946	15798.2716
9s.1.2a Outlet	8/4/03	5:57	0.4761	3920.0913	0.2063	0.0042	0.2012	15798.2975	3920.0946	15798.2648
9s.1.2e/f Inlet	8/13/03	6:00	0.4645	3920.0929	0.2235	0.0038	0.2197	15798.2109	3920.0946	15798.1928
7s.1.5 Outlet	8/25/03	6:16	0.4768	3920.0914	0.2635	0.0072	0.2563	15798.2932	3920.0946	15798.2720
9s.1.2h Outlet	8/26/03	6:38	0.4743	3920.0885	0.2674	0.0037	0.2616	15798.2932	3920.0946	15798.2440
10s.1.1c Outlet	8/28/03	8:15	0.4776	3920.0916	0.3011	0.0060	0.2961	15798.2932	3920.0946	15798.2657
10s.1.1d Outlet	9/2/03	5:40	0.4872	3920.0895	0.2956	0.0054	0.2930	15798.3565	3920.0946	15798.3277
10s.1.1e Outlet	9/3/03	5:30	0.4763	3920.0914	0.2304	0.0047	0.2236	15798.2964	3920.0946	15798.2853
10s.1.1f Outlet	9/4/03	6:00	0.4791	3920.0913	0.1856	0.0042	0.1815	15798.2964	3920.0946	15798.2695
10s.4.3ab Outlet	9/5/03	7:45	0.4795	3920.0914	0.2504	0.0043	0.2452	15798.2964	3920.0946	15798.2916
10s.1.1g Outlet	9/8/03	6:25	0.4742	3920.0886	0.2154	0.0039	0.2084	15798.2964	3920.0946	15798.2636
11s.1.3 Outlet	9/11/03	6:10	0.4721	3920.0886	0.2474	0.0055	0.2426	15798.2964	3920.0946	15798.2601
11s.1.5 Outlet	9/12/03	6:10	0.4733	3920.0913	0.1913	0.004	0.1873	15798.2964	3920.0946	15798.3013
11s.1.7 Outlet	9/15/03	6:15	0.4755	3920.0913	0.2322	0.0043	0.2258	15798.2964	3920.0946	15798.3036
11s.1.9 Outlet	9/16/03	6:35	0.476	3920.0942	0.2155	0.0048	0.2122	15798.2964	3920.0946	15798.3169
11s.1.11 Outlet	9/17/03	5:39	0.4773	3920.0891	0.2147	0.0051	0.2116	15798.2406	3920.0946	15798.3164
11s.1.14 Spike	9/18/03		0.476	3920.0931	0.2144	0.0054	0.2124	15798.2414	3920.0946	15798.3165
11s.1.6 Inlet	9/19/03	6:36	0.4721	3920.0886	0.2474	0.0055	0.2426	15798.2964	3920.0946	15798.2601
11s.1.14 Outlet	9/19/03	6:05	0.4819	3920.0913	0.1060	0.0031	0.1050	15798.2431	3920.0946	15798.2756
8s.4.2ab Inlet	9/24/03	5:15	0.4772	3920.0899	0.1749	0.0036	0.1703	15798.3940	3920.0946	15798.3721

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial No.:
 MG-07-102

Interferometer No.:
 IF-06-062

Pressure Transducer Model No:
 750B13TFE3RF

Pressure Transducer Serial No:
 524314

Transducer Slope:
 0.684433

Acceptance
 Theoretical

c:\Projects\Intel-RR (31397)\Q3-02 HAPS (WA 1600)\data\FTIR Results\

CD-RW\

150

Location	Date	Time	Primary Storage Directory:	Backup Storage Disk:	Cell Temp (oC)
9s.1.2b Outlet	7/30/03	5:54	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\9s_1_2b 07 30 03\	CD-RW\	150
9s.1.3ab Outlet	8/1/03	5:57	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\9s_1_3ab Outlet 08 01 03\	CD-RW\	150
9s.1.2a Outlet	8/4/03	5:57	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\9s_1_2a Outlet 08 04 03\	CD-RW\	150
9s.1.2e/f Inlet	8/13/03	6:00	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\9S_1_2ef 09 15 03\	CD\R	150
7s.1.5 Outlet	8/25/03	6:16	c:\Projects\Intel-RR (31397)\Q2-03 Boilers (WA 1000)\data\FTIR Results\Scrubber Spectra\7S_1_5 Outlet 08 25 03\	CD\R	150
9s.1.2h Outlet	8/26/03	6:38	c:\Projects\Intel-RR (31397)\Q2-03 Boilers (WA 1000)\data\FTIR Results\Scrubber Spectra\9S_1_2h Outlet 08 26 03\	CD\R	150
10s.1.1c Outlet	8/28/03	8:15	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1c Outlet 08 28 03\	CD\R	150
10s.1.1d Outlet	9/2/03	5:40	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1d Outlet 09 02 03\	CD\R	150
10s.1.1e Outlet	9/3/03	5:30	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1e Outlet 09 03 03\	CD\R	150
10s.1.1f Outlet	9/4/03	6:00	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1f Outlet 09 04 03\	CD\R	150
10s.4.3ab Outlet	9/5/03	7:45	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_4_3ab Outlet 09 05 03\	CD\R	150
10s.1.1g Outlet	9/8/03	6:25	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1g Outlet 09 08 03\	CD\R	150
11s.1.3 Outlet	9/11/03	6:10	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_3 09 11 03\	CD\R	150
11s.1.5 Outlet	9/12/03	6:10	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_5 09 12 03\	CD\R	150
11s.1.7 Outlet	9/15/03	6:15	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_7 09 15 03\	CD\R	150
11s.1.9 Outlet	9/16/03	6:35	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_7 09 15 03\	CD\R	150
11s.1.11 Outlet	9/17/03	5:39	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_11 09 17 03\	CD\R	150
11s.1.14 Spike	9/18/03		c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_14 Spike 09 18 03\	CD\R	150
11s.1.6 Inlet	9/19/03	6:36	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_3 09 11 03\	CD\R	150
11s.1.14 Outlet	9/19/03	6:05	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_14 09 19 03\	CD\R	150
8s.4.2ab Inlet	9/24/03	5:15	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\8S_4_2ab Inlet 09 24 03\	CD\R	150

Client: Intel Site: Rio Rancho, NM Project No.: 31397-1600-00000

System Serial No.: MG-07-102 Interferometer No.: IF-06-062 Transducer Offset: 1.17189 Low cm-1 Limit: 100 High cm-1 Limit: 5000

Acceptance
Theoretical

150 250 150 250 7 NA 150

Location	Date	Time	FTIR Transfer Line Temp (oC)	Source to Pump Line Temp (oF):	Pump Temp (oC):	Pump to FTIR Line Temp (oF):	Sample Pump Flow Rate (aclm)	Probe Temp (oF):	Hot Box Temp (oF):
9s.1.2b Outlet	7/30/03	5:54	150	250	150	250	7	250	150
9s.1.3ab Outlet	8/1/03	5:57	150	250	150	250	7	250	150
9s.1.2a Outlet	8/4/03	5:57	150	250	150	250	7	250	150
9s.1.2e/f Inlet	8/13/03	6:00	150	250	150	250	7	NA	NA
7s.1.5 Outlet	8/25/03	6:16	150	250	150	249	7	250	NA
9s.1.2h Outlet	8/26/03	6:38	150	250	150	249	7	250	NA
10s.1.1c Outlet	8/28/03	8:15	150	249	150	249	7	250	161
10s.1.1d Outlet	9/2/03	5:40	150	249	150	249	7	250	150
10s.1.1e Outlet	9/3/03	5:30	150	255	150	250	7	255	144
10s.1.1f Outlet	9/4/03	6:00	150	249	150	250	7	255	144
10s.4.3ab Outlet	9/5/03	7:45	150	249	150	250	7	260	147
10s.1.1g Outlet	9/8/03	6:25	150	249	150	250	7	272	149
11s.1.3 Outlet	9/11/03	6:10	150	249	150	250	7	160	257
11s.1.5 Outlet	9/12/03	6:10	150	249	150	250	7	160	257
11s.1.7 Outlet	9/15/03	6:15	150	249	150	252	7	284	96
11s.1.9 Outlet	9/16/03	6:35	150	249	150	252	7	280	100
11s.1.11 Outlet	9/17/03	5:39	150	253	150	249	7	246	120
11s.1.14 Spike	9/18/03		150	255	150	249	7	250	120
11s.1.6 Inlet	9/19/03	6:36	150	249	150	250	7	160	257
11s.1.14 Outlet	9/19/03	6:05	150	255	150	249	7	250	120
8s.4.2ab Inlet	9/24/03	5:15	150	249	150	252	7	NA	NA

Client: Intel Site: Rio Rancho, NM Project No.: 31397-1600-00000

System Serial			Instrument Set	Linearizer	Linearizer	Linearizer				
No.:	Interferometer No.:	Sampling Mode:	Resolution:	Offset:	Linear:	Quad:	Linearizer Cubic:	Optics	Detector	
MG-07-102	IF-06-062	Mid IR	0.5 cm-1	1405	1000	620	223	0.2 scfh	0.2 scfh	
Acceptance										
Theoretical			15798.2988	256	2:23:00	Nitrogen	Yes	Ethylene	100	
							Background Taken		CTS	
							Before Initial			
Location	Date	Time	Calc. Laser Frequency	Scans/ Sample	Sampling Interval	Background	CTS	CTS	CTS Conc. (ppm):	Cylinder No.
9s.1.2b Outlet	7/30/03	5:54	15798.2726	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM051796
9s.1.3ab Outlet	8/1/03	5:57	15798.2856	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM051796
9s.1.2a Outlet	8/4/03	5:57	15798.2815	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM051796
9s.1.2e/f Inlet	8/13/03	6:00	15798.1982	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM030418
7s.1.5 Outlet	8/25/03	6:16	15798.2820	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
9s.1.2h Outlet	8/26/03	6:38	15798.2675	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
10s.1.1c Outlet	8/28/03	8:15	15798.2792	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM030418
10s.1.1d Outlet	9/2/03	5:40	15798.3458	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM030418
10s.1.1e Outlet	9/3/03	5:30	15798.3009	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM030418
10s.1.1f Outlet	9/4/03	6:00	15798.2929	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM030418
10s.4.3ab Outlet	9/5/03	7:45	15798.3125	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM030418
10s.1.1g Outlet	9/8/03	6:25	15798.2892	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM030418
11s.1.3 Outlet	9/11/03	6:10	15798.2835	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
11s.1.5 Outlet	9/12/03	6:10	15798.3172	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
11s.1.7 Outlet	9/15/03	6:15	15798.3214	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
11s.1.9 Outlet	9/16/03	6:35	15798.3259	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
11s.1.11 Outlet	9/17/03	5:39	15798.3427	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
11s.1.14 Spike	9/18/03		15798.3327	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
11s.1.6 Inlet	9/19/03	6:36	15798.2835	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
11s.1.14 Outlet	9/19/03	6:05	15798.2988	256	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
8s.4.2ab Inlet	9/24/03	5:15	15798.3802	256	2:23:00	Nitrogen	Yes	Ethylene	100	AAL9279

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial No.:
 MG-07-102

Interferometer No.:
 IF-06-062

Pressure Transducer Model No:
 750B13TFE3RF

Pressure Transducer Serial No:
 524314

Transducer Slope:
 0.684433

Acceptance
 Theoretical

c:\Projects\Intel-RR (31397)\Q3-02 HAPS (WA 1600)\data\FTIR Results\

CD-RW\

150

Location	Date	Time	Primary Storage Directory:	Backup Storage Disk:	Cell Temp (oC)
9s.1.2b Outlet	7/30/03	5:54	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\9s_1_2b 07 30 03\	CD-RW\	150
9s.1.3ab Outlet	8/1/03	5:57	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\9s_1_3ab Outlet 08 01 03\	CD-RW\	150
9s.1.2a Outlet	8/4/03	5:57	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\9s_1_2a Outlet 08 04 03\	CD-RW\	150
9s.1.2e/f Inlet	8/13/03	6:00	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\9S_1_2ef 09 15 03\	CD\R	150
7s.1.5 Outlet	8/25/03	6:16	c:\Projects\Intel-RR (31397)\Q2-03 Boilers (WA 1000)\data\FTIR Results\Scrubber Spectra\7S_1_5 Outlet 08 25 03\	CD\R	150
9s.1.2h Outlet	8/26/03	6:38	c:\Projects\Intel-RR (31397)\Q2-03 Boilers (WA 1000)\data\FTIR Results\Scrubber Spectra\9S_1_2h Outlet 08 26 03\	CD\R	150
10s.1.1c Outlet	8/28/03	8:15	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1c Outlet 08 28 03\	CD\R	150
10s.1.1d Outlet	9/2/03	5:40	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1d Outlet 09 02 03\	CD\R	150
10s.1.1e Outlet	9/3/03	5:30	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1e Outlet 09 03 03\	CD\R	150
10s.1.1f Outlet	9/4/03	6:00	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1f Outlet 09 04 03\	CD\R	150
10s.4.3ab Outlet	9/5/03	7:45	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_4_3ab Outlet 09 05 03\	CD\R	150
10s.1.1g Outlet	9/8/03	6:25	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\10S_1_1g Outlet 09 08 03\	CD\R	150
11s.1.3 Outlet	9/11/03	6:10	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_3 09 11 03\	CD\R	150
11s.1.5 Outlet	9/12/03	6:10	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_5 09 12 03\	CD\R	150
11s.1.7 Outlet	9/15/03	6:15	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_7 09 15 03\	CD\R	150
11s.1.9 Outlet	9/16/03	6:35	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_7 09 15 03\	CD\R	150
11s.1.11 Outlet	9/17/03	5:39	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_11 09 17 03\	CD\R	150
11s.1.14 Spike	9/18/03		c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_14 Spike 09 18 03\	CD\R	150
11s.1.6 Inlet	9/19/03	6:36	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_3 09 11 03\	CD\R	150
11s.1.14 Outlet	9/19/03	6:05	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\11S_1_14 09 19 03\	CD\R	150
8s.4.2ab Inlet	9/24/03	5:15	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\Scrubber Spectra\8S_4_2ab Inlet 09 24 03\	CD\R	150

Client: Intel Site: Rio Rancho, NM Project No.: 31397-1600-00000

System Serial No.: MG-07-102 Interferometer No.: IF-06-062 Transducer Offset: 1.17189 Low cm-1 Limit: 100 High cm-1 Limit: 5000

Acceptance
Theoretical

150 250 150 250 7 NA 150

Location	Date	Time	FTIR Transfer Line Temp (oC)	Source to Pump Line Temp (oF):	Pump Temp (oC):	Pump to FTIR Line Temp (oF):	Sample Pump Flow Rate (aclm)	Probe Temp (oF):	Hot Box Temp (oF):
9s.1.2b Outlet	7/30/03	5:54	150	250	150	250	7	250	150
9s.1.3ab Outlet	8/1/03	5:57	150	250	150	250	7	250	150
9s.1.2a Outlet	8/4/03	5:57	150	250	150	250	7	250	150
9s.1.2e/f Inlet	8/13/03	6:00	150	250	150	250	7	NA	NA
7s.1.5 Outlet	8/25/03	6:16	150	250	150	249	7	250	NA
9s.1.2h Outlet	8/26/03	6:38	150	250	150	249	7	250	NA
10s.1.1c Outlet	8/28/03	8:15	150	249	150	249	7	250	161
10s.1.1d Outlet	9/2/03	5:40	150	249	150	249	7	250	150
10s.1.1e Outlet	9/3/03	5:30	150	255	150	250	7	255	144
10s.1.1f Outlet	9/4/03	6:00	150	249	150	250	7	255	144
10s.4.3ab Outlet	9/5/03	7:45	150	249	150	250	7	260	147
10s.1.1g Outlet	9/8/03	6:25	150	249	150	250	7	272	149
11s.1.3 Outlet	9/11/03	6:10	150	249	150	250	7	160	257
11s.1.5 Outlet	9/12/03	6:10	150	249	150	250	7	160	257
11s.1.7 Outlet	9/15/03	6:15	150	249	150	252	7	284	96
11s.1.9 Outlet	9/16/03	6:35	150	249	150	252	7	280	100
11s.1.11 Outlet	9/17/03	5:39	150	253	150	249	7	246	120
11s.1.14 Spike	9/18/03		150	255	150	249	7	250	120
11s.1.6 Inlet	9/19/03	6:36	150	249	150	250	7	160	257
11s.1.14 Outlet	9/19/03	6:05	150	255	150	249	7	250	120
8s.4.2ab Inlet	9/24/03	5:15	150	249	150	252	7	NA	NA

**FTIR Spike Results
Intel Rio Rancho
RTO VOC Testing Q3 2003**

**FTIR Model Number: 2030
FTIR Serial Number: MG-07-102**

**Spike Gas
Cylinder No. ALM043050**

Constituents	Conc. (ppm)	Accuracy
Methanol	103	+/- 2%
SF ₆	1.632	

Spectral Filename	Date	Time	Run #	Spike % Recovery	SF ₆ Spike Result	Dilution Factor	Methanol Spike		Acceptable Range = +/- 30%	
							Measured Result	Expected Result		
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0014.LAB	07/28/03	17:37:40	1	115.973%	0.146	0.089181	10.653	9.186	6.430	11.941
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0015.LAB	07/28/03	17:40:17		115.309%	0.145	0.089055	10.577	9.173	6.421	11.924
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0016.LAB	07/28/03	17:42:53	2	115.723%	0.145	0.089035	10.612	9.171	6.419	11.922
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0017.LAB	07/28/03	17:45:30		116.000%	0.145	0.088630	10.589	9.129	6.390	11.868
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0018.LAB	07/28/03	17:48:07	3	125.906%	0.125	0.076891	9.971	7.920	5.544	10.296
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0019.LAB	07/28/03	17:50:43		111.723%	0.140	0.086001	9.897	8.858	6.201	11.516
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0020.LAB	07/28/03	17:53:20	4	107.778%	0.143	0.087607	9.725	9.024	6.316	11.731
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0021.LAB	07/28/03	17:55:57		112.377%	0.140	0.086020	9.957	8.860	6.202	11.518
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0022.LAB	07/28/03	17:58:33	5	114.770%	0.138	0.084653	10.007	8.719	6.103	11.335
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0023.LAB	07/28/03	18:01:10		116.665%	0.137	0.083765	10.066	8.628	6.039	11.216
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0024.LAB	07/28/03	18:03:47	6	118.592%	0.136	0.083453	10.194	8.596	6.017	11.174
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0025.LAB	07/28/03	18:06:23		119.122%	0.136	0.083249	10.214	8.575	6.002	11.147
11X-F RCTO SPIKE TEST 07 28 03 SPIKE TO PROBE_0026.LAB	07/28/03	18:09:00	7	118.704%	0.135	0.082956	10.143	8.545	5.981	11.108
Average of 7 Runs				116.78%	0.138	0.08483	10.19	8.74	6.12	11.36
				Limit = +/- 30%						

SF6 Direct to Instrument

1.628596
1.631377
1.63185
1.633336
1.63691

RTO FTIR Detection Limit Results
INTEL RIO RANCHO 3Q 2003 VOC MONITORING

Spectrum	Date	Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBAUC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (oC)	Press. (Atm)
F7 RCTO OUTLET 08 29 03 SAMPLE_0002 abs.lab	8/29/2003	9:01:30 AM	-0.045352	0.00269	-0.006349	0.013676	0.00674	-0.005895	-0.006235	0.020587	-0.005313	-0.002079	-0.000698	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0003 abs.lab	8/29/2003	9:04:16 AM	-0.001154	0.00717	-0.06155	-0.010832	-0.190556	-0.02202	-0.006935	0.088922	0.02149	-0.004036	-0.00441	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0004 abs.lab	8/29/2003	9:07:02 AM	0.022133	-0.005993	-0.242696	-0.011806	-0.144988	0.065603	-0.016195	0.003994	0.01514	0.00717	0.001663	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0005 abs.lab	8/29/2003	9:09:48 AM	0.009739	-0.008513	-0.072264	-0.018666	-0.052223	0.064625	0.000983	0.032602	0.000003	-0.002841	0.001524	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0006 abs.lab	8/29/2003	9:12:34 AM	-0.041811	0.008082	-0.008975	0.005632	0.029574	-0.045246	-0.017064	0.073309	0.010194	0.000069	0.000717	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0007 abs.lab	8/29/2003	9:15:21 AM	-0.017585	-0.026515	0.038722	-0.019832	0.029331	-0.085398	-0.020082	0.050186	0.010268	-0.012493	-0.001945	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0008 abs.lab	8/29/2003	9:18:07 AM	0.016732	0.066437	-0.301319	-0.017302	-0.304155	-0.030132	-0.011842	0.073582	-0.005211	0.002185	0.002976	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0009 abs.lab	8/29/2003	9:20:53 AM	0.014538	0.080106	-0.190473	-0.048327	-0.338631	0.083717	-0.012701	0.067311	-0.003997	0.006595	0.000506	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0010 abs.lab	8/29/2003	9:23:39 AM	-0.037779	0.030275	-0.067624	-0.026229	-0.025373	0.128101	-0.022362	0.052717	0.012463	0.001631	-0.002472	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0011 abs.lab	8/29/2003	9:26:25 AM	-0.043023	0.00104	-0.132796	0.001367	-0.105126	-0.005942	-0.00751	0.067338	0.003549	0.004235	-0.000623	149.764709	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0012 abs.lab	8/29/2003	9:29:11 AM	0.010758	0.032628	-0.300793	-0.050238	-0.334492	0.077215	-0.018275	0.040328	0.037837	0.015268	0.000184	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0013 abs.lab	8/29/2003	9:31:57 AM	0.015936	0.100767	-0.433352	-0.051084	-0.354118	-0.066713	-0.011454	0.100808	0.020434	0.022086	0.00586	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0014 abs.lab	8/29/2003	9:34:43 AM	0.010538	0.128564	-0.40953	-0.032217	-0.460608	0.033836	-0.003232	0.102606	0.008603	0.034551	0.004824	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0015 abs.lab	8/29/2003	9:37:29 AM	0.000334	0.154412	-0.488433	-0.010316	-0.448069	-0.053987	-0.019243	0.083222	0.026853	0.048023	0.003324	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0016 abs.lab	8/29/2003	9:40:15 AM	0.021037	0.073633	-0.328275	-0.028714	-0.469324	-0.006127	-0.017075	0.056985	0.019148	0.032961	-0.004983	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0017 abs.lab	8/29/2003	9:43:01 AM	-0.013472	0.126693	-0.385437	-0.032639	-0.423383	0.03912	-0.005406	0.043487	0.014413	0.032669	-0.008904	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0018 abs.lab	8/29/2003	9:45:48 AM	-0.000796	0.098879	-0.612196	-0.062699	-0.663368	0.051031	-0.010013	0.03451	-0.007379	0.058053	0.002091	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0019 abs.lab	8/29/2003	9:48:34 AM	0.005803	0.167817	-0.390597	-0.036208	-0.640019	-0.033123	-0.00325	0.083699	0.010645	0.060011	0.005421	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0020 abs.lab	8/29/2003	9:51:20 AM	-0.004647	0.125351	-0.425324	-0.075561	-0.688295	0.204546	-0.009088	0.026927	-0.00457	0.069846	0.004593	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0021 abs.lab	8/29/2003	9:54:06 AM	0.027585	0.11495	-0.377882	-0.055553	-0.652353	0.04705	-0.008927	0.058638	-0.000891	0.057251	-0.006642	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0022 abs.lab	8/29/2003	9:56:52 AM	-0.006951	0.169133	-0.553789	-0.025468	-0.662408	-0.190314	-0.008152	0.142889	0.011314	0.053809	-0.004086	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0023 abs.lab	8/29/2003	9:59:38 AM	0.01733	0.085215	-0.496327	-0.091075	-0.756892	0.06442	-0.008618	0.130984	0.020492	0.066778	0.000951	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0024 abs.lab	8/29/2003	10:02:24 AM	0.009165	0.102642	-0.453902	-0.031313	-0.779482	0.048935	-0.006717	0.064317	0.024949	0.070985	0.002987	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0025 abs.lab	8/29/2003	10:05:10 AM	0.021094	0.136061	-0.40715	-0.060096	-0.586043	0.03789	-0.005378	0.065267	0.016213	0.06061	0.000636	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0026 abs.lab	8/29/2003	10:07:56 AM	0.013168	0.077859	-0.507187	-0.08739	-0.818342	0.082627	-0.01632	0.066885	0.01192	0.066941	-0.002215	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0027 abs.lab	8/29/2003	10:10:42 AM	0.028788	0.146914	-0.54714	-0.087322	-0.764203	0.054625	-0.007986	0.035766	0.011038	0.065159	-0.002997	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0028 abs.lab	8/29/2003	10:13:28 AM	0.013555	0.13863	-0.657426	-0.077882	-0.634842	-0.097884	-0.006885	0.075288	0.007752	0.060774	-0.002061	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0029 abs.lab	8/29/2003	10:16:15 AM	0.00741	0.146587	-0.48949	-0.054984	-0.597405	-0.059281	-0.005793	0.052599	0.007725	0.061589	-0.004696	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0030 abs.lab	8/29/2003	10:19:01 AM	-0.002629	0.149869	-0.61183	-0.084832	-0.706722	-0.039442	-0.004556	0.107217	-0.021373	0.070355	-0.000522	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0031 abs.lab	8/29/2003	10:21:47 AM	0.027659	0.018516	-0.654324	-0.199931	-0.873412	0.081097	-0.012689	0.044816	0.028918	0.077458	0.00651	149.764709	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0032 abs.lab	8/29/2003	10:24:33 AM	-0.011215	0.081321	-0.61775	-0.160469	-0.787452	0.138636	-0.002149	0.108133	-0.000468	0.077771	-0.000555	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0033 abs.lab	8/29/2003	10:27:19 AM	0.003891	0.129188	-0.599636	-0.131403	-0.865084	0.220595	-0.015858	0.083828	-0.002781	0.084122	0.000212	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0034 abs.lab	8/29/2003	10:30:05 AM	0.018748	0.158791	-0.295667	-0.104762	-0.438932	0.066884	-0.004635	0.017051	0.030107	0.056811	-0.009911	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0035 abs.lab	8/29/2003	10:32:51 AM	0.002973	0.092205	-0.645134	-0.174282	-0.964822	0.168068	-0.01126	0.025508	-0.005323	0.082838	0.002169	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0036 abs.lab	8/29/2003	10:35:37 AM	0.018268	0.069553	-0.699079	-0.168153	-0.954851	0.142656	-0.007486	0.072913	-0.00936	0.071711	-0.000065	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0037 abs.lab	8/29/2003	10:38:23 AM	-0.002033	0.077871	-0.656423	-0.169793	-0.950493	0.075375	-0.010898	0.063621	0.00253	0.077102	0.005243	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0038 abs.lab	8/29/2003	10:41:09 AM	0.034855	0.152852	-0.472306	-0.109063	-0.563268	0.19761	-0.007627	0.080137	0.005325	0.061698	-0.009364	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0039 abs.lab	8/29/2003	10:43:55 AM	-0.003724	0.178807	-0.494485	-0.087132	-0.694664	-0.005381	-0.006942	0.107214	0.000483	0.073469	-0.005965	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0040 abs.lab	8/29/2003	10:46:41 AM	0.00629	0.113537	-0.755833	-0.178804	-0.816443	0.11245	-0.024047	0.074759	0.030662	0.081081	0.000761	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0041 abs.lab	8/29/2003	10:49:28 AM	-0.002457	0.060674	-0.702436	-0.249716	-0.859149	0.172013	-0.02062	-0.029551	0.022915	0.105322	-0.000341	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0042 abs.lab	8/29/2003	10:52:14 AM	0.020784	0.064995	-0.575672	-0.234821	-1.02193	0.176345	-0.019445	0.027748	0.033521	0.103787	-0.006931	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0043 abs.lab	8/29/2003	10:55:00 AM	0.033748	0.108399	-0.619892	-0.188987	-0.631607	0.194571	-0.032063	-0.054986	0.063527	0.153873	0.008583	150.509811	1.000762

RTO FTIR Detection Limit Results
INTEL RIO RANCHO 3Q 2003 VOC MONITORING

Spectrum	Date	Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBAUC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (oC)	Press. (Atm)
F7 RCTO OUTLET 08 29 03 SAMPLE_0044 abs.lab	8/29/2003	10:57:46 AM	0.034152	0.139375	-0.633129	-0.162365	-0.619796	0.013056	-0.02804	-0.076233	0.091243	0.168054	0.001035	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0045 abs.lab	8/29/2003	11:00:32 AM	0.019826	0.135108	-0.746132	-0.122691	-0.295562	-0.166154	-0.034387	-0.005213	0.084506	0.169103	-0.003231	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0046 abs.lab	8/29/2003	11:03:18 AM	0.044118	0.20275	-0.891386	-0.140145	-0.290797	-0.2387	-0.032139	0.018911	0.06446	0.167293	-0.004252	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0047 abs.lab	8/29/2003	11:06:04 AM	0.0339	0.140335	-0.828365	-0.185785	-0.699612	0.098201	-0.032266	-0.07143	0.060409	0.161472	-0.009666	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0048 abs.lab	8/29/2003	11:08:50 AM	0.033059	0.081405	-0.561229	-0.269188	-0.911859	0.325848	-0.032175	-0.089977	0.067373	0.1641	-0.004001	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0049 abs.lab	8/29/2003	11:11:36 AM	0.007713	0.177308	-0.684716	-0.115343	-0.338069	-0.081689	-0.043429	-0.069954	0.062094	0.180054	0.002691	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0050 abs.lab	8/29/2003	11:14:22 AM	0.021488	0.124352	-0.643476	-0.207493	-0.691055	0.054864	-0.041628	0.004005	0.078773	0.159836	-0.012708	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0051 abs.lab	8/29/2003	11:17:08 AM	0.03208	0.150405	-0.909833	-0.182312	-0.525992	-0.060299	-0.036515	-0.032303	0.092913	0.163458	-0.010766	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0052 abs.lab	8/29/2003	11:19:55 AM	0.020308	0.197448	-0.747354	-0.102517	-0.405314	0.002171	-0.023678	-0.058442	0.077425	0.178567	-0.000087	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0053 abs.lab	8/29/2003	11:22:41 AM	0.061157	0.086629	-0.730148	-0.242786	-0.772881	0.229762	-0.031984	-0.116924	0.091454	0.169131	-0.00633	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0054 abs.lab	8/29/2003	11:25:27 AM	0.004134	0.181037	-0.734634	-0.124359	-0.460742	-0.07837	-0.0413	-0.03362	0.067832	0.174247	0.002044	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0055 abs.lab	8/29/2003	11:28:13 AM	0.030146	0.205077	-0.826086	-0.169447	-0.369224	-0.166249	-0.038711	-0.038373	0.051102	0.17304	-0.00172	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0056 abs.lab	8/29/2003	11:30:59 AM	0.005145	0.174852	-0.711693	-0.135952	-0.260572	-0.226864	-0.029988	0.005667	0.053389	0.176849	-0.005413	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0057 abs.lab	8/29/2003	11:33:45 AM	0.054802	0.158319	-0.780146	-0.190281	-0.590701	0.014508	-0.04484	-0.034462	0.082379	0.179553	-0.002683	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0058 abs.lab	8/29/2003	11:36:31 AM	0.035955	0.121943	-0.593494	-0.209932	-0.744668	0.130382	-0.037977	-0.028928	0.066787	0.171245	-0.006352	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0059 abs.lab	8/29/2003	11:39:17 AM	0.050788	0.152378	-0.787182	-0.237318	-0.735	0.064739	-0.040809	-0.071569	0.076215	0.165959	-0.007721	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0060 abs.lab	8/29/2003	11:42:03 AM	0.045373	0.153794	-0.900773	-0.239367	-0.674591	0.070524	-0.032389	-0.033069	0.095162	0.157107	-0.004727	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0061 abs.lab	8/29/2003	11:44:49 AM	0.021947	0.113932	-0.714922	-0.223496	-0.75674	0.086965	-0.028916	-0.037209	0.059832	0.153959	-0.007138	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0062 abs.lab	8/29/2003	11:47:35 AM	0.042312	0.09909	-0.71925	-0.194386	-0.727438	0.148898	-0.029995	-0.042148	0.037969	0.157019	-0.006261	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0063 abs.lab	8/29/2003	11:50:22 AM	0.024444	0.090263	-0.506476	-0.288943	-0.824394	0.236391	-0.027686	0.001394	0.055144	0.145168	-0.006415	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0064 abs.lab	8/29/2003	11:53:08 AM	-0.008226	0.109442	-0.664315	-0.265915	-0.751515	0.204323	-0.031949	-0.039754	0.048217	0.148409	-0.006705	149.764709	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0065 abs.lab	8/29/2003	11:55:54 AM	0.071058	0.113585	-0.838582	-0.299056	-0.719492	0.138711	-0.040438	-0.059587	0.079979	0.145493	-0.008182	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0066 abs.lab	8/29/2003	11:58:40 AM	0.020655	0.063108	-0.825602	-0.30273	-0.873254	0.300226	-0.04054	-0.032522	0.05931	0.134335	-0.005663	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0067 abs.lab	8/29/2003	12:01:26 PM	0.005177	0.054446	-0.678165	-0.275753	-0.90922	0.269934	-0.020117	0.012703	0.006152	0.133678	-0.006746	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0068 abs.lab	8/29/2003	12:04:12 PM	-0.019097	0.068838	-0.64171	-0.245323	-1.154806	0.149754	-0.023519	0.06262	0.017045	0.124038	-0.009368	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0069 abs.lab	8/29/2003	12:06:58 PM	-0.005265	0.028649	-0.736142	-0.314511	-1.197573	0.222871	-0.016361	0.033574	0.023783	0.112114	-0.009485	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0070 abs.lab	8/29/2003	12:09:44 PM	0.032544	0.073048	-0.75472	-0.320944	-0.996857	0.343118	-0.034096	0.002331	0.011037	0.112814	-0.010557	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0071 abs.lab	8/29/2003	12:12:30 PM	-0.004657	0.124114	-0.792599	-0.233933	-1.053192	0.24049	-0.0236	0.038666	0.016882	0.108962	-0.009794	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0072 abs.lab	8/29/2003	12:15:16 PM	0.003561	0.133307	-0.700322	-0.170936	-1.029544	0.183958	-0.012927	0.08133	-0.0167	0.095608	-0.00814	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0073 abs.lab	8/29/2003	12:18:02 PM	-0.004047	0.166878	-0.899426	-0.220238	-0.985629	0.266291	-0.012363	0.047349	0.002603	0.097999	-0.009729	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0074 abs.lab	8/29/2003	12:20:48 PM	0.007593	0.090432	-0.692773	-0.268504	-1.048885	0.262272	-0.023244	0.064559	0.013149	0.103885	-0.009195	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0075 abs.lab	8/29/2003	12:23:34 PM	0.001977	0.081116	-0.836518	-0.307323	-1.107459	0.308568	-0.012789	0.074958	0.005727	0.091067	-0.00911	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0076 abs.lab	8/29/2003	12:26:20 PM	-0.0106	0.172594	-0.878865	-0.237049	-1.075884	0.230194	-0.005133	0.107947	0.009069	0.081537	-0.016876	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0077 abs.lab	8/29/2003	12:29:06 PM	0.004585	0.24194	-0.836285	-0.187744	-0.908787	0.223446	-0.004796	0.123611	-0.007535	0.082034	-0.011731	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0078 abs.lab	8/29/2003	12:31:52 PM	0.011072	0.286547	-0.631649	-0.157513	-0.899376	0.118711	-0.019753	0.122301	0.012903	0.088772	-0.003294	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0079 abs.lab	8/29/2003	12:34:39 PM	0.023402	0.161465	-0.320413	-0.231098	-0.618818	0.223661	-0.01177	0.121557	0.020269	0.067203	-0.015242	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0080 abs.lab	8/29/2003	12:37:25 PM	0.033272	0.225118	-0.669906	-0.209182	-0.720489	0.169086	-0.018377	0.105395	0.009823	0.068326	-0.014696	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0081 abs.lab	8/29/2003	12:40:11 PM	-0.012107	0.218526	-0.642091	-0.167905	-0.73904	0.141338	-0.015559	0.127634	0.044286	0.059472	-0.012404	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0082 abs.lab	8/29/2003	12:42:57 PM	0.025714	0.185161	-0.543343	-0.237418	-0.506081	0.297295	-0.013117	0.075202	0.041959	0.065564	-0.012705	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0083 abs.lab	8/29/2003	12:45:43 PM	-0.036745	0.137232	-0.235961	-0.213374	-0.268862	0.388737	-0.017044	0.099771	0.001045	0.048645	-0.015385	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0084 abs.lab	8/29/2003	12:48:29 PM	0.014459	0.150815	-0.353979	-0.232295	-0.697794	0.301251	-0.020009	0.058203	0.027783	0.058697	-0.010314	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0085 abs.lab	8/29/2003	12:51:15 PM	0.026024	0.177664	-0.455123	-0.206852	-0.578051	0.214167	-0.016142	0.030764	0.037124	0.06115	-0.011651	150.509811	0.995522

RTO FTIR Detection Limit Results
INTEL RIO RANCHO 3Q 2003 VOC MONITORING

Spectrum	Date	Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBAUC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (oC)	Press. (Atm)
F7 RCTO OUTLET 08 29 03 SAMPLE_0086 abs.lab	8/29/2003	12:54:01 PM	0.012598	0.161183	-0.551519	-0.20913	-0.651255	0.25687	-0.004079	0.055344	0.01421	0.06085	-0.012791	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0087 abs.lab	8/29/2003	12:56:47 PM	-0.007677	0.163734	-0.542364	-0.217811	-0.646143	0.146513	-0.01681	0.125878	0.017331	0.04654	-0.013244	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0088 abs.lab	8/29/2003	12:59:33 PM	-0.009451	0.127233	-0.386065	-0.241137	-0.385021	0.444289	-0.014423	0.011443	0.022544	0.042619	-0.013607	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0089 abs.lab	8/29/2003	1:02:19 PM	-0.047459	0.151118	-0.43506	-0.19587	-0.128943	0.07092	-0.02648	0.131762	-0.013007	0.025563	-0.014812	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0090 abs.lab	8/29/2003	1:05:05 PM	-0.025704	0.140132	-0.308572	-0.241778	-0.338022	0.194211	-0.017004	0.088041	0.008746	0.032556	-0.00932	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0091 abs.lab	8/29/2003	1:07:51 PM	-0.016759	0.114512	-0.271654	-0.245371	-0.304454	0.168905	-0.01807	0.059593	-0.015075	0.023751	-0.015218	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0092 abs.lab	8/29/2003	1:10:37 PM	-0.082513	0.113399	-0.34564	-0.168366	-0.203226	0.113878	-0.024056	0.110274	0.017063	0.014096	-0.01688	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0093 abs.lab	8/29/2003	1:13:23 PM	-0.059961	0.167357	-0.71983	-0.087321	-0.019167	-0.403351	-0.03282	0.099453	0.013442	0.004763	-0.02014	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0094 abs.lab	8/29/2003	1:16:09 PM	-0.043424	0.149249	-0.696152	-0.004689	-0.031629	-0.388357	-0.032079	0.086999	0.01538	0.006904	-0.017523	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0095 abs.lab	8/29/2003	1:18:55 PM	-0.05903	0.13196	-0.405244	-0.103717	0.093234	-0.401171	-0.018771	0.126542	0.005635	-0.000102	-0.011541	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0096 abs.lab	8/29/2003	1:21:41 PM	-0.029769	0.127096	-0.509547	-0.071128	-0.193679	-0.242351	-0.038781	0.086177	0.002386	-0.002346	-0.013713	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0097 abs.lab	8/29/2003	1:24:28 PM	-0.031132	0.168867	-0.717971	-0.042065	-0.108914	-0.522501	-0.052579	0.090685	0.027127	-0.005178	-0.021066	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0098 abs.lab	8/29/2003	1:27:14 PM	-0.015513	0.167018	-0.743453	0.028519	-0.011871	-0.701323	-0.043242	0.091387	0.051157	-0.003758	-0.017494	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0099 abs.lab	8/29/2003	1:30:00 PM	-0.050892	0.163001	-0.344268	0.010215	-0.044468	-0.332976	-0.034629	0.101603	0.02314	0.003619	-0.01178	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0100 abs.lab	8/29/2003	1:32:46 PM	-0.073372	0.177361	-0.39538	-0.00471	0.106161	-0.404562	-0.0297	0.108886	-0.000675	-0.003214	-0.016025	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0101 abs.lab	8/29/2003	1:35:32 PM	-0.031634	0.096562	-0.428206	-0.070662	-0.005428	-0.266372	-0.03652	0.058271	0.012244	-0.007731	-0.014369	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0102 abs.lab	8/29/2003	1:38:18 PM	-0.064267	0.080082	-0.205671	-0.088603	-0.061451	-0.104862	-0.029343	0.129972	-0.010715	-0.002872	-0.014189	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0103 abs.lab	8/29/2003	1:41:04 PM	-0.04143	0.159433	-0.529681	-0.004845	0.033982	-0.454351	-0.019698	0.116973	-0.005127	0.000185	-0.015399	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0104 abs.lab	8/29/2003	1:43:50 PM	-0.073628	0.193795	-0.766278	-0.023061	-0.082059	-0.614337	-0.031914	0.131985	0.0264	-0.007729	-0.01634	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0105 abs.lab	8/29/2003	1:46:36 PM	-0.090458	0.136945	-0.710046	-0.053775	0.077557	-0.518175	-0.025414	0.140174	0.009423	-0.010819	-0.015273	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0106 abs.lab	8/29/2003	1:49:22 PM	-0.02512	0.119105	-0.331949	-0.108331	-0.060276	-0.219198	-0.021777	0.118904	-0.000612	-0.003369	-0.008371	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0107 abs.lab	8/29/2003	1:52:08 PM	-0.058552	0.108808	-0.549003	-0.078649	-0.089897	-0.295591	-0.032111	0.149824	-0.01708	-0.014008	-0.009461	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0108 abs.lab	8/29/2003	1:54:54 PM	-0.087763	0.150735	-0.72159	-0.047667	-0.050849	-0.513254	-0.037031	0.160212	-0.001334	-0.013922	-0.01592	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0109 abs.lab	8/29/2003	1:57:40 PM	-0.02673	0.160983	-1.070583	-0.079287	-0.576111	-0.371464	-0.058466	0.031133	0.067722	-0.017986	-0.024079	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0110 abs.lab	8/29/2003	2:00:26 PM	-0.040443	0.14075	-0.740097	-0.029082	-0.072735	-0.495715	-0.04539	0.112306	0.021031	-0.016931	-0.012344	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0111 abs.lab	8/29/2003	2:03:13 PM	-0.057604	0.224018	-0.943457	-0.004578	-0.153322	-0.79697	-0.047321	0.170419	0.045516	-0.028222	-0.020776	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0112 abs.lab	8/29/2003	2:05:59 PM	-0.095516	0.160617	-0.550443	-0.021496	0.12057	-0.497583	-0.036953	0.111792	-0.000386	-0.028925	-0.01281	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0113 abs.lab	8/29/2003	2:08:45 PM	-0.066258	0.130775	-0.688336	-0.086827	-0.099776	-0.436761	-0.027685	0.174987	-0.008713	-0.034067	-0.010021	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0114 abs.lab	8/29/2003	2:11:31 PM	-0.095458	0.097229	-0.731408	-0.128443	-0.063046	-0.420792	-0.034222	0.206449	0.016318	-0.037008	-0.016651	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0115 abs.lab	8/29/2003	2:14:16 PM	-0.071734	0.119544	-0.879761	-0.189364	-0.175096	-0.231995	-0.015525	0.171454	-0.011985	-0.028736	-0.016264	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0116 abs.lab	8/29/2003	2:17:02 PM	-0.080261	0.235531	-1.122529	-0.153138	-0.113417	-0.479859	-0.02606	0.198134	0.012362	-0.037722	-0.017469	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0117 abs.lab	8/29/2003	2:19:48 PM	-0.057444	0.087679	-1.058737	-0.262559	-0.687239	-0.069753	-0.044228	0.131591	0.038312	-0.039172	-0.022853	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0118 abs.lab	8/29/2003	2:22:35 PM	-0.082967	0.180867	-1.192516	-0.112215	-0.379456	-0.652997	-0.039211	0.179365	0.02648	-0.034114	-0.015364	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0119 abs.lab	8/29/2003	2:25:21 PM	-0.100116	0.144379	-0.805534	-0.11749	-0.148926	-0.672202	-0.023293	0.172646	0.009396	-0.032158	-0.00943	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0120 abs.lab	8/29/2003	2:28:06 PM	-0.07274	0.203678	-1.044097	-0.070055	-0.463962	-0.649993	-0.044727	0.149505	0.052284	-0.041715	-0.022864	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0121 abs.lab	8/29/2003	2:30:52 PM	-0.070881	0.1414	-1.028089	-0.046508	-0.278281	-0.594985	-0.039955	0.138746	0.035835	-0.025065	-0.014763	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0122 abs.lab	8/29/2003	2:33:39 PM	-0.033642	0.07185	-0.943123	-0.175256	-0.741885	-0.306883	-0.053224	0.028954	0.073194	-0.037596	-0.015894	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0123 abs.lab	8/29/2003	2:36:25 PM	-0.101533	0.133176	-0.91127	-0.090042	-0.33617	-0.678127	-0.04411	0.046465	0.054354	-0.034479	-0.015711	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0124 abs.lab	8/29/2003	2:39:11 PM	-0.060442	0.068849	-1.021469	-0.092481	-0.519574	-0.642172	-0.044554	0.045975	0.063695	-0.043586	-0.016821	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0125 abs.lab	8/29/2003	2:41:57 PM	-0.07985	0.131852	-0.971751	0.017896	-0.148232	-0.779377	-0.044812	0.064087	0.015729	-0.040779	-0.011239	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0126 abs.lab	8/29/2003	2:44:43 PM	-0.100442	0.117787	-0.851801	-0.038988	-0.399282	-0.757445	-0.033047	0.053571	0.041081	-0.04808	-0.01658	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0127 abs.lab	8/29/2003	2:47:29 PM	-0.079579	0.086947	-1.024722	-0.052671	-0.210387	-0.791038	-0.038511	0.103755	0.053388	-0.046946	-0.017583	150.509811	0.995522

RTO FTIR Detection Limit Results
INTEL RIO RANCHO 3Q 2003 VOC MONITORING

Spectrum	Date	Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBAUC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (oC)	Press. (Atm)
F7 RCTO OUTLET 08 29 03 SAMPLE_0128 abs.lab	8/29/2003	2:50:15 PM	-0.10955	0.113113	-0.969442	-0.070529	-0.315217	-0.693138	-0.04891	0.14365	0.012286	-0.054684	-0.015137	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0129 abs.lab	8/29/2003	2:53:00 PM	-0.076202	0.132343	-1.204069	-0.081508	-0.369509	-0.719483	-0.045316	0.15187	0.041191	-0.053673	-0.017207	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0130 abs.lab	8/29/2003	2:55:46 PM	-0.028406	-0.001049	-0.88774	-0.290739	-0.976292	-0.047818	-0.049846	0.039132	0.053378	-0.068129	-0.021145	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0131 abs.lab	8/29/2003	2:58:33 PM	-0.073611	-0.076399	-1.010346	-0.140786	-0.707577	-0.594716	-0.049076	0.093749	0.067872	-0.049703	-0.013935	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0132 abs.lab	8/29/2003	3:01:19 PM	-0.066731	0.007329	-0.759099	-0.18755	-1.015477	-0.311985	-0.057706	0.075118	0.049791	-0.060375	-0.021306	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0133 abs.lab	8/29/2003	3:04:05 PM	-0.098471	-0.066411	-0.583403	-0.163749	-1.274624	-0.11573	-0.036959	0.043583	-0.003799	-0.073992	-0.022345	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0134 abs.lab	8/29/2003	3:06:51 PM	-0.058568	-0.019705	-0.468927	-0.110427	-0.96803	-0.33131	-0.043959	0.013322	0.012708	-0.069165	-0.016828	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0135 abs.lab	8/29/2003	3:09:37 PM	-0.020187	-0.046513	-0.642986	-0.135002	-0.995704	-0.341335	-0.042968	0.003144	0.039834	-0.081306	-0.02348	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0136 abs.lab	8/29/2003	3:12:23 PM	-0.065636	0.079336	-0.578339	0.026931	-0.370472	-0.721717	-0.050108	-0.025327	0.053449	-0.059548	-0.010079	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0137 abs.lab	8/29/2003	3:15:09 PM	-0.020026	-0.077535	-0.655683	-0.089176	-0.7049	-0.38608	-0.047586	-0.059462	0.052407	-0.074735	-0.017992	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0138 abs.lab	8/29/2003	3:17:55 PM	-0.062152	-0.07986	-0.701913	-0.111993	-0.895462	-0.269015	-0.051022	-0.038462	0.053954	-0.08844	-0.019731	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0139 abs.lab	8/29/2003	3:20:41 PM	-0.064688	-0.099558	-0.660881	-0.209241	-1.044727	-0.160393	-0.021909	0.018513	0.02566	-0.107046	-0.019664	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0140 abs.lab	8/29/2003	3:23:27 PM	-0.070874	-0.098566	-0.854931	-0.226532	-0.892943	-0.254072	-0.035947	0.126665	0.041003	-0.103775	-0.01943	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0141 abs.lab	8/29/2003	3:26:13 PM	-0.062735	0.019329	-1.15087	-0.177415	-0.93584	-0.343394	-0.053761	0.040371	0.079043	-0.0897	-0.018198	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0142 abs.lab	8/29/2003	3:28:59 PM	-0.061569	0.058015	-1.153097	-0.203236	-0.740618	-0.506355	-0.05103	0.114959	0.054552	-0.086691	-0.015577	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0143 abs.lab	8/29/2003	3:31:45 PM	-0.125422	0.096725	-1.320901	-0.082026	-0.43684	-0.653918	-0.041702	0.156891	0.043259	-0.074036	-0.014702	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0144 abs.lab	8/29/2003	3:34:30 PM	-0.086585	0.095555	-1.239698	-0.213111	-0.535359	-0.532102	-0.046322	0.191749	0.073218	-0.072002	-0.01648	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0145 abs.lab	8/29/2003	3:37:16 PM	-0.127509	0.095097	-1.248599	-0.241197	-0.886296	-0.478592	-0.05095	0.170751	0.057991	-0.076931	-0.016047	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0146 abs.lab	8/29/2003	3:40:02 PM	-0.126124	-0.014086	-1.191756	-0.296426	-0.998912	-0.287695	-0.034636	0.177151	0.019405	-0.08813	-0.023096	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0147 abs.lab	8/29/2003	3:42:48 PM	-0.121461	-0.013236	-1.04413	-0.266491	-0.938033	-0.233435	-0.049003	0.0418	0.066566	-0.064241	-0.011848	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0148 abs.lab	8/29/2003	3:45:34 PM	-0.110189	0.018531	-1.094476	-0.19941	-0.901899	-0.354445	-0.043843	0.102602	0.045574	-0.061171	-0.007731	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0149 abs.lab	8/29/2003	3:48:20 PM	-0.110849	0.024358	-0.883435	-0.139326	-0.960417	-0.323157	-0.026421	0.132525	0.023934	-0.076924	-0.01979	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0150 abs.lab	8/29/2003	3:51:06 PM	-0.092548	0.012583	-0.548821	-0.103837	-1.052026	-0.427287	-0.019957	0.10124	-0.020612	-0.076294	-0.021532	150.509811	1.000762
F7 RCTO OUTLET 08 29 03 SAMPLE_0151 abs.lab	8/29/2003	3:53:52 PM	-0.125738	0.028861	-0.613675	-0.026016	-0.934502	-0.368826	-0.02246	0.036805	-0.021561	-0.086395	-0.019997	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0152 abs.lab	8/29/2003	3:56:38 PM	-0.094821	-0.071483	-0.564376	-0.044056	-0.834159	-0.383267	-0.040356	0.010962	0.017984	-0.072425	-0.014806	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0153 abs.lab	8/29/2003	3:59:24 PM	-0.092184	-0.049712	-0.394541	-0.023585	-0.883474	-0.365296	-0.025228	0.083958	-0.028011	-0.09834	-0.02458	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0154 abs.lab	8/29/2003	4:03:49 PM	-0.090392	-0.140391	-0.546959	-0.081011	-0.880925	-0.258851	-0.045342	-0.038799	0.031576	-0.081984	-0.018924	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0155 abs.lab	8/29/2003	4:06:35 PM	-0.076269	-0.099665	-0.603358	-0.105074	-0.651546	-0.557669	-0.04691	-0.000089	0.050232	-0.066892	-0.015637	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0156 abs.lab	8/29/2003	4:09:21 PM	-0.083392	-0.062893	-0.817047	-0.099726	-0.609981	-0.492938	-0.04344	0.029503	0.072682	-0.07124	-0.012172	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0157 abs.lab	8/29/2003	4:12:07 PM	-0.098628	-0.100409	-0.779078	-0.150574	-0.959777	-0.255902	-0.025455	0.101971	-0.011212	-0.118295	-0.026052	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0158 abs.lab	8/29/2003	4:14:53 PM	-0.11312	-0.117139	-0.869601	-0.201132	-0.925942	-0.343589	-0.030791	0.113429	0.035116	-0.113399	-0.012041	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0159 abs.lab	8/29/2003	4:17:38 PM	-0.115057	-0.056465	-0.973185	-0.213388	-1.044273	-0.272651	-0.017677	0.207456	-0.001818	-0.143165	-0.012584	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0160 abs.lab	8/29/2003	4:20:24 PM	-0.137133	0.0688	-0.963599	-0.114735	-0.821736	-0.440201	-0.019325	0.259326	-0.013851	-0.166459	-0.021546	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0161 abs.lab	8/29/2003	4:23:10 PM	-0.176906	0.036178	-1.011236	-0.15558	-1.00156	-0.474016	-0.022914	0.315086	-0.021644	-0.169754	-0.019705	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0162 abs.lab	8/29/2003	4:25:56 PM	-0.147816	0.090334	-1.077175	-0.141514	-1.065382	-0.45948	-0.020452	0.289508	-0.019464	-0.181457	-0.018031	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0163 abs.lab	8/29/2003	4:28:42 PM	-0.169913	0.045207	-1.107713	-0.168689	-0.923414	-0.416056	-0.011409	0.302505	0.008999	-0.179426	-0.015975	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0164 abs.lab	8/29/2003	4:31:28 PM	-0.147357	0.035826	-1.059667	-0.157255	-0.905094	-0.480337	-0.021149	0.339118	0.006192	-0.172739	-0.014225	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0165 abs.lab	8/29/2003	4:34:14 PM	-0.125661	0.008682	-0.641133	-0.154645	-0.713697	-0.304817	-0.020483	0.248938	-0.013727	-0.169649	-0.010159	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0166 abs.lab	8/29/2003	4:37:00 PM	-0.158328	0.025752	-0.721827	-0.091324	-0.838558	-0.488419	-0.012745	0.215081	0.012136	-0.14789	-0.005029	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0167 abs.lab	8/29/2003	4:39:46 PM	-0.113467	-0.012172	-0.639809	-0.045795	-0.670704	-0.486635	-0.024629	0.110673	-0.003547	-0.150013	-0.010814	150.509811	0.990283
F7 RCTO OUTLET 08 29 03 SAMPLE_0168 abs.lab	8/29/2003	4:42:32 PM	-0.137718	-0.132311	-0.135931	0.002909	-0.178368	-0.412408	-0.034935	0.138169	0.015144	-0.183092	-0.021353	150.509811	0.995522
F7 RCTO OUTLET 08 29 03 SAMPLE_0169 abs.lab	8/29/2003	4:45:18 PM	-0.156521	-0.073845	-0.150827	0.023449	-0.325299	-0.528256	-0.018129	0.067875	-0.004666	-0.173275	-0.01569	150.509811	0.990283

RTO FTIR Detection Limit Results
INTEL RIO RANCHO 3Q 2003 VOC MONITORING

Spectrum	Date	Time	Methanol (ppm)	Ethanol (ppm)	IPA (ppm)	m-xylene (ppm)	o-xylene (ppm)	p-xylene (ppm)	Ethyl Lactate (ppm)	PGMEA (ppm)	NBAUC (ppm)	H ₂ O (%)	CO ₂ (%)	Temp (oC)	Press. (Atm)				
F7 RCTO OUTLET 08 29 03 SAMPLE_0170 abs.lab	8/29/2003	4:48:04 PM	-0.120328	-0.068176	-0.2106	0.099465	-0.359581	-0.716939	-0.035109	0.127504	0.021553	-0.164852	-0.007272	150.509811	0.990283				
F7 RCTO OUTLET 08 29 03 SAMPLE_0171 abs.lab	8/29/2003	4:50:50 PM	-0.136459	-0.077875	-0.076175	0.042308	-0.361424	-0.701904	-0.035947	0.103782	0.002206	-0.179603	-0.010693	150.509811	0.990283				
F7 RCTO OUTLET 08 29 03 SAMPLE_0172 abs.lab	8/29/2003	4:53:36 PM	-0.124735	-0.059809	-0.16754	0.065004	-0.430699	-0.626206	-0.027951	0.096462	0.016088	-0.177391	-0.013789	150.509811	0.995522				
F7 RCTO OUTLET 08 29 03 SAMPLE_0173 abs.lab	8/29/2003	4:56:21 PM	-0.150459	-0.001672	-0.364752	0.085508	-0.535435	-0.728145	-0.023748	0.204323	0.001353	-0.170272	-0.012967	150.509811	0.995522				
F7 RCTO OUTLET 08 29 03 SAMPLE_0174 abs.lab	8/29/2003	4:59:07 PM	-0.135496	-0.039983	-0.492292	0.042172	-0.465933	-0.564439	-0.026567	0.146308	0.004925	-0.188805	-0.014903	150.509811	0.995522				
F7 RCTO OUTLET 08 29 03 SAMPLE_0175 abs.lab	8/29/2003	5:01:53 PM	-0.141088	-0.075514	-0.550923	-0.013392	-0.693713	-0.535327	-0.017649	0.215445	0.006209	-0.177008	-0.012491	150.509811	0.990283				
Average after ambient background taken			-0.036748	0.086246	-0.646956	-0.124810	-0.568839	-0.162781											
			Square of Differences																
Used for Detection Limit	RMSD	0.05764054	0.08545577	0.28135498	0.09349248	0.34123486	0.31748053	0.014247334								0.07963171	0.02851957	0.0972619	0.00776869
	3*RMSD	0.173	0.256	0.844	0.280	1.024	0.952	0.043								0.239	0.086	0.292	0.023
	STD	0.00354176	0.0099418	0.10505073	0.00948324	0.11505687	0.093814	0.000205179								0.010433	0.00098455	0.01089782	6.791E-05
	STD*5	0.018	0.050	0.525	0.047	0.575	0.5	0.0								0.05	0.00	0.05	0.000
	Max	0.071058	0.286547	0.038722	0.099465	0.12057	0.444289	0.000983								0.339118	0.095162	0.180054	0.008583
	Min	-0.176906	-0.140391	-1.320901	-0.320944	-1.274624	-0.79697	-0.058466								-0.116924	-0.028011	-0.188805	-0.026052
	ABS Diff	0.247964	0.426938	1.359623	0.420409	1.395194	1.241259	0.059449								0.456042	0.123173	0.368859	0.034635
	ABS Diff*2	0.496	0.854	2.719	0.841	2.790	2.5	0.1								0.91	0.25	0.74	0.069

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
F7 RCTO R1 08 22 03 PRE TEST N2 TO PROBE_0000.LAB	8/22/2003	6:22:25 AM	0.00	0.00	0.19	0.01	0.00	-0.04	0.06	-0.24		149.76	0.9920
F7 RCTO R1 08 22 03 PRE TEST N2 TO PROBE_0001.LAB	8/22/2003	6:25:01 AM	0.00	0.00	0.19	0.00	0.04	-0.04	0.08	-0.23		149.76	0.9868
F7 RCTO R1 08 22 03 PRE TEST N2 TO PROBE_0002BKG.LAB	8/22/2003	6:27:48 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		149.76	0.9868
F7 RCTO R1 08 22 03 PRE TEST N2 TO PROBE_0003.LAB	8/22/2003	6:30:27 AM	0.00	0.00	0.00	-0.01	0.05	-0.01	0.01	0.04		149.76	0.9868
F7 RCTO R1 08 22 03 PRE TEST N2 TO PROBE_0004.LAB	8/22/2003	6:33:02 AM	0.00	0.00	0.01	0.01	0.03	-0.01	-0.01	0.02		149.02	0.9868
F7 RCTO R1 08 22 03 PRE TEST CTS TO PROBE_0001.LAB	8/22/2003	6:37:31 AM	0.00	0.00	-0.02	0.12	99.39	99.57	98.11	99.53		149.76	1.0079
F7 RCTO R1 08 22 03 PRE TEST CTS TO PROBE_0002.LAB	8/22/2003	6:40:07 AM	0.00	0.00	-0.07	0.15	99.53	99.76	98.39	99.65		149.76	1.0079
F7 RCTO R1 08 22 03 PRE TEST CTS TO PROBE_0003.LAB	8/22/2003	6:42:42 AM	0.00	0.00	-0.08	0.13	99.61	99.87	98.42	99.82		149.76	1.0079
F7 RCTO R1 08 22 03 PRE TEST CTS TO PROBE_0004.LAB	8/22/2003	6:45:18 AM	0.00	0.00	-0.09	0.12	99.74	100.03	98.60	99.82		149.76	1.0079
F7 RCTO R1 08 22 03 PRE TEST CTS TO PROBE_0005.LAB	8/22/2003	6:47:53 AM	0.00	0.00	-0.08	0.11	99.76	100.04	98.59	99.78		149.76	1.0079
Average							99.61	99.86	98.42	99.72			
F7 RCTO R1 08 22 03 POST TEST CTS TO PROBE_0000.LAB	8/22/2003	4:26:17 PM	0.01	0.00	0.12	0.00	99.42	99.67	98.45	99.62		149.76	1.0026
F7 RCTO R1 08 22 03 POST TEST CTS TO PROBE_0001.LAB	8/22/2003	4:28:53 PM	0.00	0.00	0.09	0.03	98.87	99.21	97.91	99.05		149.76	1.0079
F7 RCTO R1 08 22 03 POST TEST CTS TO PROBE_0002.LAB	8/22/2003	4:31:28 PM	0.00	0.00	0.08	0.04	99.03	99.34	98.01	99.15		149.76	1.0079
F7 RCTO R1 08 22 03 POST TEST CTS TO PROBE_0003.LAB	8/22/2003	4:34:04 PM	0.00	0.00	0.08	0.05	98.93	99.29	98.03	99.13		149.76	1.0079
F7 RCTO R1 08 22 03 POST TEST CTS TO PROBE_0004.LAB	8/22/2003	4:36:40 PM	0.00	0.00	0.07	0.09	99.21	99.50	98.15	99.23		149.76	1.0079
Average							99.09	99.40	98.11	99.24			
F7 RCTO R1 08 22 03 POST TEST N2 TO PROBE_0000.LAB	8/22/2003	4:43:41 PM	0.00	0.00	0.10	-0.06	0.03	0.06	0.05	-0.33		149.76	1.0026
F7 RCTO R1 08 22 03 POST TEST N2 TO PROBE_0001.LAB	8/22/2003	4:46:17 PM	0.00	0.00	0.11	-0.03	-0.02	0.06	-0.01	-0.38		149.76	1.0079
F7 RCTO R1 08 22 03 POST TEST N2 TO PROBE_0002.LAB	8/22/2003	4:48:52 PM	0.00	0.00	0.11	-0.03	0.01	0.06	0.07	-0.31		149.76	1.0079
F7 RCTO R1 08 22 03 POST TEST N2 TO PROBE_0003.LAB	8/22/2003	4:51:28 PM	0.00	0.00	0.09	-0.08	0.10	0.05	0.03	-0.30		149.76	1.0079

**FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING**

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			3k (ppm)	Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)				
11W RCTO OUTLET 07 31 03 PRE TEST N2 TO PROBE_0000.LAB	7/31/2003	7:30:30 AM	0.03	0.00	-0.44	-0.02	0.04	0.00	0.09	-0.96	151.25	1.0060	
11W RCTO OUTLET 07 31 03 PRE TEST N2 TO PROBE_0001.LAB	7/31/2003	7:33:16 AM	0.03	0.00	-0.43	0.00	0.08	-0.04	0.11	-1.13	151.25	1.0008	
11W RCTO OUTLET 07 31 03 PRE TEST N2 TO PROBE_0002BKG.LAB	7/31/2003	7:37:17 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	151.25	1.0008	
11W RCTO OUTLET 07 31 03 PRE TEST N2 TO PROBE_0003.LAB	7/31/2003	7:40:05 AM	0.00	0.00	-0.01	-0.02	-0.03	0.02	-0.12	0.16	150.51	1.0060	
11W RCTO OUTLET 07 31 03 PRE TEST N2 TO PROBE_0004.LAB	7/31/2003	7:42:50 AM	0.00	0.00	0.00	-0.02	-0.04	-0.02	-0.10	0.13	150.51	1.0060	
11W RCTO OUTLET 07 31 03 PRE TEST CTS TO PROBE_0001.LAB	7/31/2003	7:50:25 AM	0.00	0.00	-0.04	0.03	100.56	100.29	100.62	101.66	150.51	0.9955	
11W RCTO OUTLET 07 31 03 PRE TEST CTS TO PROBE_0002.LAB	7/31/2003	7:53:11 AM	-0.01	0.00	-0.07	0.02	100.10	100.06	100.18	100.85	150.51	1.0008	
11W RCTO OUTLET 07 31 03 PRE TEST CTS TO PROBE_0003.LAB	7/31/2003	7:55:56 AM	0.00	0.00	-0.05	0.02	99.35	99.15	99.41	100.23	150.51	1.0060	
11W RCTO OUTLET 07 31 03 PRE TEST CTS TO PROBE_0004.LAB	7/31/2003	7:58:42 AM	0.00	0.00	-0.04	0.06	100.47	100.51	100.59	101.64	150.51	0.9955	
11W RCTO OUTLET 07 31 03 PRE TEST CTS TO PROBE_0005.LAB	7/31/2003	8:01:27 AM	0.00	0.00	-0.05	0.04	101.14	100.92	100.74	101.99	150.51	0.9955	
Average							100.32	100.18	100.31	101.27			
11W RCTO OUTLET 07 31 03 POST TEST CTS TO PROBE_0000.LAB	7/31/2003	4:24:09 PM	0.02	0.00	-0.06	-0.02	99.77	99.58	99.65	100.23	150.51	0.9955	
11W RCTO OUTLET 07 31 03 POST TEST CTS TO PROBE_0001.LAB	7/31/2003	4:26:55 PM	0.02	0.00	-0.05	0.01	99.92	99.72	99.76	100.69	150.51	0.9955	
11W RCTO OUTLET 07 31 03 POST TEST CTS TO PROBE_0002.LAB	7/31/2003	4:29:41 PM	0.02	0.00	-0.06	0.01	100.48	100.37	100.38	101.13	150.51	0.9903	
11W RCTO OUTLET 07 31 03 POST TEST CTS TO PROBE_0003.LAB	7/31/2003	4:32:26 PM	0.02	0.00	-0.04	-0.01	99.95	99.76	99.81	100.63	150.51	0.9955	
11W RCTO OUTLET 07 31 03 POST TEST CTS TO PROBE_0004.LAB	7/31/2003	4:35:12 PM	0.02	0.00	-0.03	-0.01	100.40	100.14	100.25	101.16	150.51	0.9903	
Average							100.10	99.92	99.97	100.77			
11W RCTO OUTLET 07 31 03 POST TEST N2 TO PROBE_0000.LAB	7/31/2003	4:40:06 PM	0.02	0.00	0.02	-0.04	0.01	0.01	-0.10	-0.08	150.51	0.9903	
11W RCTO OUTLET 07 31 03 POST TEST N2 TO PROBE_0001.LAB	7/31/2003	4:42:52 PM	0.02	0.00	0.01	-0.04	0.05	-0.01	-0.28	-0.08	150.51	0.9955	
11W RCTO OUTLET 07 31 03 POST TEST N2 TO PROBE_0002.LAB	7/31/2003	4:45:38 PM	0.02	0.00	0.02	-0.02	0.00	-0.08	-0.19	0.06	150.51	0.9955	
11W RCTO OUTLET 07 31 03 POST TEST N2 TO PROBE_0003.LAB	7/31/2003	4:48:24 PM	0.02	0.00	0.03	-0.01	-0.05	-0.04	-0.19	0.03	150.51	0.9955	
11W RCTO OUTLET 07 31 03 POST TEST N2 TO PROBE_0004.LAB	7/31/2003	4:51:10 PM	0.02	0.00	0.03	-0.01	-0.04	-0.08	-0.24	0.10	150.51	1.0008	

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

**FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING**

FTIR Model No.: 2030
FTIR Serial No.: MG-07-112

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
							Left (ppm)	Middle (ppm)	Right (ppm)	3k (ppm)		
F11S RCTO OUTLET 09 16 03 PRE N2 TO PROBE_0000.LAB	9/16/2003	6:46:33 AM	0.01	0.00	0.07	-0.03					150.51	0.9903
F11S RCTO OUTLET 09 16 03 PRE N2 TO PROBE_0001.LAB	9/16/2003	6:49:20 AM	0.01	0.00	0.06	-0.04					150.51	0.9903
F11S RCTO OUTLET 09 16 03 PRE N2 TO PROBE_0002.LAB	9/16/2003	6:52:06 AM	0.01	0.00	0.06	-0.02					150.51	0.9955
F11S RCTO OUTLET 09 16 03 PRE N2 TO PROBE_0003BKG.LAB	9/16/2003	6:54:57 AM	0.00	0.00	0.00	0.00					150.51	0.9903
F11S RCTO OUTLET 09 16 03 PRE N2 TO PROBE_0004.LAB	9/16/2003	6:57:47 AM	0.00	0.00	-0.01	0.01					150.51	0.9955
F11S RCTO OUTLET 09 16 03 PRE CTS TO PROBE_0000.LAB	9/16/2003	6:29:45 AM	0.02	0.00	0.16	0.00	101.24	101.24	101.24	100.89	150.51	0.9903
F11S RCTO OUTLET 09 16 03 PRE CTS TO PROBE_0001.LAB	9/16/2003	6:32:31 AM	0.02	0.00	0.11	-0.03	100.50	100.83	100.75	100.43	150.51	0.9955
F11S RCTO OUTLET 09 16 03 PRE CTS TO PROBE_0002.LAB	9/16/2003	6:35:17 AM	0.02	0.00	0.12	-0.02	101.44	101.81	101.80	101.49	150.51	0.9850
F11S RCTO OUTLET 09 16 03 PRE CTS TO PROBE_0003.LAB	9/16/2003	6:38:04 AM	0.01	0.00	0.09	0.00	101.51	101.69	101.69	101.56	150.51	0.9850
F11S RCTO OUTLET 09 16 03 PRE CTS TO PROBE_0004.LAB	9/16/2003	6:40:50 AM	0.01	0.00	0.09	-0.01	101.71	101.81	101.90	101.54	150.51	0.9850
Average							101.28	101.48	101.48	101.18		
F11S RCTO OUTLET 09 16 03 POST CTS TO PROBE_0000.LAB	9/16/2003	3:15:35 PM	0.01	0.00	0.07	0.03	100.90	100.34	100.51	101.16	150.51	0.9798
F11S RCTO OUTLET 09 16 03 POST CTS TO PROBE_0001.LAB	9/16/2003	3:18:21 PM	0.00	0.00	0.08	0.03	100.47	100.07	100.10	100.42	150.51	0.9850
F11S RCTO OUTLET 09 16 03 POST CTS TO PROBE_0002.LAB	9/16/2003	3:21:08 PM	0.00	0.00	0.08	0.03	100.46	100.23	100.22	100.58	150.51	0.9850
F11S RCTO OUTLET 09 16 03 POST CTS TO PROBE_0003.LAB	9/16/2003	3:23:54 PM	0.00	0.00	0.08	0.04	100.11	99.76	99.73	99.99	150.51	0.9903
F11S RCTO OUTLET 09 16 03 POST CTS TO PROBE_0004.LAB	9/16/2003	3:26:40 PM	0.00	0.00	0.07	0.03	101.21	100.87	100.81	101.13	150.51	0.9798
Average							100.63	100.25	100.27	100.66		
F11S RCTO OUTLET 09 16 03 POST N2 TO PROBE_0000.LAB	9/16/2003	3:31:23 PM	0.00	0.00	0.06	0.02	0.30	0.09	-0.02	-0.07	150.51	0.9850
F11S RCTO OUTLET 09 16 03 POST N2 TO PROBE_0001BKG.LAB	9/16/2003	3:34:31 PM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	150.51	0.9850
F11S RCTO OUTLET 09 16 03 POST N2 TO PROBE_0002.LAB	9/16/2003	3:37:23 PM	0.00	0.00	0.00	0.00	-0.13	-0.01	0.04	-0.11	150.51	0.9850
F11S RCTO OUTLET 09 16 03 POST N2 TO PROBE_0003.LAB	9/16/2003	3:40:09 PM	0.00	0.00	0.00	0.00	-0.11	0.00	0.00	-0.11	150.51	0.9850
F11S RCTO OUTLET 09 16 03 POST N2 TO PROBE_0004.LAB	9/16/2003	3:42:56 PM	0.00	0.00	0.00	0.00	-0.15	-0.04	-0.05	-0.11	150.51	0.9903

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*				Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)			
11X-F RCTO PRE TEST 07 29 03 N2 TO PROBE_0000BKG.LAB	7/29/2003	6:34:55 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		149.76	0.9920
11X-F RCTO PRE TEST 07 29 03 N2 TO PROBE_0001.LAB	7/29/2003	6:37:33 AM	0.00	0.00	0.00	-0.02	0.05	-0.02	0.02	0.24		149.76	0.9973
11X-F RCTO PRE TEST 07 29 03 N2 TO PROBE_0002.LAB	7/29/2003	6:40:09 AM	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.07	0.22		149.76	0.9973
11X-F RCTO PRE TEST 07 29 03 N2 TO PROBE_0003.LAB	7/29/2003	6:42:45 AM	0.00	0.00	0.00	-0.01	0.05	-0.02	0.06	0.17		149.76	0.9973
11X-F RCTO PRE TEST 07 29 03 N2 TO PROBE_0004.LAB	7/29/2003	6:45:21 AM	0.00	0.00	-0.02	0.00	-0.01	0.01	0.01	0.22		149.76	0.9973
11X-F RCTO PRE TEST 07 29 03 CTS TO PROBE_0000.LAB	7/29/2003	6:50:01 AM	0.00	0.00	-0.24	0.12	99.69	99.10	98.80	99.92		149.76	0.9920
11X-F RCTO PRE TEST 07 29 03 CTS TO PROBE_0001.LAB	7/29/2003	6:52:37 AM	0.00	0.00	-0.24	0.12	99.22	98.59	98.25	99.37		149.76	0.9973
11X-F RCTO PRE TEST 07 29 03 CTS TO PROBE_0002.LAB	7/29/2003	6:55:13 AM	0.00	0.00	-0.25	0.12	99.31	98.72	98.29	99.51		149.76	0.9973
11X-F RCTO PRE TEST 07 29 03 CTS TO PROBE_0003.LAB	7/29/2003	6:57:49 AM	0.00	0.00	-0.25	0.12	99.15	98.50	98.15	99.29		149.02	0.9973
11X-F RCTO PRE TEST 07 29 03 CTS TO PROBE_0004.LAB	7/29/2003	7:00:25 AM	0.00	0.00	-0.25	0.10	99.28	98.67	98.37	99.58		149.76	0.9973
Average							99.33	98.72	98.37	99.54			
11X-F RCTO 07 29 03 POST TEST CTS TO PROBE_0000.LAB	7/29/2003	10:25:08 PM	0.00	0.00	-0.28	-0.09	99.57	99.00	98.81	99.70		149.76	1.0026
11X-F RCTO 07 29 03 POST TEST CTS TO PROBE_0001.LAB	7/29/2003	10:27:44 PM	-0.01	0.00	-0.28	-0.10	98.95	98.37	98.18	99.11		149.76	1.0079
11X-F RCTO 07 29 03 POST TEST CTS TO PROBE_0002.LAB	7/29/2003	10:30:21 PM	-0.01	0.00	-0.27	-0.08	99.58	98.97	98.79	99.81		149.76	1.0026
11X-F RCTO 07 29 03 POST TEST CTS TO PROBE_0003.LAB	7/29/2003	10:32:57 PM	-0.01	0.00	-0.27	-0.10	99.02	98.56	98.29	99.31		149.76	1.0079
11X-F RCTO 07 29 03 POST TEST CTS TO PROBE_0004.LAB	7/29/2003	10:35:34 PM	-0.01	0.00	-0.28	-0.10	99.03	98.44	98.22	99.19		149.76	1.0079
Average							99.23	98.67	98.46	99.42			
11X-F RCTO 07 29 03 POST TEST N2 TO PROBE_0000.LAB	7/29/2003	10:40:34 PM	-0.01	0.00	-0.05	-0.10	0.22	0.06	0.20	0.26		149.76	1.0079
11X-F RCTO 07 29 03 POST TEST N2 TO PROBE_0001.LAB	7/29/2003	10:43:10 PM	-0.01	0.00	-0.04	-0.08	0.12	0.03	0.15	0.32		149.76	1.0079
11X-F RCTO 07 29 03 POST TEST N2 TO PROBE_0002.LAB	7/29/2003	10:45:47 PM	-0.01	0.00	-0.03	-0.08	0.09	-0.01	0.05	0.17		149.76	1.0026
11X-F RCTO 07 29 03 POST TEST N2 TO PROBE_0003.LAB	7/29/2003	10:48:23 PM	-0.01	0.00	-0.03	-0.08	0.07	0.00	0.07	0.25		149.76	1.0079
11X-F RCTO 07 29 03 POST TEST N2 TO PROBE_0004.LAB	7/29/2003	10:51:00 PM	-0.01	0.00	-0.04	-0.09	0.07	0.00	0.03	0.37		149.76	1.0079

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

FTIR QUALITY ASSURANCE RESULTS
INTEL RIO RANCHO 2003 3rd QUARTER VOC MONITORING

FTIR Model No.: 2030
FTIR Serial No.: MG-07-102

Spectrum File Name	Date	Time	H ₂ O (%)	CO ₂ (ppm)	CO (ppm)	CH ₄ (ppm)	Left (ppm)	ETHYLENE*			Temp (°C)	Pressure (atm)
								Middle (ppm)	Right (ppm)	3k (ppm)		
11X-B RCTO R1 08 20 03 PRE N2 TO PROBE_0000.LAB	8/20/2003	7:09:24 AM	0.00	0.00	0.16	0.00	0.25	-0.01	0.20	-0.17	149.76	1.0026
11X-B RCTO R1 08 20 03 PRE N2 TO PROBE_0001BKG.LAB	8/20/2003	7:13:11 AM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	149.76	1.0079
11X-B RCTO R1 08 20 03 PRE N2 TO PROBE_0002.LAB	8/20/2003	7:15:49 AM	0.00	0.00	-0.03	0.02	-0.06	0.00	-0.03	-0.11	149.76	1.0132
11X-B RCTO R1 08 20 03 PRE N2 TO PROBE_0003.LAB	8/20/2003	7:18:25 AM	0.00	0.00	-0.03	0.04	-0.04	0.02	-0.06	-0.12	149.76	1.0184
11X-B RCTO R1 08 20 03 PRE N2 TO PROBE_0004.LAB	8/20/2003	7:21:01 AM	0.00	0.00	-0.04	0.03	-0.08	0.00	-0.03	-0.09	149.76	1.0079
11X-B RCTO R1 08 20 03 PRE CTS TO PROBE_0000.LAB	8/20/2003	7:25:41 AM	0.00	0.00	-0.09	0.18	99.70	99.99	98.72	100.13	149.76	1.0132
11X-B RCTO R1 08 20 03 PRE CTS TO PROBE_0001.LAB	8/20/2003	7:28:17 AM	0.00	0.00	-0.07	0.17	99.72	99.95	98.76	100.08	149.76	1.0132
11X-B RCTO R1 08 20 03 PRE CTS TO PROBE_0002.LAB	8/20/2003	7:30:53 AM	0.00	0.00	-0.09	0.16	99.76	100.01	98.72	100.00	149.76	1.0132
11X-B RCTO R1 08 20 03 PRE CTS TO PROBE_0003.LAB	8/20/2003	7:33:29 AM	0.00	0.00	-0.08	0.17	100.21	100.54	99.11	100.55	149.76	1.0079
11X-B RCTO R1 08 20 03 PRE CTS TO PROBE_0004.LAB	8/20/2003	7:36:05 AM	0.00	0.00	-0.08	0.16	100.29	100.56	99.19	100.58	149.76	1.0079
Average							99.93	100.21	98.90	100.27		
11X-B RCTO R1 08 20 03 POST CTS TO PROBE_0001.LAB	8/20/2003	4:03:10 PM	0.01	0.00	-0.18	0.03	100.33	100.54	99.47	99.91	149.76	0.9973
11X-B RCTO R1 08 20 03 POST CTS TO PROBE_0002.LAB	8/20/2003	4:05:46 PM	0.01	0.00	-0.18	0.02	100.28	100.52	99.44	100.06	149.76	0.9973
11X-B RCTO R1 08 20 03 POST CTS TO PROBE_0003.LAB	8/20/2003	4:08:22 PM	0.01	0.00	-0.17	0.02	99.73	100.01	98.96	99.43	149.76	1.0026
11X-B RCTO R1 08 20 03 POST CTS TO PROBE_0004.LAB	8/20/2003	4:10:58 PM	0.01	0.00	-0.18	0.02	100.35	100.56	99.41	100.02	149.76	0.9973
11X-B RCTO R1 08 20 03 POST CTS TO PROBE_0005.LAB	8/20/2003	4:13:33 PM	0.00	0.00	-0.19	0.01	100.29	100.51	99.47	100.06	149.76	0.9973
Average							100.20	100.43	99.35	99.89		
11X-B RCTO R1 08 20 03 POST N2 TO PROBE_0000.LAB	8/20/2003	4:20:28 PM	1.59	0.20	-0.19	1.16	-0.30	-0.01	-0.19	-0.15	149.76	1.0026
11X-B RCTO R1 08 20 03 POST N2 TO PROBE_0001.LAB	8/20/2003	4:23:04 PM	1.60	0.20	-0.21	1.16	-0.21	-0.02	-0.25	-0.03	149.76	1.0026
11X-B RCTO R1 08 20 03 POST N2 TO PROBE_0002.LAB	8/20/2003	4:25:40 PM	1.60	0.20	-0.22	1.17	-0.29	-0.02	-0.25	0.06	149.76	1.0026
11X-B RCTO R1 08 20 03 POST N2 TO PROBE_0003.LAB	8/20/2003	4:28:16 PM	1.61	0.20	-0.21	1.17	-0.28	-0.01	-0.25	0.23	149.76	1.0026

* Ethylene Used as the Calibration Transfer Standard. Analyzed in four distinct regions.

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial No.: MG-07-112
Interferometer No.: IF-06-133
Electronics No.'s: Comm: 8022C-175
ICU#00 Proc: 8022C-182
 Mod: 8021C-198
SAQ: 8023C-199
Detector Type: 0.25 mm LN2 MCT

Acceptance
 Theoretical 15798.282 90+/-10 88 0.983 Yes 1.288

Location	Date	Time	Known Laser		Peak Signal @ 1200 cm-1:	Saturated Below 400 cm-1	Preamp +AC	Check
			Freq:	Laser Phase Angle:				
F7 RCTO Outlet R2	8/29/03	6:07	15798.20	91.858	0.891	Yes	1.165	
F7 RCTO Outlet R3	9/3/03	10:40	15798.20	94.588	0.898	Yes	1.166	
F11W RCTO Outlet	7/30/03	10:45	15798.22	91.760	0.910	Yes	1.165	
F11W RCTO Outlet R1	7/31/03	7:15	15798.21	93.880	0.898	Yes	1.138	
F11W RCTO Outlet R3	8/13/03	6:30	15798.30	93.170	0.898	Yes	1.142	
F11X-F RCTO	8/11/03	5:45	15798.284	95.290	1.102	Yes	1.901	
11X-B RCTO Outlet R1	8/27/03	6:39	15798.20	94.588	0.890	Yes	1.132	
11X-B RCTO Outlet R2	9/2/03	7:14	15798.20	91.059	0.886	Yes	1.134	
F11S RCTO Main Outlet R2	9/8/03	13:30	15798.20	88.940	0.898	Yes	1.158	
F11S RCTO Main Outlet R3	9/16/03	5:30	15798.20	93.177	0.895	Yes	1.157	
F11S RCTO Main Outlet R3	9/22/03	5:53	15798.20	92.470	0.890	Yes	1.082	

Client: Intel Site: Rio Rancho, NM Project No.: 31397-1600-00000

System Serial
 No.: MG-07-112 Interferometer No.: IF-06-133 Det. Serial No.: D-4863 (16 um) Det. Mfg. Date: 36923 Pre-Amp (gain): 8027-324 (2x) Window Type: KBr Window Size: 25 x 5 mm Mirror Type: Au

Acceptance
 Theoretical -3.98 3.42 0.46=><=0.48 0.46 cm-1 +/- 0.01 3920.095 0.2004 0.0024

Location	Date	Time	Preamp -AC	Check DC	Water Line (FWHH)	Freq (cm-1)	Peak	Baseline
F7 RCTO Outlet R2	8/29/03	6:07	-3.068	1.8570	0.4646	3920.0928	0.2324	0.0040
F7 RCTO Outlet R3	9/3/03	10:40	-2.149	1.8580	0.4685	3920.0878	0.2108	0.0040
F11W RCTO Outlet	7/30/03	10:45	-3.129	1.8530	0.4603	3920.0879	0.2731	0.0078
F11W RCTO Outlet R1	7/31/03	7:15	-3.002	1.8060	0.4643	3920.0908	0.2595	0.0078
F11W RCTO Outlet R3	8/13/03	6:30	-2.977	1.8510	0.4637	3920.0878	0.1997	0.0034
F11X-F RCTO	8/11/03	5:45	-2.6440	5.2060	0.4708	3920.0884	0.1653	0.0390
11X-B RCTO Outlet R1	8/27/03	6:39	-2.903	1.8090	0.4638	3920.0930	0.2493	0.0058
11X-B RCTO Outlet R2	9/2/03	7:14	-3.065	1.8760	0.4702	3920.0877	0.1959	0.0042
F11S RCTO Main Outlet R2	9/8/03	13:30	-3.129	1.8040	0.4617	3920.0881	0.2721	0.0046
F11S RCTO Main Outlet R3	9/16/03	5:30	-3.163	1.799	0.4643	3920.0878	0.2488	0.0053
F11S RCTO Main Outlet R3	9/22/03	5:53	-2.758	1.811	0.4660	3920.0904	0.2227	0.0035

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial
No.: MG-07-112
Interferometer No.: IF-06-133
Mirror Size: 5.11 m
Laser Type: HeNe
Apodization: Med Norton Beer
Omega Controller: POL=0 POH=373
Sampling Mode: Mid IR
Instrument Set Resolution: 0.5 cm-1

Acceptance
Theoretical

0.198 15798.2635 3920.0946 15798.2528 15798.2595 256

Location	Date	Time	Amplitude	Original Laser Frequency	Auto Corr. Water Line	Auto Corr. Laser Frequency	Calc. Laser Frequency	Scans/ Sample
F7 RCTO Outlet R2	8/29/03	6:07	0.2303	157298.2034	3920.0946	15798.1889	15798.2108	256
F7 RCTO Outlet R3	9/3/03	10:40	0.2049	157298.2034	3920.0946	15798.1935	15798.2076	256
F11W RCTO Outlet	7/30/03	10:45	0.2668	157298.2171	3920.0946	15798.1861	15798.2157	256
F11W RCTO Outlet R1	7/31/03	7:15	0.2529	157298.2109	3920.0946	15798.1960	15798.2195	256
F11W RCTO Outlet R3	8/13/03	6:30	0.1938	157298.2079	3920.0946	15798.1940	15798.2152	256
F11X-F RCTO	8/11/03	5:45	0.1616	15798.2843	3920.0946	15798.2428	15798.2761	256
11X-B RCTO Outlet R1	8/27/03	6:39	0.2464	157298.2034	3920.0946	15798.1835	15798.2156	256
11X-B RCTO Outlet R2	9/2/03	7:14	0.1917	157298.2034	3920.0946	15798.1948	15798.2048	256
F11S RCTO Main Outlet R2	9/8/03	13:30	0.2655	157298.2034	3920.0946	15798.1851	15798.2091	256
F11S RCTO Main Outlet R3	9/16/03	5:30	0.2412	157298.2034	3920.0946	15798.1853	15798.2165	256
F11S RCTO Main Outlet R3	9/22/03	5:53	0.2192	157298.2034	3920.0946	15798.1976	15798.2173	256

Client: Intel Site: Rio Rancho, NM Project No.: 31397-1600-00000

System Serial			Linearizer	Linearizer	Linearizer	Linearizer		
No.:	Interferometer No.:	Offset:	Linear:	Quad:	Cubic:	Optics	Detector	
MG-07-112	IF-06-133	1072	1000	334	38	0	2F	
Acceptance								
Theoretical			2:23:00	Nitrogen	Yes	Ethylene	100	
					Background Taken			CTS
					Before Initial			
Location	Date	Time	Sampling Interval	Background	CTS	CTS	CTS Conc. (ppm):	Cylinder No.
F7 RCTO Outlet R2	8/29/03	6:07	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
F7 RCTO Outlet R3	9/3/03	10:40	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
F11W RCTO Outlet	7/30/03	10:45	2:23:00	Nitrogen	Yes	Ethylene	100	ALM0249794
F11W RCTO Outlet R1	7/31/03	7:15	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794
F11W RCTO Outlet R3	8/13/03	6:30	2:23:00	Nitrogen	Yes	Ethylene	100	ALM051796
F11X-F RCTO	8/11/03	5:45	2:23:00	Nitrogen	Yes	Ethylene	100	ALM0249794
11X-B RCTO Outlet R1	8/27/03	6:39	2:23:00	Nitrogen	Yes	Ethylene	100	AAL9279
11X-B RCTO Outlet R2	9/2/03	7:14	2:23:00	Nitrogen	Yes	Ethylene	100	AAL9279
F11S RCTO Main Outlet R2	9/8/03	13:30	2:23:00	Nitrogen	Yes	Ethylene	100	AAL9279
F11S RCTO Main Outlet R3	9/16/03	5:30	2:23:00	Nitrogen	Yes	Ethylene	100	AAL9279
F11S RCTO Main Outlet R3	9/22/03	5:53	2:23:00	Nitrogen	Yes	Ethylene	100	AAL9279

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial No.: MG-07-112
Interferometer No.: IF-06-133
Pressure Transducer Model No.: 0.0 scfh

Acceptance
 Theoretical

c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1600)\data\FTIR Results\Scrubber Spectra\

Location	Date	Time	Primary Storage Directory:
F7 RCTO Outlet R2	8/29/03	6:07	Projects\Intel rr 31397\Q3-03 haps (WA 1600)\Data\FTIR Results\RCTO Spectra\ F7 RCTO Outlet 08 28 03 Run 2
F7 RCTO Outlet R3	9/3/03	10:40	Projects\Intel rr 31397\Q3-03 haps (WA 1600)\Data\FTIR Results\RCTO Spectra\ F7 RCTO Outlet 09 03 03 Run 3
F11W RCTO Outlet	7/30/03	10:45	Projects\Intel rr 31397\Q3-03 haps (WA 1100)\Data\FTIR Results\RCTO Spectra\ F11W RCTO 07 30 03 Spike
F11W RCTO Outlet R1	7/31/03	7:15	Projects\Intel rr 31397\Q3-03 haps (WA 1100)\Data\FTIR Results\RCTO Spectra\ F11W RCTO 07 31 03 Run 1
F11W RCTO Outlet R3	8/13/03	6:30	Projects\Intel rr 31397\Q3-03 haps (WA 1100)\Data\FTIR Results\RCTO Spectra\ F11W RCTO 08 13 03 Run 3
F11X-F RCTO	8/11/03	5:45	Projects\Intel rr 31397\Q3-03 haps (WA 1100)\Data\FTIR Results\RCTO Spectra\ F11X-F RCTO 08 11 03 Run 3
11X-B RCTO Outlet R1	8/27/03	6:39	Projects\Intel rr 31397\Q3-03 haps (WA 1600)\Data\FTIR Results\RCTO Spectra\ 11X-B RCTO Outlet 08 27 03 Run 2
11X-B RCTO Outlet R2	9/2/03	7:14	Projects\Intel rr 31397\Q3-03 haps (WA 1600)\Data\FTIR Results\RCTO Spectra\ 11X-B RCTO Outlet 08 28 03 Run 3
F11S RCTO Main Outlet R2	9/8/03	13:30	Projects\Intel rr 31397\Q3-03 haps (WA 1600)\Data\FTIR Results\RCTO Spectra\ F11S RCTO Main Outlet 09 08 03 Run 1
F11S RCTO Main Outlet R3	9/16/03	5:30	Projects\Intel rr 31397\Q3-03 haps (WA 1600)\Data\FTIR Results\RCTO Spectra\ F11S RCTO Main Outlet 09 16 03 Run 2
F11S RCTO Main Outlet R3	9/22/03	5:53	Projects\Intel rr 31397\Q3-03 haps (WA 1600)\Data\FTIR Results\RCTO Spectra\ F11S RCTO Outlet 09 22 03 Run 3

Client: Intel Site: Rio Rancho, NM Project No.: 31397-1600-00000

System Serial No.: MG-07-112 Interferometer No.: IF-06-133 Pressure Transducer Serial No.: 0.0 scfh Transducer Slope: 750B13TFE3RF Transducer Offset: 764418 Low cm-1 Limit: 0.679601 High cm-1 Limit: 0

Acceptance
Theoretical

CD-RW\

250

150

250

7

Location	Date	Time	Backup Storage Disk:	Cell Temp (°C)	FTIR Transfer Line Temp (°C)	Source to Pump Line Temp (°F):	Pump Temp (°C):
F7 RCTO Outlet R2	8/29/03	6:07	CD\I\	150	149	251	150
F7 RCTO Outlet R3	9/3/03	10:40	CD\I\	151	150	251	150
F11W RCTO Outlet	7/30/03	10:45	CD\I\	150	150	241	150
F11W RCTO Outlet R1	7/31/03	7:15	CD\I\	150	150	250	150
F11W RCTO Outlet R3	8/13/03	6:30	CD\I\	150	150	250	150
F11X-F RCTO	8/11/03	5:45	CD\I\	150	251	250	150
11X-B RCTO Outlet R1	8/27/03	6:39	CD\I\	150	149	252	150
11X-B RCTO Outlet R2	9/2/03	7:14	CD\I\	150	149	253	150
F11S RCTO Main Outlet R2	9/8/03	13:30	CD\I\	151	150	251	150
F11S RCTO Main Outlet R3	9/16/03	5:30	CD\I\	151	150	250	149
F11S RCTO Main Outlet R3	9/22/03	5:53	CD\I\	150	149	250	150

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial
No.: MG-07-112
Interferometer No.: IF-06-133
 100 5000

Acceptance
 Theoretical NA NA NA 150

Location	Date	Time	FTIR Line Temp (°F):	Flow Rate (acfm)	Probe Temp (°F):	Hot Box Temp (°F):
F7 RCTO Outlet R2	8/29/03	6:07	251	7	NA	110
F7 RCTO Outlet R3	9/3/03	10:40	251	7	NA	120
F11W RCTO Outlet	7/30/03	10:45	246	7	NA	150
F11W RCTO Outlet R1	7/31/03	7:15	250	7	NA	150
F11W RCTO Outlet R3	8/13/03	6:30	252	7	NA	125
F11X-F RCTO	8/11/03	5:45	246	7	NA	150
11X-B RCTO Outlet R1	8/27/03	6:39	249	7	NA	125
11X-B RCTO Outlet R2	9/2/03	7:14	251	7	NA	120
F11S RCTO Main Outlet R2	9/8/03	13:30	251	7	NA	125
F11S RCTO Main Outlet R3	9/16/03	5:30	251	7	NA	110
F11S RCTO Main Outlet R3	9/22/03	5:53	256	7	NA	125

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial No.: MG-07-102
Interferometer No.: IF-06-062
Electronics No.'s: Comm: 8022C-175
ICU#00 Proc: 8024C-178
 Mod: 8021C-233
 SAQ: 8023C-204
Detector Type: 0.25 mm LN2 MCT

Acceptance
 Theoretical
 15798.29
 90+/-10
 92
 1.285
 Yes
 1.288

Location	Date	Time	Known Laser Freq:	Laser Phase Angle:	Peak Signal @ 1200 cm-1:	Saturated Below 400 cm-1	Preamp +AC	Check
F7 RCTO Outlet R1	8/22/03	5:40	15798.2930	96.00	1.037	Yes	1.866	
11W RCTO Outlet R2	8/7/03	5:22	15798.2980	96.00	1.112	Yes	1.754	
F11X-F RCTO Outlet	7/28/03	15:43	15798.2980	96.71	1.104	Yes	2.024	
F11X-F RCTO Outlet R1	7/29/03	5:57	15798.2980	96.71	1.106	Yes	1.942	
F11X-B RCTO Outlet Run 1	8/20/03	6:10	15798.2900	94.59	1.033	Yes	1.911	
F11S Bypass	9/8/03	18:10	15798.2960	98.82	1.045	Yes	1.988	

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial
No.: MG-07-102
Interferometer No.: IF-06-062
Det. Serial No.: D-4222 (16 um)
Det. Mfg. Date: 36861
Pre-Amp (gain): 8027-283 (2x)
Window Type: KBr
Window Size: 25 x 5 mm
Mirror Type: Au

Acceptance
 Theoretical
 -3.98
 3.42
 0.46=><=0.48
 0.48 cm-1
 +/- 0.01
 3920.095
 0.2004
 0.0024

Location	Date	Time	Preamp AC	Check · Preamp DC	Water Line (FWHH)	Freq (cm-1)	Peak	Baseline
F7 RCTO Outlet R1	8/22/03	5:40	-2.518	4.813	0.4728	3920.0885	0.2312	0.0036
11W RCTO Outlet R2	8/7/03	5:22	-2.729	5.185	0.4753	3920.0913	0.1973	0.0042
F11X-F RCTO Outlet	7/28/03	15:43	-2.857	5.046	0.4780	3920.0916	0.3016	0.0068
F11X-F RCTO Outlet R1	7/29/03	5:57	-2.754	5.116	0.4757	3920.0915	0.2046	0.0034
F11X-B RCTO Outlet Run 1	8/20/03	6:10	-2.446	4.781	0.4761	3920.0888	0.2893	0.0055
F11S Bypass	9/8/03	18:10	-2.797	4.727	0.4737	3920.0917	0.3179	0.0082

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial No.: MG-07-102
Interferometer No.: IF-06-062
Mirror Size: 5.11 m
Laser Type: HeNe
Apodization: Med Norton Beer
Omega Controller: POL=0 POH=373
Sampling Mode: Mid IR
Instrument Set Resolution: 0.5 cm-1

Acceptance
 Theoretical
 0.198
 15798.29
 3920.0946
 15798.2832
 15798.2988
 256

Location	Date	Time	Amplitude	Original Laser Frequency	Auto Corr. Water Line	Auto Corr. Laser Frequency	Calc. Laser Frequency	Scans/ Sample
F7 RCTO Outlet R1	8/22/03	5:40	0.2270	15798.2932	3920.0946	15798.2676	15798.2808	256
11W RCTO Outlet R2	8/7/03	5:22	0.1918	15898.2975	3920.0946	15798.2766	15798.3012	256
F11X-F RCTO Outlet	7/28/03	15:43	0.2938	15798.2975	13920.9460	15798.2850	15798.2969	256
F11X-F RCTO Outlet R1	7/29/03	5:57	0.2011	15798.2975	3920.0946	15798.2647	15798.3400	256
F11X-B RCTO Outlet Run 1	8/20/03	6:10	0.2823	15798.2932	3920.0946	15798.2594	15798.2871	256
F11S Bypass	9/8/03	18:10	0.3109	15798.2964	3920.0946	15798.2960	15798.3128	256

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

			System Serial No.:	Interferometer No.:	Linearizer Offset:	Linearizer Linear:	Linearizer Quad:	Linearizer Cubic:	Optics	Detector
			MG-07-102	IF-06-062	1405	1000	620	223	0.2 scfh	0.2 scfh
			Acceptance Theoretical		2:23:00	Nitrogen	Yes	Ethylene	100	
					Background Taken Before Initial		CTS		CTS Conc. (ppm):	CTS Cylinder No.
Location	Date	Time	Sampling Interval	Background	CTS	CTS	CTS	CTS	CTS	CTS
F7 RCTO Outlet R1	8/22/03	5:40	2:23:00	Nitrogen	Yes	Ethylene	100	ALM049794		
11W RCTO Outlet R2	8/7/03	5:22	2:23:00	Nitrogen	Yes	Ethylene	100	ALM051796		
F11X-F RCTO Outlet	7/28/03	15:43	2:23:00	Nitrogen	Yes	Ethylene	100	ALM051796		
F11X-F RCTO Outlet R1	7/29/03	5:57	2:23:00	Nitrogen	Yes	Ethylene	100	ALM051796		
F11X-B RCTO Outlet Run 1	8/20/03	6:10	2:23:00	Nitrogen	Yes	Ethylene	100	AAL9279		
F11S Bypass	9/8/03	18:10	2:23:00	Nitrogen	Yes	Ethylene	100	AAL9279		

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial No.: MG-07-102
Interferometer No.: IF-06-062
Pressure Transducer Model No: 750B13TFE3RF

Acceptance
 Theoretical

c:\Projects\Intel-RR (31397)\Q3-02 HAPs (WA 1600)\data\FTIR Results\

Location	Date	Time	Primary Storage Directory:
F7 RCTO Outlet R1	8/22/03	5:40	c:\Projects\Intel-RR (31397)\Q3-03 (WA 1600)\data\FTIR Results\F7 08 22 03 Run 1\
11W RCTO Outlet R2	8/7/03	5:22	c:\Projects\Intel-RR (31397)\Q3-03 HAP & VOC (WA 1600)\data\FTIR Results\RCTO Results\11W RCTO Outlet 08 07 03 Run 2
F11X-F RCTO Outlet	7/28/03	15:43	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1100)\data\FTIR Results\RCTO Spectra\F11X-F 07 28 03 Spike\
F11X-F RCTO Outlet R1	7/29/03	5:57	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1100)\data\FTIR Results\RCTO Spectra\F11X-F 07 29 03 Run 1\
F11X-B RCTO Outlet Run 1	8/20/03	6:10	c:\Projects\Intel-RR (31397)\Q3-03 VOC-HAPs (WA 1100)\data\FTIR Results\RCTO Spectra\F11X-B 08 20 03 Run 1\
F11S Bypass	9/8/03	18:10	c:\Projects\Intel-RR (31397)\Q3-03 HAPS (WA 1600)\data\FTIR Results\RCTO Spectra\F11S RCTO Bypass 09 08 03 Run 1\

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial No.: MG-07-102
Interferometer No.: IF-06-062
Pressure Transducer Serial No.: 524314
Transducer Slope: 0.684433
Transducer Offset: 1.17189
Low cm-1 Limit: 100
High cm-1 Limit: 5000

Acceptance
Theoretical

CD-RW\

150

150

250

150

Location	Date	Time	Backup Storage Disk:	Cell Temp (°C)	FTIR Transfer Line Temp (°C)	Source to Pump Line Temp (°F):	Pump Temp (°C):
F7 RCTO Outlet R1	8/22/03	5:40	CD\R	150	150	250	150
11W RCTO Outlet R2	8/7/03	5:22	CD\R	150	150	250	150
F11X-F RCTO Outlet	7/28/03	15:43	CD\R	150	150	250	150
F11X-F RCTO Outlet R1	7/29/03	5:57	CD\R	150	150	251	150
F11X-B RCTO Outlet Run 1	8/20/03	6:10	CD\R	150	150	252	150
F11S Bypass	9/8/03	18:10	CD\R	150	150	249	150

Client: Intel
Site: Rio Rancho, NM
Project No.: 31397-1600-00000

System Serial No.: MG-07-102
Interferometer No.: IF-06-062

Acceptance
Theoretical

250

7

NA

150

Location	Date	Time	FTIR Line Temp (°F):	Flow Rate (acfm)	Probe Temp (°F):	Hot Box Temp (°F):
F7 RCTO Outlet R1	8/22/03	5:40	250	7	NA	150
11W RCTO Outlet R2	8/7/03	5:22	250	7	NA	125
F11X-F RCTO Outlet	7/28/03	15:43	247	7	NA	150
F11X-F RCTO Outlet R1	7/29/03	5:57	250	7	NA	150
F11X-B RCTO Outlet Run 1	8/20/03	6:10	246	7	NA	150
F11S Bypass	9/8/03	18:10	250	7	NA	125

INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER

FIELD AND SOURCE DOCUMENTATION

APPENDIX B
Field and Measurement Data

Laboratory Data

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION
I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000

Client: T007 - TRC-Denver
Report Number: 03-216

Lab ID: 03-M505
Client ID: 2840 RB 0.1N NaOH
Site: Rio Rancho
Sample Date: 7/28/03
Sample Volume: 150. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 7.50 µg

Lab ID: 03-M506
Client ID: 2842 RB DI H2O
Site: Rio Rancho
Sample Date: 7/28/03
Comments: 03-M488
Sample Volume: 115. mL

Analyte	Results
Cl2	0.120 µg/mL 13.8 µg

Lab ID: 03-M507
Client ID: 2700 9S.1.2b 0.1N NaOH
Site: Rio Rancho
Sample Date: 7/30/03
Sample Volume: 280. mL

Analyte	Results
Cl2	0.270 µg/mL 75.6 µg

Lab ID: 03-M508
Client ID: 2702 9S.1.2b 0.1N NaOH
Site: Rio Rancho
Sample Date: 7/30/03
Sample Volume: 300. mL

Analyte	Results
Cl2	0.340 µg/mL 102. µg

Lab ID: 03-M509
Client ID: 2708 9S.1.3ab 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 1/03
Sample Volume: 340. mL

Analyte	Results
Cl2	0.285 µg/mL 96.9 µg

Client: T007 - TRC-Denver
Report Number: 03-216

Lab ID: 03-M510
Client ID: 2710 9S.1.3ab 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 1/03
Sample Volume: 335. mL

Analyte	Results
Cl2	0.290 µg/mL 97.2 µg

Lab ID: 03-M511
Client ID: 2706 9S.1.3ab 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 1/03
Sample Volume: 330. mL

Analyte	Results
Cl2	0.565 µg/mL 186. µg

Lab ID: 03-M512
Client ID: 2704 9S.1.3ab 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 1/03
Sample Volume: 285. mL

Analyte	Results
Cl2	0.970 µg/mL 276. µg

Lab ID: 03-M513
Client ID: 2712 9S.1.2a 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 4/03
Sample Volume: 350. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 17.5 µg

Lab ID: 03-M514
Client ID: 2714 9S.1.2a 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 4/03
Sample Volume: 355. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 17.8 µg

Client: T007 - TRC-Denver
Report Number: 03-216

Lab ID: 03-M515
Client ID: 2716 9S.1.1e 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 5/03
Sample Volume: 375. mL

Analyte	Results
Cl2	0.190 µg/mL 71.2 µg

Lab ID: 03-M516
Client ID: 2718 9S.1.1e 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 5/03
Sample Volume: 365. mL

Analyte	Results
Cl2	0.175 µg/mL 63.9 µg

Lab ID: 03-M517
Client ID: 2720 9S.1.1d 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 6/03
Sample Volume: 315. mL

Analyte	Results
Cl2	0.100 µg/mL 31.5 µg

Lab ID: 03-M518
Client ID: 2722 9S.1.1d 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 6/03
Sample Volume: 340. mL

Analyte	Results
Cl2	0.200 µg/mL 68.0 µg

Lab ID: 03-M519
Client ID: 2713 9S.1.2a 0.1N H2SO4
Site: Rio Rancho
Sample Date: 8/ 4/03
Comments: 03-M497
Sample Volume: 365. mL

Analyte	Results
NH4	15.1 µg/mL 5,510 µg

Client: T007 - TRC-Denver
Report Number: 03-216

Lab ID: 03-M520
Client ID: 2715 9S.1.2a 0.1N H2SO4
Site: Rio Rancho
Sample Date: 8/ 4/03
Comments: 03-M498
Sample Volume: 390. mL

Analyte	Results
NH4	16.0 µg/mL 6,240 µg

Lab ID: 03-M521
Client ID: 2724 9S.1.1c 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 7/03
Sample Volume: 250. mL

Analyte	Results
Cl2	0.245 µg/mL 61.2 µg

Lab ID: 03-M522
Client ID: 2726 9S.1.1c 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 7/03
Sample Volume: 250. mL

Analyte	Results
Cl2	0.160 µg/mL 40.0 µg

Lab ID: 03-M523
Client ID: 2728 9S.1.1b 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 8/03
Sample Volume: 250. mL

Analyte	Results
Cl2	0.145 µg/mL 36.2 µg

Lab ID: 03-M524
Client ID: 2730 9S.1.1b 0.1N NaOH
Site: Rio Rancho
Sample Date: 8/ 8/03
Sample Volume: 320. mL

Analyte	Results
Cl2	0.085 µg/mL 27.2 µg

Client: T007 - TRC-Denver
Report Number: 03-233A

Lab ID: 03-M570
Client ID: 2732 9S.1.2C Run 1

Site: Rio Rancho
Sample Date: 8/11/03
Sample Volume: 297. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 14.8 µg

Lab ID: 03-M571
Client ID: 2734 9S.1.2C Run 2
Site: Rio Rancho
Sample Date: 8/11/03
Sample Volume: 302. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 15.1 µg

Lab ID: 03-M572
Client ID: 2740 9S.1.2F outlet Run 1
Site: Rio Rancho
Sample Date: 8/15/03
Sample Volume: 275. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 13.8 µg

Lab ID: 03-M573
Client ID: 2742 9S.1.2F outlet Run 2
Site: Rio Rancho
Sample Date: 8/15/03
Sample Volume: 255. mL

Analyte	Results
Cl2	0.065 µg/mL 16.6 µg

Lab ID: 03-M574
Client ID: 2744 9S.1.2F inlet Run 1
Site: Rio Rancho
Sample Date: 8/15/03
Sample Volume: 285. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 14.2 µg

Client: T007 - TRC-Denver
Report Number: 03-233A

Lab ID: 03-M575
Client ID: 2746 9S.1.2F inlet Run 2
Site: Rio Rancho
Sample Date: 8/15/03
Sample Volume: 245. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 12.2 µg

Lab ID: 03-M576
Client ID: 2760 11S.1.6 outlet Run 1
Site: Rio Rancho
Sample Date: 8/19/03
Sample Volume: 340. mL

Analyte	Results
Cl2	0.090 µg/mL 30.6 µg

Lab ID: 03-M577
Client ID: 2762 11S.1.6 outlet Run 2
Site: Rio Rancho
Sample Date: 8/19/03
Sample Volume: 335. mL

Analyte	Results
Cl2	0.150 µg/mL 50.2 µg

Lab ID: 03-M578
Client ID: 2752 11S.1.6 inlet Run 1
Site: Rio Rancho
Sample Date: 8/19/03
Sample Volume: 337. mL

Analyte	Results
Cl2	0.210 µg/mL 70.8 µg

Lab ID: 03-M579
Client ID: 2754 11S.1.6 inlet Run 2
Site: Rio Rancho
Sample Date: 8/19/03
Sample Volume: 320. mL

Analyte	Results
Cl2	0.530 µg/mL 170. µg

Client: T007 - TRC-Denver
Report Number: 03-233A

Lab ID: 03-M580
Client ID: 2748 11S.1.10 outlet Run 1
Site: Rio Rancho
Sample Date: 8/21/03
Sample Volume: 315. mL

Analyte	Results
Cl2	0.075 µg/mL 23.6 µg

Lab ID: 03-M581
Client ID: 2750 11S.1.10 outlet Run 2
Site: Rio Rancho
Sample Date: 8/21/03
Sample Volume: 310. mL

Analyte	Results
Cl2	0.080 µg/mL 24.8 µg

Lab ID: 03-M582
Client ID: 2756 11S.1.12 outlet Run 1
Site: Rio Rancho
Sample Date: 8/21/03
Sample Volume: 327. mL

Analyte	Results
Cl2	0.130 µg/mL 42.5 µg

Lab ID: 03-M583
Client ID: 2758 11S.1.12 outlet Run 2
Site: Rio Rancho
Sample Date: 8/21/03
Sample Volume: 322. mL

Analyte	Results
Cl2	0.085 µg/mL 27.4 µg

Client: T007 - TRC-Denver
Report Number: 03-250

Lab ID: 03-M595
Client ID: 2768 Inlet 7S1.5 Run 1
Site: Rio Rancho
Sample Date: 8/25/03
Sample Volume: 345. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 17.2 µg

Lab ID: 03-M596
Client ID: 2766 Outlet 7S1.5 Run 2
Site: Rio Rancho
Sample Date: 8/25/03
Sample Volume: 315. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 15.8 µg

Lab ID: 03-M597
Client ID: 2764 Outlet 7S1.5 Run 1
Site: Rio Rancho
Sample Date: 8/25/03
Sample Volume: 325. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 16.2 µg

Lab ID: 03-M598
Client ID: 2736 Outlet 9S1.2h Run 1
Site: Rio Rancho
Sample Date: 8/26/03
Sample Volume: 310. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 15.5 µg

Lab ID: 03-M599
Client ID: 2738 Outlet 9S1.2h Run 2
Site: Rio Rancho
Sample Date: 8/26/03
Sample Volume: 290. mL

Analyte	Results
Cl2	0.215 µg/mL 62.4 µg

Client: T007 - TRC-Denver
Report Number: 03-250

Lab ID: 03-M600
Client ID: 2770 Inlet 7S1.5 Run 2
Site: Rio Rancho
Sample Date: 8/25/03
Sample Volume: 327. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 16.4 µg

Lab ID: 03-M601
Client ID: 2772 Outlet 10S.1.1c Run 1
Site: Rio Rancho
Sample Date: 8/28/03
Sample Volume: 305. mL

Analyte	Results
Cl2	3.82 µg/mL 1160 µg

Lab ID: 03-M602
Client ID: 2774 10S.1.1c Run 2
Site: Rio Rancho
Sample Date: 8/28/03
Sample Volume: 280. mL

Analyte	Results
Cl2	1.09 µg/mL 305. µg

Lab ID: 03-M603
Client ID: 2776 10S.1.1d Run 1
Site: Rio Rancho
Sample Date: 9/ 2/03
Sample Volume: 280. mL

Analyte	Results
Cl2	0.085 µg/mL 23.8 µg

Lab ID: 03-M604
Client ID: 2778 10S.1.1d Run 2
Site: Rio Rancho
Sample Date: 9/ 2/03
Sample Volume: 265. mL

Analyte	Results
Cl2	0.550 µg/mL 146. µg

Client: T007 - TRC-Denver
Report Number: 03-250

Lab ID: 03-M605
Client ID: 2780 10S.1.1e Run 1
Site: Rio Rancho
Sample Date: 9/ 3/03
Sample Volume: 285. mL

Analyte	Results
Cl2	0.075 µg/mL 21.4 µg

Lab ID: 03-M606
Client ID: 2782 10S.1.1e Run 2
Site: Rio Rancho
Sample Date: 9/ 3/03
Sample Volume: 260. mL

Analyte	Results
Cl2	0.275 µg/mL 71.5 µg

Lab ID: 03-M607
Client ID: 2784 10S.1.1f Run 1
Site: Rio Rancho
Sample Date: 9/ 4/03
Sample Volume: 257. mL

Analyte	Results
Cl2	0.310 µg/mL 79.7 µg

Lab ID: 03-M608
Client ID: 2786 10S.1.1f Run 2
Site: Rio Rancho
Sample Date: 9/ 4/03
Sample Volume: 245. mL

Analyte	Results
Cl2	0.370 µg/mL 90.6 µg

Lab ID: 03-M609
Client ID: 2788 Inlet 10S.4.2ab Run 1
Site: Rio Rancho
Sample Date: 9/ 5/03
Sample Volume: 245. mL

Analyte	Results
Cl2	0.185 µg/mL 45.3 µg

Client: T007 - TRC-Denver
Report Number: 03-250

Lab ID: 03-M610
Client ID: 2790 Inlet 10S.4.2ab Run 2
Site: Rio Rancho
Sample Date: 9/ 5/03
Sample Volume: 237. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 11.8 µg

Lab ID: 03-M611
Client ID: 2798 Outlet 10S.4.2ab Run 2
Site: Rio Rancho
Sample Date: 9/ 5/03
Sample Volume: 260. mL

Analyte	Results
Cl2	0.165 µg/mL 42.9 µg

Lab ID: 03-M612
Client ID: 2850 Inlet 10S.4.2ab Run 3
Site: Rio Rancho
Sample Date: 9/ 6/03
Sample Volume: 270. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 13.5 µg

Lab ID: 03-M613
Client ID: 2852 Outlet 10S.4.2ab Run 3
Site: Rio Rancho
Sample Date: 9/ 6/03
Sample Volume: 265. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 13.2 µg

Lab ID: 03-M614
Client ID: 2792 10S.1.1g Run 1
Site: Rio Rancho
Sample Date: 9/ 8/03
Sample Volume: 265. mL

Analyte	Results
Cl2	3.24 µg/mL 859. µg

Client: T007 - TRC-Denver
Report Number: 03-250

Lab ID: 03-M615
Client ID: 2794 10S.1.1g Run 2
Site: Rio Rancho
Sample Date: 9/ 8/03
Sample Volume: 300. mL

Analyte	Results
Cl2	3.45 µg/mL 1040 µg

Lab ID: 03-M643
Client ID: 2796 Outlet 20S.4.2ab Run 1
Site: Rio Rancho
Sample Date: 9/ 5/03
Sample Volume: 80.0 mL

Analyte	Results
Cl2	0.085 µg/mL 6.80 µg

Client: T007 - TRC-Denver
Report Number: 03-268

Lab ID: 03-M730
Client ID: 2800 11s.1.3 Run 1
Site: Rio Rancho
Sample Date: 9/11/03
Sample Volume: 345. mL

Analyte	Results
Cl2	0.080 µg/mL 27.6 µg

Lab ID: 03-M731
Client ID: 2802 11s.1.3 Run 2
Site: Rio Rancho
Sample Date: 9/11/03
Sample Volume: 320. mL

Analyte	Results
Cl2	1.56 µg/mL 499. µg

Lab ID: 03-M732
Client ID: 2804 11s.1.5 Run 1
Site: Rio Rancho
Sample Date: 9/12/03
Sample Volume: 325. mL

Analyte	Results
Cl2	6.25 µg/mL 2030 µg

Lab ID: 03-M733
Client ID: 2806 11s.1.5 Run 2
Site: Rio Rancho
Sample Date: 9/12/03
Sample Volume: 255. mL

Analyte	Results
Cl2	2.90 µg/mL 740. µg

Lab ID: 03-M734
Client ID: 2808 11s.1.7 Run 1
Site: Rio Rancho
Sample Date: 9/15/03
Sample Volume: 325. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 16.2 µg

Client: T007 - TRC-Denver
Report Number: 03-268

Lab ID: 03-M735
Client ID: 2810 11s.1.7 Run 2
Site: Rio Rancho
Sample Date: 9/15/03
Sample Volume: 335. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 16.8 µg

Lab ID: 03-M736
Client ID: 2812 11s.1.9 Run 1
Site: Rio Rancho
Sample Date: 9/16/03
Sample Volume: 330. mL

Analyte	Results
Cl2	< 0.050 µg/mL < 16.5 µg

Lab ID: 03-M737
Client ID: 2814 11s.1.9 Run 2
Site: Rio Rancho
Sample Date: 9/16/03
Sample Volume: 325. mL

Analyte	Results
Cl2	0.080 µg/mL 26.0 µg

Lab ID: 03-M738
Client ID: 2816 11s.1.11 Run 1
Site: Rio Rancho
Sample Date: 9/17/03
Sample Volume: 325. mL

Analyte	Results
Cl2	0.055 µg/mL 17.9 µg

Lab ID: 03-M739
Client ID: 2818 11s.1.11 Run 2
Site: Rio Rancho
Sample Date: 9/17/03
Sample Volume: 330. mL

Analyte	Results
Cl2	0.245 µg/mL 80.8 µg

Client: T007 - TRC-Denver
Report Number: 03-268

Lab ID: 03-M740
Client ID: 2824 11s.1.14 (outlet) Run 1
Site: Rio Rancho
Sample Date: 9/19/03
Sample Volume: 335. mL

Analyte	Results
Cl2	0.345 µg/mL 116. µg

Lab ID: 03-M741
Client ID: 2820 11s.1.14 (inlet) Run 1
Site: Rio Rancho
Sample Date: 9/19/03
Sample Volume: 335. mL

Analyte	Results
Cl2	5.70 µg/mL 1910 µg

Lab ID: 03-M742
Client ID: 2822 11s.1.14 (inlet) Run 2
Site: Rio Rancho
Sample Date: 9/19/03
Sample Volume: 320. mL

Analyte	Results
Cl2	6.40 µg/mL 2050 µg

Lab ID: 03-M743
Client ID: 2826 11s.1.14 (outlet) Run 2
Site: Rio Rancho
Sample Date: 9/19/03
Sample Volume: 327. mL

Analyte	Results
Cl2	0.130 µg/mL 42.5 µg

Lab ID: 03-M777
Client ID: 2828 8s.4.2ab Inlet Run 1
Site: Rio Rancho
Sample Date: 9/24/03
Sample Volume: 305. mL

Analyte	Results
Cl2	9.28 µg/mL 2830 µg

Client: T007 - TRC-Denver
Report Number: 03-268

Lab ID: 03-M778
Client ID: 2832 8s.4.2ab Outlet Run 1
Site: Rio Rancho
Sample Date: 9/24/03
Sample Volume: 330. mL

Analyte	Results
Cl2	0.435 µg/mL 144. µg

Lab ID: 03-M779
Client ID: 2834 8s.4.2ab Outlet Run 2
Site: Rio Rancho
Sample Date: 9/24/03
Sample Volume: 315. mL

Analyte	Results
Cl2	0.230 µg/mL 72.4 µg

Lab ID: 03-M780
Client ID: 2830 8s.4.2ab Inlet Run 2
Site: Rio Rancho
Sample Date: 9/24/03
Sample Volume: 317. mL

Analyte	Results
Cl2	0.650 µg/mL 206. µg

Lab ID: 03-M781
Client ID: 2829 8s.4.2ab Inlet Run 1
Site: Rio Rancho
Sample Date: 9/24/03
Sample Volume: 367. mL

Analyte	Results
NH3	58.5 µg/mL 21,500 µg

Lab ID: 03-M782
Client ID: 2833 8s.4.2ab Outlet Run 1
Site: Rio Rancho
Sample Date: 9/24/03
Sample Volume: 350. mL

Analyte	Results
NH3	32.1 µg/mL 11,200 µg

Client: T007 - TRC-Denver
Report Number: 03-268

Lab ID: 03-M783
Client ID: 2835 8s.4.2ab Outlet Run 2
Site: Rio Rancho
Sample Date: 9/24/03
Sample Volume: 370. mL

Analyte	Results
NH3	30.4 µg/mL 11,300 µg

Lab ID: 03-M784
Client ID: 2831 8s.4.2ab Inlet Run 2
Site: Rio Rancho
Sample Date: 9/24/03
Sample Volume: 350. mL

Analyte	Results
NH3	812. µg/mL 284,000 µg

INTEL CORPORATION - ANNUAL HAP MONITORING PROGRAM
H2Q302 – THIRD QUARTER

FIELD AND SOURCE DOCUMENTATION

APPENDIX C

Field and Measurement Data

Calibration and Certification Data

3rd QTR 2003 HAP report

TRC ENVIRONMENTAL CORPORATION - MEASUREMENT DIVISION

I:\SOURCE\Projects\Intel-RR (31397)\Q3-03 HAPs (WA 1600)\Docs\H2Q303 HAP Report - FINAL.doc

31397-1600-00000



CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

500 WEAVER PARK RD, LONGMONT, CO 80501 Phone: 888-253-1635 Fax: 303-772-7673
 CERTIFICATE_OF_ACCURACY:___Certified_Master_Class_Calibration_Standard_____

Product_Information

Project No.: 08-04779-003
 Item No.: 08020001290PAL
 P.O. No.: 6173D

Customer_

TRC ENVIRONMENTAL
 7761 SHAFFER PARKWAY
 SUITE 100
 LITTLETON, CO 80127

Cylinder Number: AAL9279
 Cylinder Size: AL
 Certification Date: 15Jul2003
 Expiration Date: 14Jul2005

CERTIFIED_CONCENTRATION_____

Component_Name____	Concentration __(Moles)_____	Accuracy _(+/-%)__
ETHYLENE	100. PPM	2
NITROGEN	BALANCE	

TRACEABILITY__

Traceable_To

NIST

APPROVED BY: (signature on file)
 DEVON VONFELDT

DATE: _____

SPECIFICATIONS__

Component_Name_____	Requested Concentration (Moles)_____	Certified Concentration (Moles)_____	Blend Tolerance Result (+/-%)_____	Certified Accuracy Result (+/-%)_____
ETHYLENE	100. PPM	100. PPM	.0	2.00
NITROGEN	BAL	BAL		

TRACEABILITY__

Traceable_To

NIST

PHYSICAL_PROPERTIES_____

Cylinder Size: AL Pressure: 2000 PSIG Valve Connection: 350
 Expiration Date: 14Jul2005

SPECIAL_HANDLING_INSTRUCTIONS_____

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.



CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

500 WEAVER PARK RD, LONGMONT, CO 80501 Phone: 888-253-1635 Fax: 303-772-7673
 CERTIFICATE_OF_ACCURACY:___Certified_Master_Class_Calibration_Standard_____

Product_Information
 Project No.: 08-04779-003
 Item No.: 08020001290PAL
 P.O. No.: 6173D

Customer_
 TRC ENVIRONMENTAL
 7761 SHAFFER PARKWAY
 SUITE 100
 LITTLETON, CO 80127

Cylinder Number: ALM030418
 Cylinder Size: AL
 Certification Date: 15Jul2003
 Expiration Date: 14Jul2005

CERTIFIED_CONCENTRATION_____

Component_Name____	Concentration __(Moles)_____	Accuracy _(+/-%)____
ETHYLENE	100. PPM	2
NITROGEN	BALANCE	

TRACEABILITY__

Traceable_To

NIST
 APPROVED BY: (signature on file)
 DEVON VONFELDT

DATE: _____

SPECIFICATIONS__

Component_Name_____	Requested Concentration (Moles)_____	Certified Concentration (Moles)_____	Blend Tolerance Result (+/-%)_____	Certified Accuracy Result (+/-%)_____
ETHYLENE	100. PPM	100. PPM	.0	2.00
NITROGEN	BAL	BAL		

TRACEABILITY__

Traceable_To

NIST

PHYSICAL_PROPERTIES_____

Cylinder Size: AL Pressure: 2000 PSIG Valve Connection: 350
 Expiration Date: 14Jul2005

SPECIAL_HANDLING_INSTRUCTIONS_____

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.



CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

500 WEAVER PARK RD, LONGMONT, CO 80501 Phone: 888-253-1635 Fax: 303-772-7673
 CERTIFICATE_OF_ACCURACY:___Certified_Master_Class_Calibration_Standard_____

Product_Information
 Project No.: 08-04779-003
 Item No.: 08020001290PAL
 P.O. No.: 6173D

Customer_
 TRC ENVIRONMENTAL
 7761 SHAFFER PARKWAY
 SUITE 100
 LITTLETON, CO 80127

Cylinder Number: ALM013057
 Cylinder Size: AL
 Certification Date: 15Jul2003
 Expiration Date: 14Jul2005

CERTIFIED_CONCENTRATION_____

Component_Name____	Concentration __(Moles)_____	Accuracy _(+/-%)__
ETHYLENE	100. PPM	2
NITROGEN	BALANCE	

TRACEABILITY__

Traceable_To

NIST
 APPROVED BY: (signature on file)
 DEVON VONFELDT

DATE: _____

SPECIFICATIONS__

Component_Name_____	Requested Concentration (Moles)_____	Certified Concentration (Moles)_____	Blend Tolerance Result (+/-%)_____	Certified Accuracy Result (+/-%)_____
ETHYLENE	100. PPM	100. PPM	.0	2.00
NITROGEN	BAL	BAL		

TRACEABILITY__

Traceable_To

NIST

PHYSICAL_PROPERTIES_____

Cylinder Size: AL Pressure: 2000 PSIG Valve Connection: 350
 Expiration Date: 14Jul2005

SPECIAL_HANDLING_INSTRUCTIONS_____

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.



CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

500 WEAVER PARK RD, LONGMONT, CO 80501 Phone: 888-253-1635 Fax: 303-772-7673
 CERTIFICATE_OF_ACCURACY:___Certified_Master_Class_Calibration_Standard_____

Product_Information
 Project No.: 08-04779-003
 Item No.: 08020001290PAL
 P.O. No.: 6173D

Customer_
 TRC ENVIRONMENTAL
 7761 SHAFFER PARKWAY
 SUITE 100
 LITTLETON, CO 80127

Cylinder Number: ALM049794
 Cylinder Size: AL
 Certification Date: 15Jul2003
 Expiration Date: 14Jul2005

CERTIFIED_CONCENTRATION_____

Component_Name____	Concentration __(Moles)_____	Accuracy _(+/-%)____
ETHYLENE	100. PPM	2
NITROGEN	BALANCE	

TRACEABILITY__

Traceable_To

NIST
 APPROVED BY: (signature on file) DATE: _____
 DEVON VONFELDT

SPECIFICATIONS__

Component_Name_____	Requested Concentration (Moles)_____	Certified Concentration (Moles)_____	Blend Tolerance Result (+/-%)_____	Certified Accuracy Result (+/-%)_____
ETHYLENE	100. PPM	100. PPM	.0	2.00
NITROGEN	BAL	BAL		

TRACEABILITY__

Traceable_To

NIST

PHYSICAL_PROPERTIES_____

Cylinder Size: AL Pressure: 2000 PSIG Valve Connection: 350
 Expiration Date: 14Jul2005

SPECIAL_HANDLING_INSTRUCTIONS_____

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.



CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

500 WEAVER PARK RD, LONGMONT, CO 80501 Phone: 888-253-1635 Fax: 303-772-7673
 CERTIFICATE_OF_ACCURACY:___Certified_Master_Class_Calibration_Standard_____

Product_Information

Project No.: 08-01843-004
 Item No.: 08020001290PAL
 P.O. No.: 6132D

Customer_

TRC ENVIRONMENTAL
 7761 SHAFFER PARKWAY
 SUITE 100
 LITTLETON, CO 80127

Cylinder Number: ALM051796
 Cylinder Size: AL
 Certification Date: 09Apr2003
 Expiration Date: 08Apr2005

CERTIFIED_CONCENTRATION_____

Component_Name____	Concentration __(Moles)_____	Accuracy _(+/-%)__
ETHYLENE	100. PPM	2
NITROGEN	BALANCE	

TRACEABILITY__

Traceable_To

NIST

APPROVED BY: (signature on file)
 JON WITZAK

DATE: _____

SPECIFICATIONS__

Component_Name_____	Requested Concentration (Moles)	Certified Concentration (Moles)	Blend Tolerance Result (+/-%)	Certified Accuracy Result (+/-%)
ETHYLENE	100. PPM	100. PPM	.0	2.00
NITROGEN	BAL	BAL		

TRACEABILITY__

Traceable_To

NIST

PHYSICAL_PROPERTIES_____

Cylinder Size: AL Pressure: 2015 PSIG Valve Connection: 350
 Expiration Date: 08Apr2005

SPECIAL_HANDLING_INSTRUCTIONS_____

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.



CUSTOM CLASS

500 WEAVER PARK RD, LONGMONT, CO 80501

Phone: 888 - 253-1635

Fax: 303 - 772-7673

CERTIFICATE_OF_ACCURACY:___Custom_Class_Calibration_Standard_____

Product_Information

Project No.: 08-95468-002

Item No.: 0802C310361ZAL

P.O. No.: 6027D

Cylinder Number: ALM064781

Cylinder Size: AL

Certification Date: 16Sep2002

Expiration Date: 15Sep2003

Customer_

TRC ENVIRONMENTAL
 7761 SHAFFER PARKWAY
 SUITE 100
 LITTLETON, CO 80127

CERTIFIED_CONCENTRATION_____

Component_Name_____

Concentration
 __ (Moles)_____

Accuracy
 _ (+/- %)_____

CARBON TETRACHLORIDE

10.4 PPM

2

SULFUR HEXAFLUORIDE

1.50 PPM

5

NITROGEN

BALANCE

TRACEABILITY__

Description

Traceability_Type

Traceable_To

BLEND PROCESS TRACEABILITY

WEIGHT

NIST

ANALYTICAL TRACEABILITY

GAS STANDARDS

APPROVED BY: (signature on file)
 DEVON VONFELDT

DATE: _____

SPECIFICATIONS_____

CP 1017-1017-1015_____										
Component_Name_____		Requested Concentration (Moles)		Gravimetric Concentration (Moles)		Analyzed Concentration (Moles)		Tolerance Result (+/- %)	Accuracy Result (+/- %)	Accuracy Result (+/- %)
CARBON TETRACHLORIDE		10.	PPM	N/A		10.4	PPM	4.0	N/A	2.00
SULFUR HEXAFLUORIDE		1.5	PPM	1.50	PPM	N/A		.0	5.00	N/A
NITROGEN										

TRACEABILITY__

Analytical_Traceability

Type/SRM_No.____	Expiration_Date	Cylinder_Number_	Concentration	Component_____
SRS CSTD	16Sep2002	CLM001239	49.80 PPM	CARBON TETRACHLORIDE

Instrumentation

Instrument/Model/Serial#	Date_Last_Calibrated	Analytical_Principle	Analytical_Method
HP/6890/US00006537	16Sep2002	FID	

PHYSICAL_PROPERTIES_____

Cylinder Size: AL	Pressure: 2015 PSIG	Valve Connection: 350
	Expiration Date: 15Sep2003	

SPECIAL_HANDLING_INSTRUCTIONS_____

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS_____

COMPONENT	GRAMS
CARBON TETRACHLORIDE	.272
SULFUR HEXAFLUORIDE	35.8
NITROGEN	4731.9

VP0879


Scott Specialty Gases
 www.scottgas.com

500 WEAVER PARK RD, LONGMONT, CO 80501 Phone: 888-253-1635 Fax: 303-772-7673
 CERTIFICATE_OF_ACCURACY: Custom Class Calibration Standard

Product Information

Project No.: 08-95468-003
 Item No.: 0802M301080ZAL
 P.O. No.: 6027D

Cylinder Number: ALM043050
 Cylinder Size: AL
 Certification Date: 09/16/2002
 Expiration Date: 09/16/2003

Customer

TRC ENVIRONMENTAL
 7761 SHAFFER PARKWAY
 SUITE 100
 LITTLETON, CO 80127

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)	Accuracy (+/- %)
METHANOL	103. PPM	2
SULFUR HEXAFLUORIDE	1.53 PPM	5
NITROGEN	BALANCE	

TRACEABILITY

Description	Traceability Type	Traceable To
BLEND PROCESS TRACEABILITY	WEIGHT	NIST
ANALYTICAL TRACEABILITY	GAS STANDARDS	
APPROVED BY: (signature on file) DEVON VONFELDT		DATE: _____

SPECIFICATIONS

Component Name	Requested Concentration (Moles)	Gravimetric Concentration (Moles)	Analyzed Concentration (Moles)	Blend Tolerance Result (+/- %)	Blend Process Accuracy Result (+/- %)	Analytical Accuracy Result (+/- %)	Interlocking Result (+/- %)
METHANOL	100. PPM	N/A	103. PPM	3.0	N/A	2.00	N/A
SULFUR HEXAFLUORIDE	1.5 PPM	1.53 PPM	N/A	2.0	5.00	N/A	N/A
NITROGEN							

TRACEABILITY

Analytical Traceability

Type/SRM No.	Expiration Date	Cylinder Number	Concentration	Component
SRS CSTD	09/16/02	CAL9549	99.40 PPM	METHANOL

Instrumentation

Instrument/Model/Serial#	Date Last Calibrated	Analytical Principle	Analytical Method
HP/6890/US00006537	09/16/02	FID	

PHYSICAL PROPERTIES

Cylinder Size	Pressure	Valve Connection
AL	2000 PSIG	350
	Expiration Date: 09/16/2003	

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

COMPONENT	GRAMS
METHYL ALCOHOL	.564
SULFUR HEXAFLUORIDE	36.5
NITROGEN	4727.1

EPA METHOD 5 FULL TEST METER BOX CALIBRATION

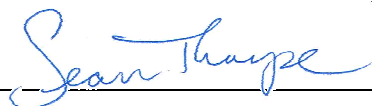
Meter ID:	90394
Model #:	Nutech 2010A
DGM Serial #:	28345
Operator:	S. Thorpe

Date:	July 8, 2003	
Barometric Pressure:	24.55	24.10 in Hg
Critical Orifice Vacuum:	13.97	13.73 in Hg
Positive Leak Check @ 5.00dH	Yes	

DRY GAS METER READINGS									ORIFICE DATA CONDITIONS					
dH (in H ₂ O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps.		Final Temps.		Orifice Serial# (number)	K' Orifice Coefficient (see above)	Vacuum (in Hg)	Ambient Temperature		
					Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)				Initial (deg F)	Final (deg F)	Average (deg F)
3.000	10.00	917.540	928.354	10.814	68.0	69.0	70.0	70.0	CI-73	0.8374	13.00	68.0	69.0	68.5
3.1	10.00	928.354	939.185	10.831	70.0	70.0	70.0	70.0	CI-73	0.8374	13.00	69.0	73.0	71.0
3.000	10.00	939.185	950.026	10.841	70.0	70.0	74.0	74.0	CI-73	0.8374	13.00	73.0	71.0	72.0
1.600	12.00	950.026	959.566	9.540	74.0	74.0	73.0	72.0	CI-63	0.6106	15.00	71.0	71.0	71.0
1.600	12.00	959.566	969.126	9.560	73.0	72.0	74.0	73.0	CI-63	0.6106	15.0	71.0	71.0	71.0
1.600	13.00	969.126	979.495	10.369	74.0	73.0	75.0	74.0	CI-63	0.6106	15.0	71.0	71.0	71.0
0.950	15.00	979.495	988.822	9.327	75.0	74.0	75.0	75.0	CI-55	0.4749	16.00	71.0	71.0	71.0
0.950	15.00	988.822	998.163	9.341	75.0	75.0	75.0	75.0	CI-55	0.4749	17.00	71.0	72.0	71.5
0.940	15.00	998.163	1007.434	9.271	75.0	75.0	72.0	71.0	CI-55	0.4749	16.00	72.0	70.0	71.0
0.520	21.00	1007.434	1017.204	9.770	72.0	71.0	72.0	72.0	CI-48	0.3541	17.00	70.0	69.0	69.5
0.510	21.00	1017.204	1026.968	9.764	72.0	72.0	72.0	72.0	CI-48	0.3541	18.00	69.0	69.0	69.0
0.520	21.00	1026.968	1036.854	9.886	72.0	72.0	72.0	72.0	CI-48	0.3541	18.00	69.0	69.0	69.0

CALIBRATION RESULTS								
DRY GAS METER VOLUME CORRECTED		ORIFICE VOLUME CORRECTED		DRY GAS METER CALIBRATION FACTOR Yd		ORIFICE CALIBRATION FACTOR dH@		
Vm(std) (ft ³)	Vm(std) (liters)	Vcr(std) (ft ³)	Vm(std) (liters)	Value (number)	Variation (number)	Value (in H ₂ O)	Value (mm H ₂ O)	Variation (in H ₂ O)
8.928	252.8	8.943	253.3	1.002	0.002	1.742	44.24	0.020
8.932	253.0	8.921	252.7	0.999	0.000	1.820	46.22	0.098
8.904	252.2	8.913	252.4	1.001	0.002	1.750	44.45	0.029
7.643	216.4	7.663	217.0	1.003	0.004	1.752	44.50	0.031
7.662	217.0	7.663	217.0	1.000	0.001	1.755	44.59	0.034
8.295	234.9	8.302	235.1	1.001	0.002	1.746	44.34	0.024
7.436	210.6	7.450	211.0	1.002	0.003	1.699	43.15	-0.023
7.444	210.8	7.447	210.9	1.000	0.001	1.700	43.19	-0.021
7.412	209.9	7.450	211.0	1.005	0.006	1.695	43.05	-0.026
7.823	221.6	7.788	220.6	0.995	-0.004	1.682	42.72	-0.039
7.815	221.3	7.792	220.7	0.997	-0.002	1.642	41.70	-0.079
7.912	224.1	7.792	220.7	0.985	-0.014	1.674	42.52	-0.047
AVERAGE RESULTS				0.999	+/- 0.02	1.721	43.723	+/- 0.2

Signed: _____



Date: 07/08/03

EPA METHOD 5 POST TEST METER BOX CHECK

Meter Box ID: 90394
 Meter Box Model Number: Nutech 2010A
 Dry Gas Meter Serial Number: 28345
 Pre Test Full Calibration Y_d : 0.999
 Pre Test Full Calibration $dH_{@}$: 1.721
 Pre Test Full Calibration Date: 7/8/2003

Date: 9/29/2003
 Operator: S. Thorpe
 Barometric Pressure: 24.65
 Critical Orifice Kit Number: CI-63
 Critical Orifice Vacuum: 14

DRY GAS METER READINGS									ORIFICE DATA			CONDITIONS		
dH (in H ₂ O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temperature		Final Temperature		Orifice Serial (number)	K' Orifice Coefficient (see above)	Vacuum (in Hg)	Ambient Temperature		
					Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)				Initial (deg F)	Final (deg F)	Average (deg F)
1.60	12.00	676.081	685.543	9.462	68.0	67.0	69.0	68.0	CI-63	0.6090	13.0	67.0	67.0	67.0
1.60	12.00	685.543	694.994	9.451	69.0	68.0	70.0	69.0	CI-63	0.6090	13.0	67.0	67.0	67.0
1.60	13.00	694.994	705.235	10.241	70.0	69.0	71.0	69.0	CI-63	0.6090	13.0	67.0	67.0	67.0

POST TEST RESULTS									
DRY GAS METER VOLUME CORRECTED		ORIFICE VOLUME CORRECTED		DRY GAS METER CALIBRATION FACTOR Y_d			ORIFICE CALIBRATION FACTOR $dH_{@}$		
V_m (std) (cu ft)	V_m (std) (liters)	V_{cr} (std) (cu ft)	V_m (std) (liters)	Value (number)	Variation (number)	Variation (Percent)	Value (in H ₂ O)	Value (mm H ₂ O)	Variation (in H ₂ O)
7.829	221.7	7.847	222.2	1.002	-0.002	-0.24%	1.746	44.34	0.009
7.806	221.1	7.847	222.2	1.005	0.001	0.06%	1.736	44.09	-0.001
8.446	239.2	8.501	240.7	1.007	0.002	0.18%	1.729	43.92	-0.008
PRE-TEST CALIBRATION RESULTS				0.999			1.721		
AVERAGE RESULTS				1.005			1.737		
DIFFERENCE FROM FULL CAL. (%)				-0.57%			-0.92%		
ACCEPTANCE CRITERIA				+/-5%	+/- .02	+/-2%	N/A		

Signed: _____

Date: September 29, 2003

EPA METHOD 5 FULL TEST METER BOX CALIBRATION

Meter ID:	90401
Model #:	Nutech 2010A
DGM Serial #:	28149
Operator:	S. Thorpe

Date:	July 8, 2003	
Barometric Pressure:	24.55	24.10 in Hg
Critical Orifice Vacuum:	13.97	13.73 in Hg

DRY GAS METER READINGS									ORIFICE DATA CONDITIONS					
dH (in H ₂ O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps.		Final Temps.		Orifice Serial# (number)	K' Orifice Coefficient (see above)	Vacuum (in Hg)	Ambient Temperature		
					Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)				Initial (deg F)	Final (deg F)	Average (deg F)
3.100	10.00	881.338	892.162	10.824	72.0	72.0	73.0	73.0	CI-73	0.8374	13.00	71.0	72.0	71.5
3.1	10.00	892.162	903.011	10.849	73.0	73.0	76.0	73.0	CI-73	0.8374	12.00	72.0	72.0	72.0
3.1	10.00	903.011	913.882	10.871	76.0	73.0	77.0	74.0	CI-73	0.8374	12.0	72.0	72.0	72.0
1.600	12.00	913.882	923.410	9.528	77.0	74.0	77.0	76.0	CI-63	0.6106	15.00	72.0	72.0	72.0
1.600	12.00	923.410	932.943	9.533	77.0	76.0	78.0	76.0	CI-63	0.6106	15.0	72.0	72.0	72.0
1.600	12.00	932.943	942.495	9.552	78.0	76.0	79.0	76.0	CI-63	0.6106	15.00	72.0	72.0	72.0
0.960	15.00	942.495	951.793	9.298	79.0	76.0	79.0	77.0	CI-55	0.4749	16.00	72.0	72.0	72.0
0.970	15.00	951.793	961.145	9.352	79.0	77.0	80.0	79.0	CI-55	0.4749	16.00	72.0	72.0	72.0
0.970	15.00	961.145	970.480	9.335	80.0	79.0	80.0	79.0	CI-55	0.4749	16.00	72.0	73.0	72.5
0.540	21.00	970.480	980.278	9.798	80.0	79.0	80.0	79.0	CI-48	0.3541	17.00	73.0	72.0	72.5
0.520	21.00	980.278	990.066	9.788	80.0	79.0	77.0	74.0	CI-48	0.3541	17.00	72.0	71.0	71.5
0.520	21.00	990.066	999.742	9.676	77.0	74.0	76.0	76.0	CI-48	0.3541	17.0000	71.0	71.0	71.0

CALIBRATION RESULTS								
DRY GAS METER VOLUME CORRECTED		ORIFICE VOLUME CORRECTED		DRY GAS METER CALIBRATION FACTOR Yd		ORIFICE CALIBRATION FACTOR dH@		
Vm(std) (ft ³)	Vm(std) (liters)	Vcr(std) (ft ³)	Vm(std) (liters)	Value (number)	Variation (number)	Value (in H ₂ O)	Value (mm H ₂ O)	Variation (in H ₂ O)
8.884	251.6	8.917	252.5	1.004	-0.003	1.799	45.70	0.075
8.884	251.6	8.913	252.4	1.003	-0.003	1.794	45.57	0.070
8.881	251.5	8.913	252.4	1.004	-0.003	1.784	45.32	0.060
7.594	215.1	7.656	216.8	1.008	0.002	1.738	44.13	0.013
7.587	214.9	7.656	216.8	1.009	0.003	1.729	43.93	0.005
7.595	215.1	7.656	216.8	1.008	0.002	1.726	43.85	0.002
7.372	208.8	7.443	210.8	1.010	0.003	1.701	43.20	-0.024
7.401	209.6	7.443	210.8	1.006	-0.001	1.707	43.37	-0.017
7.378	208.9	7.440	210.7	1.008	0.002	1.704	43.29	-0.020
7.734	219.0	7.766	219.9	1.004	-0.002	1.702	43.23	-0.022
7.754	219.6	7.773	220.1	1.003	-0.004	1.649	41.90	-0.075
7.690	217.8	7.777	220.2	1.011	0.005	1.660	42.17	-0.064
AVERAGE RESULTS				1.006	+/- 0.02	1.725	43.805	+/- 0.2

Signed: _____



Date: July 8, 2003

EPA METHOD 5 POST TEST METER BOX CHECK

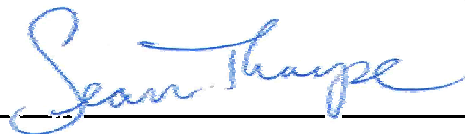
Meter Box ID: 90401
 Meter Box Model Number: Nutech 2010A
 Dry Gas Meter Serial Number: 28149
 Pre Test Full Calibration Y_d : 1.006
 Pre Test Full Calibration $dH_{@}$: 1.725
 Pre Test Full Calibration Date: 7/8/2003

Date: 9/29/2003
 Operator: S. Thorpe
 Barometric Pressure: 24.65
 Critical Orifice Kit Number: CI-63
 Critical Orifice Vacuum: 14

DRY GAS METER READINGS									ORIFICE DATA			CONDITIONS		
dH (in H ₂ O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temperature		Final Temperature		Orifice Serial (number)	K' Orifice Coefficient (see above)	Vacuum (in Hg)	Ambient Temperature		
					Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)				Initial (deg F)	Final (deg F)	Average (deg F)
1.60	12.00	174.630	183.990	9.360	72.0	71.0	73.0	71.0	CI-63	0.6090	11.0	72.0	72.0	72.0
1.60	13.00	183.990	194.093	10.103	73.0	71.0	74.0	71.0	CI-63	0.6090	11.5	72.0	73.0	72.5
1.60	13.00	194.093	204.227	10.134	74.0	71.0	76.0	72.0	CI-63	0.6090	11.5	73.0	74.0	73.5

POST TEST RESULTS									
DRY GAS METER VOLUME CORRECTED		ORIFICE VOLUME CORRECTED		DRY GAS METER CALIBRATION FACTOR Y_d			ORIFICE CALIBRATION FACTOR $dH_{@}$		
V_m (std) (cu ft)	V_m (std) (liters)	V_{cr} (std) (cu ft)	V_m (std) (liters)	Value (number)	Variation (number)	Variation (Percent)	Value (in H ₂ O)	Value (mm H ₂ O)	Variation (in H ₂ O)
7.690	217.8	7.810	221.2	1.016	-0.002	-0.20%	1.759	44.67	-0.002
8.293	234.9	8.457	239.5	1.020	0.002	0.21%	1.760	44.72	0.000
8.303	235.1	8.449	239.3	1.018	0.000	0.00%	1.762	44.76	0.002
PRE-TEST CALIBRATION RESULTS				1.006			1.725		
AVERAGE RESULTS				1.018			1.760		
DIFFERENCE FROM FULL CAL. (%)				-1.16%			-2.06%		
ACCEPTANCE CRITERIA				+/-5%	+/- .02	+/-2%	N/A		

Signed: _____

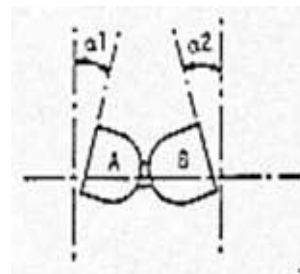
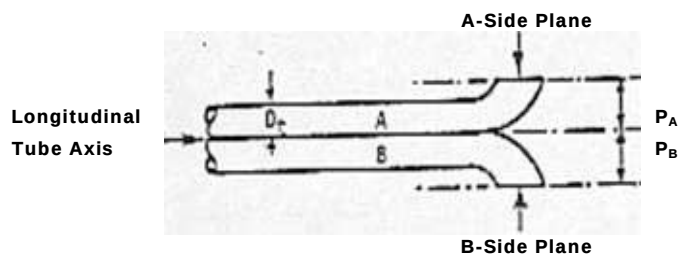


Date: September 29, 2003

PITOT TUBE CALIBRATION

Date: 2/4/2003
 Technician: S. Thorpe

Pitot ID: 301
 Geometrically Correct: Yes



$$1.05 D_t < P < 1.50 D_t$$

$$P_A = P_B$$

$$\alpha_1 \text{ and } \alpha_2 < 10^\circ$$

$$D_t = \underline{0.37}$$

$$1.05 \times D_t = \underline{0.3885}$$

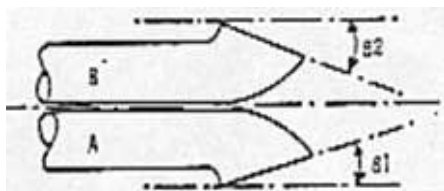
$$1.50 \times D_t = \underline{0.555}$$

$$P_A = \underline{0.445}$$

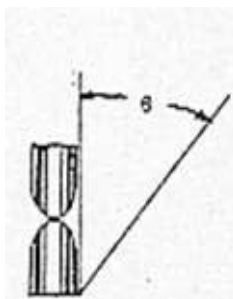
$$P_B = \underline{0.47}$$

$$\alpha_1 = \underline{1}$$

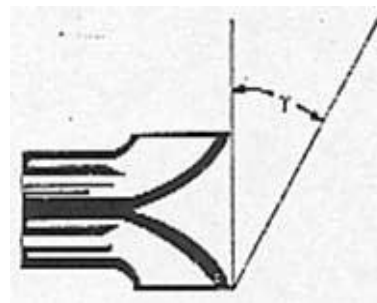
$$\alpha_2 = \underline{1}$$



$$\beta_1 \text{ and } \beta_2 < 5^\circ$$



$$W < 0.0313$$



$$Z < 0.125$$

$$\beta_1 = \underline{1.5}$$

$$\beta_2 = \underline{1}$$

$$\theta = \underline{1}$$

$$W = A \sin \theta = \underline{0.015969}$$

$$\gamma = \underline{1}$$

$$A = P_A + P_B = \underline{0.915}$$

$$Z = A \sin \gamma = \underline{0.015969}$$

Technician: Sean Thorpe

Date: 2/4/2003

PITOT THERMOCOUPLE CALIBRATION

Date: 2/4/2003
Technician: S. Thorpe
Ambient Temperature: 64
Thermocouple ID: 301
Standard: Fluke 50D
Standard Serial No.: A

Standard Temperature (°R)	Pitot	
	Rdg (°R)	Diff (%)
492.0	491.0	-0.20%
492.0	491.0	-0.20%

Tolerance ± 1.5 %

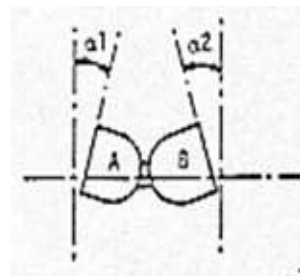
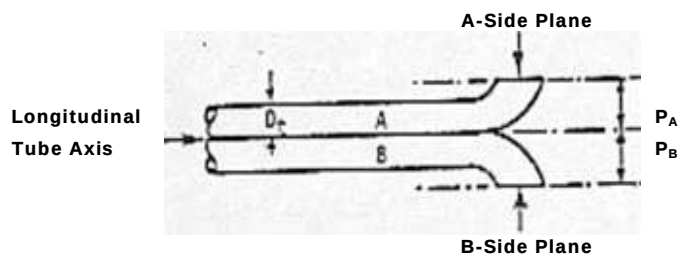
Percent Difference =

$$\frac{(\text{Thermocouple Temp.} - \text{Standard temp.}) \times 100}{\text{Standard Temp.}}$$

PITOT TUBE CALIBRATION

Date: 3/24/2003
 Technician: S. Thorpe

Pitot ID: 315
 Geometrically Correct: Yes



$$1.05 D_t < P < 1.50 D_t$$

$$P_A = P_B$$

$$\alpha_1 \text{ and } \alpha_2 < 10^\circ$$

$$D_t = \underline{0.71}$$

$$1.05 \times D_t = \underline{0.7455}$$

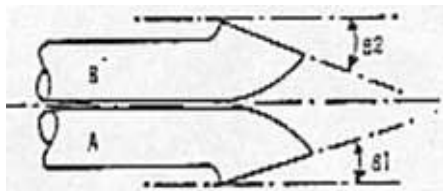
$$1.50 \times D_t = \underline{1.065}$$

$$P_A = \underline{0.95}$$

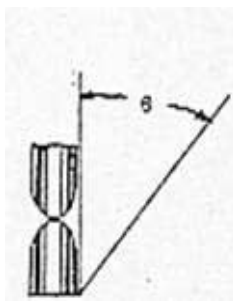
$$P_B = \underline{0.98}$$

$$\alpha_1 = \underline{1}$$

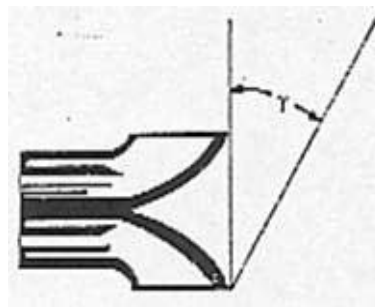
$$\alpha_2 = \underline{1}$$



$$\beta_1 \text{ and } \beta_2 < 5^\circ$$



$$W < 0.0313$$



$$Z < 0.125$$

$$\beta_1 = \underline{1}$$

$$\beta_2 = \underline{3}$$

$$\theta = \underline{0.92}$$

$$W = A \sin \theta = \underline{0.030989}$$

$$\gamma = \underline{1}$$

$$A = P_A + P_B = \underline{1.93}$$

$$Z = A \sin \gamma = \underline{0.0336831}$$

Technician: S. Thorpe

Date: 3/24/2003

PITOT THERMOCOUPLE CALIBRATION

Date: 3/24/2003
Technician: S. Thorpe
Ambient Temperature: 70
Thermocouple ID: 315
Standard: Fluke 50D
Standard Serial No.: A

Standard Temperature (°R)	Pitot	
	Rdg (°R)	Diff (%)
492.1	492.0	-0.02%
492.0	492.2	0.04%

Tolerance ± 1.5 %

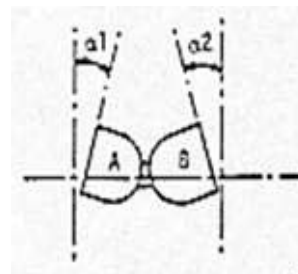
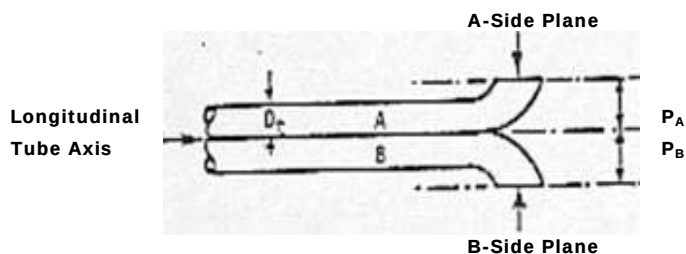
Percent Difference =

$$\frac{(\text{Thermocouple Temp.} - \text{Standard temp.}) \times 100}{\text{Standard Temp.}}$$

PITOT TUBE CALIBRATION

Date: 4/2/2002
 Technician: B. Bauer

Pitot ID: 401
 Geometrically Correct: YES



$$1.05 D_t < P < 1.50 D_t$$

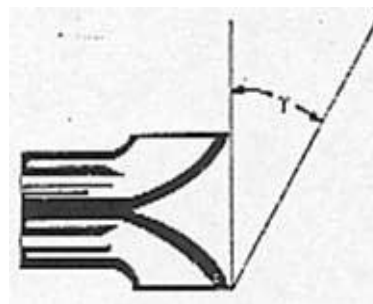
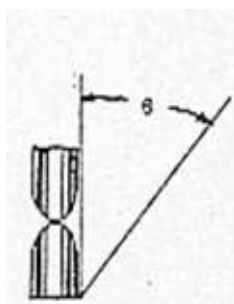
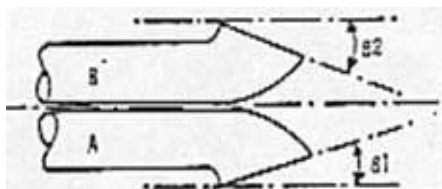
$$P_A = P_B$$

$$\alpha_1 \text{ and } \alpha_2 < 10^\circ$$

$$\begin{aligned} D_t &= \underline{0.375} \\ 1.05 \times D_t &= \underline{0.39375} \\ 1.50 \times D_t &= \underline{0.5625} \end{aligned}$$

$$\begin{aligned} P_A &= \underline{0.45} \\ P_B &= \underline{0.462} \end{aligned}$$

$$\begin{aligned} \alpha_1 &= \underline{0.5} \\ \alpha_2 &= \underline{0.5} \end{aligned}$$



$$\beta_1 \text{ and } \beta_2 < 5^\circ$$

$$W < 0.0313$$

$$Z < 0.125$$

$$\begin{aligned} \beta_1 &= \underline{1.5} \\ \beta_2 &= \underline{2} \end{aligned}$$

$$\begin{aligned} \theta &= \underline{2} \\ W = A \sin \theta &= \underline{0.031828} \end{aligned}$$

$$\begin{aligned} \gamma &= \underline{2} \\ A = P_A + P_B &= \underline{0.912} \\ Z = A \sin \gamma &= \underline{0.031828} \end{aligned}$$

Technician: B. Bauer

Date: 4/2/2002

PITOT THERMOCOUPLE CALIBRATION

Date: 4/2/2002
Technician: B. Bauer
Ambient Temperature: 70
Thermocouple ID: 401
Standard: Fluke 50D
Standard Serial No.: A

Standard Temperature (°R)	Pitot	
	Rdg (°R)	Diff (%)
494.5	494	-0.10%
495	494.5	-0.10%

Tolerance ± 1.5 %

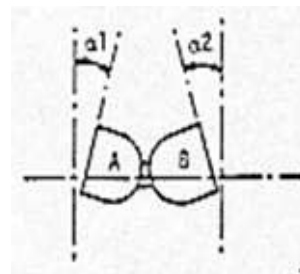
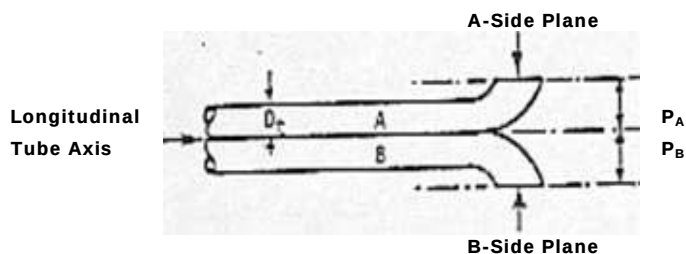
Percent Difference =

$$\frac{(\text{Thermocouple Temp.} - \text{Standard temp.}) \times 100}{\text{Standard Temp.}}$$

PITOT TUBE CALIBRATION

Date: 9/29/2003
 Technician: S. Thorpe

Pitot ID: 401
 Geometrically Correct: YES



$$1.05 D_t < P < 1.50 D_t$$

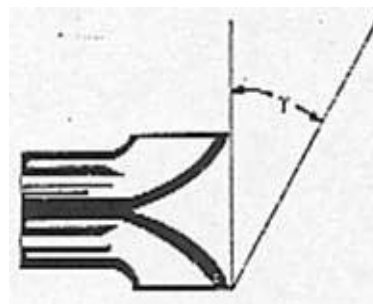
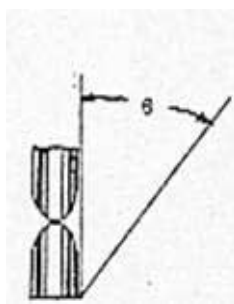
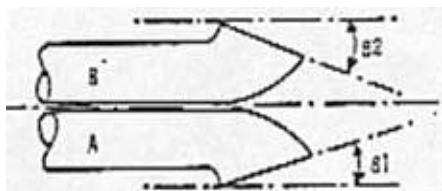
$$P_A = P_B$$

$$\alpha_1 \text{ and } \alpha_2 < 10^\circ$$

$$\begin{aligned} D_t &= \underline{0.375} \\ 1.05 \times D_t &= \underline{0.39375} \\ 1.50 \times D_t &= \underline{0.5625} \end{aligned}$$

$$\begin{aligned} P_A &= \underline{0.45} \\ P_B &= \underline{0.462} \end{aligned}$$

$$\begin{aligned} \alpha_1 &= \underline{0.5} \\ \alpha_2 &= \underline{0.5} \end{aligned}$$



$$\beta_1 \text{ and } \beta_2 < 5^\circ$$

$$W < 0.0313$$

$$Z < 0.125$$

$$\begin{aligned} \beta_1 &= \underline{1.5} \\ \beta_2 &= \underline{2} \end{aligned}$$

$$\begin{aligned} \theta &= \underline{2} \\ W = A \sin \theta &= \underline{0.031828} \end{aligned}$$

$$\begin{aligned} \gamma &= \underline{2} \\ A = P_A + P_B &= \underline{0.912} \\ Z = A \sin \gamma &= \underline{0.031828} \end{aligned}$$

Technician: Sean Thorpe

Date: 9/29/2003

PITOT THERMOCOUPLE CALIBRATION

Date: 9/29/2003
Technician: S. Thorpe
Ambient Temperature: 70
Thermocouple ID: 401
Standard: Fluke 50D
Standard Serial No.: A

Standard Temperature (°R)	Pitot	
	Rdg (°R)	Diff (%)
492.1	491.8	-0.06%
492	492	0.00%

Tolerance ± 1.5 %

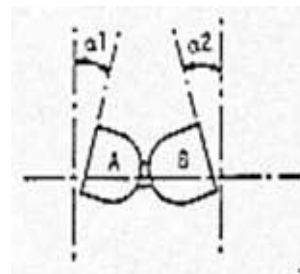
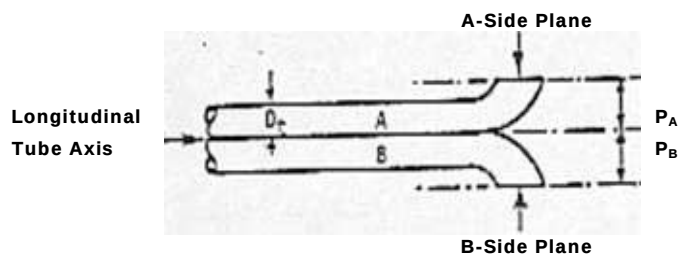
Percent Difference =

$$\frac{(\text{Thermocouple Temp.} - \text{Standard temp.}) \times 100}{\text{Standard Temp.}}$$

PITOT TUBE CALIBRATION

Date: 3/11/2003
 Technician: S. Thorpe

Pitot ID: 501
 Geometrically Correct: Yes



$$1.05 D_t < P < 1.50 D_t$$

$$P_A = P_B$$

$$\alpha_1 \text{ and } \alpha_2 < 10^\circ$$

$$D_t = \underline{0.38}$$

$$1.05 \times D_t = \underline{0.399}$$

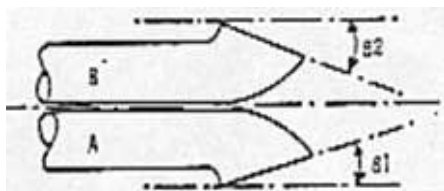
$$1.50 \times D_t = \underline{0.57}$$

$$P_A = \underline{0.46}$$

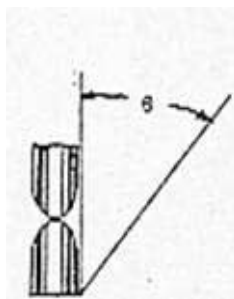
$$P_B = \underline{0.47}$$

$$\alpha_1 = \underline{9}$$

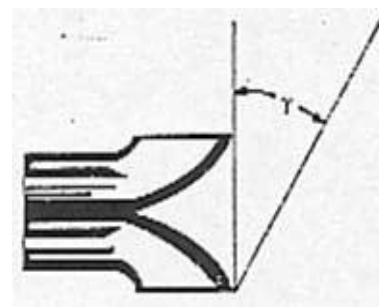
$$\alpha_2 = \underline{4}$$



$$\beta_1 \text{ and } \beta_2 < 5^\circ$$



$$W < 0.0313$$



$$Z < 0.125$$

$$\beta_1 = \underline{1}$$

$$\beta_2 = \underline{3}$$

$$\theta = \underline{1}$$

$$W = A \sin \theta = \underline{0.016231}$$

$$\gamma = \underline{5}$$

$$A = P_A + P_B = \underline{0.93}$$

$$Z = A \sin \gamma = \underline{0.0810548}$$

Technician: Sean Thorpe

Date: 3/11/2003

PITOT THERMOCOUPLE CALIBRATION

Date: 3/24/2003
Technician: S. Thorpe
Ambient Temperature: 70
Thermocouple ID: 501
Standard: Fluke 50D
Standard Serial No.: A

Standard Temperature (°R)	Pitot	
	Rdg (°R)	Diff (%)
492.2	292.2	-40.63%
492.1	292.2	-40.62%

Tolerance ± 1.5 %

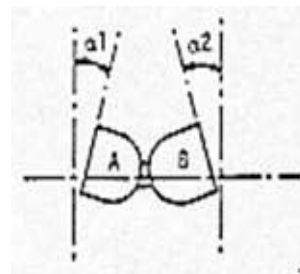
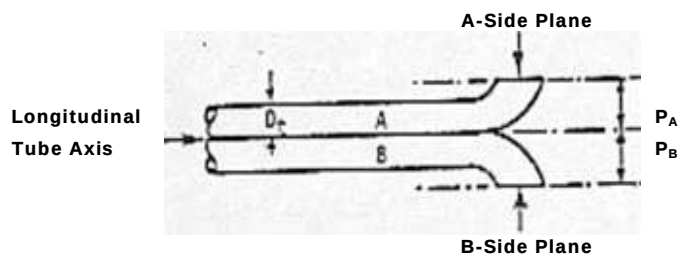
Percent Difference =

$$\frac{(\text{Thermocouple Temp.} - \text{Standard temp.}) \times 100}{\text{Standard Temp.}}$$

PITOT TUBE CALIBRATION

Date: 3/11/2003
 Technician: S. Thorpe

Pitot ID: 502
 Geometrically Correct: Yes



$$1.05 D_t < P < 1.50 D_t$$

$$P_A = P_B$$

$$\alpha_1 \text{ and } \alpha_2 < 10^\circ$$

$$D_t = \underline{0.36}$$

$$1.05 \times D_t = \underline{0.378}$$

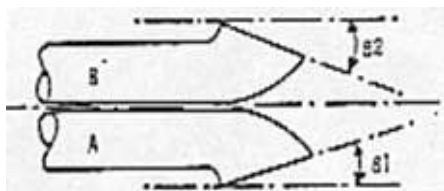
$$1.50 \times D_t = \underline{0.54}$$

$$P_A = \underline{0.485}$$

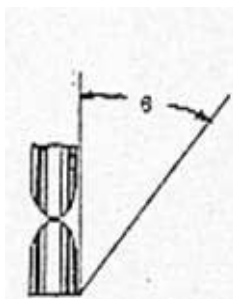
$$P_B = \underline{0.445}$$

$$\alpha_1 = \underline{1}$$

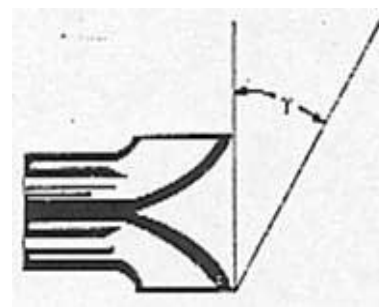
$$\alpha_2 = \underline{2}$$



$$\beta_1 \text{ and } \beta_2 < 5^\circ$$



$$W < 0.0313$$



$$Z < 0.125$$

$$\beta_1 = \underline{1}$$

$$\beta_2 = \underline{3.5}$$

$$\theta = \underline{1}$$

$$W = A \sin \theta = \underline{0.016231}$$

$$\gamma = \underline{2}$$

$$A = P_A + P_B = \underline{0.93}$$

$$Z = A \sin \gamma = \underline{0.0324565}$$

Technician: *Sean Thorpe*

Date: 3/11/2003

PITOT THERMOCOUPLE CALIBRATION

Date: 3/25/2003
Technician: S. Thorpe
Ambient Temperature: 70
Thermocouple ID: 502
Standard: Fluke 50D
Standard Serial No.: A

Standard Temperature (°R)	Pitot	
	Rdg (°R)	Diff (%)
492.1	494.8	0.55%
492	495.2	0.65%

Tolerance ± 1.5 %

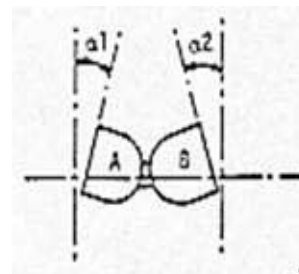
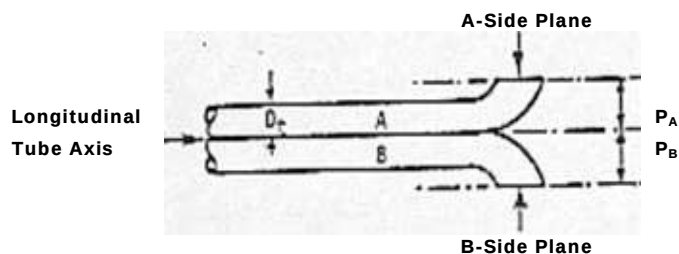
Percent Difference =

$$\frac{(\text{Thermocouple Temp.} - \text{Standard temp.}) \times 100}{\text{Standard Temp.}}$$

PITOT TUBE CALIBRATION

Date: 3/11/2003
 Technician: S. Thorpe

Pitot ID: HA-1
 Geometrically Correct: Yes



$$1.05 D_t < P < 1.50 D_t$$

$$P_A = P_B$$

$$\alpha_1 \text{ and } \alpha_2 < 10^\circ$$

$$D_t = \underline{0.362}$$

$$1.05 \times D_t = \underline{0.3801}$$

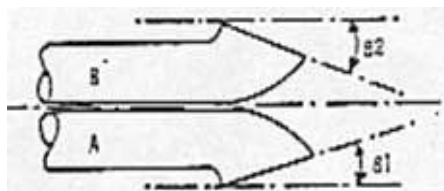
$$1.50 \times D_t = \underline{0.543}$$

$$P_A = \underline{0.395}$$

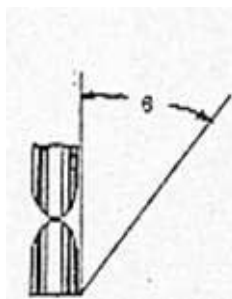
$$P_B = \underline{0.463}$$

$$\alpha_1 = \underline{1}$$

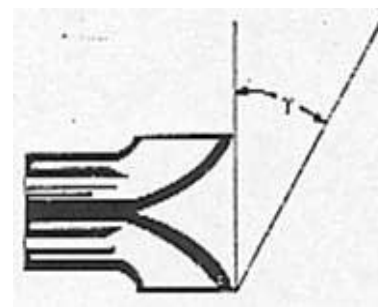
$$\alpha_2 = \underline{1}$$



$$\beta_1 \text{ and } \beta_2 < 5^\circ$$



$$W < 0.0313$$



$$Z < 0.125$$

$$\beta_1 = \underline{1}$$

$$\beta_2 = \underline{2.5}$$

$$\theta = \underline{2}$$

$$W = A \sin \theta = \underline{0.029944}$$

$$\gamma = \underline{2}$$

$$A = P_A + P_B = \underline{0.858}$$

$$Z = A \sin \gamma = \underline{0.0299438}$$

Technician: Sean Thorpe

Date: 3/11/2003

PITOT THERMOCOUPLE CALIBRATION

Date: 3/24/2003
Technician: S. Thorpe
Ambient Temperature: 70
Thermocouple ID: HA-1
Standard: Fluke 50D
Standard Serial No.: A

Standard Temperature (°R)	Pitot	
	Rdg (°R)	Diff (%)
492.1	492.2	0.02%
491.9	492.2	0.06%

Tolerance ± 1.5 %

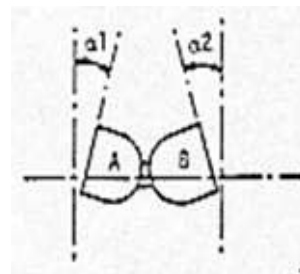
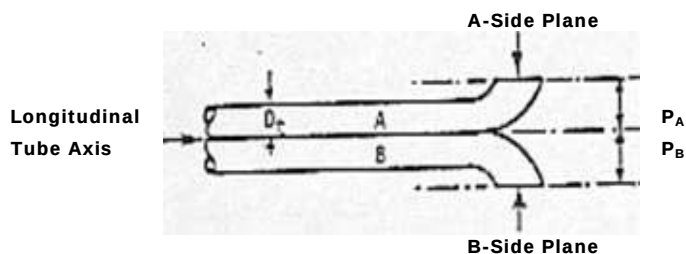
Percent Difference =

$$\frac{(\text{Thermocouple Temp.} - \text{Standard temp.}) \times 100}{\text{Standard Temp.}}$$

PITOT TUBE CALIBRATION

Date: 3/24/2003
 Technician: S. Thorpe

Pitot ID: HA-2
 Geometrically Correct: Yes



$$1.05 D_t < P < 1.50 D_t$$

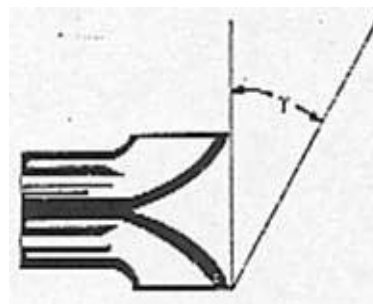
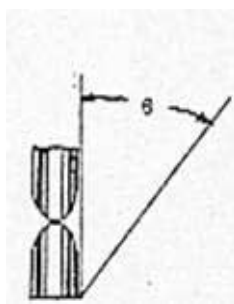
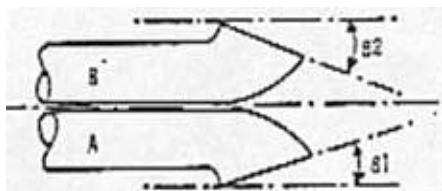
$$P_A = P_B$$

$$\alpha_1 \text{ and } \alpha_2 < 10^\circ$$

$$\begin{aligned} D_t &= \underline{0.72} \\ 1.05 \times D_t &= \underline{0.756} \\ 1.50 \times D_t &= \underline{1.08} \end{aligned}$$

$$\begin{aligned} P_A &= \underline{0.88} \\ P_B &= \underline{0.9} \end{aligned}$$

$$\begin{aligned} \alpha_1 &= \underline{1} \\ \alpha_2 &= \underline{2} \end{aligned}$$



$$\beta_1 \text{ and } \beta_2 < 5^\circ$$

$$W < 0.0313$$

$$Z < 0.125$$

$$\begin{aligned} \beta_1 &= \underline{1} \\ \beta_2 &= \underline{1} \end{aligned}$$

$$\begin{aligned} \theta &= \underline{1} \\ W = A \sin \theta &= \underline{0.031065} \end{aligned}$$

$$\begin{aligned} \gamma &= \underline{2} \\ A = P_A + P_B &= \underline{1.78} \\ Z = A \sin \gamma &= \underline{0.062121} \end{aligned}$$

Technician: Sean Thorpe

Date: 3/24/2003

PITOT THERMOCOUPLE CALIBRATION

Date: 3/24/2003
Technician: S. Thorpe
Ambient Temperature: 69
Thermocouple ID: ha-2
Standard: Fluke 50D
Standard Serial No.: A

Standard Temperature (°R)	Pitot	
	Rdg (°R)	Diff (%)
492.1	491.8	-0.06%
492.0	492.0	0.00%

Tolerance ± 1.5 %

Percent Difference =

$$\frac{(\text{Thermocouple Temp.} - \text{Standard temp.}) \times 100}{\text{Standard Temp.}}$$

Follow up testing done at Arizona site to verify that an operating fab could achieve an overall effi
HF

Site	Date	Scrubber Number	flow, cfm	Method	Test duration	scrubber water pH
Arizona	Jul-00	scrubber 2	23,879	FTIR	14 hrs.	7.25 - 7.33
Arizona	Jul-00	scrubber 4	22,940	FTIR	11.5 hrs.	7.82 - 8.13
Arizona	Jul-00	scrubber 9	25,316	FTIR	12.5 hrs.	8.86 - 8.93

Overall Efficiency Calculation, if scrub 4 eff assumed =0 (i.e. inlet = outlet)

		Scrubber 2	Scrubber 4	Scrubber 9	Total
	Flow, cfm	23,789	22,940	25,316	
385 ft3/lb. mole	Inlet conc, ppm	4.7 ND		0.79	
20 MW HF	Total lbs. in	4.18	0.25	0.75	5.18
12 hrs.	Outlet conc., ppm	0.321	0.292	0.343	
	Total lbs. out	0.286	0.25	0.325	0.86
	Efficiency	93.17%	0	56.58%	83.38%

Scrubber 2

Time	In conc., ppm	Out conc., ppm	Time
4:39:47 PM	5.529		
4:44:46 PM	5.100	0.603	
4:49:45 PM	5.066	0.5341	
4:54:44 PM	4.953	0.4849	
4:59:44 PM	4.720	0.4542	8:13:51 PM
5:04:43 PM	4.561	0.4244	8:18:51 PM
5:09:42 PM	4.490	0.405	8:23:50 PM
5:14:41 PM	5.031	0.3993	8:28:50 PM
5:19:40 PM	4.916	0.4067	8:33:49 PM
5:24:40 PM	5.485	0.4204	8:38:48 PM
5:29:39 PM	4.894	0.4365	8:43:48 PM
5:34:38 PM	4.560	0.4494	8:48:47 PM
5:39:37 PM	4.561	0.4707	8:53:47 PM
5:44:36 PM	4.626	0.4962	8:58:46 PM
5:49:36 PM	4.622	0.5128	9:03:46 PM
5:54:35 PM	4.509	0.5551	9:08:45 PM
5:59:34 PM	4.646	0.6082	9:13:45 PM
6:04:33 PM	4.735	0.6679	9:18:44 PM
6:09:32 PM	4.354	0.6001	9:23:44 PM
6:14:32 PM	4.534	0.5547	9:28:43 PM
6:19:31 PM	4.938	0.5	9:33:43 PM
6:24:30 PM	4.713	0.4452	9:38:42 PM
6:29:29 PM	5.318	0.301	9:43:42 PM
6:34:29 PM	5.149	0.2939	9:48:41 PM
6:39:28 PM	4.899	0.3321	9:53:41 PM
6:44:27 PM	4.930	0.3379	9:58:40 PM
6:49:26 PM	4.699	0.3356	10:03:40 PM
6:54:26 PM	5.061	0.3367	10:08:39 PM

6:59:25 PM	4.501	0.3394	10:13:39 PM
7:04:24 PM	4.993	0.3547	10:18:38 PM
7:09:23 PM	5.077	0.3636	10:23:37 PM
7:14:22 PM	5.343	0.3824	10:28:37 PM
7:19:22 PM	5.156	0.4145	10:33:36 PM
7:24:21 PM	5.180	0.4391	10:38:36 PM
7:29:20 PM	5.280	0.3977	10:43:35 PM
7:34:19 PM	5.133	0.373	10:48:35 PM
7:39:19 PM	5.294	0.3627	10:53:34 PM
7:46:00 PM	5.495	0.3594	10:58:34 PM
7:50:59 PM	5.352	0.365	11:03:33 PM
7:55:58 PM	5.373	0.3765	11:08:33 PM
8:00:57 PM	4.807	0.3853	11:13:32 PM
8:05:57 PM	4.513	0.3624	11:18:32 PM
8:10:56 PM	4.243	0.3304	11:23:31 PM
8:15:55 PM	3.860	0.3136	11:28:31 PM
8:20:54 PM	3.901	0.3144	11:33:30 PM
8:25:53 PM	3.685	0.313	11:38:30 PM
8:30:53 PM	3.786	0.312	11:43:29 PM
8:35:52 PM	3.972	0.3142	11:48:29 PM
8:40:51 PM	4.287	0.3155	11:53:28 PM
8:45:50 PM	4.406	0.3237	11:58:28 PM
8:50:50 PM	4.772	0.3378	12:03:27 AM
8:55:49 PM	4.913	0.3512	12:08:27 AM
9:00:48 PM	4.649	0.3491	12:14:28 AM
9:05:47 PM	4.462	0.3698	12:19:27 AM
9:10:47 PM	4.562	0.353	12:24:27 AM
9:15:46 PM	4.308	0.3147	12:29:26 AM
9:20:45 PM	4.901	0.3053	12:34:26 AM
9:25:44 PM	5.947	0.3002	12:39:25 AM
9:30:43 PM	5.223	0.3242	12:44:25 AM
9:35:43 PM	5.046	0.3297	12:49:24 AM
9:40:42 PM	5.040	0.3111	12:54:24 AM
9:45:41 PM	4.849	0.3013	12:59:23 AM
9:50:40 PM	4.760	0.2934	1:04:23 AM
9:55:40 PM	4.810	0.2937	1:09:22 AM
10:00:39 PM	4.671	0.2878	1:14:22 AM
10:05:38 PM	4.689	0.2818	1:19:21 AM
10:10:37 PM	4.656	0.281	1:24:20 AM
10:15:37 PM	4.261	0.2831	1:29:20 AM
10:20:36 PM	4.262	0.286	1:34:20 AM
10:25:35 PM	3.947	0.2952	1:39:19 AM
10:30:34 PM	5.126	0.2939	1:44:18 AM
10:35:33 PM	5.028	0.2948	1:49:18 AM
10:40:33 PM	4.564	0.2935	1:54:18 AM
10:45:32 PM	4.411	0.2903	1:59:17 AM
10:50:31 PM	4.425	0.2956	2:04:17 AM
10:55:30 PM	4.389	0.2996	2:09:16 AM
11:00:30 PM	4.424	0.3176	2:14:15 AM
11:05:29 PM	4.510	0.3457	2:19:15 AM
11:10:28 PM	4.421	0.3277	2:24:14 AM
11:15:27 PM	4.069	0.2979	2:29:14 AM

11:20:26 PM	3.646	0.2859	2:34:13 AM
11:25:26 PM	3.881		2:39:13 AM
11:30:25 PM	3.976	0.285	2:44:12 AM
11:35:24 PM	4.977	0.2826	2:49:12 AM
11:40:23 PM	5.387	0.2785	2:54:11 AM
11:45:23 PM	4.561	0.2819	2:59:11 AM
11:50:22 PM	4.549	0.2805	3:04:10 AM
11:55:21 PM	4.775	0.2789	3:09:10 AM
12:00:20 AM	4.520	0.2806	3:14:09 AM
12:05:20 AM	4.182	0.2791	3:19:09 AM
12:10:19 AM	4.339	0.2922	3:24:08 AM
12:15:18 AM	4.751	0.2947	3:29:08 AM
12:20:17 AM	4.682	0.3025	3:34:07 AM
12:25:16 AM	4.521	0.3079	3:39:07 AM
12:30:16 AM	4.653	0.3184	3:44:06 AM
12:35:15 AM	4.776	0.3349	3:49:06 AM
12:40:14 AM	5.103	0.3557	3:54:05 AM
12:45:13 AM	5.202	0.3645	3:59:04 AM
12:50:12 AM	5.167	0.3618	4:04:04 AM
12:55:12 AM	5.029	0.3801	4:09:03 AM
1:00:11 AM	4.863	0.3679	4:14:03 AM
1:05:10 AM	4.780	0.3232	4:19:02 AM
1:10:09 AM	5.685	0.3076	4:24:02 AM
1:15:09 AM	6.186	0.2946	4:29:01 AM
1:20:08 AM	5.790	0.2958	4:34:01 AM
1:25:07 AM	5.159	0.2875	4:39:00 AM
1:30:06 AM	5.308	0.2815	4:44:00 AM
1:35:05 AM	5.252	0.2822	4:48:59 AM
1:40:05 AM	5.097	0.2841	4:53:59 AM
1:45:04 AM	5.135	0.274	4:58:58 AM
1:50:03 AM	5.232	0.271	5:03:58 AM
1:55:02 AM	5.110	0.2694	5:08:57 AM
2:00:01 AM	5.369	0.266	5:13:57 AM
2:05:01 AM	5.185	0.2613	5:18:56 AM
2:10:00 AM	4.499	0.2581	5:23:56 AM
2:14:59 AM	4.735		5:28:55 AM
2:19:58 AM	4.491	0.2595	5:33:55 AM
2:24:58 AM	4.672	0.2581	5:38:54 AM
2:29:57 AM	4.880	0.2525	5:43:54 AM
2:34:56 AM	4.758	0.25	5:48:53 AM
2:39:55 AM	4.640	0.2495	5:53:53 AM
2:44:54 AM	4.696	0.2535	5:58:52 AM
2:49:54 AM	4.650	0.256	6:03:52 AM
2:54:53 AM	4.644	0.2547	6:08:51 AM
2:59:52 AM	4.733	0.2528	6:13:51 AM
3:04:51 AM	4.766	0.2602	6:18:50 AM
3:09:50 AM	4.998	0.2628	6:23:49 AM
3:14:50 AM	4.914	0.2679	6:28:49 AM
3:19:49 AM	5.008	0.2719	6:33:48 AM
3:24:48 AM	4.786	0.2804	6:38:48 AM
3:29:47 AM	4.862	0.2924	6:43:47 AM
3:34:46 AM	4.828	0.3004	6:48:47 AM

3:39:46 AM	4.726	0.286	6:53:46 AM
3:44:45 AM	4.552	0.2898	6:58:46 AM
3:49:44 AM	4.384	0.2741	7:03:45 AM
3:54:43 AM	4.085	0.2668	7:08:45 AM
3:59:43 AM	4.219	0.2638	7:13:44 AM
4:04:42 AM	4.307	0.2642	7:18:44 AM
4:09:41 AM	4.217	0.2625	7:23:43 AM
4:14:40 AM	4.114	0.2594	7:28:42 AM
4:19:40 AM	3.904	0.2549	7:33:42 AM
4:24:39 AM	3.781	0.2504	
4:29:38 AM	4.162	0.2557	
4:34:37 AM	4.182	0.2468	
4:39:36 AM	3.875	0.2474	
4:44:36 AM	3.920	0.2441	
4:49:35 AM	3.793	0.2421	
4:54:34 AM	4.548	0.2431	
4:59:33 AM	5.804	0.2411	
5:04:32 AM	4.945	0.2439	
5:09:32 AM	4.620	0.2436	
5:14:31 AM	4.254	0.2403	
5:19:30 AM	4.193	0.2408	
5:24:29 AM	4.307	0.2403	
5:29:29 AM	4.385	0.2397	
5:34:28 AM	4.469	0.2396	
5:39:27 AM	4.578	0.2449	
5:44:26 AM	4.448	0.242	
5:53:29 AM	4.535	0.2382	
5:58:28 AM	4.794	0.2369	
6:03:27 AM	4.922	0.2401	
6:08:27 AM	4.630	0.2367	
6:13:26 AM	4.387	0.2382	
6:18:25 AM	4.414	0.2404	
6:23:24 AM	4.210	0.2424	
6:28:23 AM	4.155	0.2487	
Average	4.702	0.321	

ciency of at least 70%

caustic injection?

yes

yes Outlet detectable in spite of ND inlet. Likely cause was shared sump with another scrubber that ha

yes

Overall Efficiency Calculation, if scrub 4 inlet assumed = 0 (i.e. neg. efficiency)

	Scrubber 2	Scrubber 4	Scrubber 9	Total
Flow, cfm	23,789	22,940	25,316	
Inlet conc, ppm	4.7	0	0.79	
Total lbs. in	4.18	0	0.75	4.93
Outlet conc., ppm	0.321	0.292	0.343	
Total lbs. out	0.286	0.25	0.325	0.860781
Efficiency	93.17%		56.58%	82.54%

worst case overall efficiency = 82.54%

Scrubber 4			Scrubber 9		
In	Out			In	Out
conc., ppm	conc., ppm		Time	conc., ppm	conc., ppm
	0.3225		8:16:26 PM	3.845	0.328
	0.3406		8:21:41 PM	2.811	0.332
	0.3488		8:26:39 PM	2.418	0.347
	0.3483		8:31:38 PM	2.166	0.358
0.661	0.3475		8:36:37 PM	1.935	0.352
0.148	0.34		8:41:36 PM	1.838	0.357
BDL	0.3388		8:46:35 PM	1.663	0.360
BDL	0.3324		8:51:35 PM	1.683	0.365
BDL	0.3327		8:56:34 PM	1.557	0.369
BDL	0.333		9:01:33 PM	1.531	0.375
BDL	0.3334		9:06:32 PM	1.502	0.383
BDL	0.3395		9:11:31 PM	1.457	0.376
BDL	0.3352		9:16:30 PM	1.425	0.373
BDL	0.3298		9:21:29 PM	1.414	0.389
BDL	0.3316		9:26:28 PM	1.335	0.394
BDL	0.3335		9:31:27 PM	1.216	0.379
BDL	0.3272		9:36:26 PM	1.187	0.386
BDL	0.3305		9:41:25 PM	1.130	0.382
BDL	0.3271		9:46:24 PM	1.219	0.394
BDL	0.3274		9:51:23 PM	1.105	0.382
BDL			9:56:22 PM	1.116	0.375
BDL	0.3304		10:01:21 PM	1.112	0.364
BDL	0.323		10:06:20 PM	1.050	0.360
BDL	0.3268		10:11:19 PM	1.116	0.362
BDL	0.3139		10:16:18 PM	1.008	0.352
BDL	0.3114		10:21:17 PM	0.972	0.349
BDL	0.3105		10:26:16 PM	0.947	0.343
BDL	0.3062		10:31:15 PM	0.927	0.340

BDL	0.3075	10:36:14 PM	0.868	0.334
BDL	0.308	10:41:13 PM	0.781	0.333
BDL	0.3113	10:46:12 PM	0.775	0.337
BDL	0.3098	10:51:11 PM	0.826	0.332
BDL	0.3041	10:56:10 PM	0.765	0.328
BDL	0.3009	11:01:09 PM	0.771	0.327
BDL	0.305	11:06:09 PM	0.710	0.325
BDL	0.3028	11:11:08 PM	0.723	0.323
BDL	0.3002	11:16:07 PM	0.742	0.324
BDL	0.3029	11:21:06 PM	0.617	0.321
BDL	0.3086	11:26:05 PM	0.673	0.323
BDL	0.3112	11:31:04 PM	0.701	0.322
BDL	0.3111	11:36:03 PM	0.666	0.320
BDL	0.3123	11:41:02 PM	0.665	0.332
BDL	0.3119	11:46:01 PM	0.625	0.332
BDL	0.3109	11:51:00 PM	0.673	0.334
BDL	0.311	11:55:59 PM	0.622	0.327
BDL	0.3124	12:00:58 AM	0.609	
BDL	0.3028	12:05:57 AM	0.554	0.326
BDL	0.3116	12:10:56 AM	0.559	0.325
BDL	0.3096	12:15:55 AM	0.580	0.325
BDL	0.311	12:20:54 AM	0.581	0.326
BDL	0.3083	12:25:53 AM	0.585	0.325
BDL	0.3063	12:30:52 AM	0.588	0.325
BDL	0.3031	12:35:51 AM	0.544	0.330
BDL	0.2982	12:40:50 AM	0.570	0.328
BDL	0.2963	12:45:49 AM	0.599	0.320
BDL	0.2984	12:50:48 AM	0.553	0.325
BDL	0.2958	12:55:47 AM	0.603	0.324
BDL	0.2929	1:00:46 AM	0.577	0.324
BDL	0.2996	1:05:45 AM	0.601	0.326
BDL	0.2979	1:10:44 AM	0.591	0.327
BDL	0.2961	1:15:43 AM	0.674	0.328
BDL	0.2955	1:20:42 AM	0.604	0.332
BDL	0.2859	1:25:42 AM	0.637	0.334
BDL	0.2848	1:30:41 AM	0.620	0.338
BDL	0.2871	1:35:40 AM	0.608	0.339
BDL	0.2794	1:40:39 AM	0.650	0.343
BDL	0.2831	1:45:38 AM	0.622	0.341
BDL	0.2843	1:54:50 AM	0.688	0.340
BDL	0.287	1:59:49 AM	0.565	0.352
BDL	0.2852	2:04:48 AM	0.682	0.363
BDL	0.2807	2:09:47 AM	0.639	0.367
BDL	0.2886	2:14:46 AM	0.659	0.376
BDL	0.2853	2:19:45 AM	0.582	0.375
BDL	0.2799	2:24:44 AM	0.595	0.370
BDL	0.2859	2:29:43 AM	0.604	0.362
BDL	0.285	2:34:42 AM	0.529	0.356
BDL	0.2883	2:39:41 AM	0.586	0.352
BDL	0.2879	2:44:40 AM	0.544	0.346
BDL	0.2821	2:49:39 AM	0.589	0.357
BDL	0.2815	2:54:38 AM	0.567	0.351

BDL	0.2848	2:59:37 AM	0.600	0.353
BDL	0.2839	3:04:36 AM	0.579	0.347
BDL	0.2793	3:09:35 AM	0.617	0.347
BDL	0.2836	3:14:34 AM	0.615	0.347
BDL	0.2746	3:19:33 AM	0.588	0.347
BDL	0.2728	3:24:32 AM	0.634	0.346
BDL		3:29:31 AM	0.595	0.342
BDL	0.275	3:34:30 AM	0.536	0.338
BDL	0.2697	3:39:29 AM	0.584	0.333
BDL	0.2748	3:44:28 AM	0.582	0.333
BDL	0.2711	3:49:27 AM	0.579	0.330
BDL	0.2772	3:54:26 AM	0.608	0.325
BDL	0.277	3:59:25 AM	0.633	0.322
BDL	0.275	4:04:24 AM	0.642	0.322
BDL	0.2734	4:09:23 AM	0.576	0.320
BDL	0.278	4:14:23 AM	0.643	0.316
BDL	0.2747	4:19:22 AM	0.606	0.333
BDL	0.2744	4:24:21 AM	0.631	0.332
BDL	0.2789	4:29:20 AM	0.596	0.326
BDL	0.2779	4:34:19 AM	0.599	0.322
BDL	0.2806	4:39:18 AM	0.652	0.330
BDL	0.2768	4:44:17 AM	0.670	0.330
BDL	0.2791	4:49:16 AM	0.644	0.330
BDL	0.2816	4:54:15 AM	0.601	0.327
BDL	0.2779	4:59:14 AM	0.661	0.326
BDL	0.2735	5:04:13 AM	0.643	0.327
BDL	0.2707	5:09:12 AM	0.627	0.329
BDL	0.2747	5:14:11 AM	0.643	0.332
BDL	0.2769	5:19:10 AM	0.609	0.343
BDL	0.2696	5:24:09 AM	0.610	0.341
BDL	0.2711	5:29:08 AM	0.565	0.346
BDL	0.2742	5:34:07 AM	0.612	
BDL	0.2736	5:39:06 AM	0.629	0.344
BDL	0.274	5:44:05 AM	0.633	0.346
BDL	0.2727	5:49:04 AM	0.662	0.340
BDL	0.2771	5:54:03 AM	0.652	0.341
BDL	0.2656	5:59:02 AM	0.671	0.336
BDL	0.2674	6:04:01 AM	0.692	0.338
BDL	0.2701	6:09:00 AM	0.638	0.356
BDL	0.2662	6:13:59 AM	0.594	0.355
BDL	0.2701	6:18:58 AM	0.633	0.350
BDL	0.268	6:23:57 AM	0.626	0.343
BDL	0.2673	6:28:56 AM	0.666	0.341
BDL	0.2614	6:33:55 AM	0.677	0.338
BDL	0.2687	6:38:54 AM	0.703	0.337
BDL	0.2654	6:43:54 AM	0.729	0.339
BDL	0.266	6:48:53 AM	0.653	0.337
BDL	0.2667	6:53:52 AM	0.635	0.337
BDL	0.2674	6:58:51 AM	0.613	0.339
BDL	0.262	7:03:50 AM	0.586	0.338
BDL	0.2677	7:08:49 AM	0.616	0.342
BDL	0.2613	7:13:48 AM	0.640	0.345

BDL	0.2613	7:18:47 AM	0.585	0.342
BDL	0.2618	7:23:46 AM	0.640	0.347
BDL	0.2612	7:28:45 AM	0.620	0.344
BDL	0.2593	7:33:44 AM	0.661	0.346
BDL	0.2541	7:38:43 AM	0.584	0.342
BDL	0.2596	7:43:42 AM	0.582	0.347
BDL	0.255	7:48:41 AM	0.595	0.348
BDL	0.2559	7:53:40 AM	0.571	0.348
BDL	0.256	7:58:40 AM	0.594	0.351
	0.292482014	8:03:39 AM	0.586	0.348
		8:08:38 AM	0.603	0.353
		8:13:37 AM	0.601	0.350
		8:18:36 AM	0.566	0.346
		8:23:35 AM	0.586	0.343
		8:28:34 AM	0.614	0.343
		8:33:33 AM	0.542	0.341
		8:38:32 AM	0.568	0.340
		8:43:31 AM	0.578	0.337
		8:48:30 AM	0.610	0.337
		8:53:29 AM	0.442	0.334

d HF in inlet

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Washington, D.C. 20460

JUN 13 1989

MEMORANDUM

SUBJECT: Guidance on Limiting Potential to Emit in New Source Permitting

FROM: Terrell E. Hunt
Associate Enforcement Counsel
Air Enforcement Division
Office of Enforcement and Compliance Monitoring

John S. Seitz, Director
Stationary Source Compliance Division
Office of Air Quality Planning and Standards

TO: Addressees

This memorandum transmits the final guidance on conditions in construction permits which can legally limit a source's potential to emit to minor or de minimis levels. We received many helpful comments on the January 24, 1989 draft of this guidance, and have incorporated the comments into the final document wherever possible. A summary of the major changes which have been made to the guidance in response to these comments is provided below.

Several commenters noted that the draft guidance used the term "federally enforceable" to mean both federally enforceable as defined in the new source regulations (40 C.F.R. Sections 52.21(b) (17), 51.165(a) (1) (xiv), 51.166(b) (17)), and enforceable as a practical matter. We have tried to distinguish the places where each term should be used, explained the relationship between the two terms, and indicated that in order to properly restrict potential to emit, limitations must be both federally enforceable as defined in the regulations and practically enforceable.

-2-

Some commenters requested that the section on averaging times for production limits be more specific as to when it is appropriate to use limitations which exceed a one month time basis. We have tried to explain why it is not possible to develop generic criteria for making this distinction, and to indicate situations where exceptions to the policy that production and operation limitations not exceed one month may be warranted.

There were some requests for a section on enforcement. We have included a new Section VI which addresses this topic. We also received many good suggestions on the example permit limitations. The section on examples has been substantially reworked to reflect your comments.

Finally, we learned through the comments that in two specific circumstances, short term emission limits are the most useful and reasonable way to restrict and verify limits on potential to emit. These circumstances are: 1) when control equipment is installed but control equipment operating parameters are difficult to measure during enforcement inspections; and 2) in surface coating operations with numerous and unpredictable use of coatings containing varying VOC content, where add-on control equipment is not employed. Therefore, we have made a narrow exception to the flat prohibition on use of emission limits to restrict potential to emit for these specific circumstances, and only when certain additional conditions have been met.

Again, we appreciate the thoughtful comments we have received on this guidance. Please insert this document into your Clean Air Act Compliance/Enforcement Policy Compendium as Item Number H.3. If you have any questions, please contact Judith Katz in the Air Enforcement Division at FTS 382-2843, or Sally Farrell in the Stationary Source Compliance Division at FTS 382-2875.

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LIMITING POTENTIAL TO EMIT IN NEW SOURCE PERMITTING

JUNE 13, 1989

AIR ENFORCEMENT DIVISION
OFFICE OF ENFORCEMENT AND COMPLIANCE MONITORING

STATIONARY SOURCE COMPLIANCE DIVISION
OFFICE OF AIR QUALITY PLANNING AND STANDARDS

Limiting Potential to Emit in New Source Permitting

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Limiting Potential to Emit in New Source Permitting

I. Introduction

Whether a new source or modification is major and subject to new source review under Parts C and D of the Clean Air Act is dependent on whether that source or modification has or will have the potential to emit major or significant amounts of a regulated pollutant. Therefore, the definition of "potential to emit" under the new source regulations is extremely important in determining the applicability of new source review to a particular source. The federal regulations define "potential to emit" as:

the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of fuel combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

40 C.F.R Sections 52.21(b) (4), 51.165(a) (1) (iii), 51.166(b) (4).

Permit limitations are very significant in determining whether a source is subject to major new source review. This is because they are the easiest and most common way for a source to obtain restrictions on its potential to emit. A permit does not

have to be a major source permit to legally restrict potential emissions. A minor source construction permit issued pursuant to a state program approved by EPA as meeting the requirements of 40 C.F.R. Section 51.160 is federally enforceable. In fact, any permit limitation can legally restrict potential to emit if it meets two criteria: 1) it is federally enforceable as defined by 40 C.F.R. Sections 52.21(b) (17), 51.165(a) (1) (xiv), 51.166(b) (17), i.e., contained in a permit issued pursuant to an EPA-approved permitting program or a permit directly issued by EPA, or has been submitted to EPA as a revision to a State Implementation Plan and approved as such by EPA; and 2) it is enforceable as a practical matter. The second criterion is an implied requirement of the first criterion. A permit requirement may purport to be federally enforceable, but, in reality cannot be federally enforceable if it cannot be enforced as a practical matter.

Non-permit limitations can also legally restrict potential to emit. These limitations include New Source Performance Standards codified at 40 C.F.R. Part 60 and National Emission Standards for Hazardous Air Pollutants codified at 40 C.F.R. Part 61.

The appropriate means of restricting potential to emit through permit conditions has been an issue in recent enforcement cases. Through these cases and through guidance issued by EPA, the Agency has addressed three questions: what types of permit

limitations can legally limit potential to emit; whether long averaging times for production limitations are enforceable as a practical matter; and whether sources may limit potential to emit to minor source levels as a means of circumventing the preconstruction review requirements of major source review.

II. The Louisiana-Pacific Case

In United States v. Louisiana-Pacific Corporation, 682 F. Supp. 1122 (D. Colo. Oct. 30, 1987) and 682 F. Supp. 1141 (D. Colo. March 22, 1988), Judge Alfred Arraj discussed the type of permit restrictions which can be used to limit a source's potential to emit. The Judge concluded that:

... not all federally enforceable restrictions are properly considered in the calculation of a source's potential to emit. While restrictions on hours of operation and on the amount of materials combusted or produced are properly included, blanket restrictions on actual emissions are not.

682 F. Supp. at 1133.

The Court held that Louisiana-Pacific's permit conditions which limited carbon monoxide emissions to 78 tons per year and volatile organic compounds to 101.5 tons per year should not be considered in determining "potential to emit" because these blanket emission limits did not reflect the type of permit conditions which restricted operations or production such as limits on hours of operation, fuel consumption, or final product.

The Louisiana-Pacific court was guided in its reasoning by the D.C. Circuit's holding in Alabama Power v. Costle, 636 F. 2d 323 (D.C. Circuit 1979). Before Alabama Power, EPA regulations required potential to emit to be calculated according to a source's maximum uncontrolled emissions. In Alabama Power, the D. C. Circuit remanded those regulations to EPA with instructions that the Agency include the effect of in-place control equipment in defining potential to emit. EPA went beyond the minimum dictates of the D.C. Circuit in promulgating revised regulations in 1980 to include, in addition to control equipment, any federally enforceable physical or operational limitation. The Louisiana-Pacific court found that blanket limits on emissions did not fit within the concept of proper restrictions on potential to emit as set forth by Alabama Power.

Moreover, Judge Arraj found that:

...a fundamental distinction can be drawn between the federally enforceable limitations which are expressly included in the definition of potential to emit and (emission) limitations.... Restrictions on hours of operation or on the amount of material which may be combusted or produced ... are, relatively speaking, much easier to "federally enforce." Compliance with such conditions could be easily verified through the testimony of officers, all manner of internal correspondence and accounting, purchasing and production records. In contrast, compliance with blanket restrictions on actual emissions would be virtually impossible to verify or enforce.

Id. Thus, Judge Arraj found that blanket emission limits were not enforceable as a practical matter.

Finally, the Court reasoned that allowing blanket emission limitation to restrict potential to emit would violate the intent of Congress in establishing the Prevention of Significant Deterioration (PSD) program.

III. Types of Limitations that will Restrict Potential to Emit

As an initial matter in this discussion, a few important terms should be defined. Emission limits are restrictions over a given period of time on the amount of a pollutant which may be emitted from a source into the outside air. Production limits are restrictions on the amount of final product which can be manufactured or otherwise produced at a source. Operational limits are all other restrictions on the manner in which a source is run, including hours of operation, amount of raw material consumed, fuel combusted, or conditions which specify that the source must install and maintain add-on controls that operate at a specified emission rate or efficiency. All production and operational limits except for hours of operation are limits on a source's capacity utilization. Potential emissions are defined as the product of a source's emission rate at maximum operating capacity, capacity utilization, and hours of operation.

To appropriately limit potential to emit consistent with the opinion in Louisiana-Pacific, all permits issued pursuant to 40 C.F.R. Sections 51.160, 51.166, 52.21 and 51.165 must contain a

production or operational limitation in addition to the emission limitation in cases where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity without pollution control equipment. Restrictions on production or operation that will limit potential to emit include limitations on quantities of raw materials consumed, fuel combusted, hours of operation, or conditions which specify that the source must install and maintain controls that reduce emissions to a specified emission rate or to a specified efficiency level. Production and operational limits must be stated as conditions that can be enforced independently of one another. For example, restrictions on fuel which relates to both type and amount of fuel combusted should state each as an independent condition in the permit. This is necessary for purposes of practical enforcement so that, if one of the conditions is found to be difficult to monitor for any reason, the other may still be enforced.

When permits contain production or operational limits, they should also have recordkeeping requirements that allow a permitting agency to verify a source's compliance with its limits. For example, permits with limits on hours of operation or amount of final product should require an operating log to be kept in which the hours of operation and the amount of final product produced are recorded. These logs should be available

for inspection should staff of a permitting agency wish to check a source's compliance with the terms of its permit.

When permits require add-on controls operated at a specified efficiency level, permit writers should include, so that the operating efficiency condition is enforceable as a practical matter, those operating parameters and assumptions which the permitting agency depended upon to determine that the control equipment would have a given efficiency.

An emission limitation alone would limit potential to emit only when it reflects the absolute maximum that the source could emit without controls or other operational restrictions. When a permit contains no limits on capacity utilization or hours of operation, the potential to emit calculation should assume operation at maximum design or achievable capacity (whichever is higher) and continuous operation (8760 hours per year).

The particular circumstances of some individual sources make it difficult to state operating parameters for control equipment limits in a manner that is easily enforceable as a practical matter. Therefore, there are two exceptions to the absolute prohibition on using blanket emission limits to restrict potential to emit. If the permitting agency determines that setting operating parameters for control equipment is infeasible in a particular situation, a federally enforceable permit

containing short term emission limits (e.g. lbs per hour) would be sufficient to limit potential to emit, provided that such limits reflect the operation of the control equipment, and the permit includes requirements to install, maintain, and operate a continuous emission monitoring (CEM) system and to retain CEM data, and specifies that CEM data may be used to determine compliance with the emission limit.

Likewise, for volatile organic compound (VOC) surface coating operations where no add-on control is employed but emissions are restricted through limiting VOC contents and quantities of coatings used, emission limits may be used to restrict potential to emit under the following limited circumstances. If the permitting agency determines for a particular surface coating operation that operating and production parameters (e.g. gallons of coating, quantities produced) are not readily limited due to the wide variety of coatings and products and due to the unpredictable nature of the operation, emission limits coupled with a requirement to calculate daily emissions may be used to restrict potential to emit. The source must be required to keep the records necessary for this calculation, including daily quantities and the VOC content of each coating used. Emission limits may be used in this limited circumstance to restrict potential to emit since, in this case, emission limits are more easily enforceable than operating or production limits.

IV. Time Periods For Limiting Production and Operation

As discussed above, a limitation specifically recognized by the regulations as reducing potential to emit is a limitation on production or operation. However, for these limitations to be enforceable as a practical matter, the time over which they extend should be as short term as possible and should generally not exceed one month. This policy was explained in a March 13, 1987 memorandum from John Seitz to Bruce Miller, Region IV. The requirement for a monthly limit prevents the enforcing agency from having to wait for long periods of time to establish a continuing violation before initiating an enforcement action.

EPA recognizes that in some rare situations, it is not reasonable to hold a source to a one month limit. In these cases, a limit spanning a longer time is appropriate if it is a rolling limit. However, the limit should not exceed an annual limit rolled on a monthly basis. EPA cannot now set out all inclusive categories of sources where a production limit longer than a month will be acceptable because every situation that may arise in the future cannot now be anticipated. However, permits where longer rolling limits are used to restrict production should be issued only to sources with substantial and unpredictable annual variation in production, such as emergency

boilers. Rolling limits could be used as well for sources which shut down or curtail operation during part of a year on a regular seasonal cycle, but the permitting authority should first explore the possibility of imposing a month-by-month limit. For example, if a pulp drier is periodically shut down from December to April, the permit could contain a zero hours of operation limit for each of those months, and then the appropriate hourly operation limit for each of the remaining months. Under no circumstances would a production or operation limit expressed on a calendar year annual basis be considered capable of legally restricting potential to emit.

V. Sham Operational Limits

In the past year, several sources have obtained purportedly federally enforceable permits with operating restrictions limiting their potential to emit to minor or de minimis levels for the purpose of allowing them to commence construction prior to receipt of a major source permit. In such cases where EPA can demonstrate an intent to operate the source at major source levels, EPA considers the minor source construction permit void ab initio and will take appropriate enforcement action to prevent the source from constructing or operating without a major source permit.

The following example illustrates the kind of situation addressed in this section: An existing major stationary source proposes to add a 12.5 megawatt electric utility steam generating unit, and applies for a federally enforceable minor source permit which restricts operation at the unit to 240 hours per year. Because the project is designed as a baseload facility, EPA does not believe that the source intends to operate the facility for only 240 hours a year. Further investigation would probably uncover documentation of the source's intent to operate at higher levels than those for which it is permitted.

This situation raises the question of whether a source can lawfully bypass the preconstruction or premodification review requirements of Prevention of Significant Deterioration (PSD) and nonattainment New Source Review by committing to permit conditions which restrict production to a level at which the source does not intend to operate for any extensive time. If, after constructing and commencing operation, the source obtains a relaxation of its original permit conditions prior to exceeding them, does this constitute a violation of the preconstruction review requirements? This section discusses why it is improper to construct a source with a minor source permit when there is intent to operate as a major source, and provides guidelines for identifying these "sham" permits.

A. Permits with conditions that do not reflect a source's planned mode of operation are void ab initio and cannot act to shield the source from the requirement to undergo preconstruction review.

1. Sham permits are not allowed by 40 CFR Section 52.21(r) (4) Section

52.21(r) (4) states:

At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980 on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then (PSD) shall apply to the source or modification as though construction had not yet commenced on the source or modification.

When a source that is minor because of operating restrictions in a construction permit later applies for a relaxation of that construction permit which would make the source major, Section 52.21(r) (4) prescribes the methodology for determining best available control technology (BACT). However, it does not foreclose EPA's ability, in addition to the retroactive application of BACT and other requirements of the PSD program, to pursue enforcement where the Agency believes that the initial minor source permit was a sham. EPA will limit its activity to requiring application of 40 CFR 52.21(r) (4) only for the cases where a source legitimately changes a project after finding that the operating restrictions which were taken in good faith cannot be complied with. Whether a source has acted in good faith is a factual question which is answered by available evidence in the particular case.

2. Sham permits are not allowed by the definition of potential to emit:

40 C.F.R. Sections 52.21(b) (4), 51.165(a) (1) (iii), 51.166(b) (4).

The definition of potential to emit enables sources to obtain federally enforceable permits with operational restrictions as a means of limiting emissions to minor source levels. However, implicit in the application of these limitations is the understanding that they comport with the true design and intended operation of the project.

3. Sham permits are not allowed by the Clean Air Act

Parts C and D of the Clean Air Act exhibit Congress's clear intent that new major sources of air pollution be subject to preconstruction review. The purposes for these programs cannot be served without this essential element. Therefore, attempts to expedite construction by securing minor source status through the receipt of operational restrictions from which the source intends to free itself shortly after operation are to be treated as circumvention of the preconstruction review requirements.

B. Guidelines for determining when minor source construction permits are shams.

EPA's determination that a purportedly federally enforceable construction permit is a sham is made based on an evaluation of specific facts and evidence in each individual case. The following are criteria which should be scrutinized when making such a determination:

1. Filing a PSD or nonattainment NSR permit application

If a major source or major modification permit application is filed simultaneously with or at approximately the same time as the minor source construction permit, this is strong evidence of an intent to circumvent the requirements of preconstruction review. Even a major source application filed after the minor source application, but either before operation has commenced or after less than a year of operation should be looked at closely.

2. Applications for funding

Applications for commercial loans or, for public utilities, bond issues, should be scrutinized to see if the source has guaranteed a certain level of operation which is higher than that in its construction permit. If the project would not be funded or if it would not be economically viable if operated on an extended basis

(at least a year) at the permitted level of production, this should be considered as evidence of circumvention.

3. Reports on consumer demand and projected production levels.

Stockholder reports, reports to the Securities and Exchange Commission, utility board reports, or business permit applications should be reviewed for projected operation or production levels. If reported levels are necessary to meet projected consumer demand but are higher than permitted levels, this is additional evidence of circumvention.

4. Statements of authorized representatives of the source regarding plans for operation.

Statements by representatives of the source to EPA or to state or local permitting agencies about the source's plans for operation can be evidence to show intent to circumvent preconstruction review requirements.

Note that if a determination is made that a permit is a "sham" for one pollutant and, therefore, the source is a major source or major modification, the permit may possibly still contain valid limits on potential to emit for other pollutants.

In such cases, the entire source must still go through new source review, during which, for PSD review, all pollutants for which there is a net significant increase must be analyzed for BACT. In nonattainment new source review, new sources must have LAER determinations only for pollutants for which they are major. Major modifications, however, must have LAER determinations for all nonattainment pollutants emitted in significant amounts. If the valid limits in a partially void minor source construction permit keep certain pollutants below significance levels, then those pollutants would not have to be analyzed for BACT or LAER. However, if a source or modification is determined to be major for PSD or NSR because part of its minor permit is deemed void, it would have to undergo BACT or LAER analysis for all significant pollutants.

VI. Enforcement Procedures

This guidance has discussed permit conditions which will legally restrict potential to emit, shielding a source from the requirement to comply with major new source permitting regulation. Failure by a permitting agency to adhere to these guidelines may result in a permit that does not legally restrict potential to emit, thereby subjecting a source to major new source review. If that source has not gone through preconstruction review, it is a significant violator of the Clean Air Act and is subject to enforcement for constructing or

modifying without a major new source permit.

The enforcement options available to EPA in these situations include administrative action under Sections 167 or 113 (a) (5) of the Act or federal judicial action under Sections 113 (b) (2), 113 (b) (5), 113(c), or 167. Which enforcement option is selected depends on the facts of the particular situation. (See July 15, 1988 guidance on EPA Procedures for Addressing Deficient New Source Permits.)

VII. Examples

The following examples are provided to illustrate the type of permit restrictions which would and would not legally limit potential to emit to less than major source thresholds. These examples are provided for purposes of clarifying the potential to emit and averaging time guidance only. They are not intended to reflect all the permit conditions necessary for a valid permit. Specific test methods, compliance monitoring and recordkeeping and reporting requirements are necessary to make permit limitations enforceable as a practical matter. The use of examples where averaging times are the longest times allowed under EPA policies is not intended to necessarily condone the selection of the longest averaging times; averaging times should in practice be as short as possible.

1. The minor source construction permit for a boiler contains the following restrictions:
250,000 gal fuel/month; 0.8% S fuel; 8000 hours/year.

These conditions are federally enforceable production and operation limits, but do not limit potential to emit because one of them does not meet EPA policies on enforceability as a practical matter. The averaging time for hours of operation, one of the operational limits necessary to restrict emissions to less than 250 tpy, exceeds a monthly or rolling yearly limit. If, instead of 8000 hours/year, the hourly restriction were stated as 666 hours/month, the permit would serve to keep the source a minor source, assuming the permit contains appropriate recordkeeping provisions.

2. A waferboard plant which has the physical capacity to emit over 300 tpy of carbon monoxide in the absence of using specific combustion techniques has the following permit restriction as the sole emission limitation: 249 tpy.

This does not limit potential to emit since an operational or production restriction is necessary for the source to be restricted to 249 tpy. The permit must contain a restriction on hours of operation or capacity utilization which, when multiplied by the maximum emission rate for the CO sources at the plant, results in emissions of 249 tpy. Additionally, while the

emission limit alone cannot restrict potential to emit, the emission limit is unenforceable as a practical matter since it is limited on an annual basis. The permit should contain a short term emission limit (in addition to the annual emission limit), consistent with the compliance period or parameter in the applicable test method for determining compliance.

3. A small scale rock crushing plant that cannot emit more than 240 tpy under maximum operation without controls (including plant-wide particulate emissions from transfer and storage operations) has the following permit restriction as the sole emission limitation: 240 tpy particulate matter.

Since no operational limitations are necessary for the source to emit below 250 tpy, no operational restrictions need be in the permit to limit potential to emit. However, although this is not a major source, the state agency should express the emission limit in this permit as a lb/hour measure or gr/dscf so that it will be enforceable as a practical matter.

4. A plant consisting solely of a small rock crusher has the following permit restrictions: 0.05 lb gr PM/dscf; fabric filter must be employed and maintained at 99% efficiency.

Assuming that maintaining the fabric filter at 99% efficiency will result in emissions of less than 250 tpy, this permit would limit

potential to emit if it also contained either 1) parameters that allowed the permitting agency to verify the fabric filter's operating efficiency or 2) a requirement to install and operate continuous opacity monitors (COMs) and a specification that COM data may be used to verify compliance with emission limits. Note that if this second alternative were adopted, it would not be necessary to require that the fabric filter be maintained at 99% efficiency.

To determine potential to emit, the efficiency rate of the fabric filter would be multiplied by the maximum uncontrolled emission rate, the maximum number of operating hours and maximum throughput capacity since there are no other operating or production limits. However, the efficiency rate of the fabric filter would not be enforceable as a practical matter unless there were an enforceable means to monitor ESP performance on a short term basis. The two alternatives mentioned above would satisfy this requirement.

5. A surface coating operation has the capability of utilizing 15,000 gal coating/month, with the following permit restrictions: 3.0 lb VOC/gal coating minus water; 20.5 tons VOC/month; monthly VOC emissions to be determined from records of the daily volumes of coatings used times the manufacturers specified VOC content.

This does not limit potential to emit since the source has the physical capacity to exceed 250 tpy of VOC, and the permit does not contain a production or an operational limitation. A monthly limit on gallons of coating used which when multiplied by 3.0 lb/gal equates to less than the 250 tpy threshold (13,500 gallons/month), with appropriate recordkeeping, would generally be necessary to limit potential to emit. If, however, the permitting agency determines, due to the wide variety of coatings employed and products produced, that restrictions on operation or production are not practically enforceable, then the above emission limits could restrict potential to emit if there are requirements that the source calculate emissions daily, and keep the appropriate records.

If the source was alternatively to meet the 20.5 ton/month limit by employing add-on controls, the permit would need to contain an operational limit, such as the requirement to install and operate an incinerator at 99% efficiency. A requirement to monitor incinerator efficiency (either directly or indirectly via temperature monitoring for example), and appropriate recordkeeping requirements to verify compliance with each of the permit conditions would also be necessary to make the permit conditions enforceable as a practical matter. Note, however, that in the case where add-on controls are employed, the source may be able to meet a shorter term emission limit than the ton per month figure.

VIII. Conclusion

We hope this guidance will help EPA Regions identify sources which have the potential to emit major amounts of an air pollutant which will subject those sources to the requirements of preconstruction new source review. Every source which is subject to these requirements but has not obtained a major new source permit should be seriously considered for enforcement action.



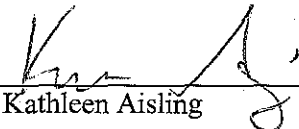
**EPA REGION 6
Inspection Report Addendum**

FRS #: 110000472471 Inspection Date: December 7-11, 2009
AFS #: 35/043/00005
Company Name: INTEL CORPORATION
Facility Name: RIO RANCHO FACILITY
Physical Location: 4100 Sara Road SE
Rio Rancho, NM 87124-1025
Mailing Address: 4100 Sara Road SE
Rio Rancho, NM 87124-1025
County: Sandoval Reg. Programs: SIP, Synthetic Minor
SIC Code: 3674
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Debbie Ford

8/3/10
(Date)

Reviewed By:


Kathleen Aisling

8/4/10
(Date)

As part of the review of the information collected during the inspection, the Environmental Protection Agency (EPA) discovered anomalies in Intel's use of EPA Compendium Method IP-9 - Determination of Reactive Acidic and Basic Gases and Particulate Matter in Indoor Air (IP-9) to test scrubber removal efficiencies in 1995 and 1996.

Inspectors from EPA's National Enforcement Investigations Center (NEIC), who led the inspection, did not include a discussion of the issues with the use of IP-9 in the June 3, 2010, inspection report (NEIC report). This addendum by EPA Region 6 addresses the Areas of Concern (AOC) with Intel's testing of scrubber efficiencies, and together with the NEIC inspection report, comprises the final inspection report for the inspection conducted at Intel in Rio Rancho, New Mexico (Intel) December 7-11, 2009.

Background – Scrubber Efficiency Testing

According to the May 1997 Final Report (see Attachment 1) of testing at the Intel Rio Rancho facility by Radian International, LLC (Radian), tests were performed in June, August, and September 1995, and in August 1996, on a total of eleven acid gas scrubbers. Intel requested that Radian test the removal efficiencies of hydrochloric acid (HCl), hydrofluoric acid (HF), and chlorine gas (Cl₂) using EPA Compendium Method IP-9 (see Attachment 2) to measure HF and HCl, and EPA Method 26A to measure Cl₂ emissions.

According to the 1997 report:

"Intel chose to use EPA Compendium Method IP-9 to measure HF and HCl emissions and EPA Method 26a to measure Cl₂ emissions. EPA Method 26a has historically been used for HCl, HF, and Cl₂ analyses at Fabs. However, recent tests at other semiconductor Fabs have demonstrated that HCl and HF data collected using EPA Method 26a tests can be biased and can lead to erroneously low scrubber efficiency determinations. The error is caused by sample contamination from chloride and fluoride salts present as submicron aerosols in the Fab exhaust stream. EPA Compendium Method IP-9 measures acid gas vapors without interference from these aerosols.

Radian was selected to perform the EPA Compendium Method IP-9 and Method 26a emission tests because of its practical experience with Method IP-9, which uses a new U.S. EPA measurement technology – the annular denuder."

Radian provided background on the IP-9 method in the Analytical Approach section, pg 1-3:

"EPA Method IP-9 was developed and tested by the U.S. EPA at their laboratories in Research Triangle Park, North Carolina and was designed to measure acidic and basic gases and particulate matter in indoor and ambient air. The relatively low concentrations of HCl and HF vapor and ammonium aerosols in semiconductor Fabs make EPA Method IP-9 suitable for testing in this environment."

It should be noted that the word "and" was added between "indoor" and "ambient" in the Radian report. The compendium method scope, on page i, states, "This system was developed to measure reactive acidic and basic gases and particulate matter which are contained in indoor ambient air." The wording used by Radian is not the same as noted in the scope of IP-9, and the addition of the word "and" is incorrect.

Intel used and continues to use the weighted removal efficiencies based on data collected during these 1995 and 1996 tests, along with later testing using other methods, to calculate emissions of HAPs from the scrubbers. EPA has concerns that the use of IP-9 for Intel's scrubber efficiency testing at the Rio Rancho facility was not approved by the New Mexico Environment Department (NMED) nor EPA. Method IP-9 was developed for testing indoor ambient air and not for stack testing (see AOC I).

Radian further explained in the Analytical Approach section:

"Radian tested the Intel scrubbers using two U.S. EPA analytical protocols – EPA Method 26a and the annual denuder method, EPA Compendium Method IP-9. EPA Method 26a was used for the determination of Cl₂ for which it is well suited. Method 26a was also selected to establish a "baseline" analysis to compare the EPA Method IP-9 test results during the first series of tests at Rio Rancho."

EPA has concerns that Radian used EPA Method 26a, which could be biased according to Radian's test report Introduction, to establish a "baseline" analysis for comparing the IP-9 test results during the first series of tests (see AOC J).

Conformity of Testing to IP-9 Method

According to the IP-9 method, revision dated 9/30/89 (version in effect for the 1995/1996 testing):

The IP-9 annular denuder system (ADS) "was developed to measure reactive acidic and basic gases and particulate matter which are contained in indoor ambient air. The chemical species which can be measured by the ADS are gaseous SO₂ [sulfur dioxide], HNO₂ [nitrous acid], HNO₃ [nitric acid], and NH₃ [ammonia] and particulate SO₄⁻ [sulfate], NO₃⁻ [nitrate], NH₄⁺ [ammonium], and H⁺ [hydron]. Other similar chemical species can be successfully collected by the system with just a few simple modifications (i.e. changing the denuder coating solutions, the denuder sequence, and the liner or filter types and sequence)."

Radian did not document that it made any modifications to detect HF & HCl gases in the report; therefore, EPA could not confirm that the procedures used were adequate to accurately test for HF and HCl gases (see AOC I).

Test method IP-9, Section 7.1.14, describes the differential flow controller (pump) used for pulling air through the sampler. IP-9 calls for the fixed rate to be between 5 and 20 standard L/min (usually 10 L/min). According to Radian's test report, "target sample volume for both

inlet and outlet samples was 100 liters. This required at least a 1.5-hour sampling effort for each test." Based upon a 100L/1.5 hour test, this converts to 66.67 L/hr or 1.11 L/min.

Radian's test report only stated that a calibrated, metered sampling pump was used, but did not state the flow rate though the system during testing. The flow rate specified in the test report does not appear to meet the minimum requirement specified in IP-9 (see AOC I).

Test Duration

Radian stated in the test report that the processes at Rio Rancho result in periodic changes in chemical emission rates. Thus, each scrubber test was performed over three 1.5-hour periods to measure each test scrubber's average performance over time. During the December 2009 inspection, Intel explained that the production timeframe from [REDACTED] [REDACTED]. EPA is concerned that 4.5 hours of scrubber testing is not an adequate test duration to measure efficiencies for the full range of operating conditions at this facility (see AOC K).

Scrubber Selection

Eleven (11) representative scrubbers were chosen for testing. Intel verified that the scrubbers had similar operating parameters and that the only potential difference between scrubbers at the facility was the acid gas and chlorine loading to each. The report detailed two reasons for selecting representative scrubbers. The first reason was to reduce the number of scrubbers that required testing, while still ensuring that emissions and performance data reflected overall scrubber operations. Intel selected the scrubbers to be tested based upon their location relative to emissions from the Fabrication Unit (Fab) process tools. The Radian test report describes the scrubber system:

"emissions are conveyed to Intel's scrubbers by ducts leading from the Fabs, with several scrubbers and ducts attached to a common plenum. Each scrubber on a plenum will receive a different level of acid gas or chlorine based upon its location relative to the exhaust ducts feeding the plenum. A scrubber near a duct with a higher level of acid gas will receive higher concentrations of acid gas than an adjacent scrubber near a duct with a [sic] lower emissions."

EPA could not confirm which scrubbers would have had higher emission loading due to their closer proximity to the exhaust duct. EPA could not confirm that the selected scrubbers were representative (see AOC L).

The second reason for choosing representative scrubbers was that the Intel exhaust system was cramped and designed in such a way that the facility could not provide adequate sample port locations for inlet and outlet testing that would meet EPA Method 1 requirements. (EPA Method 1 - Sample and Velocity Traverses for Stationary Sources is used to determine location of sample ports and number and location of traverse points for stack testing. The sample port location must meet minimum stack diameter distances upstream and downstream of air flow disturbances to ensure that no swirling or cyclonic flow exists that can affect the testing.) The Radian report stated that as a result, the selection of surrogate scrubbers was necessary. The test

report did not provide any information on scrubbers that could not meet sampling location requirements and the characteristics of the surrogate scrubbers. EPA could not confirm that the scrubbers tested were representative (see AOC L).

Denuder tubes

The annular denuder system uses a series of denuder tubes that are etched and coated with various chemicals to react with the gases in the test stream. The IP-9 Method specifies that sodium carbonate is the denuder chemical to use when detecting SO₂, HNO₂, HNO₃.

The Radian test report states that denuder tubes 1 and 2 were coated with sodium bicarbonate (NaHCO₃). On Page 3-2 of the test report, the diagram of the Annular Denuder System shows denuder tubes 1 and 2 with a notation of Na₂CO₃, which is sodium carbonate.

Since the Radian report has conflicting documentation about whether sodium carbonate or sodium bicarbonate was used during testing, and the Radian report did not document deviation from the method to allow detection of HCl and HF, EPA could not assess whether the method was applied appropriately (see AOC M).

Negative Scrubber Efficiencies

Radian reported some instances of negative scrubber efficiency in Series 1 and 4. This phenomenon was explained as follows:

"HF, although very soluble, is a weak acid. During normal scrubber operations, HF gas readily dissolves in the scrubber water. When the concentration of strong acids, such as HCl, increase in the Fab exhaust, the pH of scrubber water decreases as the strong acid goes into solution. This decrease in pH changes the liquid/gas equilibrium of the HF toward the gas phase; that is, it increases the vapor pressure. Until the pH is increased by water addition or until HF equilibrium is reestablished by depletion of dissolved HF, the measured scrubber efficiency will be low or negative."

The NEIC report documented two areas of concern relating to pH of the scrubbing water and based upon the above-referenced explanation for negative efficiencies, potential HF emissions:

- Intel reported during the inspection that it monitors the pH of the scrubber liquid, though it is not required by the permit to maintain the scrubber liquid within a certain pH range. This information is included in AOC D in the NEIC report.
- Intel has not performed scrubber efficiency testing since it began adding caustic to the scrubber water beginning in 2008. This is noted in AOC C of the NEIC report.

The Radian test report only documented removal efficiencies based upon inlet and outlet concentrations of HF and did not document pH of scrubber water or water addition to the scrubbers during testing. EPA is concerned that the averaged removal efficiency does not reflect operation during pH fluctuations, and HF emissions are being underestimated (see AOC N).

Process Changes at Intel

At the time of the inspection, Intel explained the evolution of the chip manufacturing process and that a new process is developed approximately every 18 months. Also, Intel stated that since production began at Rio Rancho in 1980, production size of the silicon wafer has changed from 6" to 8" and currently 12". When the size of the wafer changes, the entire Fab process must be re-tooled to handle the larger wafers. In addition, as the wafer size has increased, the chemicals and process tools have also changed and evolved. EPA is concerned that 1995-1996 Radian testing of processes that have shut down may not be valid for use in calculating HAP emissions from current processes (see AOC O).

SUMMARY OF FINDINGS

On the basis of review of Intel's test method documentation, EPA Region 6 identified the following areas of concern in addition to those stated in the June 2010 NEIC Report. Areas of concern are inspection observations of potential problems that could result in environmental harm, noncompliance with permit or regulatory requirements, or are associated with pollution prevention issues.

AREAS OF CONCERN

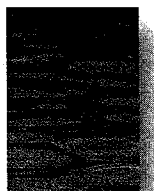
- I. Intel did not obtain EPA or NMED approval to use the indoor ambient air test method IP-9 for stack testing of its scrubbers to determine removal efficiencies. Additionally, Intel did not obtain approval for deviating from the IP-9 method to detect HF and HCl gases, nor for using a pump with a lower flow rate than the flow specified in the method. Intel continues to use the results of the unapproved and potentially inaccurate testing to calculate HAP emissions from scrubbers at the facility.
- J. Radian used EPA Method 26a, which could be biased according to Radian's test report, to establish a "baseline" analysis for comparison with the IP-9 test results during the first series of tests, possibly invalidating the scrubber efficiencies measured during the test, and thus, later emissions calculations.
- K. Intel's scrubber tests were comprised of three 1.5-hour runs. This duration for testing may not adequately account for the entire range of operating conditions in the [REDACTED] manufacturing process for each wafer, possibly invalidating the scrubber efficiencies measured during the tests, and thus, later emissions calculations.
- L. Radian's test report did not provide adequate documentation to demonstrate that the selection of a subset of scrubbers for testing was representative of the operation of all the scrubbers, possibly invalidating the scrubber efficiencies measured during the test, and thus, later emissions calculations.

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- M. Radian's test report had conflicting information about the chemical coating of denuder tubes 1 and 2. EPA could not determine if sodium bicarbonate or sodium carbonate was used during scrubber testing, and thus, could not accurately assess the application of the test method for detecting HF and HCl.
- N. Intel uses an average scrubber removal efficiency that was calculated from stack test results that do not relate to pH of the scrubber water liquid or water addition to the scrubber at the time of testing. Intel may be underestimating HF emissions when the pH of the scrubber liquid is low.
- O. Intel has changed its processes and chemical usage many times since the scrubber testing in 1995 and 1996. The facility continues to use scrubber efficiency testing from outdated processes for calculating current HAP emissions, which could result in inaccuracies.

Attachments

1. Testing Removal Efficiencies of Packed-Bed Wet Scrubbers, Intel Rio Rancho, New Mexico – Final Report dated May 1997
2. EPA Compendium Method IP-9 – Determination of Reactive Acidic and Basic Gases and Particulate Matter in Indoor Air (Annular Denuder Technique) – Revision 9/30/89



***TESTING REMOVAL
EFFICIENCIES OF
PACKED-BED WET SCRUBBERS
INTEL RIO RANCHO,
NEW MEXICO***

FINAL REPORT

Prepared For:

Intel Corporation
Rio Rancho, New Mexico

Prepared By:

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May 1997

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**TESTING REMOVAL EFFICIENCIES OF
PACKED-BED WET SCRUBBERS
INTEL RIO RANCHO, NEW MEXICO**

FINAL REPORT

Prepared For:

Intel Corporation
Rio Rancho, New Mexico

Prepared By:

Radian International, LLC
Albuquerque, New Mexico
Austin, Texas

May 1997

EXECUTIVE SUMMARY

In 1995 and 1996, Radian International, LLC performed four series of tests to determine removal efficiencies of representative acid gas scrubbers at Intel Corporation's Rio Rancho, New Mexico facility. The scrubber inlet and exhaust streams were tested for the following species:

- Hydrochloric acid (HCl);
- Hydrofluoric acid (HF); and
- Chlorine (Cl₂).

The scrubber tests were conducted in June, August, and September 1995, and again in August 1996. Eleven different scrubbers were tested by the end of the program. The eleven scrubbers selected as representatives of the installed base of acid gas scrubbers at the Rio Rancho facility included:

- Fab 7 Scrubbers 7.1.1a, 7.1.2, 7.1.3
- Fab 9 Scrubbers 9.1.3a, 9.1.1e (exhaust only), and 9.1.2b (exhaust only)
- Fab 10 Scrubbers 10.1.1d, 10.1.1e, 10.1.1f, and
- Fab 11 Scrubbers 11.1.3, 11.1.5

Detailed results can be found in Section 2 of this report. In summary the findings were as follows:

- Low Levels of Pollutants: In general, the concentrations of measured acid gases and chlorine in the inlets were very low. Inlet concentrations ranged from just under 5 ppmv to a low of <0.010 ppmv.
- The Scrubbers Remove Acid Gases: Despite the low inlet levels, the analyses indicate that the scrubbers effectively remove acid gases and chlorine from the exhaust streams.

The results of the scrubber efficiency tests demonstrate that Intel's scrubbers provide substantial acid gas and chlorine removal capability. The removal efficiencies found at Rio Rancho are consistent with efficiencies observed at other semiconductor manufacturers with similar, state-of-technology packed-bed wet scrubbers.

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1.0 Introduction

Intel requested a series of HCl, HF and Cl₂ emission tests to evaluate acid gas scrubber performance at its Rio Rancho facility. The evaluation was to be based upon test results from eleven carefully selected scrubbers. These scrubbers were selected as being fully representative of other scrubbers at Rio Rancho in terms of design, operation, and chemical loading.

Intel chose to use EPA Compendium Method IP-9 to measure HF and HCl emissions and EPA Method 26a to measure Cl₂ emissions. EPA Method 26a has historically been used for HCl, HF, and Cl₂ analyses at Fabs. However, recent tests at other semiconductor Fabs have demonstrated that HCl and HF data collected using EPA Method 26a tests can be biased and can lead to erroneously low scrubber efficiency determinations. The error is caused by sample contamination from chloride and fluoride salts present as submicron aerosols in the Fab exhaust stream. EPA Compendium Method IP-9 measures acid gas vapors without interference from these aerosols.

Radian was selected to perform the EPA Compendium Method IP-9 and Method 26a emission tests because of its practical experience with Method IP-9, which uses a new U.S. EPA measurement technology - the annular denuder.

Since the processes at Rio Rancho result in periodic changes in chemical emission rates each scrubber test was performed over three 1.5-hour periods to measure each test scrubber's average performance over time.

1.1 Program Overview

Intel Corporation produces a variety of semiconductor products at their facility in Rio Rancho, New Mexico. The semiconductor fabrication (Fab) areas at the facility contain several processes, including etching and cleaning tools, which utilize a variety of mineral acids and other chemicals. The exhaust from these process tools, containing various amounts of HCl, HF, chlorine (Cl₂), are drawn into a single ducting system and sent to series of packed-bed wet (aqueous) scrubbers for treatment. From there, the scrubbed exhaust gases exit from the building through stacks located on the Fab roof. The eleven representative scrubbers chosen for evaluation were:

- Fab 7 Scrubbers 7.1.1a, 7.1.2, 7.1.3

- Fab 9 Scrubbers 9.1.3a, 9.1.1e (exhaust only), and 9.1.2b (exhaust only)
- Fab 10 Scrubbers 10.1.1d, 10.1.1e, 10.1.1f, and
- Fab 11 Scrubbers 11.1.3, 11.1.5

1.2 Scrubber Selection

Intel and Radian worked together to select candidate scrubbers for testing which would be representative of other scrubbers at the Rio Rancho facility. Intel has worked with scrubber design experts to verify that its scrubbers have similar operating parameters and that the only potential difference between scrubbers at its facility is the acid gas and chlorine loading to each.

One reason for selecting a set of representative scrubbers was to reduce the number of scrubbers that required testing while still taking care to ensure that emissions and performance data reflected overall scrubber operations at the facility. Selecting the appropriate scrubbers required careful attention. At Rio Rancho, emissions are conveyed to Intel's scrubbers by ducts leading from the Fabs, with several scrubbers and ducts attached to a common plenum. Each scrubber on a plenum will receive a different level of acid gas or chlorine based upon its location relative to the exhaust ducts feeding the plenum. A scrubber near a duct with a high level of acid gas will receive higher concentrations of acid gas than an adjacent scrubber near a duct with a lower emissions. So to ensure adequate and diverse loadings of acid gas and chlorine to the test scrubbers, Intel selected the candidates based upon their location relative to emissions from Fab process tools.

Another reason for selecting the eleven scrubbers was that many of the other scrubbers provided no access to a testing location that met EPA test method requirements. EPA methods require sampling locations that will produce accurate exhaust flow measurements and isokinetic samples. Stacks and scrubber locations at Rio Rancho were designed by Intel to conserve space and reduce the distance which the exhaust must be conveyed from the Fab to the scrubber. This design makes access to the inlet side of the scrubbers difficult and the limited accessibility would have made collection of valid samples problematic. As a result, some scrubbers could not be tested and selection of surrogate scrubbers was necessary. The scrubbers selected had the best sampling locations available to meet the EPA method requirements.

1.3 Analytical Approach

Radian tested the Intel scrubbers using two U.S. EPA analytical protocols - EPA Method 26a and the annular denuder method, EPA Compendium Method IP-9. EPA Method 26a was used for the determination of Cl_2 , for which it is well suited. Method 26a was also selected to establish a "baseline" analysis to compare the EPA Method IP-9 test results during the first series of tests at Rio Rancho.

EPA Method IP-9 was developed and tested by the U.S. EPA at their laboratories in Research Triangle Park, North Carolina and was designed to measure acidic and basic gases and particulate matter in indoor and ambient air. The relatively low concentrations of HCl and HF vapor and ammonium aerosols in semiconductor Fabs make EPA Method IP-9 suitable for testing in this environment.

The annular denuder method is similar to that of the U.S. EPA impinger methods, such as EPA Method 26a. However rather than passing the sample stream through an aqueous solution, the annular denuder utilizes a reactive solid surface to capture acid gases. With the annular denuder the reactive solid reacts with gaseous HCl and HF; chlorine and neutral salts do not react and pass through the acid collection system. Neutral salts are then trapped at the end of the denuder on a filter having a submicron diameter pore size.

2.0 Results

The results of the four series of emissions test at Intel's Rio Rancho facility showed the following

1. The concentrations of measured species at both the inlets and outlets were low. Averages at the outlets were found to be:

Test Series 1

<0.010 ppmv HCl;
<0.100 ppmv HF for 3 scrubbers, 0.405 ppmv for the fourth; and
<0.100 ppmv Cl₂ for 3 scrubbers, 0.209 for the fourth.

Test Series 2

<0.30 ppmv HCl for 3 scrubbers, 0.078 ppmv for the fourth;
<0.050 ppmv HF for 2 scrubbers, <0.300 ppmv for 2; and
<0.050 ppmv Cl₂ for 3 scrubbers, 0.087 ppmv for the fourth.

Test Series 3

<0.010 ppmv HCl;
<0.010 ppmv HF for 1 scrubber, <0.040 ppmv for 2, and 0.275 ppmv for the fourth (the last averaged two test sets for scrubber 7.1.3); and,
<0.050 ppmv Cl₂ for 3 scrubbers, 0.103 for the fourth

Test Series 4

<0.010 ppmv HCl for 3 scrubbers, 0.026 for the fourth;
<0.070 ppmv HF for 2 scrubbers, 0.132 for 1, 1.055 for 1;
<0.025 ppmv Cl₂

Scrubber 7.3 ResultsSeries 3

0.560 ppmv for HCl

0.054 ppmv for HF

1.420 ppmv for Cl₂Series 4

0.117 ppmv for HCl

0.100 ppmv for HF

0.076 ppmv for Cl₂

Scrubber 7.1.3 was tested during Test Series 3 and retested during Test Series 4. Note that for Scrubber 7.1.3, Test Series 4 showed dramatic improvement in the HCl and Cl₂ removal efficiency of the scrubber. The improvement can be attributed to optimization of scrubber operating gas/liquid flow variables.

Note that in the year between Test Series 3 and Test Series 4, Radian was able to lower the detection limits for both EPA Method IP-9 and EPA Method 26a through use of more effective particle filtration, improved equipment decontamination, and more efficient equipment conditioning. HCl and HF detection limits were reduced to <0.005 ppmv from <0.010 ppmv. The Cl₂ detection limit was reduced to <0.025 ppmv from <0.050 ppmv.

2. The analyses indicated that the scrubbers were effective in removal of the acid gases and chlorine. The average efficiencies across all scrubbers tested were:

Test Series 1

- Removal for HCl;
- Removal for HF; and
- Removal for chlorine.

Test Series 2

- 80% removal for HCl;
- 72% removal for HF; and
- 78% removal for chlorine.

Test Series 3

- Removal for Hcl;
- Removal for HF; and
- Removal for chlorine (1 value).

Test Series 4

- 92% removal for HCl;

- 48% removal for HF; and
- All inlets near detection limit for chlorine except 7.1.3 (see below)

Scrubber 7.1.3

<u>Series 3</u>	<u>Series 4</u>
64% for HCl	89% for HCl
79% for HF	76% for HF
37% for Cl ₂	70% for Cl ₂

3. Finally, ammonium salt aerosols were observed in the inlet and outlet gas streams. This would have been a contributor to bias in EPA Method 26a measurements if used for HCl and HF measurements.

A detailed analysis of the results of the test program during 1995 and 1996 is reported in Section 2.1 and 2.2 and includes:

- Scrubber efficiency determinations for HCl and HF;
- Scrubber efficiency determinations for Cl₂; and
- HCl, HF, and Cl₂ flow determinations for each scrubber from each test series.

2.1 Scrubber Efficiency Determination for HCl and HF

Table 2-1 provides the results of EPA Method IP-9 tests for HCl and HF acid gases for each scrubber as well as scrubber efficiency calculations for each test. Table 2-2 provides average exhaust flow rates for each scrubber based upon the test results.

Individual run results for each test are shown in Appendix A. Appendix B presents sample calculations used throughout the report.

In reviewing test results in this section it is important to understand the significance of measurement error on the data in the tables as well as in Appendix A.

All measurements contain an element of uncertainty. This uncertainty can be expressed as the method detection limit (MDL). The MDL is determined using an EPA protocol and is a calculation of measurement imprecision. The MDL is the value (or concentration in analytical

Table 2-1. Acid Gases: Average Scrubber Efficiency

Fab I.D. Scrubber No.	HCl			HF		
Average	Inlet (ppmv)	Outlet (ppmv)	% ^a	Inlet (ppmv)	Outlet (ppmv)	% ^a
Fab 10.1.1d: Series 1	0.086	<0.010	94%	0.113	0.090	20%
Series 2	0.208	0.078	63%	0.346	0.270	22%
Fab 10.1.1e: Series 1	-	-	-	0.134	0.027	80%
Series 2	0.100	0.016	84%	0.089	<0.010	94%
Series 4	0.091	0.008	92%	0.039	0.045	-17%
Fab 10.1.1f: Series 1	0.149	<0.010	97%	0.425	0.066	85%
Series 2	0.210	0.029	86%	0.052	0.011	79%
Fab 9.1.3a: Series 1	0.116	<0.010	91%	0.461	0.405	12%
Series 2	0.113	0.013	89%	2.273	0.149	93%

NOTES:

a"%" indicates average percent of acid gas removed by scrubber; i.e., the scrubber efficiency.

Scrubber efficiency (%) was not calculated if measured inlet values were less than five times the method detection limit (MDL). Below 5X MDL, the uncertainty in the measurement is too large to accurately measure efficiency.

Measured outlet concentrations were used for efficiency calculations down to the MDL. For concentrations measured at or below the MDL, the outlet concentration assigned to the efficiency calculation was 1/2 the MDL (the mid-point between the MDL and zero).

Table 2-1. (Continued)

Fab I.D. Scrubber No.	HCl			HF		
	Inlet (ppmv)	Outlet (ppmv)	% ^a	Inlet (ppmv)	Outlet (ppmv)	% ^a
9.1.3a Series 3a	0.023	<0.010	-- ^b	1.622	0.176	89%
Series 3b	0.074	<0.010	88%	1.429	0.374	74%
Fab 9.1.1e Series 3	Outlet Only	<0.010	--	Outlet Only	<0.010	--
Fab 9.1.2b Series 3	Outlet Only	<0.010	--	Outlet Only	0.035	--
Fab 7.1.1a Series 3	0.112	<0.010	96%	0.189	0.040	79%
Fab 7.1.2 Series 4	0.058	<0.005	96%	0.102	0.062	39%

NOTES:

^a"%" indicates average percent of acid gas removed by scrubber; i.e., the **scrubber efficiency**. Scrubber efficiency (%) was not calculated if measured **inlet** values were less than five times the method detection limit (MDL). Below 5X MDL, the uncertainty in the measurement is too large to accurately measure efficiency.

Measured outlet concentrations were used for efficiency calculations down to the MDL. For concentrations measured at or below the MDL, the outlet concentration assigned to the efficiency calculation was 1/2 the MDL (the mid-point between the MDL and zero).

^bThese results were invalidated due to abnormal operating conditions during the test. The exhaust fan had been replaced the day before the test and the system flow through the scrubber was not balanced for the new fan. This resulted in higher than normal exhaust flows.

Table 2-1. (Continued)

Fab I.D. Scrubber No.		HCl			HF		
Average		Inlet (ppmv)	Outlet (ppmv)	% ^a	Inlet (ppmv)	Outlet (ppmv)	% ^a
Fab 7.1.3	Series 3	1.554	0.560	64%	0.256	0.054	79%
	Series 4	1.046	0.117	89%	0.423	0.100	76%
Fab 11.1.5	Series 4	0.008	0.026	--	4.977	1.055	79%
Fab 11.1.3	Series 4	0.011	<0.005	--	1.667	0.132	92%

NOTES:

^a"%" indicates average percent of acid gas removed by scrubber; i.e., the **scrubber efficiency**.

Scrubber efficiency (%) was not calculated if measured **inlet** values were less than five times the method detection limit (MDL). Below 5X MDL, the uncertainty in the measurement is too large to accurately measure efficiency.

Measured outlet concentrations were used for efficiency calculations down to the MDL. For concentrations measured at or below the MDL, the outlet concentration assigned to the efficiency calculation was 1/2 the MDL (the mid-point between the MDL and zero).

Table 2-2. Scrubber Exhaust Flowrate

Fab I.D. Scrubber No.	Exhaust Flowrate	Exhaust Flowrate
	ACFM ^a	DSCFM ^b
Fab 10 10.1.1d: Average	22,658	18,555
Fab 10 10.1.1e: Average	21,779	19,386
Fab 10 10.1.1f: Average	23,464	19,308
Fab 9 9.1.3a: Average	16,237	13,202
Fab 9 9.1.1e: Average	24,197	19,654
Fab 9 9.1.2b: Average	54,166	43,888
Fab 7 7.1.1a: Average	59,259	48,136
Fab 7 7.1.2: Average	43,593	35,527
Fab 7 7.1.3: Average	43,022	34,486
Fab 11 11.1.5: Average	29,739	24,116
Fab 11 11.1.3: Average	34,518	28,116
Fab 10 10.1.1e: Average	16,496	13,300
Retest		

NOTES:

^aACFM - Actual Measured Cubic Feet/Minute. Measurements taken at humidity, temperature and pressure prevailing at the site during the test.

^bDSCFM - Dry Standard Cubic Feet/Minute. The ACFM measurements corrected to standard conditions.

Based upon the above considerations, test results with a large relative error (i.e., measured chemistry) at which the uncertainty is as large as the measurement. For example, if the uncertainty (expressed as the MDL) is 10, then any measurement at or below 10 cannot be resolved, for at a value of 10 or below the uncertainty is as large as the measurement.

Note also that this band of uncertainty impacts all measurements, not just those made at or below the MDL value. The closer measurements are to the MDL the greater the relative error. For example, large measurements such as 1.000 ppmv, an MDL (uncertainty) of 0.010 ppmv would not be significant. The relative error surrounding the measurement would be 1%. However, for a small measurement near the detection limit, for example 0.020 ppmv, an MDL of 0.010 ppmv would result in a relative uncertainty of 50%! Thus measurements between 2 and 3 times the MDL would have an uncertainty band surrounding them from 50% to 33%. And the band would drop to 20% or less for measurements at or greater than 5 times the detection limit. Concentrations less than 5 times the detection limit) were not used to calculate scrubber efficiencies. For example, in Test Series 1, 2 and 3, the minimum inlet concentration selected for HF and HCl scrubber efficiency calculations was 0.05 ppmv (5 X MDL of 0.010 ppmv). When improvements to the test method lowered the detection limit to 0.005 ppmv, the minimum concentration used for the efficiency calculations was lowered to 0.025 ppmv. Section 3.5 contains the methodology used to determine the method detection limits for IP-9.

2.1.1 HCl Discussion

Average HCl removal efficiencies for each scrubber during the two testing efforts ranged from a low of 62% for scrubber 10.1.1d to a high of 96% for scrubbers 10.1.1f, 7.1.1a, and 7.1.2. Measured concentrations of HCl vapor at the inlet of the scrubbers were low, ranging from a high 1.554 ppmv at scrubber 7.1.3 to 0.008 ppmv at scrubber 11.1.5. HCl outlet measurements were at or near the method detection limit of 0.005 ppmv for most tests.

2.1.2 HF Discussion

HF vapor removal efficiencies varied more from scrubber to scrubber than the HCl values. Average efficiencies for the scrubbers ranged from of 93% for scrubber 10.1.1d and scrubber 9.1.3a (second test series) down to -17% for scrubber 10.1.1e (series 4) where both the inlet and outlet HF concentrations were extremely low (<0.050 ppmv).

In the first test series, Run #2 for scrubber 10.1.1d also indicated a negative scrubber efficiency, although Run #1 for the same scrubber at approximately the same HF loading

indicated a positive efficiency of 45%. The average of the two tests resulted in a 20% efficiency determination for scrubber 10.1.1d. Review of field data sheets and laboratory records shows no errors nor any deviation from established protocols during the test. The data could not be excluded. The second test series at scrubber 10.1.1d showed a similar average efficiency at 22%.

The results for scrubbers 10.1.1d and 10.1.1e (Series 4) are not unexpected. Similar results have been observed by Radian staff at other Fabs. HF, although very soluble, is a weak acid. During normal scrubber operations, HF gas readily dissolves in the scrubber water. When the concentration of strong acids, such as HCl, increase in the Fab exhaust the pH of scrubber water decreases as the strong acid goes into solution. This decrease in pH changes the liquid/gas equilibrium of the HF toward the gas phase; that is, it increases the vapor pressure. Until the pH is increased by water addition or until HF equilibrium is reestablished by depletion of dissolved HF, the measured scrubber efficiency will be low or negative. If during the same period the concentration of HF in the Fab exhaust decreases, the measured efficiency for HF will be found to be low. However, it must be stressed that this phenomenon is a short term condition occurring when inlet HF concentrations drop and when strong acid concentrations increase sufficiently to significantly effect scrubber water pH.

Note also that the scrubber 9.1.3a analysis from the first test series has been invalidated due to recent equipment changes which caused the scrubber to operate outside of its design parameters. If this value is discarded, the remaining scrubber 9.1.3a HF measurement shows a scrubber efficiency of 93% for series 2, 89% for series 3, and 74% for series 4.

During the first test series, fourteen of the sixteen HCl/HF determinations indicated efficient removal of HCl and HF. Two outlier measurements during the first test series suggested that future tests employing EPA Method IP-9 should be performed in triplicate; that is, three sequential tests each of at least 1.5 hours duration. This additional test would provide a referee value allowing outliers to be positively identified during data analysis.

2.2 Scrubber Efficiency Determination for Chlorine

The chlorine test results in Table 2-3 show that average chlorine removal efficiencies for the four test scrubbers ranged from 34% for scrubber 9.1.3a up to 85% for scrubber 10.1.1e. Like HCl, chlorine levels at the outlet were low for the Fab 11 scrubbers, measuring at or near the method detection limit for the test sets.

Table 2-3. Chlorine: Average Scrubber Efficiency

Fab I.D. Scrubber No.		Chlorine ppmv		
Average		Inlet	Outlet	% ^a
Fab 10.1.1d:	Series 1	0.157	0.087	45%
	Series 2	0.135	<0.050	81%
Fab 10.1.1e:	Series 1	-	-	-
	Series 2	0.162	<0.050	85%
	Series 4	0.033	<0.025	-
Fab 10.1.1f:	Series 1	0.135	<0.050	81%
	Series 2	0.139	<0.050	82%
Fab 9.1.3a:	Series 1 ^b	0.527	0.347	34%
	Series 2	0.227	0.080	64%
	Series 3.1	<0.050	<0.050	-
	Series 3.2	0.094	<0.050	-

NOTES:

^a"%" indicates average percent of acid gas removed by scrubber; i.e., the **scrubber efficiency**.

Scrubber efficiency (%) was not calculated if measured **inlet** values were less than five times the method detection limit (MDL). Below 5X MDL, the uncertainty in the measurement is too large to accurately measure efficiency.

Measured outlet concentrations were used for efficiency calculations down to the MDL. For concentrations measured at or below the MDL, the outlet concentration assigned to the efficiency calculation was 1/2 the MDL (the mid-point between the MDL and zero).

^bScrubber 9.1.3a Series 1 results have been invalidated due to abnormal operating conditions during the test. The exhaust fan had been replaced the day before the test and the system was not balanced for the new fan.

Table 2-3. (Continued)

Fab I.D. Scrubber No.		Chlorine ppmv		
Average		Inlet	Outlet	% ^a
Fab 9.1.1e	Series 3	Outlet Only	<0.050	-
Fab 9.1.2b	Series 3	Outlet Only	<0.050	-
Fab 7.1.1a	Series 3	0.355	0.103	71%
Fab 7.1.2	Series 4	<0.025	<0.025	-
Fab 7.1.3	Series 3	2.265	1.420	37%
	Series 4	0.253	0.076	70%
Fab 11.1.5	Series 4	<0.025	<0.025	-
Fab 11.1.3	Series 4	<0.025	<0.025	-

NOTES:

a"%" indicates average percent of acid gas removed by scrubber; i.e., the scrubber efficiency.

Scrubber efficiency (%) was not calculated if measured inlet values were less than five times the method detection limit (MDL). Below 5X MDL, the uncertainty in the measurement is too large to accurately measure efficiency.

Measured outlet concentrations were used for calculations down to the MDL. For concentrations measured at or below the MDL, the outlet concentration assigned to the efficiency calculation was 1/2 the MDL (the mid-point between the MDL and zero).

3.0 Technical Approach

3.1 Test Objectives

The primary objective of the test program was to assess the acid gas and chlorine average removal efficiency of twelve representative scrubbers at Intel's Rio Rancho facility. Data for this analysis is provided in Section 2.0.

3.2 Source Test Procedures Used at Rio Rancho

Two test methods were used in the Rio Rancho effort, EPA Method 26a and EPA Method IP-9.

3.2.1 Summary of EPA Method IP-9 Method

For EPA Method IP-9, one inch sample ports were drilled in the inlet and outlet ducts of the test scrubbers. Radian used one-quarter inch (O.D.) Teflon sample lines for sampling. The lines were inserted into the center of the respective duct or stack and the openings into the duct (ports) were sealed to prevent sample dilution by outside air and/or escape of duct exhaust. The sample line was attached to a calibrated, metered sampling pump. Target sample volume for both inlet and outlet samples was 100 liters. This required at least a 1.5-hour sampling effort for each test.

Both inlet and outlet samples were collected simultaneously. Since EPA Method IP-9 is designed to sample vapor and submicron aerosol particles, isokinetic sampling was not required. The annular denuder system has five components - two annular denuder tubes coated with sodium bicarbonate attached in series followed by a third tube coated with citric acid and a three stage filter pack (See Figure 3.1). The first two denuder tubes will absorb acid gases (HCl and HF). These gases diffuse onto the denuder wall and react with the bicarbonate leaving byproducts in the form of their respective anions (fluoride and chloride). The second annular denuder tube acts as backup to the first collecting any acid gases that may have broken through the first tube. Ammonia is collected in the third tube. A three stage filter pack at the end collects the aerosol particles. The first filter physically traps the aerosol particles. The second filter is coated with sodium carbonate and collects acidic gases which evolve off the first filter from decomposition of the NH_4Cl or NH_4F salts. The third filter (coated with citric acid) collects any ammonia which evolves from the first filter when aerosol salt decomposes. Each of the six

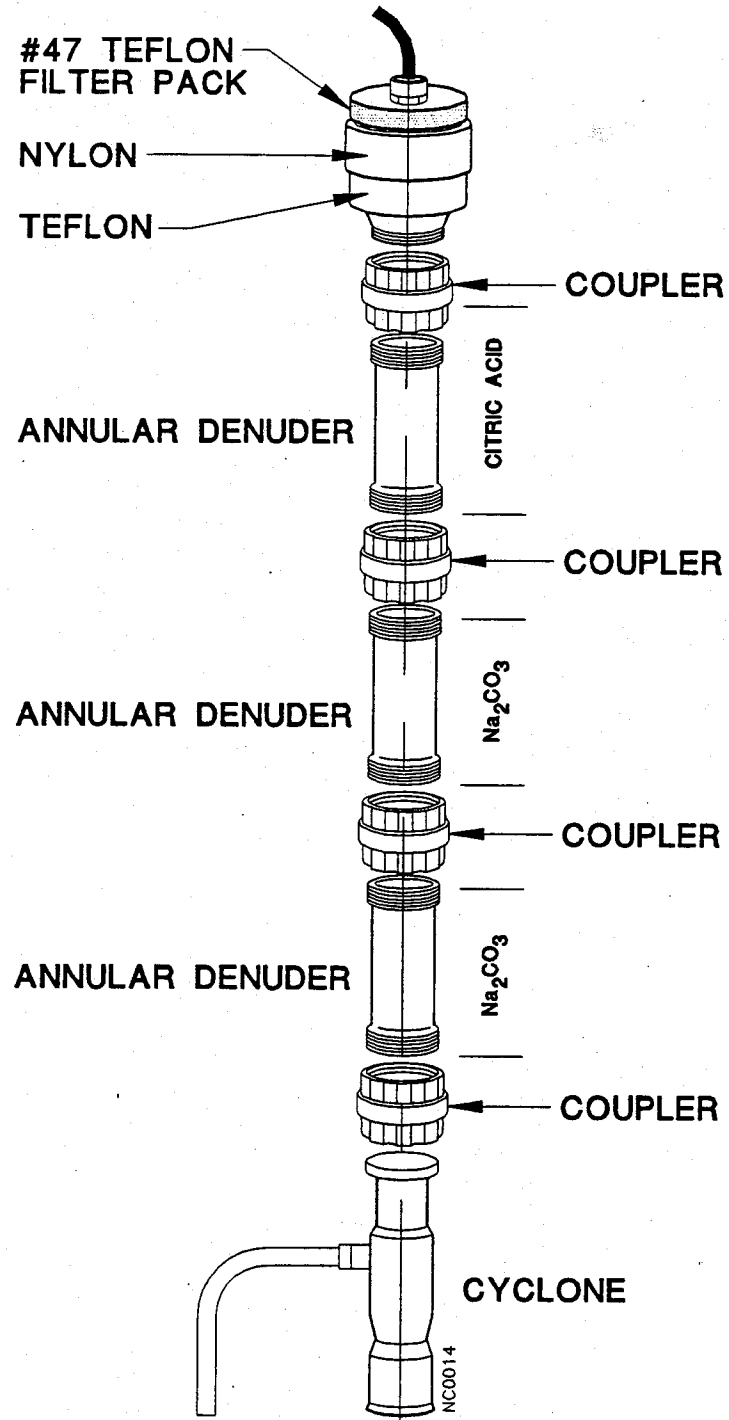


Figure 3-1. Annular Denuder System

discreet samples from the annular denuder train is rinsed in triplicate with deionized water and the rinsate is analyzed by ion chromatography using EPA Method 300.

The calibration used by the laboratory adhered to EPA Analytical Method 300 specifications. Before sample analysis, the instrument was calibrated using four standards whose concentrations extended over a range of 0.5 to 12 ppmv for chloride and fluoride. A least squares fit applied to each ion's data points must result in a calibration curve with a correlation of 0.995 or better before the analysis can proceed.

3.2.2 Summary of EPA Method 26a

EPA Method 26a was used for sampling and analysis of chlorine gas.

To capture the sample, two-inch sample ports were drilled into the inlet and outlet ducts of each respective stack. The heated sample probe inserted into each port consisted of a combined probe/pitot tube apparatus to ensure isokinetic sampling. The EPA Method 26a testing at the inlets and outlets of the respective stacks utilized EPA Method 17 protocol pitot/sample probe configurations to ensure conformance with isokinetic sampling requirements.

Once the sample had been extracted from a duct it was drawn into a Method 26a sample train containing five impingers. The presence of HCl interferes with a Method 26a chlorine analysis, therefore HCl had to be removed from the sample before the chlorine could be collected. This was accomplished in the first two impingers in the sample train. There HCl (and other acid gases) were trapped in aqueous solutions of 0.1N H₂SO₄. This solution absorbed acid gases but allowed chlorine to pass through.

Chlorine was trapped in the third and fourth impingers in the sample train. There the absorbing solution consisted of an aqueous solutions of 0.1 N NaOH. At the end of the sampling event, 10 ml of 0.1 N Na₂S₂O₃ was added to the chlorine samples in each impinger to convert residual chlorine byproduct in the solution, hypochlorous (HOCl) acid, to chloride. A fifth impinger in the sample train contained dry silica gel to absorb residual moisture.

All NaOH impingers were weighed before being recovered into the appropriate sample bottles. Each sample bottle was marked and sealed after sampling. The bottles were collected and brought to Radian's Austin laboratories for analysis.

Calibration of sampling hardware consisted of monitoring actual flow rate periodically during each sampling episode using a calibrated flow meter. Adjustment of flow rate to standard conditions (STP) was made by incorporating sample temperature, sample pressure, and atmospheric pressure readings made during each sampling event.

As with the EPA Method IP-9 analyses, the equipment calibrations in the laboratory adhered to EPA Method 300 analytical specifications. Before sample analysis, each instrument was calibrated using four standards over a sample concentration range of 0.5 to 12 ppmv for chloride. A least squares fit applied to the each ion's data points had to result in a calibration curve with a correlation of 0.995 or better before analysis could commence.

3.3 Data Analysis

Calculation for velocity traverse was performed by EPA Method 2 leading to emission rates in dry standard cubic feet per minute (DSCFM) at a standard temperature of 68°F and 1 atmosphere pressure.

Calculations pertaining to isokinetic sampling are as described by EPA Method 17 and simply ensured proper sampling rates.

Calculation of gas concentrations in the scrubber ducts involved dividing the total collected acid gas by the amount of sample gas pulled through the impinger train or denuder tube. The amount of acid gas in the sample was determined using the analyzer instrument response times the average response factors (from a multipoint calibration) for each specific anion. Analytical results and sample gas quantities are presented in Appendix C.

The equation for converting sample concentration to ppmv is given as:

$$\text{ppmv} = \text{Sample Amt} \times (\text{MW1/MW2}) \times (1/\text{SV}) \times (60 \times 28.317) / (454 \times 10^3)$$

Where:

ppmv	=	conc in ppmv;
Sample Amt	=	amount of ion in the sample in mg (from Table 4-1);
MW1	=	molecular weight of the acid gas in lb/lb-mole;
MW2	=	molecular weight of the anion in lb/lb-mole;
SV	=	volume of gas sampled through the tube in actual liters;
60	=	60 minutes per hour;

28.317 = number of liters per cubic foot (unit conversion factor);
454 = number of grams per pound (unit conversion factor); and
 10^3 = number of mg per gram (unit conversion factor).

Scrubber removal efficiency was calculated as the difference between the inlet and outlet gas concentration (ppmv) divided by the inlet gas concentration (ppmv). The critical issue to be answered by the ammonium aerosol measurements was how much they influence (bias) the standard EPA Method 26a analysis.

To accurately address the aerosol bias issue; that is, to measure the bias of the aerosol salts on Method 26a measurements, the chloride and fluoride concentrations from the denuder aerosol samples were calculated and reported as ppmv HCl as they would have been if absorbed in the Method 26a acid impingers.

3.4 Quality Control (QC)

Typically data quality is considered to have two separate characteristics, accuracy and precision. Each of these were addressed by the QC procedures in this study.

For the acid gas analyses, accuracy was assured by multipoint calibration (zero and four upscale concentrations) of each analyzer used. Linear least squares analyses of the calibration data were performed to derive calibration curve response equations, average instrument response factors (RF) and correlation coefficients (CC). For each calibration, the correlation equation had to exceed 0.99 for analyses to proceed. This criterion was met for all analyses in this study.

The primary mechanism for determining precision for the acid gas analyses portion of this study was a laboratory duplicate analyses on every tenth sample. In each case, precision was evaluated through determination of the relative percent difference (RPD) for the two values, calculated as the difference between them expressed as a percentage of their average value. A value exceeding $\pm 20\%$ for any analysis would indicate a problem.

Additional quality control procedures included taking and analyzing field and reagent blanks and a laboratory check sample every tenth sample. Spike recovery exceeding 90% was the acceptance criteria to ensure adequate quality control of the analysis.

3.5 Estimating the Method Detection Limit

Method detection limits for the IP-9 Annular Denuder method were calculated from method blanks collected during the test program. Method blanks are collected in the same manner as field samples, but without an actual sample being pulled through the equipment.

Method blank levels were determined for both the denuder's particulate filter and the two acid gas denuder tubes. During this program one (1) filter blank and three (3) denuder tube blanks were collected. Table 3-1 shows analytical results of these method blanks. All the detection limits were calculated assuming a nominal sample volume of 1.2 m³.

The IP-9 protocol stipulates that the method quantitation limit is established at 10 times the value of the method blank. The quantification limits are set at values above which reliable results are ensured. The table below presents the established detection limits and quantification limits. Based upon the blank values shown above, the calculated limits are:

Chemical	Denuder (ppmv)
HCl	0.007
HF	0.015

Based upon these quantification limit calculations, Radian elected to employ 0.010 ppmv as the standard detection limit for Method IP-9.

Table 3-1. Analytical Results of Method Blanks

	Sample Volume (m³)	Chloride Results (µg/sample)	Fluoride Results (µg/sample)	Chloride Results (ppbv)	Fluoride Results (ppbv)
Filter	1.2	1.4	0.54	0.7	0.5
Denuder Tube (average)	1.2	1.4	1.6	0.7	1.5

APPENDIX A

HCl, HF, and Chlorine Concentrations and Emission Rates for Intel Scrubbers

Table A-1. HCl Concentrations and Emission Rates at Scrubber Outlets

Fab I.D. Scrubber Number			HCl Inlet (ppmv)	HCl Outlet (ppmv)	HCl Outlet lbs/hr)
10.1.1d	Series 1	Run 1	0.115	<0.010	0.000498
		Run 2	0.056	<0.010	0.000498
	Series 2	Run 1	0.250	0.086	0.00959
Run 2		0.242	0.075	0.00836	
Run 3		0.133	0.074	0.00825	
10.1.1e	Series 1	Run 1	0.017	<0.010	0.000492
		Run 2	0.032	<0.010	0.000492
	Series 2	Run 1	0.131	0.016	0.00195
Run 2		0.107	0.023	0.00281	
Run 3		0.063	<0.010	0.000610	
	Series 4	Run 1	0.126	0.015	0.00115
		Run 2	0.144	<0.005	0.00022
		Run 3	<0.005	0.005	0.00039
10.1.1f	Series 1	Run 1	0.164	<0.010	0.000516
		Run 2	0.133	<0.010	0.000516
	Series 2	Run 1	0.246	0.049	0.00571
Run 2		0.100	0.018	0.00210	
Run 3		0.285	0.021	0.00245	
9.1.3a	Series 1	Run 1	0.116	0.010	0.00128
		Run 2	<0.010	<0.010	0.000638

Table A-1. (Continued)

Fab I.D. Scrubber Number			HCl Inlet (ppmv)	HCl Outlet (ppmv)	HCl Outlet (lbs/hr)
9.1.3a	Series 2	Run 1	0.052	0.010	0.000763
		Run 2	0.174	0.015	0.00114
		Run 3	0.046	<0.010	0.000381
	Series 3a	Run 1	0.013	<0.010	0.00037
		Run 2	0.052	<0.010	0.00035
		Run 3	<0.010	<0.010	0.00038
	Series 3b	Run 1	0.193	0.017	0.00132
		Run 2	0.018	<0.010	0.00037
		Run 3	0.011	<0.010	0.00035
9.1.1e	Series 3	Run 1	Outlet Only	<0.010	0.00056
		Run 2	Outlet Only	<0.010	0.00056
		Run 3	Outlet Only	<0.010	0.00055
9.1.2b	Series 3	Run 1	Outlet Only	<0.010	0.00122
		Run 2	Outlet Only	<0.010	0.00126
		Run 3	Outlet Only	<0.010	0.00125
7.1.1a	Series 3	Run 1	0.010	<0.010	0.00136
		Run 2	0.180	<0.010	0.00137
		Run 3	0.145	<0.010	0.00137
7.1.2	Series 4	Run 1	0.020	<0.005	0.00063
		Run 2	0.125	0.008	0.00160
		Run 3	0.030	<0.005	0.00059

Table A-1. (Continued)

Fab I.D. Scrubber Number			HCl Inlet (ppmv)	HCl Outlet (ppmv)	HCl Outlet (lbs/hr)
7.1.3	Series 3	Run 1	1.346	0.712	0.13310
		Run 2	2.780	0.449	0.08743
		Run 3	1.498	0.655	0.11884
		Run 4	0.593	0.425	0.07667
	Series 4	Run 1	0.708	0.158	0.03321
		Run 2	1.142	0.057	0.01209
		Run 3	1.288	0.136	0.02799
11.1.5	Series 4	Run 1	0.020	0.036	0.00484
		Run 2	<0.005	0.017	0.00235
		Run 3	<0.005	0.022	0.00304
11.1.3	Series 4	Run 1	<0.005	<0.005	0.00048
		Run 2	0.014	<0.005	0.00047
		Run 3	0.016	<0.005	0.00049

Table A-2. HF Concentrations and Emission Rates at Scrubber Outlets

Fab I.D. Scrubber Number			HF Inlet (ppmv)	HF Outlet (ppmv)	HF Outlet (lbs/hr)
10.1.1d	Series 1	Run 1	0.110	0.060	0.00327
		Run 2	0.115	0.120	0.00655
	Series 2	Run 1	0.293	0.226	0.0138
		Run 2	0.364	0.300	0.0183
		Run 3	0.382	0.284	0.0174
10.1.1e	Series 1	Run 1	0.121	0.026	0.00140
		Run 2	0.147	0.027	0.00146
	Series 2	Run 1	0.044	0.014	0.000937
		Run 2	0.098	<0.010	0.000335
		Run 3	0.080	<0.010	0.000335
	Series 4	Run 1	0.039	0.052	0.00219
		Run 2	0.046	0.047	0.00188
		Run 3	0.031	0.037	0.00156
	Series 1	Run 1	0.397	0.075	0.00424
		Run 2	0.453	0.056	0.00317
10.1.1f	Series 2	Run 1	0.039	0.028	0.00179
		Run 2	0.041	0.028	0.00179
	Series 1	Run 3	0.052	0.011	0.000702
		Run 1	0.472	0.653	0.0456
		Run 2	0.450	0.156	0.0109

Table A-2. (Continued)

Fab I.D. Scrubber Number			HF Inlet (ppmv)	HF Outlet (ppmv)	HF Outlet (lbs/hr)
9.1.3a	Series 2	Run 1	5.180	0.234	0.00978
		Run 2	0.752	0.181	0.00757
		Run 3	0.888	0.032	0.00134
	Series 3a	Run 1	2.070	0.840	0.00344
		Run 2	1.1690	0.249	0.00966
		Run 3	1.628	0.194	0.00807
	Series 3b	Run 1	2.651	0.066	0.00280
		Run 2	1.000	0.454	0.01831
		Run 3	0.635	0.601	0.02337
9.1.1e	Series 3	Run 1	Outlet Only	0.011	0.00068
		Run 2	Outlet Only	0.010	0.00062
		Run 3	Outlet Only	<0.010	0.00030
9.1.2b	Series 3	Run 1	Outlet Only	0.027	0.00362
		Run 2	Outlet Only	0.039	0.00539
		Run 3	Outlet Only	0.038	0.00520
7.1.1a	Series 3	Run 1	0.214	<0.010	0.00075
		Run 2	0.185	0.050	0.00754
		Run 3	0.167	0.065	0.00975
7.1.2	Series 4	Run 1	0.137	0.067	0.00775
		Run 2	0.086	0.062	0.00697
		Run 3	0.083	0.057	0.00613

Table A-2. (Continued)

Fab I.D. Scrubber Number			HF Inlet (ppmv)	HF Outlet (ppmv)	HF Outlet (lbs/hr)
7.1.3	Series 3	Run 1	0.037	0.043	0.00441
		Run 2	0.370	0.044	0.00470
		Run 3	0.497	0.050	0.00498
		Run 4	0.121	0.077	0.00762
	Series 4	Run 1	0.138	0.078	0.00899
		Run 2	0.495	0.128	0.01490
		Run 3	0.636	0.095	0.01072
11.1.5	Series 4	Run 1	4.858	1.028	0.07579
		Run 2	4.162	1.290	0.09795
		Run 3	5.911	0.848	0.06431
11.1.3	Series 4	Run 1	1.319	0.023	0.00201
		Run 2	1.732	0.356	0.01600
		Run 3	1.949	0.016	0.00145

Table A-3. Chlorine Concentrations and Emission Rates at Scrubber Outlets

Fab I.D. Scrubber Number			Cl ₂ Inlet (ppmv)	Cl ₂ Outlet (ppmv)	Cl ₂ Outlet (lbs/hr)
10.1.1d	Series 1	Run 1	0.162	0.076	0.0145
		Run 2	0.152	0.097	0.0185
	Series 2	Run 1	0.135	<0.050	0.00535
		Run 2	0.071	<0.050	0.00535
		Run 3	<0.050	<0.050	0.00535
10.1.1e	Series 1	Run 1	0.057	<0.050	0.00472
		Run 2	<0.050	<0.050	0.00472
	Series 2	Run 1	<0.050	<0.050	0.00585
		Run 2	0.162	<0.050	0.00585
		Run 3	<0.050	<0.050	0.00585
	Series 4	Run 1	<0.025	<0.025	0.00403
		Run 2	<0.025	<0.025	0.00393
		Run 3	<0.025	<0.025	0.00417
	Series 1	Run 1	0.127	<0.050	0.00495
		Run 2	0.142	<0.050	0.00495
	Series 2	Run 1	0.139	<0.050	0.00559
		Run 2	<0.050	<0.050	0.00559
		Run 3	0.079	<0.050	0.00559
9.1.3a	Series 1	Run 1	0.527	0.347	0.0849
		Run 2	0.074	0.071	0.0174
	Series 2	Run 1	0.236	0.070	0.0102
		Run 2	0.217	0.090	0.0132
		Run 3	0.058	0.100	0.0146

Table A-3. (Continued)

Fab I.D. Scrubber Number			Cl ₂ Inlet (ppmv)	Cl ₂ Outlet (ppmv)	Cl ₂ Outlet (lbs/hr)
9.1.3a	Series 3a	Run 1	<0.050	<0.050	0.00363
		Run 2	0.077	0.064	0.00881
		Run 3	<0.050	<0.050	0.00369
	Series 3b	Run 1	0.232	<0.050	0.00376
		Run 2	<0.050	<0.050	0.00357
		Run 3	<0.050	<0.050	0.00345
9.1.1e	Series 3	Run 1	Outlet Only	0.058	0.01265
		Run 2	Outlet Only	<0.050	0.00549
		Run 3	Outlet Only	<0.050	0.00535
9.1.2b	Series 3	Run 1	Outlet Only	<0.050	0.01189
		Run 2	Outlet Only	<0.025	0.01224
		Run 3	Outlet Only	<0.050	0.01213
7.1.1a	Series 3	Run 1	0.393	0.109	0.05771
		Run 2	0.404	0.106	0.05665
		Run 3	0.269	0.094	0.05000
7.1.2	Series 4	Run 1	<0.025	<0.025	0.00533
		Run 2	0.030	<0.025	0.00505
		Run 3	<0.025	<0.025	0.00496
7.1.3	Series 3	Run 1	3.220	1.504	0.54680
		Run 3	2.600	2.216	0.83918
		Run 4	0.974	0.540	0.19054
		Run 2	Voided	Voided	-

Table A-3. (Continued)

Fab I.D. Scrubber Number			Cl ₂ Inlet (ppmv)	Cl ₂ Outlet (ppmv)	Cl ₂ Outlet (lbs/hr)
7.1.3	Series 4	Run 1	0.296	0.122	0.04988
		Run 2	0.244	0.070	0.02888
		Run 3	0.220	0.037	0.01481
11.1.5	Series 4	Run 1	<0.025	<0.025	0.00340
		Run 2	<0.025	<0.025	0.00350
		Run 3	<0.025	<0.025	0.00350
11.1.3	Series 4	Run 1	<0.025	<0.025	0.00194
		Run 2	<0.025	<0.025	0.00185
		Run 3	<0.025	<0.025	0.00195

Table A-4. Acid Gases: Average HCl and HF Emission Rates at Scrubber Outlets

Fab I.D. Scrubber Number Series Averages	HCl Outlet (lbs/hr)	HF Outlet (lbs/hr)
10.1.1d Series 1	0.000498	0.00491
Series 2	0.00874	0.0165
10.1.1e Series 1	0.000492	0.00143
Series 2	0.0179	0.000535
Repeat Series 4	0.000585	0.001878
10.1.1f Series 1	0.000516	0.00370
Series 2	0.00342	0.00143
9.1.3a Series 1	0.000957	0.0283
Series 2	0.000763	0.00623
Series 3a	0.000369	0.007058
Series 3b	0.000679	0.014825
9.1.1e Series 3	0.000558	0.000532
9.1.2b Series 3	0.001243	0.004735
7.1.1a Series 3	0.001368	0.006012
7.1.2 Series 4	0.000940	0.006894
7.1.3 Series 3	0.104008	0.005426
Series 4	0.024432	0.011538
11.1.5 Series 4	0.003411	0.079352
11.1.3 Series 4	0.000480	0.011284

Table A-4. (Continued)

Overall Series Average	HCl Outlet (lbs/hr)	HF Outlet (lbs/hr)
Series 1	0.000502	0.00335
Series 2	0.00771	0.00617
Series 3	0.02154	0.00553
Series 4	0.00597	0.02219

NOTE: The overall series average for Series 1 was calculated without the 9.1.3a scrubber due to maintenance operations during stack testing. Scrubber 9.1.3a was included in the overall series average for Series 2. For outlet values below the MDL (0.010 ppmv), half the MDL (0.005 ppmv) was used to calculate the emission rate.

Table A-5. Average Cl₂ Emission Rate at Scrubber Outlets

Fab I.D. Scrubber Number Series Averages		Cl₂ Outlet (lbs/hr)
10.1.1d	Series 1	0.0165
	Series 2	0.00535
10.1.1e	Series 1	0.00472
	Series 2	0.00585
Repeat	Series 4	0.00191
10.1.1f	Series 1	0.00495
	Series 2	0.00559
9.1.3a	Series 1	0.0511
	Series 2	0.0117
	Series 3a	0.00537
	Series 3b	0.00359
9.1.1e	Series 3	0.00782
9.1.2b	Series 3	0.01209
7.1.1a	Series 3	0.05479
7.1,2	Series 4	0.00512
7.1.3	Series 3	0.52551
	Series 4	0.31190
11.1.5	Series 4	0.00346
11.1.3	Series 4	0.00404

Table A-5. (Continued)

Overall Series Average	Cl₂ Outlet (lbs/hr)
Series 1	0.00872
Series 2	0.00712
Series 3	0.10669
Series 4	0.00653

NOTE: The overall series average for Series 1 was calculated without the 9.1.3a scrubber due to maintenance operations during stack testing. Scrubber 9.1.3a was included in the overall series average for Series 2. For outlet values below the MDL (0.050 ppmv), half the MDL (0.025 ppmv) was used to calculate the emission rate.

APPENDIX B

Example Calculations

Emission Rate Example Calculation

The emission rate in pounds per hour is calculated from the concentration (ppmv) with the following calculation:

$$\text{lbs/hr} = \text{DSCFM} \times \text{MW} \times \text{C} \times 2.5967\text{E-}09 \times 60$$

where:

DSCFM	= Dry Standard Cubic Feet per Minute (stack flow rate)
MW	= Molecular Weight of Compound (36.5 for HCl)
C	= Concentration of Compound (ppmv)
2.5967E-09	= Conversion Factor for ppmv to lbs/dscf
60	= Minutes in an Hour

Example Calculation: Using Fab 10.1.1d, Run 1 for the HCl outlet; Average stack flow rate for the Series 1 runs of 17,508 dscfm and a concentration of 0.005 ppmv (half of the MDL) as shown in Table A-1.

$$\begin{aligned}\text{lbs/hr of HCl} &= 17,508 \times 36.5 \times 0.005 \times 2.5967\text{E-}09 \times 60 \\ &= 0.000498\end{aligned}$$

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Compendium of Methods for the Determination of Air Pollutants in Indoor Air

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Chapter IP-9

DETERMINATION OF REACTIVE ACIDIC AND BASIC GASES AND PARTICULATE MATTER IN INDOOR AIR (ANNULAR DENUDER TECHNIQUE)

1. Scope

This document describes a sampling and analytical protocol for the annular denuder system (ADS). This system was developed to measure reactive acidic and basic gases and particulate matter which are contained in indoor ambient air. The chemical species which can be measured by the ADS are gaseous SO_2 , HNO_2 , HNO_3 and NH_3 and particulate SO_4^{2-} , NO_3^- , NH_4^+ and H^+ . Other similar chemical species can be successfully collected by the system with just a few simple modifications (i.e., changing the denuder coating solutions, the denuder sequence and the liner or filter types and sequence). Once collected, the pollutant concentrations are quantified by ion chromatography (IC) analysis and/or Technicon colorimeter autoanalysis. The IC protocols for sample preparation, analysis and quantification are detailed within the ADS method. The Technicon autoanalyzer protocols are utilized to quantify ammonia (NH_3), nitrate (NO_3^-), and sulfate (SO_4^{2-}) in ambient air samples.

2. Applicability

2.1 Recently, these and other acid gases and aerosols, and particulate matter have been of growing concern to indoor air quality groups. Much emphasis has been directed to understanding the many chemical forms in which these pollutants can exist and the conditions which cause chemical changes to occur. Industrial and commercial facilities, as well as hazardous waste storage and treatment facilities, contribute significantly to indoor air contamination through various source-specific emissions. Although several of the previously mentioned pollutants can be instrumentally measured to quantify their concentration in the ambient air, many of the established methods are not adequate (or sensitive enough) to measure these pollutants at the levels typically found in non-urban locations. As a result, monitoring and research efforts have been designed to assess what sources are responsible for targeted pollutant emissions, what health and ecological impacts are incurred, and what the maximum allowable ambient concentrations should be.

2.2 The ADS has been utilized in such research efforts. The system's configuration has made it a very appealing asset to monitoring crews. Its ability to collect the chemical species of interest with little or no interference from sampling artifacts has separated it from other air monitoring techniques. Each sampling network can assemble the treated denuders and filters in such a manner that specific pollutants, which can cause ambient concentrations to be falsely assessed, are withdrawn from the air stream before interfering chemical reactions can occur. Subsequently, it is very important to investigate all possible chemical reactions between the species of interest before setting up the ADS.

2.3 As with all monitoring methods, the ADS has its limitations. Operation below 20% relative humidity may result in less than quantitative collection of SO_2 . Also, the annular denuders are fragile and require great care when handled. Studies are being conducted to

determine how well Teflon® coated aluminum denuders collect acid aerosols. Other studies include identifying interferents which can cause under- or over-estimations of pollutant concentrations to be made and accounting for interferant reactions in the calculations.

Method IP-9

DETERMINATION OF REACTIVE ACIDIC AND BASIC GASES AND PARTICULATE MATTER IN INDOOR AIR (ANNULAR DENUDER TECHNIQUE)

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Method IP-9

DETERMINATION OF REACTIVE ACIDIC AND BASIC GASES AND PARTICULATE MATTER IN INDOOR AIR (ANNULAR DENUDER TECHNIQUE)

1. Scope

1.1 This document describes the protocol for the quantitative measurement of reactive acidic and basic gases and particulate matter which are contained in indoor atmospheres.

1.2 The chemical species which can be determined by this method are gaseous SO_2 , HNO_2 , HNO_3 , and NH_3 and particulate SO_4^{2-} , NO_3^- , NH_4^+ , and H^+ , as well as the mass of fine particulate matter ($d_{50} < 2.5 \mu\text{m}$). Detection and quantitation limits are given in Table 1.

1.3 The methodology detailed in this document is a composite of methodologies developed by U.S. Environmental Protection Agency (USEPA), Harvard University and the CNR Laboratories. It is currently employed in a number of air pollution studies in Italy, U.S.A., Canada, Mexico, Germany, Austria, and Spain, and in such institutions as public health services, epidemiology and environmental research centers.

1.4 The equipment described herein is utilized to measure acidic and basic gases and particulate matter contained in both indoor and outdoor atmospheres. The outdoor method was originally developed for monitoring regional-scale acidic and basic gases and particulate matter in support of U.S. EPA field programs involving the Integrated Air Cancer Research Program and the Acid Deposition Network. Similarly, the methodology has been used to characterize the urban haze in Denver, Houston and Los Angeles.

2. Applicable Documents

2.1 ASTM Standards

D1356 Definitions of Terms Related to Atmospheric Sampling and Analysis

2.2 Other Documents

Ambient Air Studies (1-9)

U.S. EPA Technical Assistance Document (10)

3. Summary of Method

3.1 Indoor air is drawn through an elutriator-accelerator jet assembly, an impactor frit and coupler assembly, and past glass denuder walls which have been etched and coated with chemicals that absorb the gaseous species of interest. The remaining air stream is then filtered through Teflon® and Nylasorb® membrane filters. Teflon® and nylon membrane filters are used to capture ammonium and nitrate aerosol and sulfate particulate matter.

Nitric acid and sulfur dioxide will also be collected by the nylon filter but these measurements are treated as interference. Figure 1 illustrates the annular denuder system (ADS) assembled ready for testing. Figure 2 shows the field sampling box with the ADS and pump-timer (11).

3.2 After sampling, the annular denuders are extracted with 5 mL of deionized water. The extracted solutions are subsequently analyzed for ions corresponding to the collected gaseous species (see Figure 1). The filters are placed into filter bottles where five or ten mL of the IC eluent are pipetted into each filter bottle with the filters face downward and completely covered by the eluent. The filter bottle is capped and put in an ultrasonic bath for 30 minutes. The bottles are stored in a clean refrigerator at 5°C until analysis.

3.3 The analysis of anion and cation concentrations collected by the denuders and filter pack is typically performed by ion chromatographic and Technicon® colorimeter autoanalytic procedures. The H^+ concentration of extracts from the Teflon® filter downstream of the denuders is performed by use of pH measurements using commercially available pH meters calibrated with standards (11).

4. Significance

4.1 Reactive acidic (SO_2 , HNO_2 and HNO_3) and basic (NH_3) gases and particles are found in the atmosphere as a result of emission from a variety of fossil fuel combustion sources including industrial and commercial facilities, hazardous waste storage and treatment facilities, etc. Measurements of these chemical species are currently being used in a broad range of environmental studies such as in 1) epidemiological programs to assess the impact of acid aerosols on respiratory impairment, 2) receptor modeling to determine the origin of particles that impact EPA's PM-10 air particulate standard, 3) assessment of the impact of particulate nitrate and sulfate on visibility, and 4) the quantification of the impact of acidic and basic air pollutants on issues related to acid rain.

4.2 The unique features of the annular denuder which separates it from other established monitoring methods are elimination of sampling artifacts due to interaction between the collected gases and particles, and the preservation of the samples for subsequent analysis which is accomplished by removing NH_3 in the gas stream by the citric acid coated denuder and reducing the probability of the particulate sulfate (SO_4^{2-}) captured by the filter pack being neutralized to ammonium sulfate $[(NH_4)_2SO_4]$. If NH_3 is not extracted from the gas stream prior to filtration, correction of particulate sulfate and gaseous sulfur dioxide would be required for accurate measurements to be obtained.

5. Definitions

Definitions used in this document and any user prepared Standard Operating Procedures (SOPs) should be consistent with ASTM D1356. All abbreviations and symbols are defined within this document at the point of use.

5.1 Particulate mass - a generic classification in which no distinction is made on the basis of origin, physical state, and range of particle size. (The term "particulate" is an adjective, but it is commonly used incorrectly as a noun.)

5.2 Primary particles (or primary aerosols) - dispersion aerosols formed from particles that are emitted directly into the air and that do not change form in the atmosphere. Examples include windblown dust and ocean salt spray.

5.3 Secondary particles (or secondary aerosols) - dispersion aerosols that form in the atmosphere as a result of chemical reactions, often involving gases. A typical example is sulfate ions produced by photochemical oxidation of SO_2 .

5.4 Particle - any object having definite physical boundaries in all directions, without any limit with respect to size. In practice, the particle size range of interest is used to define "particle." In atmospheric sciences, "particle" usually means a solid or liquid subdivision of matter that has dimensions greater than molecular radii (~ 10 nm); there is also not a firm upper limit, but in practice it rarely exceeds 1 mm.

5.5 Aerosol - a disperse system with a gas-phase medium and a solid or liquid disperse phase. Often, however, individual workers modify the definition of "aerosol" by arbitrarily requiring limits on individual particle motion or surface-to-volume ratio. Aerosols are formed by 1) the suspension of particles due to grinding or atomization, or 2) condensation of supersaturated vapors.

5.6 Coarse and fine particles - these two fractions are usually defined in terms of the separation diameter of a sampler. Coarse particles are those with diameters greater than $2.5 \mu\text{m}$ but less than $10 \mu\text{m}$ and that are collected by the sampler; the fine particles are those with diameters less than $2.5 \mu\text{m}$ and that are collected by the sampler.

Note: Separation diameters other than $2.5 \mu\text{m}$ have been used.

5.7 Annular - of, rotating to, or forming a ring. In the annular denuder sampler, the annular refers to the cylinder to which coating is applied to the interior parallel planes to remove gaseous pollutants by diffusion chemistry.

5.8 Denuder - the denuder refers to the process gaseous pollutants from the gas stream.

6. Interferences

6.1 Operation below 20% relative humidity (RH) may result in less than quantitative collection of SO_2 . Atmospheric water vapor in concentrations above 30% RH has been shown not to be an interferant for SO_2 collection.

6.2 Studies are being conducted to identify interferents and calculations are being developed to correct the measurements obtained by the annular denuder system for identifiable interferents. For example, the presence of ozone (O_3) is known to oxidize nitrous acid (HNO_2) to nitric acid (HNO_3); therefore, measurements of HNO_2 are often underestimates. Calculations have been developed to adjust for this oxidation process and provide more accurate estimations of HNO_2 concentrations in the atmosphere.

6.3 Other studies include the possible chemical reactions (organic and inorganic) which may occur with selected coating solutions which interfere with the accurate measurement of the chemical species of interest.

6.4 The efficiency of impactor collection decreases when the impactor surface is loaded. The average operational time before such loading occurs has not been determined.

7. Apparatus

Note: The following descriptions relate to Figure 2. Most of these parts are available commercially by University Research Glassware. However, it is important to note that these items can be made by any qualified vendor; therefore, it is not necessary that these specific items are obtained and utilized.

7.1 Sampling

7.1.1 Elutriator and acceleration jet assembly - Under normal sampling conditions, the elutriator or entry tube is made of either Teflon® coated glass or aluminum. When using glass, the accelerator jet assembly is fixed onto the elutriator and the internal surfaces of the entire assembly are coated with Teflon®. When aluminum is used, the accelerator jet assembly is removable. The jet is made of Teflon® or polyethylene and the jet support is made of aluminum. Again, all internal surfaces are coated with Teflon®. Both assemblies are available with 2, 3 and 4 mm inside diameter jets (nozzles) [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.2 Teflon® impactor support pin and impactor frit support tools - Made of either Teflon® or polyethylene and are used to aid in assembling, removing, coating and cleaning the impactor frit [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.3 Impactor frit and coupler assembly - The impactor frit is 10 mm x 3 mm and is available with a porosity range of 10-20 μm . The frits should be made of porous ceramic material or fritted stainless steel. Before use the impactor frit surface is coated with a Dow Corning 660 oil and toluene solution for use, and sits in a Teflon® seat support fixed within the coupler. The coupler is made of thermoplastic and has Teflon® clad sealing "O"-rings which are located on both sides of the seat support inside the coupler. The couplers are composed of two free moving female threads which house the support tools when assembling and removing the impactor frit, and couple the denuders when sampling. There are arrows printed on the metal band which holds the female threads together. These arrows should be pointing in the direction of air flow (see Figure 1) when the ADS is assembled.

Note: In situations when there are substantial high concentrations of coarse particles ($>2.5 \mu\text{m}$), it is recommended that a Teflon®-coated aluminum cyclone be used in place of the acceleration jet and impactor assembly, as illustrated in Figure 3. The cyclone is made of Teflon®-coated stainless steel. Figure 4 illustrates the location of the cyclone with respect to the denuder, heated enclosure and meter box assembly ready for sampling [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.4 Annular denuder - The denuder consists of two concentric glass tubes. The tubes create a 1 mm orifice which allows the air sample to pass through. The inner tube is inset 25 mm from one end of the outer tube; this end is called the flow straightener end. The other end of the inner tube is flush with the end of the outer tube. Both ends of the inner tube are sealed. In this configuration, the glass surfaces facing the orifice are etched to provide greater surface area for the coating. There are three types of denuders available. One is the older version which accommodates the impactor support pin assembly, and can

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only be the first denuder in sequence. It is available in glass with the impactor support holder made of glass and the impactor support pin assembly made of Teflon®. The denuder is 265 mm long with size #30 threads for coupling. It is available with flow straighteners at both ends; however, most denuders in use today only have one flow straightener end. The second most recent denuder version, which can be used as any denuder in sequence, is available in glass with only one flow straightener end. It is 242 mm long and has size #30 threads. Finally, the third denuder design involves two inner concentric glass tubes (1 mm separation) positioned around a solid center glass rod as illustrated in Figure 5. Once again, the glass surfaces are etched to provide greater surface area for the coating. The inner glass tubes and coater rod are inset 25 mm from one end of the outer Teflon®-coated stainless steel tube to serve as the flow straightener end. All denuder types should be equipped with thermoplastic or polyethylene caps when purchased [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.5 Caps for annular denuder - Caps are made of either polyethylene or thermoplastic and are used in the coating and drying processes, for storage and for shipment. The thermo-plastic caps include a removable Teflon® seal plate when purchased. Repeated reuse of these types of caps have caused some contamination due to the improper cleaning of the cap and Teflon® seal plate, i.e., fluid tends to be trapped under the seal plate. The polyethylene caps are not equipped with seal plates. Observation has concluded that polyethylene caps tend to dry faster and seal better than the thermoplastic caps. Less sample contamination has been reported, also [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.6 Annular denuder couplers - The couplers should be made of thermoplastic and equipped with Teflon® "O"-rings which sandwich a silicone rubber ring on three sides. This provides elasticity for better sealing under extremely cold temperature conditions in which Teflon® does not give. There are two types of couplers available. In the older version, the couplers have removable seal rings. Problems with denuder breakage and leakage due to improper threading of the couplers with the denuders led to the development of a second type of coupler. The new couplers are equipped with permanent seal rings which provide more even threading and a better seal when coupled. Some couplers have built-in flow-straighteners. The couplers are used to couple the annular denuders together and for coupling the last denuder with the filter pack [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.7 Drying manifold assembly - The manifold is made of pyrex and is available to accommodate as many as 4 drying denuders. The denuders are attached to the manifold with back-to-back Bakelite bored caps. The bored caps are connected with a Teflon® connector ring. Air is pushed through an air dryer/ cleaner bottle made of 2 1/2 inch heavy wall pyrex which contains silica gel, calcium sulfate and activated charcoal (not available with assembly). The tubing which connects the dryer/cleaner bottle to the drying manifold should be secured at each cap with either Teflon® washers or Teflon® washers coupled with Teflon® hose barbs [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.8 Filter pack assembly - The filters are supported by stainless steel porous screens and are housed in a polyethylene filter ring housing. The Teflon® filter ring housing directly follows the Teflon® filter housing inlet component. The "nylon" filter ring housing follows the Teflon® filter ring housing and sits on a Teflon® "O"-ring which seals the filter ring housing components to the filter housing outlet component. (There can be up to 4-filters in series depending on the species of interest.) The filter housing outlet component is aluminum and accommodates a polyethylene screw sleeve which seals the filter pack assembly. The sleeve is available in different lengths to accommodate up to 4 filter ring housing units. A stainless steel "Quick-Release" plug screws into the aluminum outlet component for connecting the pump-timer to the filter pack assembly. It is equipped with an orange "dust cover" (male plug) upon purchase [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.9 Vacuum tubing - Low density polyethylene tubing, 3/8 inch diameter for distances of less than 50 ft., 1/2 inch diameter for distances greater than 50 ft. Since this tubing is used downstream from the sampler, similar sized tubing or pipe of any material may be substituted. The tubing must have sufficient strength to avoid collapsing under vacuum [Fisher-Scientific, 711 Forbes Ave., Pittsburgh, PA, 15219, (412-787-6322)].

7.1.10 Tube fitting - Compression fittings (Swagelok®, Gyrolok® or equivalent) to connect vacuum tubing (above) to an NPT female connector or filter holder and connect vacuum tubing to fitting on differential flow controller. The fittings may be constructed of any material since they are downstream of the sampler [Fisher-Scientific, 711 Forbes Ave., Pittsburgh, PA, 15219, (412-787-6322)].

7.1.11 Annular denuder system (ADS) sampling box - The housing box is made of a "high-impact" plastic and is insulated with polyurethane. It is 4 feet long by 6 inches wide and 6 inches deep. There are two heater units, a fan blower and an air outlet located in the lid of the housing. Also, located on the lid are the automatic and manual control switches and a 12-V power supply outlet for the heater and fan. The bottom of the box houses the ADS. The elutriator end of the ADS protrudes through one end of the box, while the denuders are supported in the box by chrome plated spring clips. If the Teflon®-coated aluminum cyclone is used to remove coarse particles, it is also housed in the heated sampling box, with the elutriator end protruding through the sampling box, as illustrated in Figure 4. There is a vacuum plug known as a "quick-release" coupler that is linked to the filter pack of the ADS. This connects the ADS to 1 1/4 in. Teflon® rubber "clad" shrink tubing which exhausts the air stream to the ambient air. The box is sledge hammer proof [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.12 Annular denuder field-to-lab case - The field-to-lab case is made of rigid plastic and insulated with polyurethane. It is made to be hand carried, not shipped, and is used to transport 4 total annular denuder systems each consisting of either 3 annular denuder sections or 2 annular denuder sections and 1 denuder-impactor assembly. The systems are packed already assembled and capped, and either ready for sampling or ready for sample analysis. The case has a carrying handle, a lock and 3 latches and is equipped with 2 keys

[University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.13 Annular denuder shipping case - The shipping case is made of formica, backed with plywood and insulated with polyurethane. The corners are reinforced with metal. It is made to withstand shipping by truck, UPS and Federal Express. Each case is stackable and lockable and has a carrying handle. Seven total annular denuder systems can be packed in the case, provided each system contains 4 denuders each. The systems can consist of either 3 denuders (242 mm long) and 1 denuder-impactor assembly (265 mm long) or 4 denuders (242 mm long). Each component of the system is packed in its own storage compartment. The personal sampler assemblies can also be placed and shipped in this case [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.14 Differential flow controller (pump) - This unit pumps air through the sampler at a fixed rate of between 5 and 20 standard L/min (typically 10 L/min) with a precision of $\pm 5\%$ over the range of 25 to 250 mm Hg vacuum [University Research Glassware, 118 E. Main St., Carrboro, NC, 27510, (919-942-2753)].

7.1.15 Dry gas meter (DGM) - The DGM should pull 10 L of gas per revolution [Nutech, Corp., 2806 Cheek Rd., Durham, NC, 27704, (919-682-0402)].

7.2 Analysis

7.2.1 Ion chromatograph - A chromatograph equipped with the appropriate anion and cation exchange resin filled separator and suppressor columns and conductivity detector for measuring acidic (SO_2 , HNO_2 and HNO_3) and basic (NH_3) ions in solution (i.e. denuder and filter extracts) [Dionex Corp., 1228 Titan Way, Sunnyvale, CA, 94086, (408-737-0700)].

7.2.2 Technicon colorimeter autoanalyzer - Colorimetric analyzer able to detect specific ions of interest in aqueous extracts [Technicon Industrial Systems Corp., 511 Benedict Ave., Tarrytown, NY, 10591-5097, (800-431-1970)].

7.2.3 pH meter - A pH or pH/ion meter with an "integral" automatic temperature compensation and calibrated with (EPA, N.S.T.) standard buffers (pH 4 and 7). Including 2 and 4 mL analysis cups (Orion and other vendors).

7.2.4 Polyethylene bottles with polyethylene screw caps - 50 mL and 100 mL, used for storage of coating solutions, best source.

7.2.5 Erlenmeyer flasks - 250 mL and 2 L borosilicate glass or polyethylene flasks with calibration, best source.

7.2.6 Graduated cylinders - 10 mL and 100 mL borosilicate glass or polyethylene cylinders, best source.

7.2.7 Pipets - Class A 5 mL and 10 mL borosilicate glass pipettes or automatic pipettes. Calibrated "to deliver," best source.

7.2.8 Pipet bulb - Made of natural rubber. Recommended to meet OSHA requirements, best source.

7.2.9 Micropipettes - Recommended 50 μL , calibrated "to contain," borosilicate glass micropipette, best source.

7.2.10 Forceps - Recommended dressing forceps made of stainless steel or chrome-plated steel and without serrations. Used for handling filters (Millipore).

7.2.11 Stopwatch - Used for measuring flow rate of gas stream through DGM, best source.

7.2.12 Ultrasonic cleaner - Used for filter extractions and parts cleaning. Most are temperature controlled. It is recommended to control the temperature during extraction at 65°C [Cole-Palmer Instrument Co., 7425 N. Oak Park Ave., Chicago, IL, 60648, (800-323-4340)].

7.2.13 Clean air hood - Closed air hood with ammonia free air circulation. Used for Teflon® filter extraction for pH analysis, best source.

8. Reagents and Materials

8.1 Teflon® filters - Zefluor® (PTFE) membrane filters 47 mm diameter with a 2 µm pore size. Only one side is Teflon® coated; this side should face the air stream [Gelman Sciences, 600 S. Wagner Rd., Ann Arbor, MI, 48106, (800-521-1520)].

8.2 Nylasorb® filters - Membrane filters 47 mm diameter with a 1 µm pore size. These filters are specially prepared and batch analyzed for low SO_4^{2-} , NO_2^- , and NO_3^- background levels. If other brands of nylon membrane filters are used, they should be batch analyzed to ensure low and replicable levels of SO_4^{2-} , NO_2^- , and NO_3^- [Gelman Sciences, 600 S. Wagner Rd., Ann Arbor, MI, 48106, (800-521-1520)].

8.3 Denuder extract storage vials - 30 mL (1 oz) screw-cap polyethylene sampling vials (Nalgene or equivalent). Allow eight (8) per sample for each sampling period, best source.

8.4 Filter extract storage vials - 100 mL polyethylene vials (Nalgene or equivalent). Allow two (2) vials for each sampling period, best source.

8.5 IC analysis vials and caps - The vials are available in 5 mL and 0.5 mL and are made of polypropylene. The filter caps are made of plastic and contain a Teflon® filter through which the sample is extracted for analysis. Both the vials and filter caps should be disposable, best source.

8.6 Labels - Adhesive, for sample vials, best source.

8.7 Parafilm - Used for covering flasks and pH cups during pH analysis, best source.

8.8 Kimwipes® and Kay-dry towels - Used for cleaning sampling apparatus and analysis equipment, best source.

8.9 Stoppers - Cork or polyethylene, best source.

8.10 Sodium carbonate (Na_2CO_3) - ACS reagent grade, best source.

8.11 Sodium chloride (NaCl) - ACS reagent grade, best source.

8.12 Methanol (methyl alcohol - CH_3OH) - ACS reagent grade, best source.

8.13 Toluene - ACS reagent grade, best source.

- 8.14 Glycerol (glycerin - $\text{CH}_2\text{OHCHOHCH}_2\text{OH}$) - ACS reagent grade, best source.
- 8.15 Citric acid (monohydrate - $\text{HOC}(\text{CH}_2\text{CO})\text{OH})_2\text{COOH} : \text{H}_2\text{O}$) - ACS reagent grade, best source.
- 8.16 Hydrogen peroxide (H_2O_2) - ACS reagent grade, best source.
- 8.17 Ethanol ($\text{C}_2\text{H}_5\text{OH}$) - ACS reagent grade, best source.
- 8.18 Sulfuric acid (H_2SO_4) - ACS reagent grade, best source.
- 8.19 Potassium chloride (KCl) - ACS reagent grade, best source.
- 8.20 Perchloric acid (HClO_4) - ACS reagent grade (60-62°C.), best source.
- 8.21 Distilled deionized water (DDW) - ASTM Type I water.
- 8.22 pH buffers - Standard buffers 4.00 and 7.00 for internal calibration of pH meter, best source.
- 8.23 Silica gel - ACS reagent grade (indicating type), best source.
- 8.24 Sodium bromide (NaBr) - ACS reagent grade, best source.
- 8.25 Activated charcoal - ACS reagent grade, best source.
- 8.26 Balance - Electronic analytical with internal calibration weights and enclosed weighing chamber. Precision of 0.1 mg [Fisher-Scientific, 711 Forbes Ave., Pittsburgh, PA, 15219, (412-787-6322)].
- 8.27 Gloves - Polyethylene disposable. Used for impactor frit assembly and filter pack assembly, best source.
- 8.28 Dow Corning high temperature vacuum oil - Dow Corning 660 oil used for impactor frit coating solution, best source.
- 8.29 Zero air - A supply of compressed clean air, free from particles, oil, NO, NO₂, SO₂, HNO₃, and HONO. The supply may be either from a commercial cylinder or generated on site, best source.
- 8.30 IC eluent solution - For extracting filters. This should be the same eluent as used for the ion chromatographic analysis of the filters. If the filter analysis is not to be performed by ion chromatography, then a slightly basic solution (e.g., 0.003 N NaOH or sodium carbonate/bicarbonate) should be used to extract the Nylasorb® filter, while the Teflon® filter should be extracted with DDW.

9. Preparation of Coating and Extraction Reagents

- 9.1 Impactor frit coating solution preparation - Weigh 1 g of silicone oil (Dow Corning high temperature 660 oil) and place in a 100 mL polyethylene storage bottle. Add 100 mL of toluene. Mix thoroughly, close container, and store at room temperature. (WARNING - FLAMMABLE LIQUID).

9.2 Impactor frit extraction solution preparation - Add 100 mL of IC eluent to a clean polyethylene storage container. Pipette 5 mL of methanol into container. Mix thoroughly. Store, covered at room temperature.

9.3 Annular Denuder Coating Solutions Preparation

Note: Different coatings may be used depending on the chemical species of interest.

9.3.1 NaCl coating solution - Clean a 100 mL polyethylene storage vial and let dry at room temperature. Weigh 0.1 g of reagent grade NaCl and add to vial. Add 90 mL of deionized water and 10 mL of methanol. Mix thoroughly; store, covered at room temperature.

9.3.2 Na₂CO₃ coating solution - Clean a 100 mL polyethylene storage vial and let dry at room temperature. Measure 50 mL of methanol (WARNING - TOXIC, FLAMMABLE LIQUID) with a graduated cylinder and pour into vial. Measure 50 mL of DDW with a graduated cylinder and add to vial. Weigh 1 g of glycerol and add to DDW. Weigh 1 g of a₂CO₃ and add to vial. Mix thoroughly, solution may fizz; wait for fizzing to stop before sealing vial. Store at room temperature.

9.3.3 Citric acid coating solution - Clean a 100 mL polyethylene storage vial and let dry at room temperature. Measure 50 mL of methanol (WARNING - TOXIC, FLAMMABLE LIQUID) with a graduated cylinder and pour into vial. Weigh 0.5 g of citric acid and add to vial. Mix thoroughly; store, covered at room temperature.

10. Elutriator and Acceleration Jet (Inlet) Assembly

Note: Figure 6A shows the all glass configuration.

10.1 The internal walls of the elutriator and jet assembly are coated with Teflon® to prevent losses of reactive species (SO₂, HNO₃, NH₃) during sampling. The elutriator prevents water and large particles from entering the inlet and thus extends the life of the impaction surface located immediately downstream of this assembly.

10.2 Figure 6B shows an aluminum version of this inlet. All inner surfaces of the aluminum unit are Teflon® coated. The main difference between the all glass and the aluminum inlet is the jet component of the aluminum inlet is replaceable as shown in Figure 3B. The jet component is made of either Teflon® or polyethylene and is available in various diameters as needed to accommodate selected sample flow rates. The jet may be replaced using the tool shown in Figure 6B. The jet diameter for a sample flow rate of 10 L/min is 3.33 mm. At this flow rate the inlet has a D₅₀ cutpoint of 2.5 µm. If a different flow rate is to be used, the jet diameter must be changed to retain a D₅₀ cutpoint to 2.5 µm. Figure 7A shows the relationship between jet diameter and flow rate to retain a D₅₀ at 2.5 µm. Table 2 contains the jet diameters and Reynolds number to maintain a D₅₀ of 2.5 µm cutpoint at different flow rates between 1 and 20 L/min.

Note: If the sampling area has substantial concentrations of coarse particles (>2.5 µm), the user may select to replace the acceleration jet and impactor assembly with the Teflon®-coated aluminum cyclone. The D₅₀ cutpoint at a flow rate of 10 L/min is 2.5 µm, as illustrated in Figure 7B.

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11. Impactor Frit Preparation and Installation

11.1 Impactor Frit Installation

11.1.1 Impactor-coupler - The impactor-coupler assembly shown in Figure 8 is comprised of two parts: the replaceable impactor frit and the coupler-impactor housing seat. The impactor surface is a porous ceramic or porous stainless steel frit, 10 mm x 3 mm. This frit is inserted into the coupler-impactor housing using the tools shown in Figure 9. It is imperative that the in-tool is completely screwed in behind the impactor seat before the frit is pressed into place. The impactor frit is pressed gently but firmly into the seat of the impactor housing with your clean gloved finger. The impactor should fit into the housing so that it does not protrude above the seat. The impactor frit has a slight bevel. The narrow surface should be inserted into the impactor seat.

11.1.2 Impactor-denuder - The impactor-denuder assembly shown in Figure 9 is comprised of three parts: the replaceable impactor frit, the impactor seat support pin and the annular denuder impactor-pin support. The impactor frit is the same as described in Section 11.1.1 and is inserted, as previously described, into the impactor seat support pin. The impactor support pin can either be hand-held while inserting the frit or it can be placed upright into the aluminum frit holder #3 (see Figure 10). Press the support pin into the denuder pin support. The pin is grooved and has a viton "O"-ring to keep the pin snug in the denuder support during cold weather use (Teflon® tends to shrink at low temperatures). The support pin is removed by using the removal tool shown in Figure 9.

11.2 Impactor Frit Preparation

With the impactor frit in the impactor seat of either the coupler (see Figure 8) or the Teflon® impactor seat support pin which fits into the first denuder (see Figure 9), pipette 50 µL of the toluene-660 oil coating solution onto the impactor frit surface and allow to dry at room temperature. Cap both sides of the coupler impactor or denuder-impactor until use.

12. Filter Pack Preparation and Assembly

Note: Any number of filters can be used depending on the target species of interest. The configuration referred to in this section does not collect NH_4 .

12.1 With clean gloves, disassemble the filter pack (see Figure 11) by unscrewing the large outer Teflon® collar (sleeve) from the aluminum filter housing outlet component.

Note: It is necessary to remove the polyethylene cap first. Lay the pieces out on clean Kimwipes®. Insert black viton "O"-rings (see Figure 11).

12.2 Lay a clean Teflon® filter ring housing, with its large opening face-up, on a clean Kimwipe®. Place a clean stainless steel screen in the filter ring housing.

12.3 Using clean filter forceps, place a Nylasorb® nylon filter on the screen. Insert a second filter ring housing on top of the nylon filter with its large opening face-up. This forms a "sandwich" with the nylon filter held between the two filter ring housings.

12.4 Place another clean screen on the second filter ring housing. Using clean filter forceps, place a Teflon® filter on the screen.

Note: If a Teflasorb® Teflon® filter is used, be sure to place the Teflon® coated side, not the webbed side, toward the air stream. If the webbed side is facing the air stream, SO₂ extraction from the filters may be inefficient.

12.5 Place the Teflon® filter housing inlet component (see Figure 11) on top of the Teflon® filter. This forms another "sandwich" with the Teflon® filter held between the second filter ring housing and the housing inlet component. The housing inlet component connects the filter pack assembly to the last annular denuder through a thermoplastic coupler. Be careful not to twist the filterpack components, or damage will occur to the filters.

12.6 Lay the aluminum filter housing outlet component, with its large opening face-up, on a clean Kimwipe®. Insert a black viton "O"-ring in the aluminum filter base.

12.7 Insert the filter ring sandwiches (prepared in Sections 12.1-12.5) with the filter housing inlet component extending upward, on the viton "O"-ring in the aluminum filter base. Place the large outer Teflon® sleeve over the filter sandwich and screw onto the aluminum filter base. **DO NOT OVERTIGHTEN! AND DO NOT TWIST FILTER PACK COMPONENTS!**

12.8 Install the "Quick-Release" plug into the filter outlet component. **DO NOT OVERTIGHTEN!**

12.9 Install the polyethylene cap onto the filter inlet component and the orange dust cover onto the Quick-Release plug until ready to attach denuders.

13. Annular Denuder System Preparation

All new annular denuder parts obtained from suppliers should be cleaned by placing them in a dilute soap solution in an ultrasonic cleaner for about 10 minutes. The parts should then be thoroughly rinsed in DDW and allowed to dry at room temperature.

13.1 Annular Denuder Coating Procedure

Note: If the first denuder holds the impactor, a blank Teflon® impactor support pin should be installed in the pin support holder before the coating procedure.

13.1.1 Cap the end of the denuder which has the inner tube flush to the outer tube and set denuder upright on the capped end. For the denuders with flow-straighteners at both ends, either end can be capped. Measure 10 mL of the appropriate coating solution into a graduated cylinder. Pipette the 10 mL into the flow-straightener end of the upright capped annular denuder.

13.1.2 Cap the open end of the denuder and holding horizontally, rotate the denuder to distribute the coating solution evenly (see Figure 12).

13.1.3 Remove cap from flow-straightener end of denuder and decant excess coating solution into a clean denuder extract storage bottle labeled "denuder blank." Bottle label should include denuder number, coating solution and date.

13.1.4 Repeat this procedure with each denuder; label the denuders and bottles appropriately.

13.2 Annular Denuder Drying Procedure

Note: As denuders dry, they change from translucent to a frosted appearance. Denuders are dry when they become uniformly frosted.

13.2.1 Drying train and manifold clean air flow should be adjusted to 2 to 3 L/min. Close toggle valve controlling clean air flow through manifold before attaching denuders.

13.2.2 Attach flow-straightener end to drying manifold port at the back-to-back bored caps (see Figure 13).

13.2.3 Open toggle valve and allow clean air to flow through the tube for several minutes.

13.2.4 Close toggle valve, and reverse ends of tubes attached to manifold.

13.2.5 When an even frosted appearance is achieved, remove tubes from manifold, cap both ends with clean caps and store until ready for use. Turn off air to drying manifold.

13.3 Annular Denuder System (ADS) Assembly

Note: Described herein is an annular denuder system consisting of 4 denuders in series. Any number of denuders can be used as per the operators discretion. It is recommended to assemble the denuders in such a way that the flow-straightener end always follows the flush end of the previous denuder, except, in the event that denuders with flow-straighteners at both ends are used. This type of assembly allows laminar flow conditions to be restored.

13.3.1 Lay the ADS pieces on a clean surface (i.e., Kimwipes®).

13.3.2 Remove the end caps from the first denuder. Denuder 1 is coated with NaCl and may or may not hold the impactor frit pin support. If the first denuder is equipped with the impactor frit pin-support, remove the blank impactor support pin. Gently insert the impactor support pin and coated frit assembly into the denuder-pin support. If the first denuder does not hold the impactor pin-support, attach the impactor frit seat equipped coupler assembly to the flow-straightener end of the first denuder.

Note: DO NOT TIGHTEN! Do not tighten during the following procedure until Section 13.4.12 is reached.

13.3.3 Attach a thermoplastic coupler to the opposite denuder end. Place a Teflon® clad "O"-ring inside the coupler, if needed.

13.3.4 Remove the end caps of the second denuder (Na_2CO_3 coated). Attach the end with the flow-straightener section to the first denuder-coupler assembly.

13.3.5 Attach a thermoplastic coupler to the opposite denuder end. Place a Teflon® clad "O"-ring inside the coupler, if needed.

13.3.6 Remove the end caps of the third denuder (Na_2CO_3 coated). Attach the end with the flow-straightener section to the second denuder-coupler assembly.

13.3.7 Attach a thermoplastic coupler to the opposite denuder end. Place a Teflon® clad "O"-ring inside the coupler, if needed.

13.3.8 Remove the end caps from the fourth denuder (citric acid coated). Attach the end with the flow-straightener section to the third denuder-coupler assembly.

13.3.9 Attach a thermoplastic coupler to the opposite denuder end. Place a Teflon® clad "O"-ring inside the coupler, if needed.

13.3.10 Attach the filter pack inlet to the fourth denuder coupler assembly.

13.3.11 When using the first denuder equipped with the impactor frit-pin support, a thermoplastic coupler with a Teflon® clad "O"-ring is used to attach the inlet assembly. Attach but do not tighten!

13.3.12 Attach the elutriator-acceleration jet assembly to the first denuder-coupler assembly. Tighten very gently - DO NOT OVERTIGHTEN or breakage will result. (This applies when using either first denuder described).

13.3.13 Tighten the remaining couplers very gently - do not overtighten or breakage will result (see Figure 1).

13.3.14 Cap elutriator with orange dust cover until use.

Note: When collecting and measuring gaseous HNO_2 , HNO_3 , SO_2 , and NH_3 , and particulate NO_3^- , NH_4^+ , and SO_4^{2-} , it is essential to assemble the annular denuders as previously described. It is impossible to distinguish the difference between deposited HNO_2 and HNO_3 if the NaCl coated denuder does not precede the Na_2CO_3 coated denuder. It is impossible to quantify the amount of HNO_2 collected if there are not two Na_2CO_3 coated denuders in series. Also, NH_3 must be taken out of the gas stream prior to the air stream entering the filter pack. Otherwise, reaction of the unneutralized sulfate will result. If ammonia (NH_3) and/or H^+ measurements are not to be analyzed for, then the use of a citric acid coated denuder is not important. However, with the removal of NH_3 , some nitrate collected on the Teflon® filter will tend to evaporate and be found on the nylon filter.

13.4 Laboratory Leak-Check of ADS

Note: CAUTION - Do not subject the system to sudden pressure changes or filters may tear.

13.4.1 Remove the orange dust cap from the impactor opening. Attach the "Quick-Release" to a pump module. Turn on the pump. Be certain that flow through the ADS occurs by checking the rotameter.

13.4.2 Briefly cap the elutriator with the orange dust cap. The flow as indicated on the rotameter should drop to zero if no leaks exist.

13.4.3 Disconnect the pump from the ADS at the "Quick-Release" plug. Cap the "Quick-Release" plug with an orange dust cover. Turn off the pump. REMEMBER - Never overtighten joints or breakage will result. If the joints can not be sealed with gentle tightening, then the Teflon® "O"-rings are worn or defective and must be replaced.

13.4.4 Place the assembled sampler in its field-to-lab carrying case for transport to the field (see Figure 14).

Note: It is recommended that the ADS joints be loosened slightly when extreme temperature changes are incurred during transportation. This will prevent unnecessary breakage or distortion of the ADS components. Remember to allow the system to adjust to the indoor air temperature before tightening the joints and checking for leaks.

14. Sampling

14.1 Start-up

14.1.1 Remove the ADS from its field-to-lab carrying case and load into the field sampling box. The ADS field sampling box is insulated with polyurethane which is configured to hold the ADS without allowing movement. Chromeplated spring clips hold the denuders in place. Automatic and manual control switches allow the sampling box to control the temperature of the ADS. The automatic switch should be used when the ADS is not in use and when the ADS is sampling for extended periods of time without constant supervision to prevent low temperature or sudden pressure change exposure of the ADS (these types of exposure can cause leaks to occur, condensation, or the filters to tear). When sampling, the ADS should be kept 1°C above the indoor temperature to prevent condensation. The sampling box has two connections with the pump timer: the plastic suction hose connected with "Quick-Release" couplers and the 12-V power cord with a "Quick-Disconnect" coupler. The power cord remains connected, and the suction hose is disconnected from the box each time the unit is opened. Inside the box, the hose is connected to the top of the filter pack with a "Quick-Release" coupler. During sampling the sample box is kept securely closed (see Figure 2).

14.1.2 Allow the pump to warm up for 20-30 minutes prior to testing so the pump will provide steady flow during testing.

14.1.3 To check the Heat/Cool cycles, flip one switch from "AUTO" to "MANUAL" and the other between "COOL" and "HEAT." Check to insure that the fan and heater (i.e., light bulb) work, respectively.

14.1.4 With the elutriator still capped, turn on the pump with the switch on the timer. The rotameter should indicate zero flow. If there is a flow, the assembly pieces need to be recoupled. Run leak check for 5-10 seconds, then turn off pump and remove elutriator cap. Record leak rate on Field Test Data Sheet (see Figure 15).

14.1.5 Attach DGM output to elutriator inlet. Turn on pump. Record start time on Field Test Data Sheet (see Figure 15). Using a stopwatch, record the time for 20.0 L to pass through the DGM. Record the DGM temperature and the absolute pressure of the DGM.

14.1.6 Calculate the flow rate as follows:

$$Q_{STD} = (V/T)(P_b/P_{STD})(T_{STD}/T_m)(F_c)$$

where:

Q_{STD} = flow rate corrected to standard conditions, 0°C and 760 mm Hg, L/min

V = volume of gas pulled through denuder system, L

T = time required to pull 20 L of gas through denuder system, minutes

P_b = barometric pressure, mm Hg

P_{STD} = standard barometric pressure, 760 mm Hg

T_{STD} = standard temperature, 273°C

T_m = temperature of dry gas meter, 273°C + T_m

F_c = dry gas meter correction factor, dimensionless

14.1.7 If the calculated flow rate is not between 5 and 16 L/min, typical 10 L/min, then readjust the flow rate and repeat Sections 14.1.4 and 14.1.5 until the rate is in the above range. Preliminary studies should be conducted to obtain an estimate of the concentrations of the species of interest.

14.1.8 Record the flow rate on Field Test Data Sheet.

14.1.9 Remove DGM connection tubing from elutriator inlet. Pump should remain running so that sampling continues. Higher flow rates may be used for shorter sampling periods. Concentration of the species of interest in indoor air and the configuration of the sampling equipment, determine the appropriate flow rates. Sampling at 10 L/min, requires a sampling time of 24 hours for the collection of pollutant concentrations between 0.02 and 0.83 $\mu\text{g}/\text{m}^3$.

14.2 Sample Shutdown

14.2.1 Attach DGM connection tubing elutriator inlet with pump still running. Measure flow rate as in Sections 14.1.5 and 14.1.6. Record flow time, temperature, and pressure on Field Test Data Sheet (See Figure 15).

14.2.2 Turn off pump. Record time and elapsed time meter reading on log sheet. Remove DGM connection tubing from elutriator inlet. Remove ADS from the sampling box, cap the ends, and place the ADS in field-to-lab carrying case for transport to lab. Be careful not to stress the ADS during the transfer or breakage will result. CAUTION - When the ADS is brought from a cold field sampling location to a warm laboratory, it is necessary to loosen the denuder couplings to prevent thermal expansion from breaking the denuders.

14.3 Corrective Action for Leak Test Failure

Note: These steps should be followed when failure occurs during testing at the laboratory before transport to the field and in the field before testing.

14.3.1 Sampler leaks - Note the problem on the Field Test Data Sheet. Check assembly of ADS components. Replace gaskets. Check for proper seating of denuder surfaces. Replace any defective parts.

14.3.2 Cracked or chipped denuders or elutriator assemblies - Note problem on Field Test Data Sheet. Discard defective pieces. Do not try to extract cracked pieces. WARNING - use caution when disassembling cracked glassware. Pieces may shatter and cause severe cuts. Wear protective clothing.

14.3.3 Contaminated blank solutions - Note problem on Field Test Data Sheet. Follow parts cleaning procedures closely. Examine the sampler preparation area for possible sources of contamination and remove source, if found. Check DDW being used in the

solution preparations and extractions: Fill a clean 25 mL polyethylene extraction bottle with the DDW used in solution preparation and extraction, send to lab for analysis. If contaminated, correct deionization system.

14.3.4 Flow rate disagreement - Note problem on Field Test Data Sheet. Check vacuum gauge on flow module. If a high vacuum exists then the sampler has become blocked. This may be due to dust or smoke particles clogging the filters or to obstructions in the system or tubing. Check flow module. Repair as needed.

14.3.5 Inadequate flow rate - Note problem on Field Test Data Sheet. Check rotameter on flow controller. If adequate flow is shown here, then a leak exists between the controller and the DGM. If no flow is shown on rotameter, then check vacuum gauge on controller. If no vacuum exists, then pump needs repair. If a high vacuum is shown, then an obstruction exists in the system. Check to see that the paper filter dividers were not accidentally installed with the filters in the filter pack. Check tubing for kinks.

Note: Typically the pressure drop across the filters should be approximately 1 inch Hg at 10 L/min flow rate at sea level. This pressure drop can vary from 1-10 L/min depending on elevation.

15. ADS Disassembly

15.1 Remove the ADS from the field-to-lab carrying case using both hands. To prevent stress, hold the ADS by its ends. CAUTION - Do not stress the ADS while removing it from the case.

15.2 Decouple the elutriator - jet assembly from the first denuder-impactor-coupler assembly.

15.3 When using the denuder-impactor, the frit-pin must be removed from the support in the denuder before removing the frit from the pin (see Figure 9). The frit is then extracted from the pin using pin tool #3 and the frit extraction tool (see Figure 10). When using the impactor-coupler assembly, the frit is removed from the coupler seat using pin tool #3 and the "out" frit removal tool (see Figure 16). Put frit in covered dish and set aside for chemical extraction.

15.4 Remove the denuders from the couplers and cover each end of the denuders with clean end caps until extraction.

15.5 Label a clean 100 mL polyethylene bottle with the sampler ID number and filter type (i.e., Teflon® or Nylasorb®, as appropriate) for each of the filters.

15.6 Disassemble the filter pack in a clean, ammonia-free air hood. Clean all hood surfaces and utensils with methanol. Wearing clean gloves and using clean filter forceps, remove the filters and place each in its storage (protective) bottle, with the exposed filter surface facing downward, until extraction.

Note: Be careful to place the filters in the properly labeled bottles.

16. Extraction Procedures

Special precaution: Samples should be analyzed as soon after collection as possible. It is imperative that the solutions and extraction procedures are prepared and performed on the day of pH analysis. Extraction must take place in a clean, ammonia-free, air hood. The extracts must be processed in the order in which they will be analyzed, so that each sample will have a similar time interval between extraction and analysis. Denuder extracts and filters should be stored in the refrigerator until just prior to analysis. Samples stored longer than 30 days tend to degrade due to bacteria growth and/or losses to the walls of the extraction vessel.

16.1 Impactor Frit Coating Extraction

16.1.1 Place the impactor (which was removed before denuder extraction) into a small extraction bottle.

16.1.2 Label the bottle appropriately. Pipet 10 mL of impactor extraction solution into the bottle. The solution must cover the surface of the impactor frit.

16.1.3 Close the extraction bottle and place in an ultrasonic bath for 30 minutes.

16.2 Denuder Extraction

Note: If the denuder was the first denuder, which is equipped with the impactor frit-pin support, insert a clean Teflon® impactor frit-pin, without frit in place. Then extract as described below. This procedure is to be followed for each denuder.

16.2.1 Cap one end of the denuder. Add 5 mL of DDW with a pipet. Cap other end.

16.2.2 Rotate the denuder to wet all surfaces thoroughly with the water. Remove the cap and pour the liquid into a clean 25 mL polyethylene extraction bottle.

16.2.3 Repeat this procedure with a second 5 mL of DDW extract (total extract volume is 10 mL which is placed into a single bottle).

16.2.4 Replace the extraction bottle cap and label the bottle with the sampler ID number, denuder number and type (as appropriate).

16.3 Filter Extraction

16.3.1 Teflon® Filter Extraction (for pH analysis followed by ion chromatography (IC) analysis)

Note: Teflon® is not wet by water; therefore, the filter will float on top of aqueous solutions. It is imperative that the solutions and extraction procedures are prepared and performed on the day of pH analysis. Extraction of the filters must take place in a clean, ammonia-free, air hood. The filters must be processed in the order in which they will be analyzed, so that each sample will have a similar time interval between extraction and analysis.

16.3.1.1 Allow the hood to be flushed with ammonia-free air for at least 5 minutes before filter extraction. All of the hood surfaces and extraction utensils must be cleaned with a Kimwipe® moistened with ethanol.

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16.3.1.2 Pipet 3 mL of 0.0001 N perchloric acid (HClO_4) solution into the appropriately labeled extraction vial (4 mL).

Note: It is necessary to use HClO_4 because it inhibits CO_2 from dissolving into the solution and keeps the organic compounds in solution from dissociating. Both these activities, if allowed to take place, can cause the ionic strength of solution to change.

16.3.1.3 Place the Teflon® filter in the extraction vial. Cap tightly. Store at 5°C in the dark until ready for analysis.

16.3.1.4 When ready for analysis, the filter must be prepared (within the air hood) in the following manner: Using forceps and gloved hands, lift the filter from the extraction vial. Let the excess solution drain off into the vial. Holding the filter over the extraction vial, and using an automatic pipet, apply 100 ± 5 mL of ethanol to the filter. Add the ethanol slowly to ensure that all portions of the membrane are wet with ethanol. Immerse the filter in the aqueous solution once again. Tap the forceps against the inside of the vial to remove liquid. Tightly replace cap. Put in ultrasonic bath for 15 minutes total, rotating the rack 90° every 5 minutes.

Note: Perchloric acid is used in place of potassium chloride, initially, to prevent interference in the measurements of cations and anions by ion chromatography. Potassium chloride must be added to the portions of the sample extract which are used for pH analysis (the purpose of the salt, final concentration 0.04 M, is to increase the ionic strength and thus to reduce the time for equilibrium of the pH electrode used for measurement). Note also that it is necessary to use the same bottle (freshly opened) of ethanol for the extraction of the Teflon® filters that is used for the preparation of sulfuric acid standards.

16.3.1.5 When ready for pH analysis, the extracts are prepared in the order of pH measurement. Inside the air hood, remove the caps from 4 mL extraction vials. Wipe off any drops which may leak onto the outside of the cup.

16.3.1.6 Using gloved hands and a 1 mL automatic pipet, transfer 1 mL of the extract to each of two correspondingly labeled 2 mL cups.

Note: The first 2 mL cup for each extract has the same I.D.# as the 4 mL cup and the second 2 mL cup has the same I.D.# with a hyphen (-). This is the same system used with the working standards.

16.3.1.7 After transferring the extracts to the 2 mL cups, recap the 4 mL extract cup. Then store the 4 mL cups at 5°C in a refrigerator pending sulfate analysis by IC.

16.3.2 Nylon Filter Extraction

16.3.2.1 Pipet 10 mL of IC eluent into the appropriately labeled filter vial or bottle with caps.

Note: Be sure that the filter lies flat on the bottom of the bottle and that all of the filter is covered by the extraction solution.

16.3.2.2 Replace the bottle's cap and put in an ultrasonic bath for 30 minutes.

16.3.2.3 Store the bottles in a clean (i.e., pollutant free) refrigerator at 5°C in the dark until analysis.

17. Ion Chromatography Analysis

Note: The analytical procedure described here is not the only appropriate procedure available for quantifying the analytes of interest. It is not necessary that an automated system be utilized. This particular analytical procedure was chosen because it is presently being utilized by EPA. Modifications to this procedure may be required depending on the intended use of the data, however, any modifications made must be justified in order to obtain comparable data quality.

17.1 Standards Preparation

Special Precaution: Storage of these solutions should be no longer than one week. All of the working standard solutions are used to calibrate the IC and are made from reagent grade stock. The crystals are dried overnight in covered petri dishes at 110°C in a vacuum oven prior to preparing the standard solutions. Any yellowish discoloration of the dried crystals indicates decomposition and crystals should be discarded.

17.1.1 Sodium Sulfate Stock Solution

17.1.1.1 In a clean, calibrated, 1 L flask, add 500 mL of DDW.

17.1.1.2 On weighing paper, weigh out enough reagent (Na_2SO_4) to make the solution 2000 ppm concentration. The target weight is 0.7394 g. Record the gross weight. Note: It is best to weigh out slightly more than the target weight due to the adherence of the residual crystals to the weighing paper (the residual left on the paper is generally between 0.1 mg and 1 g).

17.1.1.3 Add the reagent crystals to the 500 mL of DDW. Reweigh weighing paper and subtract weight from the gross weight. The difference is the actual net weight.

17.1.1.4 Using a proportion, calculate the actual volume needed to make the solution 2000 ppm (see below).

$$\text{target wt/actual net wt} = 500 \text{ mL (target)/actual volume}$$

or

$$\text{actual volume} = (500 \text{ mL} * \text{actual net wt})/\text{target wt}$$

17.1.1.5 Using the appropriate calibrated pipet, add the amount of DDW needed to achieve the calculated actual volume. Mix well and cover with parafilm.

17.1.2 Sodium Nitrate Stock Solution

17.1.2.1 In a clean, calibrated, 1 L flask, add 500 mL of DDW.

17.1.2.2 On weighing paper, weigh out enough reagent (NaNO_3) to make the solution 2000 ppm concentration. The target weight is 0.6854 g. Record the gross weight.

Note: It is best to weigh out slightly more than the target weight due to the adherence of residual crystals to the weighing paper.

17.1.2.3 Follow Sections 17.1.1.3 through 17.1.1.5.

17.1.3 Sodium Nitrite Stock Solution

17.1.3.1 In a clean, calibrated, 1 L flask, add 500 mL of DDW.

17.1.3.2 On weighing paper, weigh out enough reagent (NaNO_2) to make the solution 1000 ppm concentration. The target weight is 0.7499 g. Record the gross weight.

Note: It is best to weigh out slightly more than the target weight due to the adherence of residual crystals to the weighing paper.

17.1.3.3 Follow Sections 17.1.1.3 through 17.1.1.5.

17.1.4 Standard working solutions - The working solutions are made up as follows: Add 10 mL each of the three stock solutions (Na_2SO_4 , NaNO_3 , and NaNO_2) to a 200 mL volumetric flask and dilute to the mark with DDW. Subsequent dilutions are carried out using a 10 mL volumetric pipet and appropriate flasks. Standards of 20, 10, 5 and 1 ppm Na_2SO_4 and NaNO_3 (and one-half these concentrations of NaNO_2) are prepared. These are used to calibrate the IC.

17.2 Reagent Preparation

Note: Storage of these reagents should be no longer than one week.

17.2.1 Anion eluent - The anion eluent is a solution of $1.8 \mu\text{m}$ Na_2CO_3 and $1.7 \mu\text{m}$ NaHCO_3 . A concentrated solution can be prepared and diluted as needed.

Note: See Anion Storage Solution

17.2.1.1 Concentrated Na_2CO_3 solution (0.36 M) - Weigh out 38.156 g of Na_2CO_3 (MW = 105.99). Dissolve into 1 L of DDW. Store in refrigerator until ready to dilute.

17.2.1.2 Concentrated NaHCO_3 solution (0.34 M) - Weigh out 28.564 g of NaHCO_3 (MW = 84.01). Dissolve into 1 L of DDW. Store in refrigerator until ready to dilute.

17.2.1.3 Dilution of stock solutions - Bring both solutions to room temperature. Accurately pipet 10 mL of each solution into a 2000 mL volumetric flask which has been partially filled with DDW. Bring to the mark with DDW (1:200 dilution).

17.2.2 Anion regenerant - The regenerant is a 0.025 N H_2SO_4 solution. VERY CAREFULLY dispense 2.8 mL of concentrated Ultrex sulfuric acid (36 N) into a graduated cylinder. Partially fill the regenerant reservoir with DDW (3 L). Slowly add the acid to the regenerant reservoir. Bring to the mark with DDW (4 L).

Note: Protective clothing and eye protection should be utilized.

17.2.3 Cation eluent - There are two cation eluents that are used for the analysis of monovalent and divalent cations. The strong cation eluent is: $48 \mu\text{m}$ HCl, $4 \mu\text{m}$ DAP.HCl, $4 \mu\text{m}$ Histidine.HCl (DAP = Diaminopropionic acid). The weak eluent consists of $12 \mu\text{m}$ HCl, $0.25 \mu\text{m}$ DAP.HCl, $0.25 \mu\text{m}$ Histidine.HCl.

17.2.3.1 Strong cation eluent - Weigh 0.560 g DAP and 0.840 g histidine into a one liter volumetric flask. Add 48 mL of 1 M HCl (Ultrex) to the flask. Bring the eluent to the final volume by bringing to the mark with DDW. Mix thoroughly to dissolve.

17.2.3.2 Weak cation eluent - Place 63 mL of the strong cation eluent in a 1 L flask. Add 9 mL of 1 M HCl to the flask. Bring the eluent to the final volume by bringing to the mark with DDW. Mix thoroughly to dissolve.

17.2.4 Cation regenerant - The cation regenerant consists of 100 μ M Tetrabutylammoniumhydroxide (TBAOH). Place the TBAOH container into a warm water bath to dissolve any crystals that may have formed. Measure 266.7 mL of the TBAOH (stock reagent is supplied as 1.5 M, 40% in water) into a graduated cylinder. Add the TBAOH to 4 L of DDW.

17.2.5 Anion storage solution - Since the anion columns contain carbonates from the eluent, protection must be taken against microorganisms that will live on this food source and clog up the columns. If the columns are not being used for long periods of time (>2 weeks), a storage solution of 0.1 M NaOH should be pumped into them.

17.3 Sample Preparation

17.3.1 Mark the auto sampler vials with the appropriate identification numbers. Place the vials in an (IC) autosampler tray.

17.3.2 Using clean, calibrated 0.5 mL pipets transfer the denuder and the remainder of the filter extracts from the extraction vials to a clean disposable 0.5 mL (IC) autosampler (polyethylene) vial. Fill the autosampler vial up to the line on the side.

Note: If refrigerated, the contents of the 4 mL extraction vial must be vortex-mixed prior to transfer to the autosampler vials.

17.3.3 Place black filter caps on top of the vials. Use the tool provided to push the caps into the vials until they are flush with the top. (see the IC manual for more detailed instructions).

17.3.4 Wipe away any excess fluid from the top of the vial to avoid contamination from other samples.

17.3.5 After all of the trays are filled, place them into the left side of the autosampler. The white dot on the tray indicates the first sample. Press the button labeled RUN/HOLD to the RUN position. The trays should move until the first sample is under the sampling head. The front panel should indicate a READY message. Press local/remove switch to remove.

17.4 Basic System Operations - Start-up and Shut-down

17.4.1 Start-up Procedure for Ion Chromatograph

17.4.1.1 Figure 17 illustrates the major components of the Dionex 2020i Ion Chromatography system. Turn helium and nitrogen tanks on by opening the valve on top of each tank (pressure in either tank should not be less than 500 psi. Replace if necessary). Open valves at the outlet end of both regulators. Pressure on the nitrogen regulator is adjusted to 100 psi. Pressure on the helium regulator is adjusted to 14 psi.

17.4.1.2 Check the level of eluents and regenerating solutions. Turn the chromatography (CMA) valves for the anion channel switch ON. Verify that the pressure

reading on the face of the degassing unit is 7 psi. Adjust by turning dial next to pressure gauge. Turn the degas switch to HIGH.

17.4.1.3 Turn the eluent reservoir switches, corresponding to the eluents to be degassed, to the ON position. Let the eluents degas on HIGH for 3-5 minutes, then turn degas switch to LOW.

17.4.1.4 Select the appropriate program on the gradient pump module using the PROGRAM switch. (Programs are recalled from memory by first pressing the PROGRAM switch, then the single digit reference number corresponding to the appropriate program).

17.4.1.5 Priming the eluent lines.

Note: All of the eluent lines used during analysis must be primed to remove any air bubbles that may be present. The selected program identifies which lines are used.

- Open the gradient pump drawer. Turn the pump to the START position for 10 seconds, or until a CLICK is heard, then turn the pump OFF. This step opens the valve to the eluent line displayed on the front panel.
- Attach a 10 mL syringe to the priming block on the face of the gradient pump module. With the priming block valve closed, pull the syringe plunger out to the end of the syringe.
- Open the priming block valve. The syringe will quickly fill with eluent. Close the valve on the priming block when the syringe is almost full. Remove syringe from block and discard collected eluant.
- This priming procedure can be repeated if necessary. All of the eluent lines that are to be used during a day of analysis should be primed at this time.

17.4.1.6 Open the door of the Advanced Chromatography Module. On the back of the door, at the bottom, is the conductivity detector. There are four labeled lines (anion, cation, waste, and cell) located next to the cell. The plumbing must be configured according to the type of analysis to be performed. If anions are being analyzed, the ANION line must be attached to the CELL line, and the CATION line must be attached to the WASTE line. If cations are being analyzed, the CATION line must be attached to the CELL line, and the ANION line must be attached to the WASTE line. The line coming from the pump must be attached to the correct port on the advanced chromatography module. SYSTEM 1 on the left is for anions, SYSTEM 2 on the right is for cations.

Note: If switching from one system to the other, the pump and the lines coming from the pump must be purged of the original eluent. This is done by disconnecting the pump line from the chromatograph module, turning the pump on and running the new eluent into a waste beaker for 2-3 minutes.

17.4.1.7 Select the columns to be used (labeled pH or NO₂) by pressing the blue button located below the labels. To verify that the correct columns are being used, the switch should be pressed at least once, and then set to the appropriate position. This is done in case the indicator light is reflecting a "default" setting, regardless of the actual position of the switch.

17.4.1.8 Turn the power switch on the autosampler ON (switch is located on the back of the unit, on the right). The default settings will be displayed on the front panel. Attach

the SAMPLE OUT line from the autosampler to the advanced chromatography module. The connection should be made to the port marked SAMPLE of the appropriate system. Turn the pump to START.

17.4.1.9 Turn the conductivity cell ON. Switch is located on the gradient pump module. Turn the REGEN switch for the appropriate system ON. Verify that regenerant is flowing by inspecting the regenerant waste line which empties into the sink. Open the advanced chromatography module door and inspect for leaks at columns, fittings, etc. Shut pump off if leaks are found.

17.4.1.10 Turn stripchart recorder ON. Baseline should stabilize in less than 20 minutes. If baseline is not stable, see troubleshooting Section 17.5 for assistance.

17.4.2 Data acquisition start-up - The following is a description of the current data acquisition program used by the U.S. EPA. The program is available (U.S. EPA, Atmospheric Chemistry and Physics Division, Office of Research and Development, Research Triangle Park, NC) and is for IBM or IBM compatible computers. Other appropriately designed programs may be used to compile the data collected for any given sampling network. It is not necessary to use a computer programmed integrator for the computation of data, however, for large sampling networks, it is recommended.

17.4.2.1 Turn on the IBM XT computer. From the C:>prompt, type: cd/cchart, then type: cchart. This loads the Chromatochart software. Turn switch on relay box to ENABLE, indicator light could go on.

17.4.2.2 Press F2 to enter the methods development module. Select option number 1 - "select channel # and load method file." "Select channel # <0>" type 0 or press ENTER to select the default choice shown in the brackets (in this case 0). "Load method file named" type the name of the appropriate method, then press ENTER. A directory of all of the current methods in memory can be obtained by pressing the F2 function key.

17.4.2.3 Press F3 to enter the Data Acquisition module. At this point you will be asked to save the method file. If there has not been any changes to the methods file, it does not need to be saved. Select option #4 - "Collect Data." Press ENTER to deactivate the method queue. "Load Run Queue named," type the name of the run queue if one has been created. Type ENTER to deactivate the run queue.

17.4.2.4 "Total # runs for method <1>," type how many times the method is to be repeated (total number of samples). "Autoanalyze Data" type Y. "Autosave data to disc" type Y. "Data file name (xxxxx) change?", type data file name. "Press ENTER to begin methods." Press ENTER only after the samples have been loaded into the autosampler and the baseline has stabilized.

17.4.2.5 Figure 18 illustrates the chromatograms for each of the samples as output by the programmed Spectra-Physics integrator. The program used to generate these outputs can be found in the Appendix of this method. Note that actual output is by individual run as illustrated by Figure 19. Most information provided here is optional to the operator.

17.4.3 Calibration of IC - The instrument should be brought to normal conditions with a warm-up time of at least thirty minutes.

17.4.3.1 With the "Reading" light on, check to ensure the flow rate is 1.5 mLs/minute, the fluid pressure is 600 psi $\pm$ 100 psi and the conductivity is constant as measured by offset difference.

17.4.3.2 Fill the IC vials with the prepared standard solutions and (10, 5 and 1 ppm Na₂SO₄ and NaNO₃) and pure eluent. This will allow a four-point calibration curve to be made.

Note: For low-level applications, more standards and blanks may be necessary in order to obtain accurate reference curves.

17.4.3.3 Load the four vials into the sample vial holder, and place the holder in the automated sampler tray.

17.4.3.4 The tray is controlled by a Spectra-Physics SP4200 or SP4270 Computer Integrator. Use the integrators operation manual to begin calibrating. (A typical program in Basic for integrators which illustrates integrator capability is shown in the Appendix of this procedure). By using the RUN command the analysis and data treatment phases of the calibration are set in motion. Four calibration standards are run, the chromatograms and peak areas displayed for each run, and the run results for each anion are fitted to a quadratic curve by a least squares regression calculation. The three curves are plotted and the correlation coefficients are calculated. The values of the coefficients are normally greater than 0.999, where 1.000 indicates a perfect fit. Values of less than 0.99 indicate the calibration procedure should be repeated.

Note: Recalibration should be carried out whenever standard concentrations show consistently high or low results relative to the calibration curve is compared to the calibration curve from the old standards. Comparability of points should be within $\pm$ 0.1 ppm or $\pm$ 10%. For standard concentrations of greater than 1 ppm, comparability will normally be within 5% or better. Old standards are assumed correct since they are referenced to the entire historical series of previous standard solutions all of which are comparable.

17.4.4 System Shut-down

17.4.4.1 Shut off the pump. Turn the REGEN switch and the conductivity cell to the OFF position.

17.4.4.2 Switch the eluent degas switch to HIGH.

17.4.4.3 Turn the stripchart recorder OFF, cap the pen. Press the F10 function key on the computer. Select option 3, to exit to DOS. Shut off the printer and the computer.

17.4.4.4 Shut the eluent degas system and reservoir switches and the autosampler to the OFF position. Close the valves on both gas cylinders. Then close the regulator valves.

17.5 Basic Troubleshooting

Before proceeding with the troubleshooting guide, make sure that the reagents used were prepared correctly, and are not "old."

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17.5.1 Unstable Baselines

17.5.1.1 Wavy baseline - The most common reason for a wavy baseline is an air bubble in the gradient pump. This is diagnosed by observing the pump head indicator lights on the gradient pump module front panel. If the baseline is pulsing in phases with pump pistons, it usually indicates a bubble. Other possibilities include a dirty or stuck check valve, piston seal or "O"-ring, as well as an air bubble in the conductivity cell.

17.5.1.2 Drifting baseline - Steadily increasing or decreasing baselines usually indicate that the suppressor column is not performing as it should. Parameters to change include the regenerant and eluent concentrations and flow rates. Check temperature routinely as changes in temperature can cause drifting. Balancing these should stabilize the baseline, if the suppressor is functioning correctly. The Dionex manual describes clean-up procedures if the suppressor is believed to be contaminated.

17.5.1.3 High baselines - As with drifting baselines, the parameters to change are eluent and regenerant concentrations and flow rates. A high baseline usually indicates that there is not enough baseline suppression, this can be controlled by increasing the regenerant flow rate.

17.5.1.4 Low baselines - Low baselines usually indicate that there is too much suppression. Oversuppression can be controlled by decreasing the flow of the regenerant.

17.5.2 Backpressure - Variations in system backpressure are common and should not raise concern UNLESS the pressure change is greater than 200 psi.

17.5.2.1 High backpressure - The system is protected from pressure related damage through the high and low pressure alarm settings on the front panel of the gradient pump module. If the high pressure setting is correctly selected (200 psi above normal operating range), the pump will automatically shut-off if this value is exceeded. The reason for high backpressure is that there is some kind of blockage in the system. Possibilities include: loading against a closed valve; a plugged line; contaminated columns; etc. Diagnosis of the problem is done by removing one component of the system and observing how the pressure changes.

17.5.2.2 Low pressure - Low pressure readings usually indicate a leak somewhere in the system. Carefully check all fittings for leaks, tighten if necessary.

17.5.3 Flow

17.5.3.1 Regenerant lines - If there is no flow at the waste outlet end of the regenerant line, check the following:

- Make sure that the correct regenerant switch is turned on
- Verify that the reservoir is not empty
- Make sure the nitrogen tank is turned on
- Check that the regulator is correctly set

17.5.3.2 Eluent lines - If there is no flow at the outlet end of the eluent lines check the following:

- Check that the pump is on
- Check that the eluent lines are connected to the correct port

17.5.4 Software - refer to the ChromatoChart manual for detailed information on software problems.

18. Ammonia Analysis By Technicon Autoanalysis

Presented in Sections 18.1 and 18.2 are the recipes for the standards and reagents required for the analysis of the ammonium ion (NH_4^+ - or ammonia (NH_3)) by Technicon autoanalysis. The prelude of these Sections briefly describes the TRAACS 800 autoanalyzer and the sample flow through the TRAACS 800 for NH_4^+ analysis. The Technicon TRAACS 800 autoanalyzer is illustrated in Figure 20. This instrument is capable of quantifying, from a single sample, three different species, simultaneously. An aliquot of the sample is taken from an automated sampler by syringe. A splitter divides the aliquot into the appropriate volumes required for the particular analyses. Each of the volumes is then transferred to the appropriate analytical cartridge. Sample flow diagrams which illustrate SO_4^{2-} , NO_3^- and NH_4^+ analysis can be shown separately and independently of one another. Hence, for a one-channel system, one can readily adapt the sample preparation and analysis protocols for each individual analysis. The data computation (by computer) and quality assurance protocols, however, can not be readily adapted to single-channel instruments. These protocols need to be specific to the individual analytical instrument. In brief, for NH_4^+ analysis, Figure 21 illustrates how the sample is carried through the Technicon autoanalyzer. The samples, along with all standards, are taken from the auto-advance sampler tray by the use of a proportioning pump and automated syringe. Air and EDTA are first added to the samples and are mixed in the first set of coils. After mixing, phenolate is added and mixed in the next set of coils. Nitroprusside is then added and mixed, followed by the addition and mixing of hypochlorite. At this stage, the sample should be a bright blue color. After the last mixing stage, the sample is sent through a heated bath, followed by another mixing stage. Finally the sample is sent through a colorimeter where the results are recorded on a digital printer and stored in a computer file for further manipulation.

18.1 Standards and Stock Solutions Preparation

Note: Before discarding the old solution, it should be checked against the fresh solution by comparing calibration curves on the working solutions prepared from them. Slopes and intercepts are calculated for each set of standards. The old slope and intercept are used to calculate concentration values from readings for the new standards. This determines if the old solution has deteriorated or if an error has been made in preparing the new solution.

18.1.1 Ammonium solution standard (1000 $\mu\text{g}/\text{mL}$) - Dry ammonium chloride in an oven for one hour at 50 to 60°C and desiccate over silica gel for one hour. Weigh 2.9470 g ammonium chloride and dissolve in 800 mL DDW. Dilute to one liter with DDW and mix thoroughly. This solution is stable for one year.

18.1.2 Intermediate ammonium standards - To make a 100 $\mu\text{g/mL}$ ammonium standard, pipet 10 mL of ammonium stock standard into a 100 mL volumetric flask. Dilute to volume with DDW and mix thoroughly. Keep refrigerated. This solution remains stable for one month. To make a 10 $\mu\text{g/mL}$ ammonium standard, pipet 1.0 mL of ammonium stock standard into a 100 mL volumetric flask. Dilute to volume with DDW and mix thoroughly. This solution remains stable for one week.

18.1.3 Working ammonium standards in DDW - Pipet aliquots of the 100 $\mu\text{g/mL}$ ammonium intermediate standards with appropriate volumes of nitrate and sulfate intermediate standards into 100 mL volumetric flasks according to the table below. Dilute to volume with DDW. Prepare fresh daily.

Standard	Stock or Intermediate Standard ($\mu\text{g/mL}$)	Aliquot (mL)	Concentration ($\mu\text{g/mL}$)
A	1000	40.0	40.0
B	100	4.0	4.0
C	100	3.0	3.0
D	100	2.0	2.0
E	100	1.0	1.0
F	100	0.5	0.5
G	10	2.0	0.2
H	10	1.0	0.1

18.1.4 Sodium citrate stock solution - Dissolve 294.1 g of sodium citrate in 800 mL DDW. Dilute to 1 liter and mix thoroughly. Store at room temperature.

18.1.5 20% citric acid/5% glycerol stock solution - Dissolve 25 g citric acid in 80 mL DDW. Add 5 mL glycerol and dilute to 100 mL with DDW. Mix thoroughly and store at room temperature.

18.1.6 Sodium citrate/citric acid/glycerol working solution - Put 100 mL sodium citrate stock solution into a 1000 mL volumetric flask. Add 20 mL of the 10% citric acid/5% glycerol stock solution and dilute to volume with DDW. Mix thoroughly and store at room temperature.

Note: This solution will be used to make up ammonium working standards for citric acid/glycerol-impregnated filter extract analyses.

18.1.7 Working ammonium standards in sodium citrate/ citric acid/glycerol working solution - Pipet aliquots of the 100 $\mu\text{g/mL}$ volumetric flasks according to the table in Section 18.1.1.3. Dilute to volume with sodium citrate/citric acid/glycerol working solution and mix thoroughly. Prepare fresh daily.

18.1.8 Potassium chloride stock solution - Dissolve 74.6 g potassium chloride in 800 mL DDW. Dilute to one liter with DDW and mix thoroughly. Store at room temperature.

18.1.9 Potassium chloride working solution - Put 100 mL of the potassium chloride stock solution into a 1000 mL volumetric flask. Dilute to volume with DDW.

18.1.10 Working ammonium standards in potassium chloride working solution - Pipet aliquots of the 100 $\mu\text{g/mL}$ ammonium stock standard or intermediate standards into 100 mL volumetric flasks according to the table below. Dilute to volume with potassium chloride working solution and mix thoroughly. Prepare fresh daily.

Standard	Stock or Intermediate Standard ($\mu\text{g/mL}$)	Aliquot (mL)	Concentration ($\mu\text{g/mL}$)
A	1000	40.0	40.0
B	100	4.0	4.0
C	100	3.0	3.0
D	100	2.0	2.0
E	100	1.0	1.0
F	100	0.5	0.5
G	10	1.0	0.1
H	10	0.5	0.05

18.2 Reagent Preparation

Note: When reagents are prepared, label the container with the contents, concentration, date prepared, and the preparer's initials.

18.2.1 Alkaline phenol - To 800 mL DDW in a one liter volumetric flask, add 83.0 g loose crystallized phenol. Keeping the flask in an ice bath or under tap water, slowly add 96.0 mL 50% sodium hydroxide solution. Shake the flask while adding the sodium hydroxide. Cool to room temperature, dilute to one liter with DDW and mix thoroughly. Store in an amber glass container. This solution remains stable for three months, if kept out of direct light.

18.2.2 Sodium hypochlorite solution - The amount of sodium hypochlorite solution varies from batch to batch of sodium hypochlorite (5% commercial grade). Therefore, for each new batch, a base and gain experiment must be run to adjust the amount of sodium hypochlorite required to obtain the existing base and gain values. In a 150 mL volumetric flask, dilute 86 mL of 5% sodium hypochlorite solution to 100 mL with DDW and mix thoroughly. Check base and gain values. Reduce or increase the amount of sodium hypochlorite to obtain the same base and gain values as the previous sodium hypochlorite batch. This solution remains stable for one day.

18.2.3 Sodium nitroprusside solution - Dissolve 1.1 g of sodium nitroprusside in about 600 mL of DDW, dilute to 1 liter with DDW and mix thoroughly. Store in an amber container, and keep in refrigerator. This solution remains stable for one month, if kept out of direct light.

18.2.4 Disodium EDTA solution - Dissolve 1.0 mL of 50% w/w sodium hydroxide and 41.0 g of disodium EDTA mix thoroughly. Add 3.0 mL of Brij-35 and mix. Store in plastic container. This solution remains stable for six months.

19. pH Analysis

19.1 Standard and Reagent Preparation

19.1.1 Standard H_2SO_4 Solution

Note: Each of the standard H_2SO_4 stock solutions must be prepared fresh the day of pH analysis.

19.1.1.1 Label seven 25 mL polyethylene stoppered volumetric flasks. Also, label each flask with the volume of 1 N H_2SO_4 solution indicated in the following table:

Flask #	Volume of 1N Stock (μL)	Standard Concentration (μN)
1	0	0
2	25	1
3	50	2
4	100	4
5	200	8
6	400	16
7	800	32

19.1.1.2 Use the 25 μL automatic pipet to add 1 N stock H_2SO_4 to flasks #1-3. Use the 100 μL pipet to add 1 N stock H_2SO_4 to flasks #4-7. Dilute all flasks to the 25 mL mark with absolute ethanol. Cap with stoppers or parafilm and mix well.

19.1.2 2 M Potassium Chloride (KCl) Solution

19.1.2.1 Weigh 149.2 ± 0.1 g of KCl. Add the KCl to a 2 L flask.

19.1.2.2 Add about 700 mL of DDW water to the flask. Swirl the solution until the KCl is completely dissolved.

19.1.2.3 Pour this mixture into a 1 L graduated cylinder. Rinse the flask with a small amount of water and transfer the rinse into the cylinder. Fill the cylinder to the 1 L mark.

19.1.2.4 Pour the solution from the cylinder into the 1 L polyethylene bottle. Cap and shake the bottle to mix well. Mark the bottle with date of preparation.

19.1.3 0.1 N Perchloric Acid (HClO_4) Solution

19.1.3.1 Fill a 1 L graduated cylinder about 1/2 full with DDW. Transfer 10 ± 0.1 mL of 60-62% HClO_4 into the 1 L cylinder with a 10 mL pipet.

19.1.3.2 Fill the cylinder to the 1 L mark. Pour the solution into the 1 L polyethylene bottle.

19.1.3.3 Cap and shake the bottle to mix well. Mark the date of preparation on the bottle.

19.1.4 0.01 N HClO_4 Solution

19.1.4.1 Fill a 1 L graduated cylinder about 1/2 full with DDW.

19.1.4.2 Measure 100 mL of the 0.1 N HClO_4 solution with the 100 mL graduated cylinder. Add this to the 1 L cylinder.

19.1.4.3 Fill a 1 L cylinder with DDW to the 1 L mark. Pour the solution into the 1 L polyethylene bottle.

19.1.4.4 Cap and shake the bottle to mix well. Mark the date of preparation on the bottle.

19.1.5 Extraction Solution (ES)

Note: This solution has the same composition as the solution used to fill the sample vials for Teflon® filters. It must be prepared fresh on the day of pH analysis.

19.1.5.1 Measure 100 ± 10 mL of DDW into a 1 L graduated cylinder. Transfer to a 2 L erlenmeyer flask.

19.1.5.2 Using a 5 mL calibrated automatic pipet, add 10 ± 0.1 mL of 0.01 N perchloric acid (HClO_4), to flask of water.

19.1.5.3 Mix well and cover with parafilm until ready for use.

19.1.6 EA Solution

19.1.6.1 Measure 150 ± 2 mL of ES (prepared in 18.1.5) into a 250 mL graduated cylinder. Transfer to a 250 mL erlenmeyer flask.

19.1.6.2 Using a 5 mL graduated cylinder, add 5 ± 0.1 mL of ethanol (this must be from the same fresh bottle of ethanol that was used to prepare the standards in 18.1.1) to the flask.

19.1.6.3 Again using a 5 mL graduated cylinder, add 3 ± 0.1 mL of 2 M potassium chloride (KCl) solution to the flask.

19.1.6.4 Mix well and cover with parafilm until ready for use.

19.1.7 Working Standard Test Solutions

19.1.7.1 Place fourteen 4 mL polystyrene sample cups (as used with Technicon Auto-Analyzer II system) labeled 1, 1*, 2, 2*...7, 7* into racks. Using the calibrated dispensing pipet bottle, add 3 mL of ES solution to each 4 mL cup.

19.1.7.2 Using the displacement pipet, add 50 μL of absolute ethanol to each cup. Pour about 3 mL of standard (H_2SO_4 solution) #1 into a labeled 4 mL cup.

19.1.7.3 Immediately, pipet 50 μL of this standard into the 4 mL cups labeled 1 and 1* containing the ES solution and ethanol.

Note: This transfer must be done without delay to prevent the standard concentration from increasing significantly due to evaporation of the ethanol solvent.

19.1.7.4 Repeat the procedure for each of the other 6 standards. If there is a delay of more than 5 minutes between the preparation of these mixtures, and the next step, put caps on the 4 mL cups.

19.1.7.5 To prepare for analysis, each must be mixed, then two aliquots from each cup are transferred to 2 mL sample cups. Place cup #1 in a rack. In a second rack place two 2 mL cups labeled 1 and 1-. Use the 1 mL automatic pipet to mix the contents of 4 mL cup #1 by drawing 1 mL into the pipet tip and then dispensing it back into the 4 mL

cup three times. Then use the same pipet to transfer 1 mL of the mixture to each of the two labeled 2 mL cups. Place caps on the two 2 mL cups. After transferring the two aliquots to 2 mL cups, rinse the automatic pipet tip in a flask of DDW. Repeat the transfer procedure for each of the other working standard pairs.

19.2 Calibration of pH Meter

The pH meter requires temperature calibration whenever a new electrode is used. Use the manufacture's procedure in the instrument manual. This calibration should be repeated every three months while not in use. The pH meter is left with the power cord plugged into the AC outlet, the mode control knob is left in the standby position, the electrode lead is partially disconnected by pressing the plastic ring on its outer edge, and the combination electrode is immersed in a 4 M KCl solution (a slit rubber stopper seals the bottle with the electrode in it). Keep a record of the temperature calibrations in a lab notebook.

19.3 Pre-Analysis Calibration

19.3.1 Use pH lab analysis log form 418 to record all data. While still in standby mode, reconnect the electrode lead at the back of the pH meter.

19.3.2 Fill three 4 mL cups with pH 7 buffer. Withdraw the electrode from the 4 M KCl bottle and wipe the tip gently with a Kimwipe® to remove the bulk of the solution. Rinse the electrode with one cup of pH 7 buffer. Do not test pH of the first cup.

19.3.3 Immerse the electrode in the second cup of the pH 7 buffer. Use a small bottle or other support to hold the cup up to the electrode while waiting for the meter reading to equilibrate.

19.3.4 Test the pH by turning to the pH mode of the meter. Allow the reading to stabilize for at least 30 seconds. Record the result on the log for "1st cup."

19.3.5 Turn to standby mode, and then test the last cup of pH 7 buffer. Record the results on the log for the "2nd cup." If the pH value for the 2nd cup is not 7.00 ± 0.01 , adjust the "calib." knob to obtain a reading of 7.00. Note this adjustment on the log.

19.3.6 Fill three 4 mL cups with pH 4 buffer. With the meter in the standby mode, remove the cup containing pH 7 buffer, wipe the tip of the electrode gently with a Kimwipe®, and then rinse the electrode with the first cup of pH 4 buffer.

19.3.7 Test the next two cups of pH 4 buffer as above, recording the results on the log. If the pH value for the 2nd cup is not 4.00 ± 0.01 , adjust the "slope" knob to get a reading of 4.00. If the value for the second cup was not 4.00 ± 0.03 , the calibrations at pH 7 and at pH 4 must both be repeated.

19.4 pH Test 0.01 N HClO₄ Solution

Note: The 0.01 N HClO₄ solution is used to prepare the ES solution which, in turn, is used to prepare the EA solution. It is imperative that the pH value for the EA solution be 4.09 ± 0.04 . If this pH value is not achieved, then the 0.01 N HClO₄ solution must be reprepared.

19.4.1 Calibrate the pH meter with pH 4 buffer.

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19.4.2 Rinse the pH electrode with DDW. Wipe the tip of the electrode with a Kimwipe®.

19.4.3 Fill three 4 mL cups with EA solution. Measure the pH of the test EA solution as with the buffer solutions this value must be 4.09 ± 0.04 .

19.4.4 If the above pH value is not achieved, follow the steps 18.1.3 - 18.1.6 to reprepare the solutions. Test the pH of the new solutions. Repeat as necessary to obtain a pH of 4.09 ± 0.04 .

19.4.5 Leave the electrode immersed in the "2nd cup" with the meter in the standby mode until ready to start analysis of the working standards.

19.5 Analysis of Working Standard

Note: Immediately following the EA analysis, start testing the working standards.

19.5.1 With the pH meter still in the standby mode, remove the last cup from the electrode, gently wipe the tip with a Kimwipe®, and then immerse the electrode into the working standard cup #1.

Note: Only two cups are available for each working standard (also for filter extracts). Thus, pH measurement is made for both of the two cups for each sample. Also, the electrode tip is not wiped between the 1st and 2nd cups of each sample.

19.5.2 After testing the pH of cup #1, test cup #1-. Record the results of both on the log sheet.

19.5.3 With the meter in the stand-by mode, remove the #1- sample cup, wipe the electrode with a Kimwipe® and test one 2 mL cup of EA solution, rinse with DDW.

19.5.4 Test a 2nd cup of EA solution; record the results for both cups on the logsheet. Discard the 1st cup of EA, but retain the 2nd cup to be used as the 1st cup for the next EA test.

19.5.5 Continue testing the remainder of the working standards, #1*, 1*- , ... 7, 7-, 7*, 7*-. Remember that the electrode tip is wiped both before and after each pair of test solutions, but not in between two cups of the same sample.

Note: If there is trouble in obtaining constant pH values, it may be necessary to use a magnetic stirrer to keep the contents to be measured uniform. If employed, ensure that the sample cups are insulated from any temperature increase of the stirring platform which may occur during extended use.

19.5.6 Use the mode control knob in the "temp." position to measure the temperature of the test solutions every 5-10 samples and record the results on the logsheet.

19.6 Analysis of Filter Extracts

Following measurement of the pH of the working standards, measure the pH of the filter extracts and record all results on the log. After all the filter extracts have been tested make an additional test with the EA solution. At the end make a final test of pH 4 buffer. With the mode control in the standby mode, shut down the pH meter by disconnecting the electrode lead at the back of the meter, leaving the meter power cord plugged into the AC line. Immerse the electrode tip in the bottle of 4 M KCl.

20. Atmospheric Species Concentration Calculations

The system described in the previous sections collects nitric acid (HNO_3), nitrous acid (HNO_2), sulfur dioxide (SO_2), ammonia (NH_3), particulate sulfate (SO_4^{2-}), and particulate nitrate (NO_3^-). Figure 1 illustrates the collection of each of these species. Nitric acid and sulfur dioxide gases are collected on denuders one and two. Some SO_2 gas is collected on denuder three also. Nitrous acid gas is collected on denuders two and three. Ammonia gas is collected on denuder four. Particulate sulfate and nitrate are collected on the first (Teflon®) filter, while some of the particulate nitrate collected on the Teflon® filter can evaporate and be collected on the second (nylon) filter. Also collected on the Teflon® filter are fine particles which contain hydrogen ions (H^+), though probably not free H^+ . Hydrogen ions are most likely present in the H_3O^+ form. The concentration of these H^+ ions indicates the atmosphere's acid aerosol content. It is necessary to prepare the Teflon® filter extracts for pH analysis prior to IC analysis for the particulate sulfate contents. Special precautions must be taken to prevent contamination of the Teflon® filters by ammonia before either of the analyses.

20.1 Assumptions of the Annular Denuder System

There are a number of assumptions which are made about performance of the annular denuder system in order for validity of the calculations to be presented later in this section to hold true. As discussed in Section 6, there are significant interferences which need to be considered in order for accurate estimations of species concentrations to be made. The assumptions are as follows:

- The first denuder stage collects 100% of sampled HNO_3 as nitrate. (Since the diffusivity of HNO_3 is high, diffusion to the side walls is assumed to be very quick.)
- The second denuder stage collects 100% of sampled HNO_2 as nitrite, which can oxidize to nitrate.
- The first and second denuder stages together collect 100% of the SO_2 as sulfite, which can oxidize to sulfate.
Note: Before analysis, it is recommended to add hydrogen peroxide (H_2O_2) to oxidize the sulfite (SO_3^-) to sulfate (SO_4^{2-}) to simplify the calculations.
- The amounts of nitrite and nitrate collected on denuder 3 (d3) represent amounts of interfering gases such as NO_2 collected on denuder 2 (d2).
- The fourth denuder stage collects 100% of the sampled ammonia (NH_3) as ammonium ion (NH_4^+).
- The Teflon® filter (f1) is 100% efficient for particulate sulfate, nitrate and ammonia. Particle losses are less than 1% on each denuder. This assumption may or may not stand true depending on the concentrations of the components in the air sampled. Modifications may be needed to avoid low (or underestimates of) acidic measurements. For example, it may be necessary to add another filter stage to more accurately account for the particulate ammonia content of the air sampled. If ammonium nitrate (NH_4NO_3) was collected on the Teflon® filter, its probability of evaporation is high. Therefore, a citric acid-impregnated filter downstream would correct for the loss from the Teflon® filter. Also, interaction of ammonia and sulfuric acid neutralizes the filter

and causes the acidic measurement to be biased. (Again diffusion rules the particle loss assumption; particles have lower diffusivities than gases).

- The nylon filter (f2) collects any nitrate that evaporates from the Teflon® filter (f1).

20.2 Calculations Using Results from IC Analysis

These assumptions lead directly to equations for computing atmospheric concentrations from denuder measurements.

20.2.1 Figure 22 illustrates the equation for nitric acid quantification. In this equation, $C_g(\text{HNO}_3)$ is the concentration of nitric acid gas expressed in $\mu\text{g}/\text{m}^3$. Subscript g denotes "gas." The computation depends on NO_3^- (d1), which is the measured amount nitrate in μg collected on denuder 1. The factor 1.016 represents the ratio of molecular weights of HNO_3 and NO_3^- . In the denominator, V is the sampled air volume expressed in m^3 .

20.2.2 Figure 23 illustrates how the concentration of nitrous acid is deduced. The numerical factors 1.022 and 0.758 (both in μg) are used to convert the measured nitrite and nitrate to equivalent amounts of nitrous acid. Measured nitrate has to be included because some of the collected nitrite may oxidize to nitrate during sampling or during sample storage. Because a small portion of NO_2 may be collected on denuders 2 (d2) and 3 (d3), the nitrite and nitrate amounts measured on denuder 3 (d3) represent corrections for NO_2 and other interfering gases.

20.2.3 Figure 24 illustrates how sulfur dioxide concentrations are deduced. Because sulfur dioxide is collected on both stages d1 and d2, the results for both stages are added. To simplify the calculation, oxidize the collected sulfite to sulfate by adding H_2O_2 to the sample vial. Hence, the quantification of SO_4^{2-} gas directly estimates sulfur dioxide. A more complicated equation would result if the collected sulfite had not been fully oxidized to sulfate. Sulfate measurements are expressed in mg. Sulfur dioxide concentrations are expressed in mg/m^3 .

20.2.4 Figure 25 illustrates the equation for ammonia quantification. The numerical factor 0.944 is used to convert the measured ammonium ion to its equivalent amount of ammonia. Therefore the product of the factor and the NH_4^+ collected by d4 directly estimates the ammonia concentration ($C_g(\text{NH}_3)$).

20.2.5 Figure 26 illustrates how particulate sulfate concentration ($C_p(\text{SO}_4^{2-})$) is computed. The subscript p denotes "particle." This formula expresses the assumption that essentially all of the particulate sulfate is collected on the Teflon® filter (f1), and no evaporation occurs.

20.2.6 Figure 27 shows how particulate ammonium concentration is computed. This formula expresses the assumption that essentially all of the particulate ammonia is collected on the Teflon® filter (f1), and no evaporation occurs.

20.2.7 Figure 28 illustrates how the particulate nitrate concentration is computed. This equation is similar to the one for sulfate except that nitrate measured on the nylon filter (f2) must be included because nitrate collected on the Teflon® filter (f1) can evaporate. Note: It is important to note that four of the measurements are not used. For example, sulfate measured on the nylon filter represents a sulfate blank for nylon that is irrelevant to sulfate collected on Teflon®. Also, nitrite collected on the nylon filter represents the

possibility that some NO_2 is collected on the nylon filter, but that is not relevant to the way that nitrate is determined in the denuder system. The remaining unused data represent low concentrations and are also not relevant to deducing the concentrations of the atmospheric species considered here.

20.3 Estimates of Errors In Concentrations Deduced From Denuder Data

Note: The assumptions and formulas used to calculate the uncertainty of the measurements are illustrated in Section 20.3.3.

20.3.1 Figure 29 shows the formula used for the uncertainty in particulate sulfate. It includes errors in measuring sulfate and in deducing the air-volume sampled. It also includes a 3% error to account for the possibility of 1% particle loss in each of the three denuder stages. Error equations for the other species are shown in Section 20.3.3.

20.3.2 Assumptions on which error equations are based:

- X is the measurement error for species X.
- Measurement errors are random and uncorrelated among species.
- Possible particle-losses of 1% in each denuder introduces an overall uncertainty of + 3% for particulate sulfate and nitrate concentrations.
- Gases such as H_2S and CH_3HS can be collected on the denuder stages, and bias the results. Amounts collected on denuder stage 3 can be used to estimate the uncertainties that result from such bias. Thus, $\text{SO}_4^{2-}(\text{d}3)$ is an estimate of the uncertainty in the amount of SO_2 collected on denuders 1 (d1) or 2 (d2).

20.3.3 Error equations:

For SO_4^{2-} :

$$[\delta C_p(\text{SO}_4^{2-})/C_p(\text{SO}_4^{2-})]^2 = [\delta \text{SO}_4^{2-} + (f1)/\text{SO}_4^{2-} + (f1)]^2 + [0.03]^2 + [\delta V/V]^2$$

For NO_3^- :

$$[\delta C_p(\text{NO}_3^-)/C_p(\text{NO}_3^-)]^2 = [\text{NO}_3^-(f1) + \text{NO}_3^-(f2)] + [0.03]^2 + [\delta V/V]^2$$

For HNO_3 and HNO_2 :

$$[\delta C_g(\text{HNO}_3)/C_g(\text{HNO}_3)]^2 = [\delta \text{NO}_2^-(\text{d}1)/\text{NO}_3^-(\text{d}1)]^2 + [\delta V/V]^2$$

$$[\delta C_g(\text{HNO}_2)/C_g(\text{HNO}_2)]^2 = [\delta A/(VC_g(\text{HNO}_2))]^2 + [\delta V/V]^2$$

where:

$$A^2 = (1.022)^2 [\delta \text{NO}_2^-(\text{d}2)^2 + \text{NO}_2^-(\text{d}3)^2] + (0.758)^2 [\delta \text{NO}_3^-(\text{d}2)^2 + \text{NO}_3^-(\text{d}3)^2]$$

20.4 Calculations Using Results from pH Analysis

Earlier determinations of pH have been based on the pH buffer concentrations, the activity of the solution, and the antilog of the measured pH value. More recent studies have steered away from the issue of activity by comparing the results of the standards, thus, alleviating errors introduced by basing the activities of ions retained on filters on those

retained in solution. The methodology developed from these more recent studies is described herein. The end results are reported in terms of mass of equivalent of ions. Appropriate values of accuracy and precision with respect to H^+ concentration for this method are 10% and 5%, respectively, for sample pH values in the 4.00 to 7.00 range.

20.4.1 Summary of method - There are two parts to this methodology, determination of the "nominal EQ," and determination of the "actual (EQ_N). The nominal EQ is defined as the equivalent $\mu g H_2SO_4/m^3$ for a nominal $5.76 m^3$ sample volume (24 hours at 4 LPM). The actual EQ_A is defined as the equivalent $\mu g H_2SO_4/m^3$ based on the actual sample air volume.

20.4.1.1 Determine the nominal EQ_N as follows:

20.4.1.1.1 To account for the difference between standards prepared with filters and standards prepared without filters, adjust the measured concentration values for the working standards (without filters) for each analysis day.

20.4.1.1.2 Calculate the standard curve, using a linear regression of the equivalent of $\mu g H_2SO_4/m^3$ (for $5.76 m^3$ volume of sample) for each working standard vs the adjusted concentration values for the working standards.

20.4.1.1.3 Use the standard curve to determine EQ_N for each sample filter.

20.4.1.1.4 Calculate the actual air flow rate to determine the actual air sample volume. Divide the actual air sample volume into EQ_N to determine EQ_A .

20.4.1.2 Determine the actual EQ_A as follows:

20.4.1.2.1 The actual sample air volume, V , for each sample is calculated using data from the field log sheet. This data includes the initial and final elapsed time, the initial rotameter reading, and the rotameter I.D. No.

20.4.1.2.2 The calibration curve for the given rotameter reading is used to calculate the flow for the sample (LPM).

20.4.1.2.3 The nominal EQ_N is divided by the calculated flow to give the actual EQ_A .

20.4.2 Adjustment for filter vs. non-filter standards - This adjustment is necessary because experiments showed that the measured acid concentration from filters doped with H_2SO_4 stock standards yielded concentrations, as measured by the difference from EA solution, which were about 3% lower than the values found for working standards (prepared without filters from the same stock standards). The results gave the following relation (by linear regression):

$$C_f = -0.11 + 0.971 (C_{nf}) \quad (1)$$

where:

C_f = difference in units of $10^{-5} N$, calculated using the pH of each filter standard and the pH of EA tested after that standard

C_{nf} = the same difference for non-filter standards (or the apparent net (strong acid) concentration of H_2SO_4)

For each working standard (non-filter), on a given analysis day, calculate the "apparent net concentration of H_2SO_4 " as follows:

$$C_{nf} = 10^{-\text{pHWS}} - 10^{-\text{pHEA}} \quad (2)$$

where:

pHWS = measured pH for a working standard (or apparent strong acid concentration for H_2SO_4 - doped filter standards)

pHEA = measured pH for the EA solution (or apparent strong acid concentration for non-filter, non- H_2SO_4 doped standards)

After calculating the C_{nf} values for each working standard, use equation (1) above to calculate the adjusted values of C_f for each.

20.4.3 Determination of standard curve - For each working standard, the corresponding EQ_N value (the equivalent of $\mu\text{g H}_2\text{SO}_4/\text{m}^3$ [assuming a sample volume of 5.76 m^3]) is determined as follows:

$$\text{EQ}_N = m/5.76 (10^6 \mu\text{g})/\text{g} \quad (3)$$

Note: 5.76 is the volume for a sample collected for 24 hours at 4 LPM, in m^3 .

Note: It is the analyst's preference as to whether concentration or mass is calculated here and used to create the standard curve. If mass is used, a nominal sample air volume is not necessary. The value of m is determined as follows:

$$m = [1.000] [S/25] [5 \times 10^{-5}] [49] \quad (4)$$

where:

1.000 = concentration of the commercial standard H_2SO_4 , in units of equivalents/L

S = volume of commercial standard H_2SO_4 used to prepare a given stock standard solution, mL

25 = volume of each stock standard solution, mL

5×10^{-5} (50 μL) = is the volume of each stock standard solution used to prepare its respective working standard, L

49 = equivalent weight of H_2SO_4 , units of grams/equivalent

Note: When the value of S is 1 mL or greater for a final volume of 25 mL, the standard curve illustrates non-linearity. This is due to incomplete dissociation of bisulfate. An example table of the values of the nominal EQ_N for each working standard is shown in Table 3. For each analysis day, the standard curve should be determined by calculating the linear regression of EQ_N vs. C_f , with the result in the following equation:

$$\text{EQ}_N = \text{intercept} + [C_f] [\text{slope}] \quad (5)$$

20.4.4 Determination of nominal EQ_N for filter samples - The apparent net strong acid concentration of each sample filter extract, C_s , is calculated as with the working standards:

$$C_s = 10^{-\text{pHS}} - 10^{-\text{pHEA}} \quad (6)$$

where:

pHS = measured pH of the sample filter extract (or apparent strong acid concentration for sample filters extracts)

pHEA = measured pH for the EA solution (or apparent strong acid concentration for non-filter, non-H₂SO₄ standards)

Note: The C_s values for the filter extracts are directly comparable to the C_f values for the working standards, since the C_f values have been adjusted for the difference in apparent acid concentration for tests made with filters and tests made without filters. Therefore, to determine the nominal EQ_N values for filter samples, use equation (5) transformed as follows:

$$EQ_N = \text{Intercept} + [C_s] [\text{Slope}] \quad (7)$$

20.4.5 Determination of actual EQ_A - The actual sample air value, V, for each sample is calculated using the data from the field log sheet. These data includes the initial and final elapsed times, the initial rotameter reading, and the rotameter I.D. No. Use the calibration curve for the given rotameter to calculate the flow for the sample, in LPM. Calculate the value of V as follows:

$$V = [F][T] \quad (8)$$

where:

F = flow from the calibration curve, LPM

T = net elapsed time, min

Since the nominal EQ_N values were determined assuming a flow of exactly 4 LPM and a net elapsed time of exactly 24 hours, the assumed volume was 5.76 m³, therefore, calculate the value of the "actual EQ_A" by:

$$EQ_A = [EQ_N]/V \quad (9)$$

where:

EQ_A = units of μg/m³

Nominal EQ_N as determined by Equations 3 and 4:

$$EQ_N = m/5.76 (10^6 \mu\text{g/g})$$

where:

m = [1.000] [S/25] [5 x 10⁻⁵] [49]

1.000 = concentration of commercial standard H₂SO₄, units of equivalents/L

S = volume of commercial standard H₂SO₄ used to prepare a given stock standard solution, mL

25 = volume of each stock standard solution, mL

5 x 10⁻⁵ (50 uL) = volume of each stock standard solution used to prepare its respective working standard, L

49 = equivalent weight of H₂SO₄, units of grams/equivalent

Working Standard #	S (mL)	M (g)	EQ _{N₃} ($\mu\text{g}/\text{m}^3$)
1	0.000	0	0.00
2	0.025	2.45	0.43
3	0.050	4.9	0.85
4	0.100	9.8	1.70
5	0.200	19.6	3.40
6	0.400	39.2	6.81
7	0.800	78.4	13.61
8	1.600	156.8	27.22

21. Variations of Annular Denuder System Usage

As mentioned in Section 3 and Section 4, the ADS as described previously, is used to measure reactive acidic (SO_2 , HNO_2 and HNO_3) and basic (NH_3) gases and particles found in indoor air. The unique features of the ADS which separates it from established air monitoring methods are the ability of sampling artifacts to be eliminated from the collected gases and particles, and the preservation of the samples for subsequent analysis which is accomplished by removing NH_3 in the gas stream with a citric acid coated denuder, thus reducing the probability of the particulate acid sulfates (SO_4^{2-}) captured on the Teflon® filter from being neutralized. The ADS configuration described in Section 13 clearly illustrates these unique features. The elutriator is designed to allow only particles with $<2.5 \mu\text{m}$ diameter into the system. The impactor is designed to reduce the possibility of coarse particle infiltration even further. And finally, the sequence of the denuders reduces interference of possible chemical reactions which could cause under-or over-estimations of concentrations to be made. Although this configuration is recommended for measuring these gases and particulates, it may be in the interest of the user to measure only one or two of the chemical species. The following discussion will present possible variations of the ADS to accommodate such usages.

21.1 Today, the ADS is being used in intercomparison studies to assess NH_3 concentration differences indoors and outdoors. The assembly used here consists of an elutriator-impactor assembly, an annular denuder and a filter pack assembly. The elutriator-impactor assembly and the annular denuder are both smaller than those described earlier. The filter pack is available in the smaller size, but an adaptor is also available to assemble the smaller annular denuder to the larger filter pack assembly. This system is referred to as the personal sampler (see Figure 30). It is designed for sampling while attached to the shirt of a worker. The personal sampler can be used to measure other chemical species in indoor air by simply changing the reactive surface (coating) of the annular denuder and or by changing the types of filters used.

21.2 Another variation of ADS application is simultaneous use in parallel with a fine particle sampler. The fine particle sampler assembly is very similar to the annular denuder assembly. The main difference is that a flow-straightener tube replaces the annular denuder. The flow-straightener is a shorter version, 1-1/4 to 4 inches long, of the annular

denuder and serves to create even air flow across the filters for the collection of particulate matter. Figure 31 illustrates an exploded view of the fine particle sampler. Again the elutriator-impactor assembly and flow-straightener are available in smaller sizes with accommodating filter pack assemblies. In addition, the ADS carrying and shipping cases as well as the sampling box can be adjusted to accommodate the ADS and fine particle sampler. Figure 32 illustrates the assemblies as they would appear in the sampling box ready for sampling.

22. Method Safety

This procedure may involve hazardous materials, operations, and equipment. This method does not purport to address all of the safety problems associated with its use. It is the user's responsibility to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to the implementation of this procedure. This should be part of the user's SOP manual.

23. Performance Criteria and Quality Assurance (QA)

Required quality assurance measures and guidance concerning performance criteria that should be achieved within each laboratory are summarized and provided in the following section.

23.1 Standard Operating Procedures (SOPs)

23.1.1 SOPs should be generated by the users to describe and document the following activities in their laboratory: 1) assembly, calibration, leak check, and operation of the specific sampling system and equipment used; 2) preparation, storage, shipment, and handling of the sampler system; 3) purchase, certification, and transport of standard reference materials; and 4) all aspects of data recording and processing, including lists of computer hardware and software used.

23.1.2 Specific stepwise instructions should be provided in the SOPs and should be readily available to and understood by the personnel conducting the monitoring work.

23.2 Quality Assurance Program

The user should develop, implement, and maintain a quality assurance program to ensure that the sampling system is operating properly and collecting accurate data. Established calibration, operation, and maintenance procedures should be conducted on a regularly scheduled basis and should be part of the quality assurance program. Calibration procedures provided in Sections 17 and 19, operation procedures in Sections 14 and 17, and maintenance procedures in Section 17 of this method and the manufacturer's instruction manual should be followed and included in the QA program. Additional QA measures (e.g., trouble shooting) as well as further guidance in maintaining the sampling system are provided by the manufacturer. For detailed guidance in setting up a quality assurance program, the user is referred to the code of Federal Regulations (12) and the EPA Handbook on Quality Assurance (13).

24. References

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12. 40 CFR Part 58, Appendix A, B.
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Table 1. Estimated Detection and Quantification Limits for the Annular Denuder System¹

Detection Limits ($\mu\text{g}/\text{m}^3$)	Sampling Period		
	<u>1 hour</u>	<u>1 day</u>	<u>1 week</u>
a) gaseous species			
SO_2	3.1	0.13	0.02
HNO_3	2.0	0.08	0.01
HONO	0.5	0.02	0.01
NH_3	5.6	0.25	0.04
b) particulate			
SO_4^{2-}	1.6	0.07	0.01
NO_3^-	1.8	0.08	0.01

Quantification Limits ($\mu\text{g}/\text{m}^3$)	Sampling Period		
	<u>1 hour</u>	<u>1 day</u>	<u>1 week</u>
a) gaseous species			
SO_2	10.4	0.43	0.06
HNO_3	6.8	0.28	0.04
HONO	1.6	0.07	0.01
NH_3	20.0	0.83	0.12
b) particulate			
SO_4^{2-}	5.3	0.22	0.03
NO_3^-	6.1	0.25	0.04

¹Samples analyzed by ion chromatography. Detection limits are taken as three standard deviations above field blanks. Quantification limits are taken as ten standard deviations above field blanks. Both the detection and quantification limits were estimated assuming that the variance is independent of concentration.

Table 2. Accelerator Jet Diameters and Corresponding Reynolds Number (Re) for Selected Flow Rates to Obtain 2.5 μM Aerodynamic D_{50} Separation

<u>Flow Rate</u> <u>L/min</u>	<u>Jet Diameter</u>	<u>Re</u>
1.0	1.55	900
2.0	1.97	1400
5.0	2.65	2700
10.0	3.33	4200
12.0	3.55	4700
15.0	3.85	5500
16.7	4.00	6000
20.0	4.25	6600

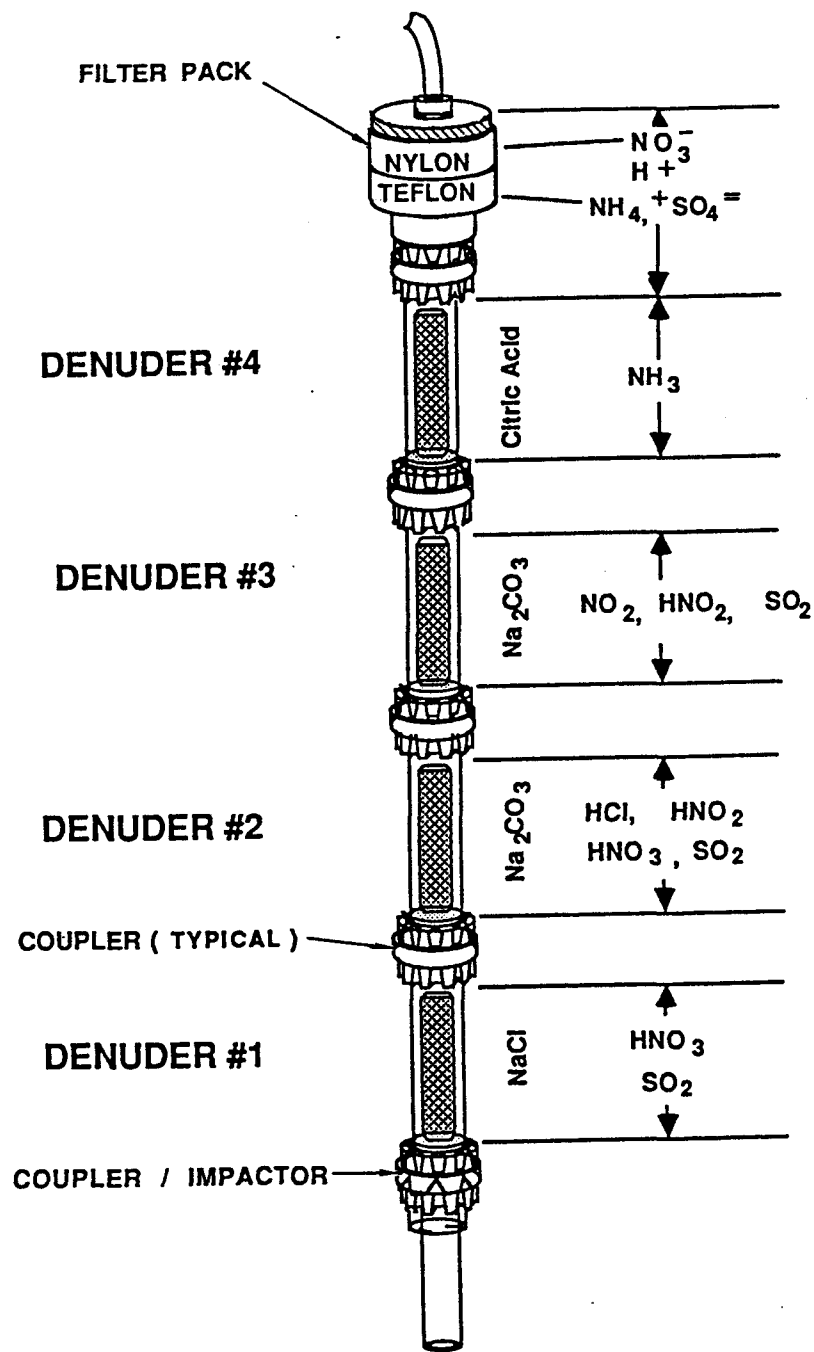


Figure 1. Schematic View of Annular Denuder Showing Species Collected

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725

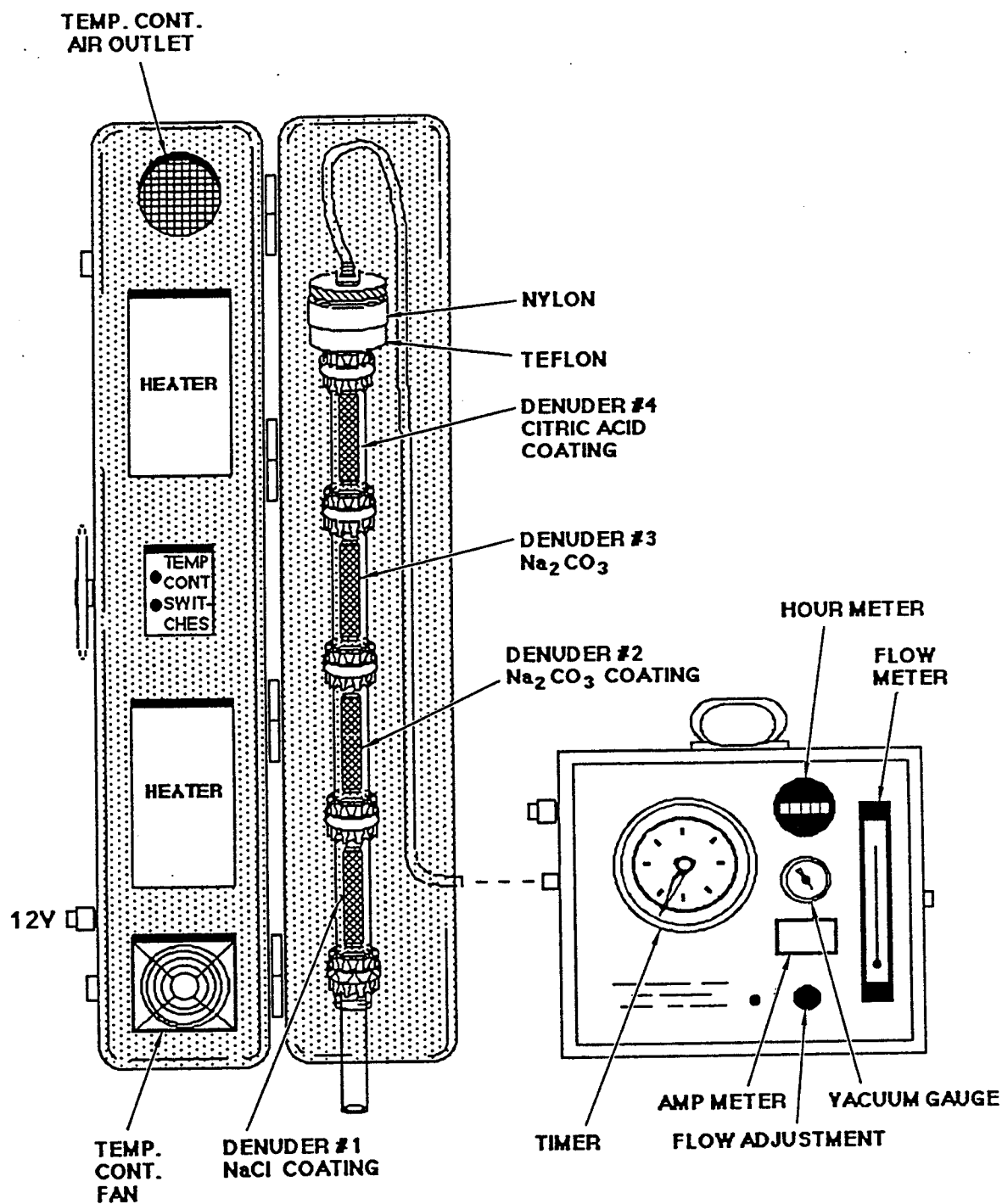


Figure 2. Annular Denuder System

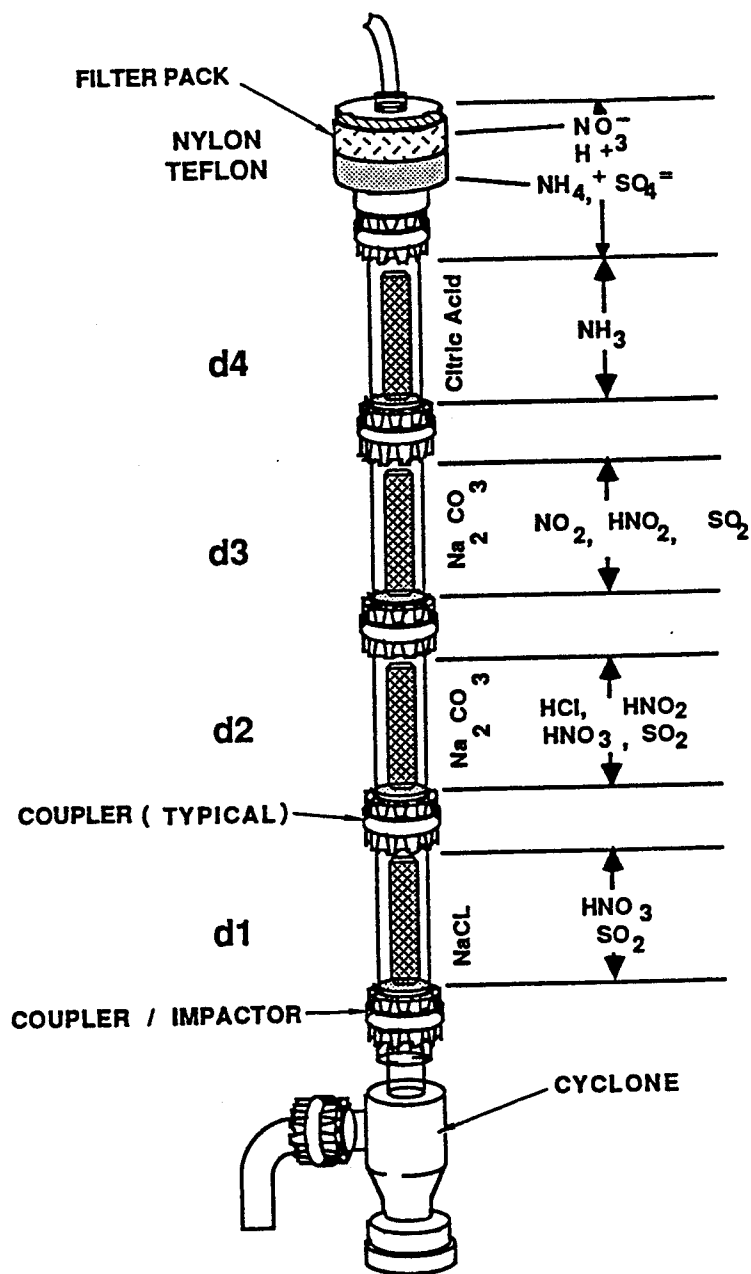


Figure 3. Schematic View of Annular Denuder with Cyclone Adaptor for Removal of Coarse Particles

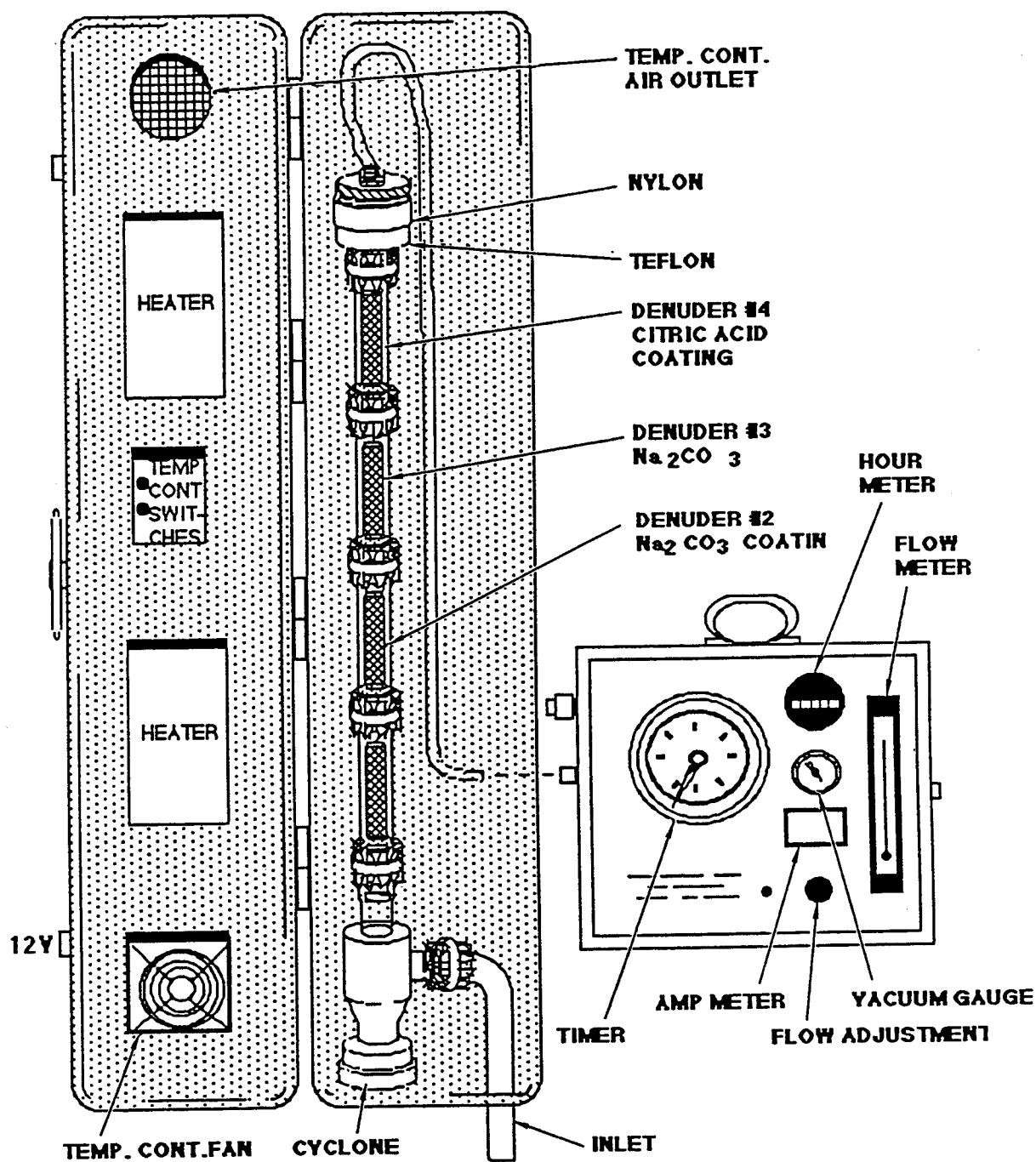


Figure 4. Annular Denuder System with Cyclone in Heated Sampling Case

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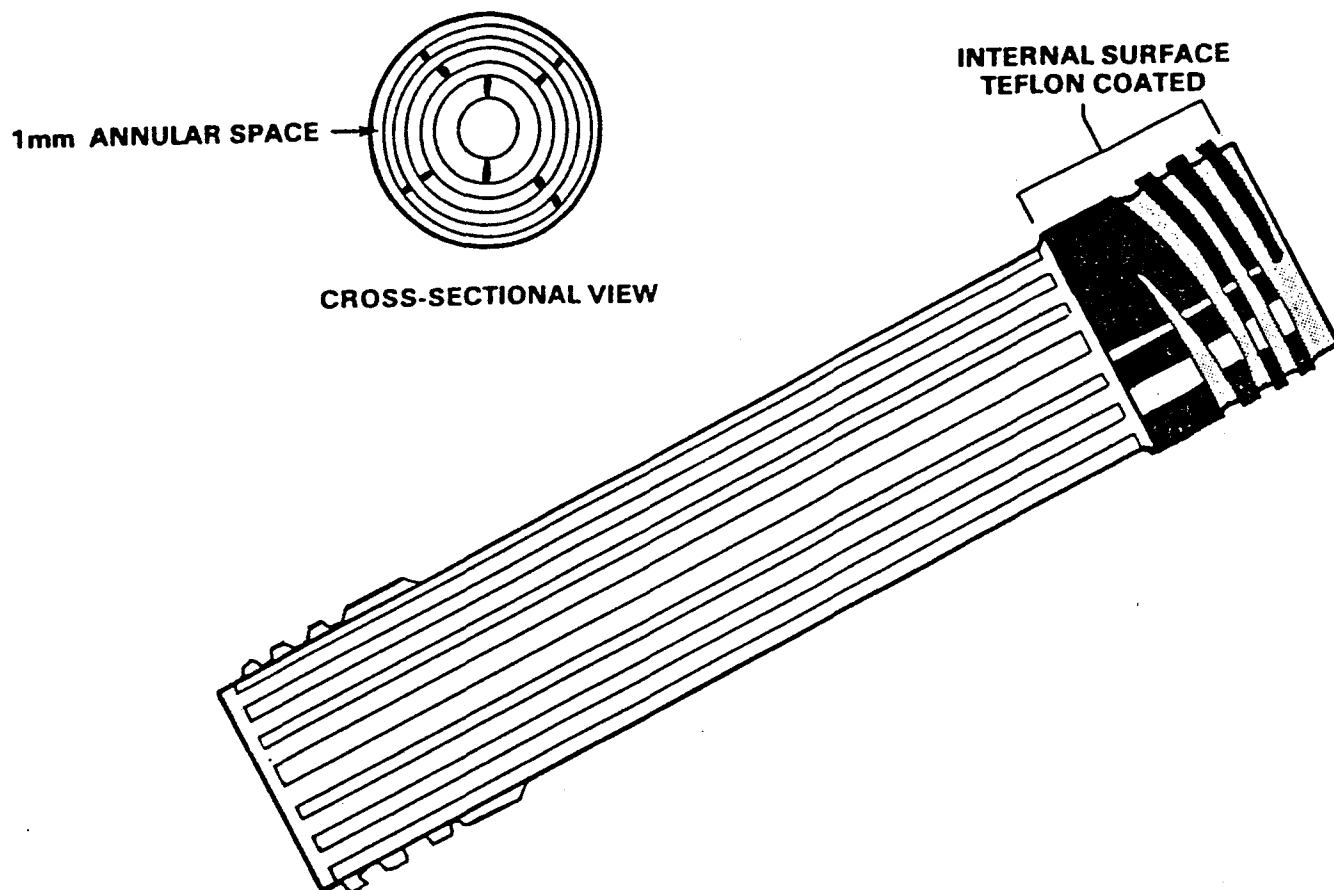


Figure 5. Internal Schematic of Annular Denuder

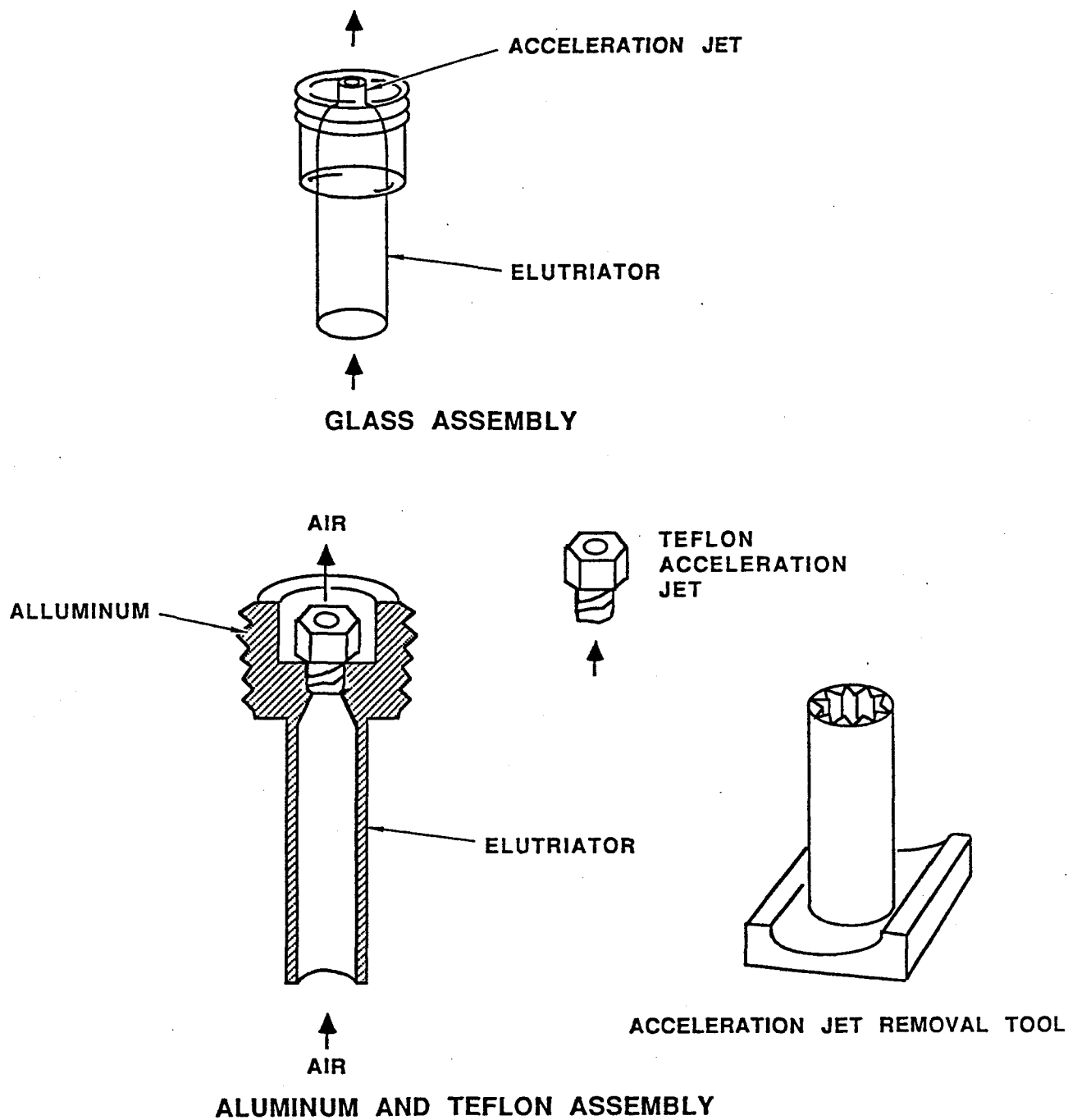


Figure 6. Available Elutriator and Acceleration Jet Assemblies

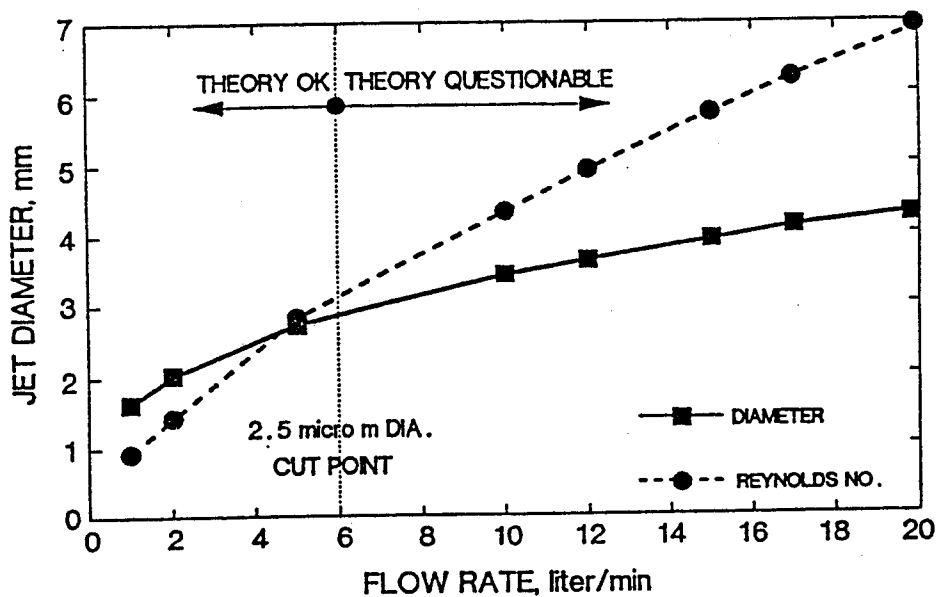


Figure 7A

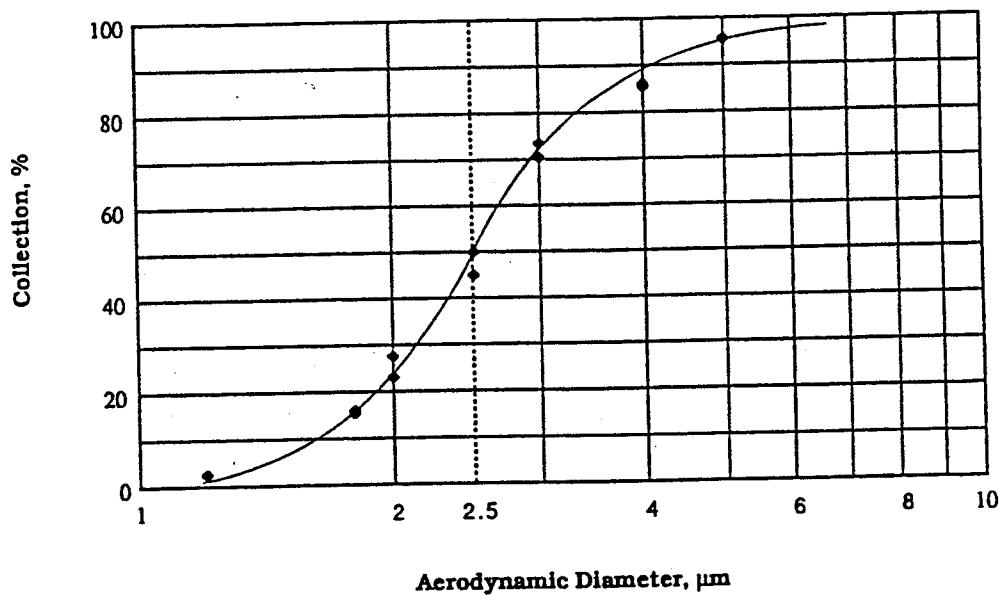


Figure 7B

Figure 7. D_{50} for Acceleration Jet (Figure 7A) and Teflon®-Coated Cyclone (Figure 7B)

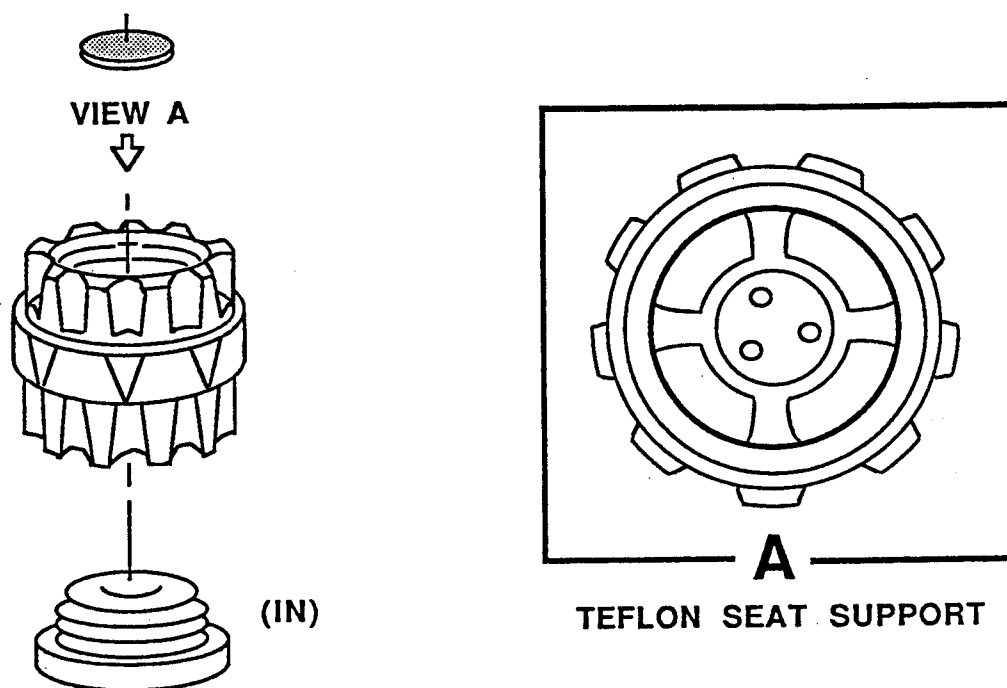


Figure 8. Side View Impactor/Coupler Assembly

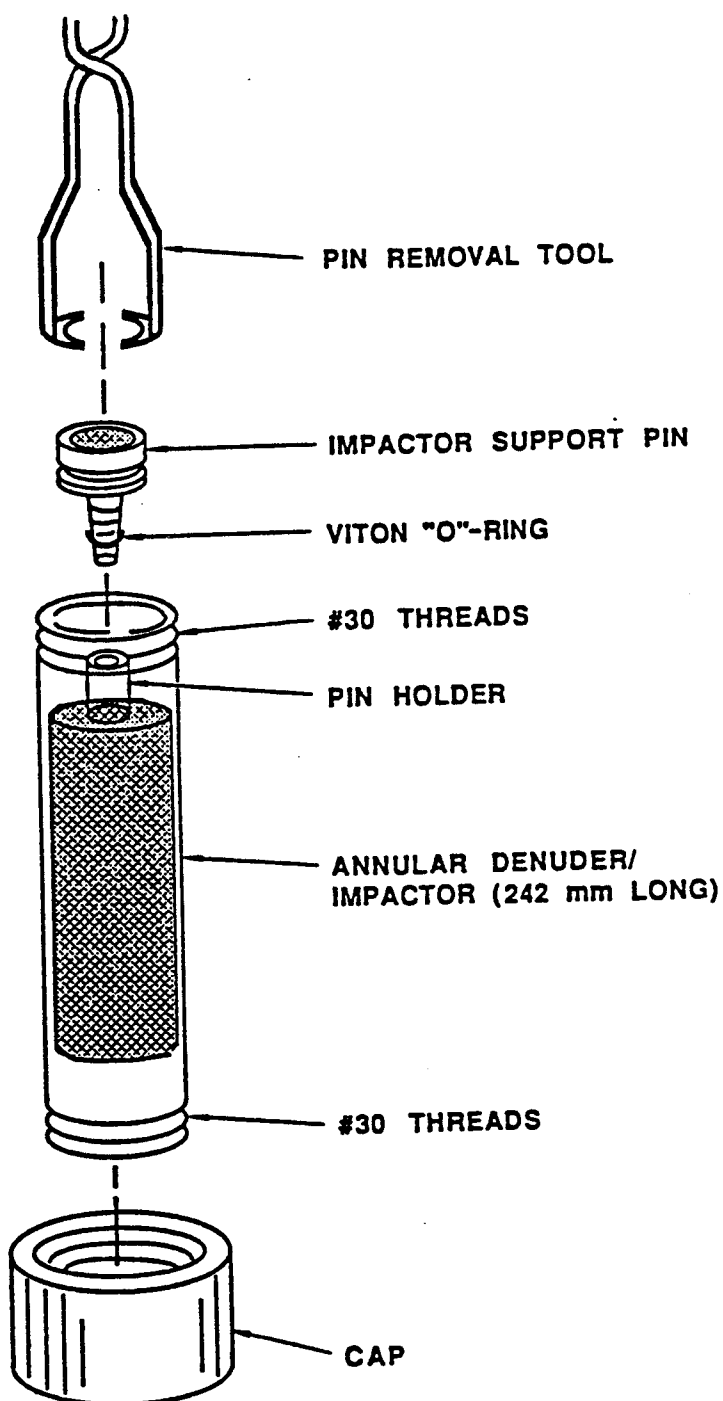


Figure 9. Glass Annular Denuder with Inset Impactor Assembly

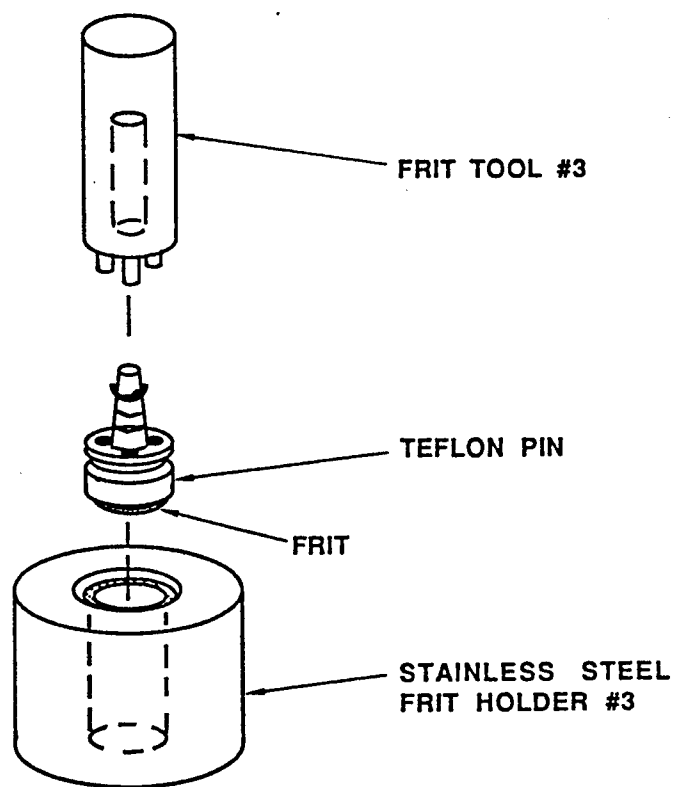


Figure 10. Frit Removal from Pin

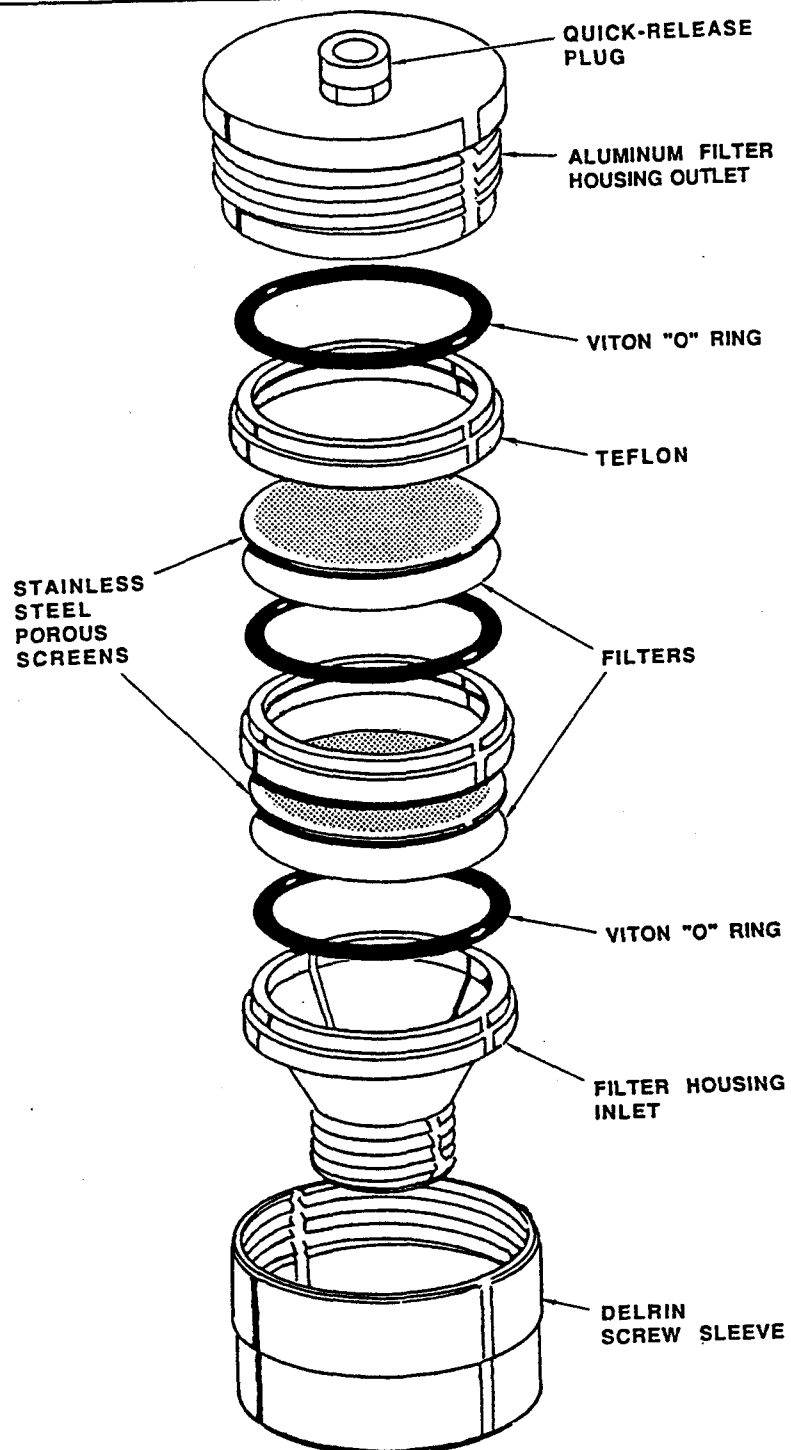


Figure 11. Filter Pack Assembly

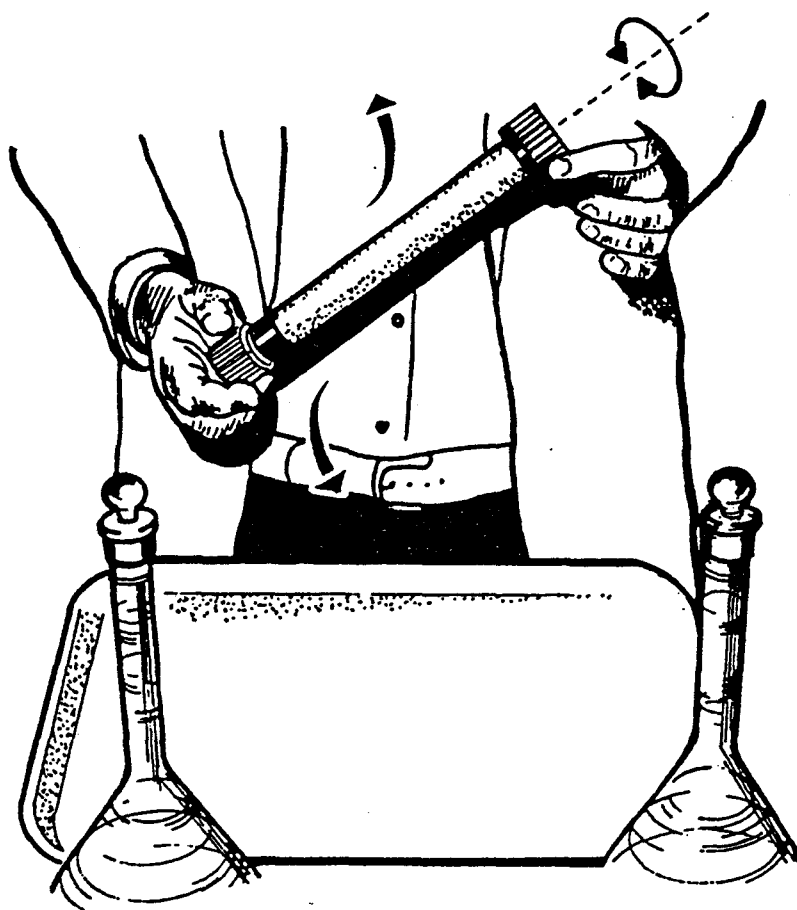


Figure 12. Annular Denuder Coating Procedure

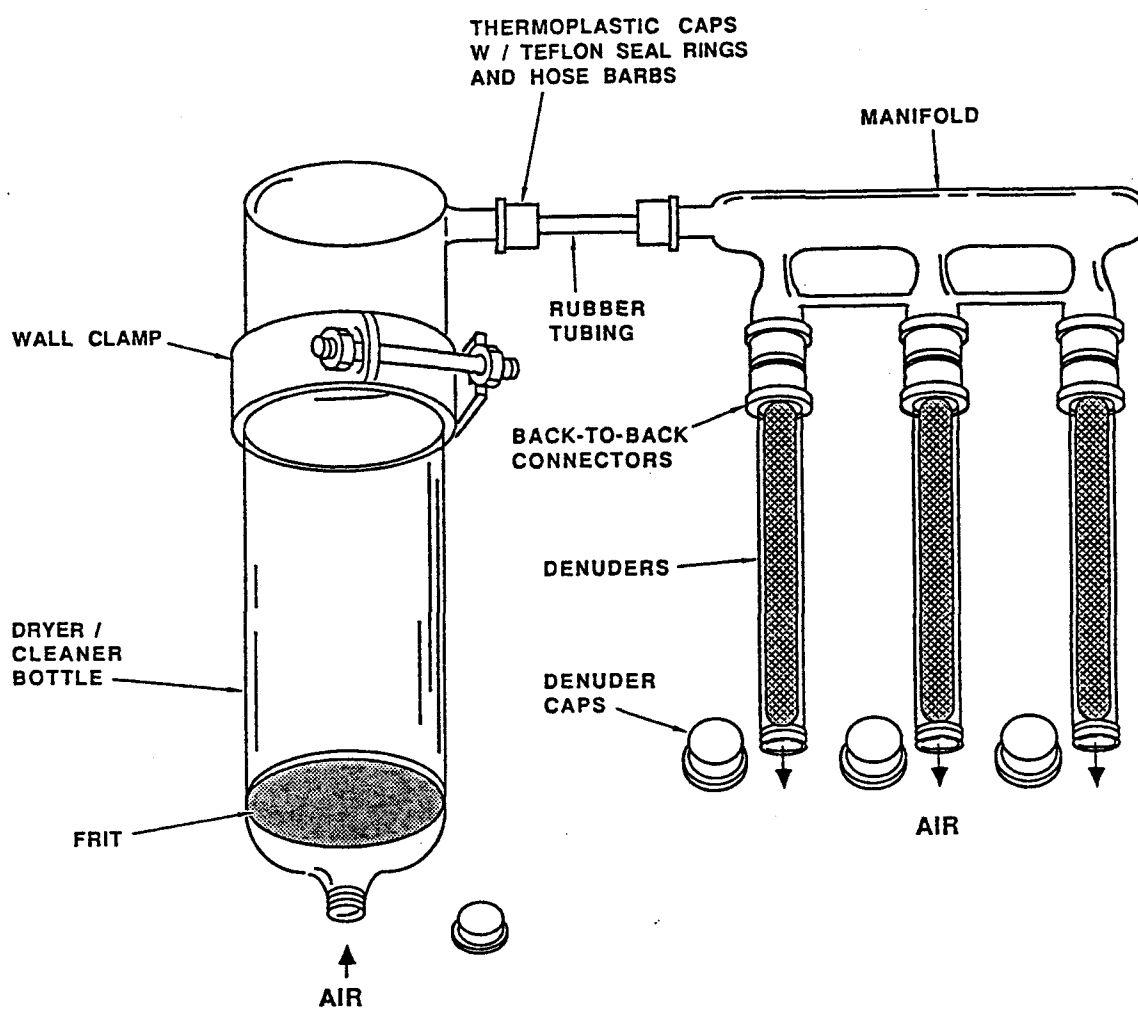


Figure 13. Drying Train and Manifold

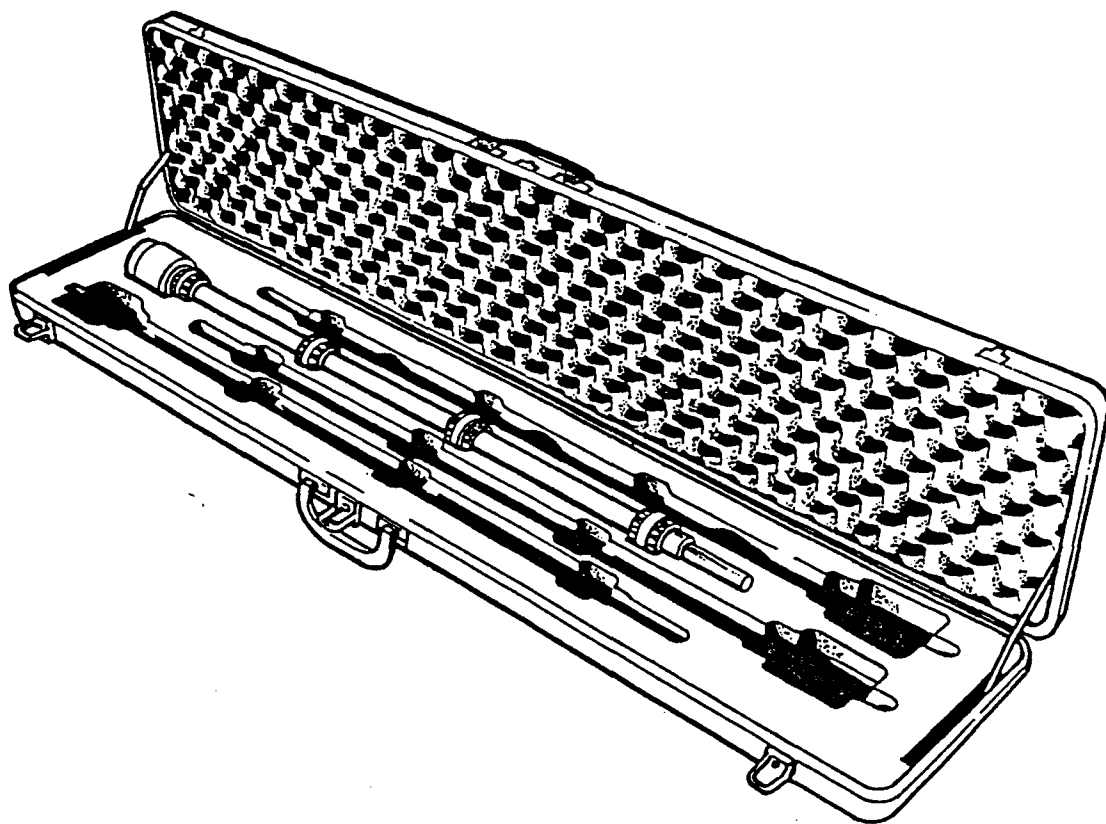


Figure 14. Annular Denuder in Field-to-Lab Case

[illegible]

Figure 15. ADS Field Test Data Sheet

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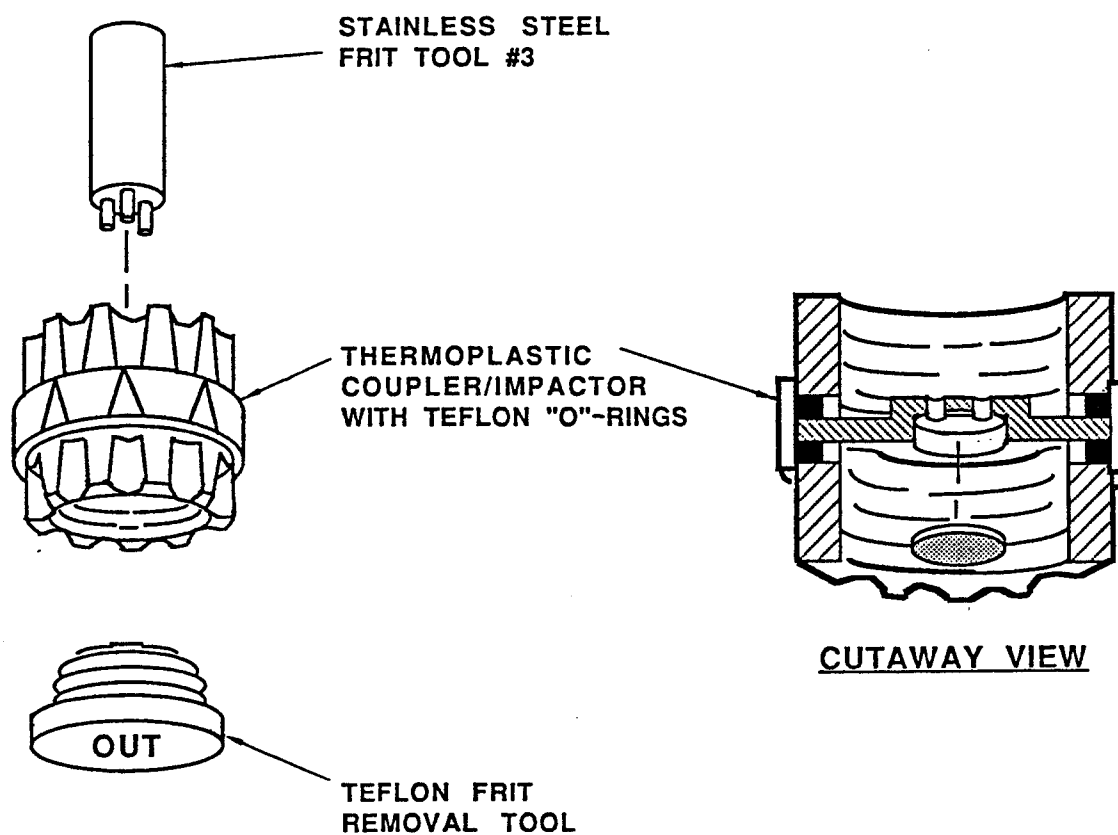


Figure 16. Side View Impactor/Coupler Assembly with Disc Removal Tools

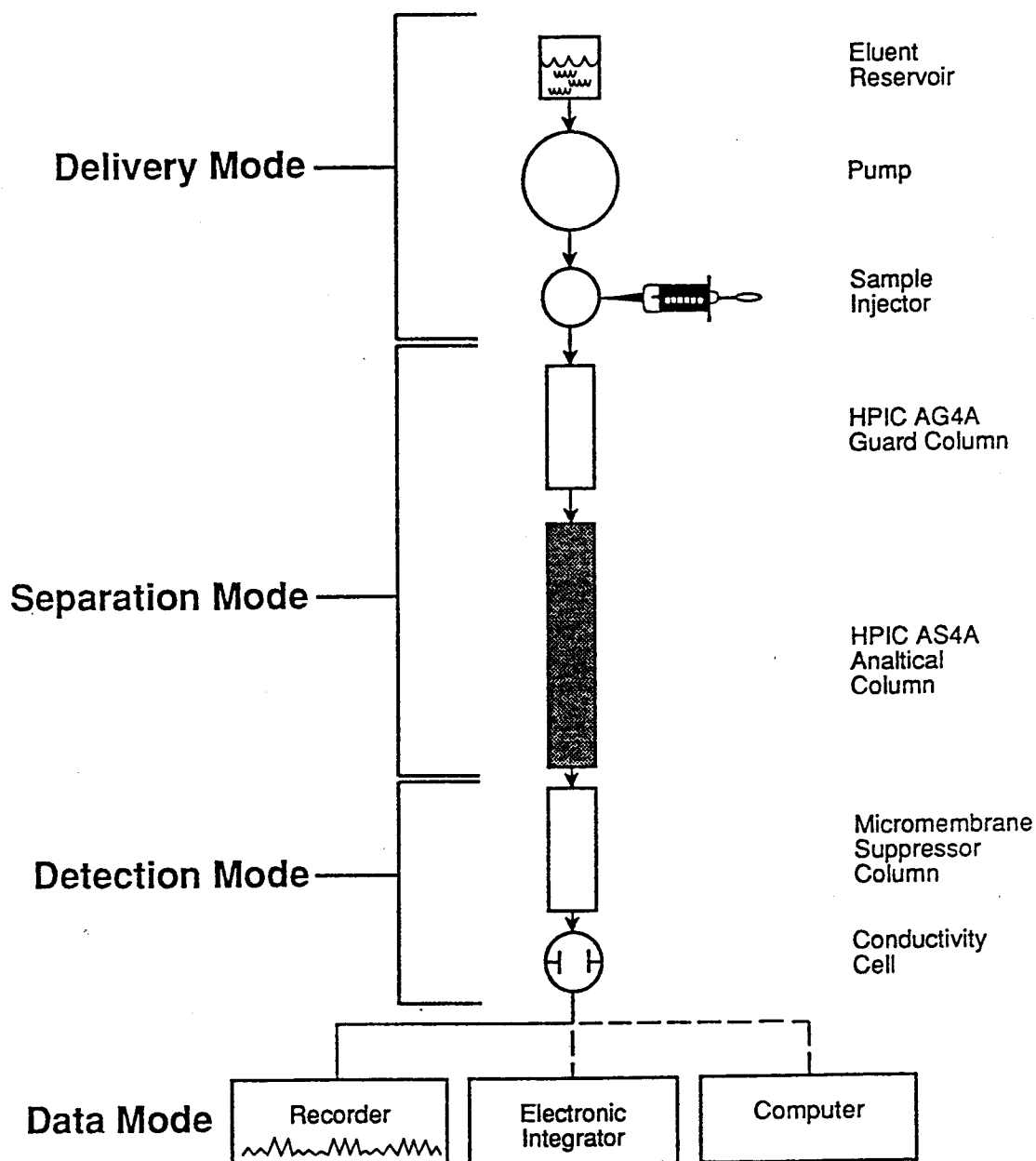


Figure 17. Major Components of a Commercially Available Ion Chromatograph

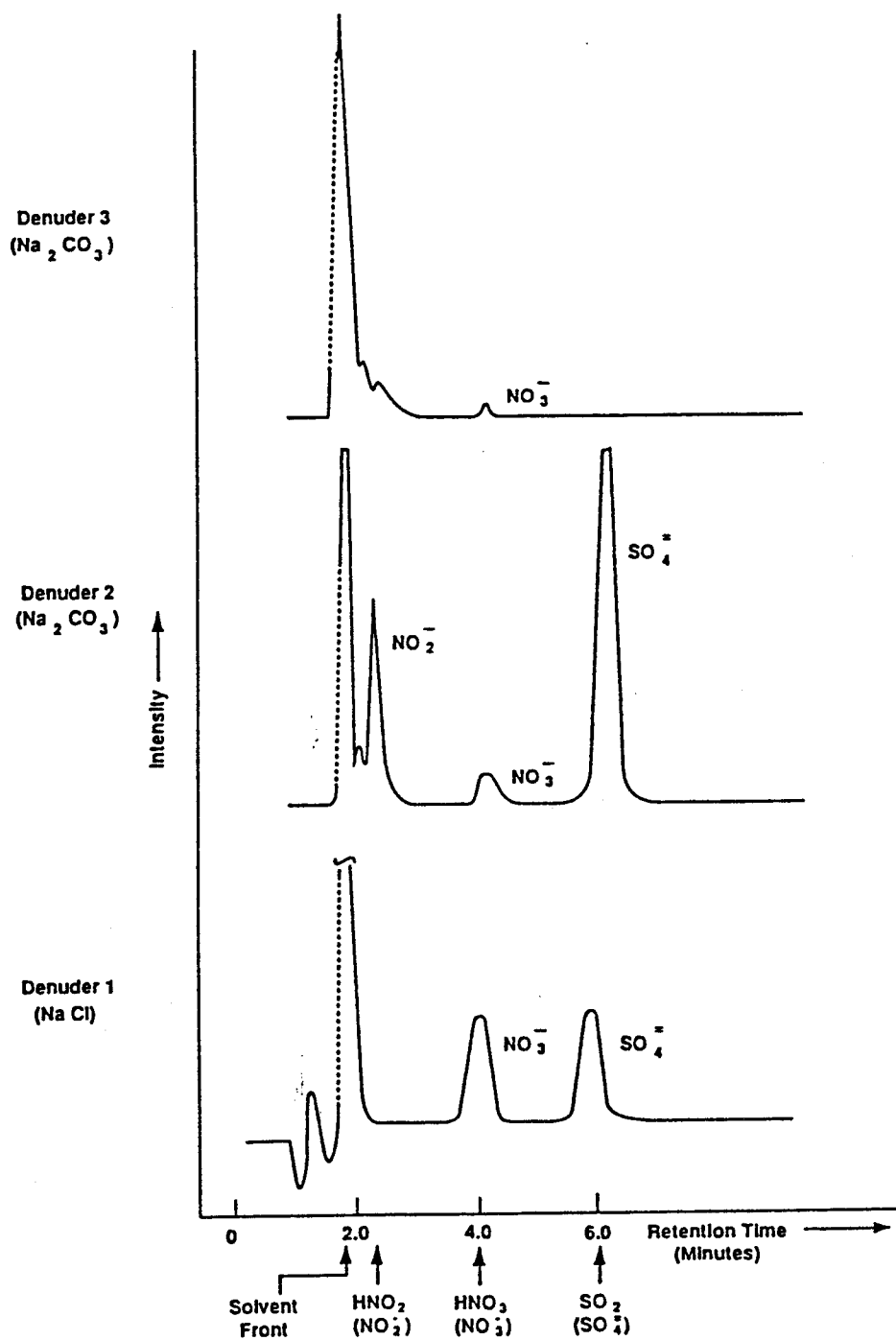


Figure 18. Chromatograms of Denuder/Filter Extract Performed by the Ion Chromatography

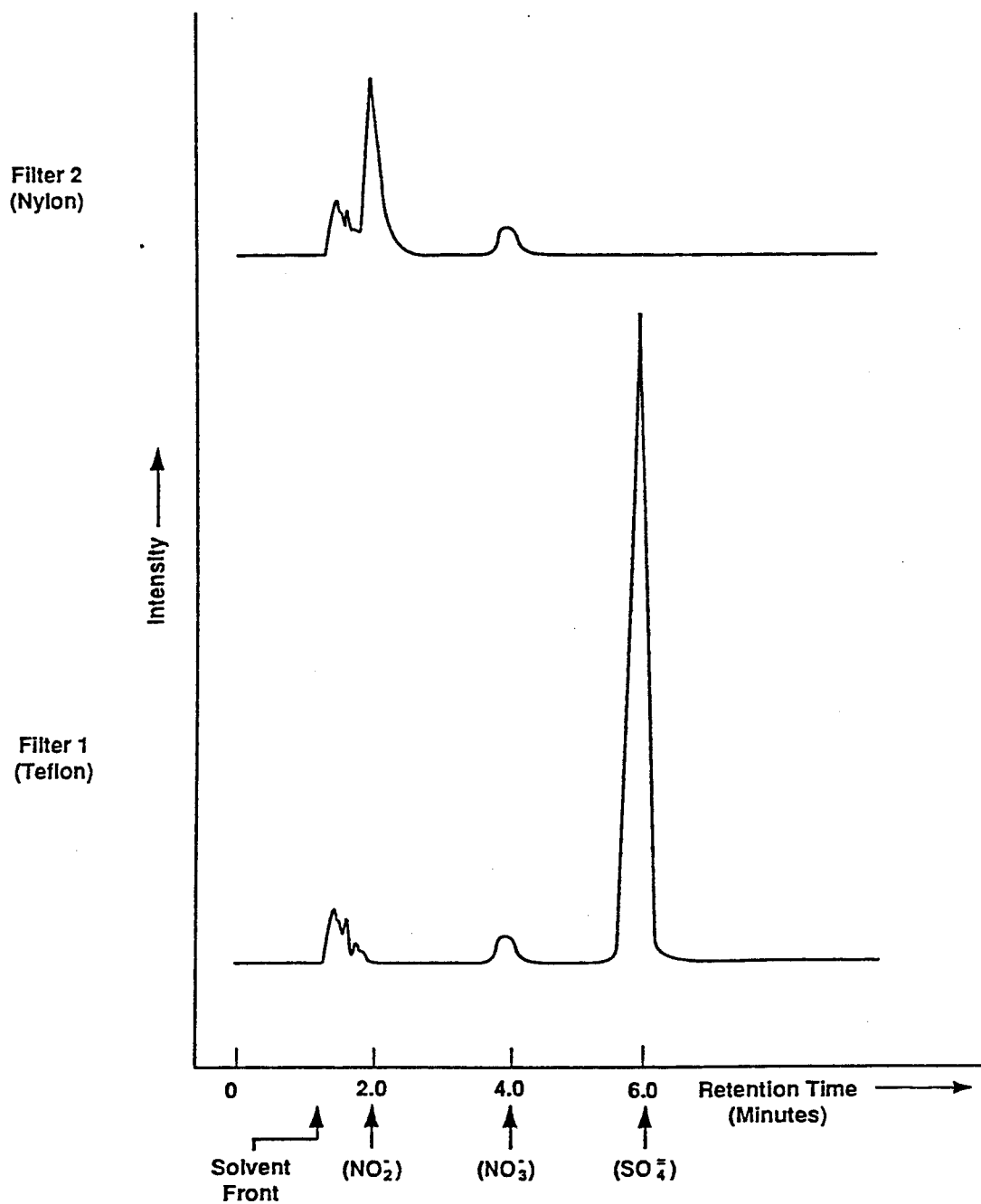


Figure 18 (Cont'd). Chromatograms of Denuder/Filter Extract Performed by the Ion Chromatography

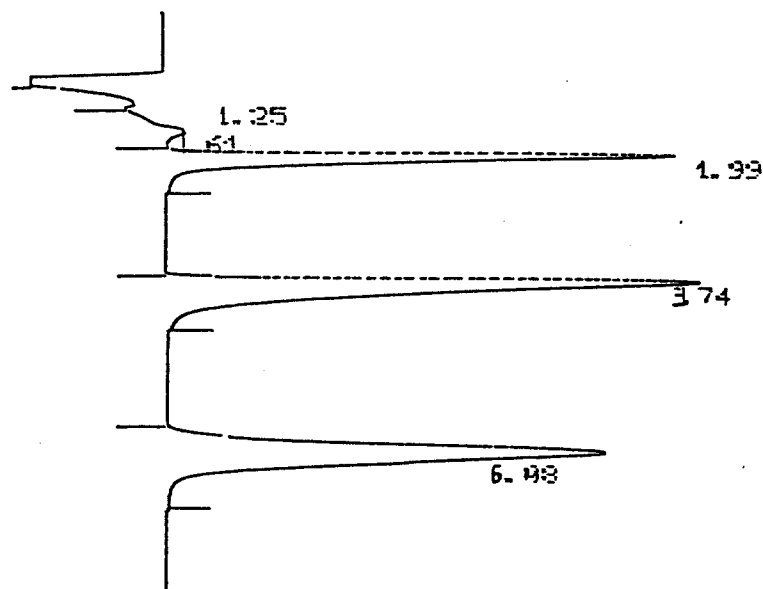
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DATA. CHANNEL A

SAMPLES FROM 1. TO 12. REPLICATES= 1.
CHANNEL A INJECT 05:22:17



ANIONS 05:22:17 CH= "A" PS= 1

FILE 2. METHOD 5. RUN 1 INDEX 1

ANALYST: BEL

NAME	PPM	RT	AREA BC	RF	RRT
N02	2.463	1.99	8009801	033252050.75	0.327
N03	4.829	3.74	11145516	012303038.104	0.615
S04	3.83	6.08	11531441	013023874.934	1.

TOTALS 11.122 30736758

PEAK HEIGHTS= 1 78** 2 88** 3 440** 4 437** 5 358**
RT SET 1.836 3.4884 5.3244

Figure 19. Chromatogram of a Standard with
Nitrous Acid, Nitric Acid, and Sulfuric Acid

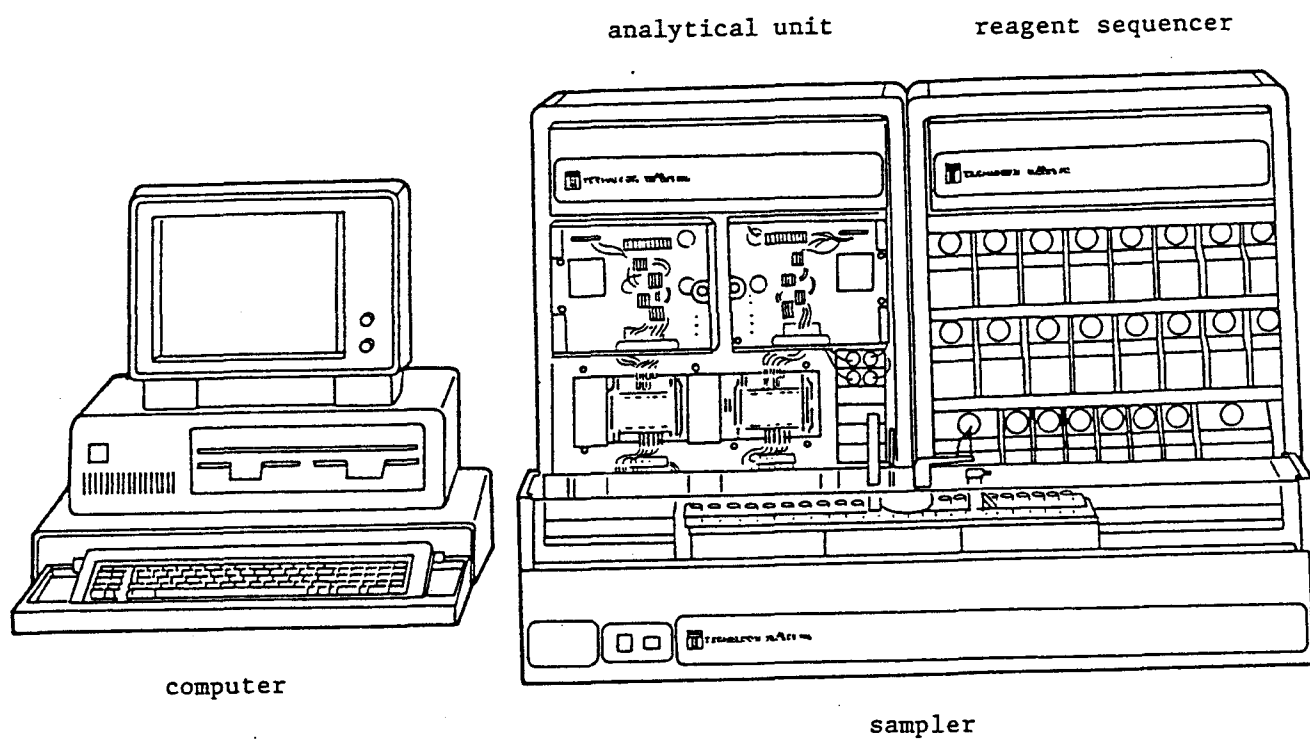


Figure 20. 4-Channel Traacs 800 System with Reagent Sequencer

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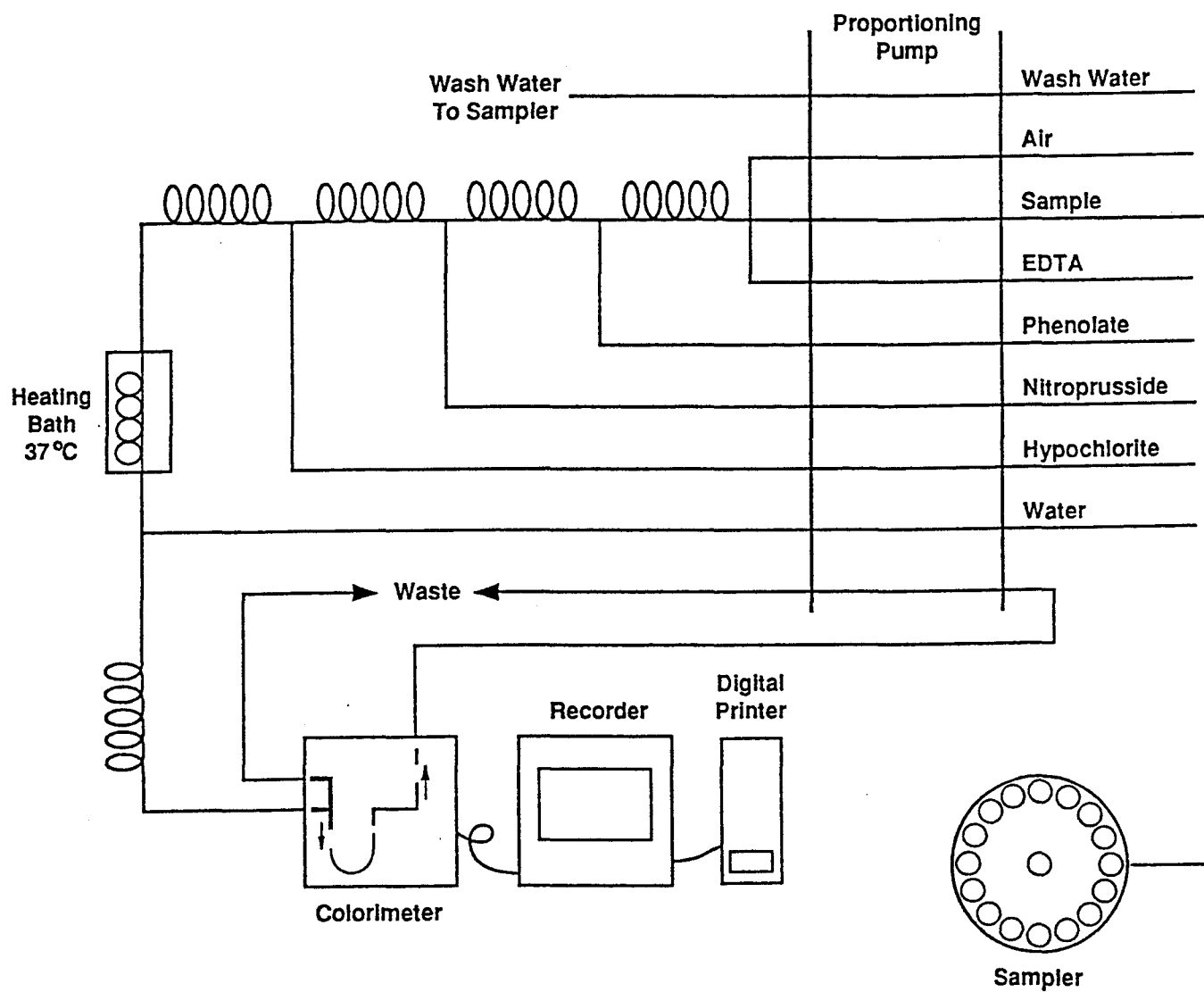


Figure 21. Technicon Autoanalyzer Flow Diagram for Ammonia Analysis

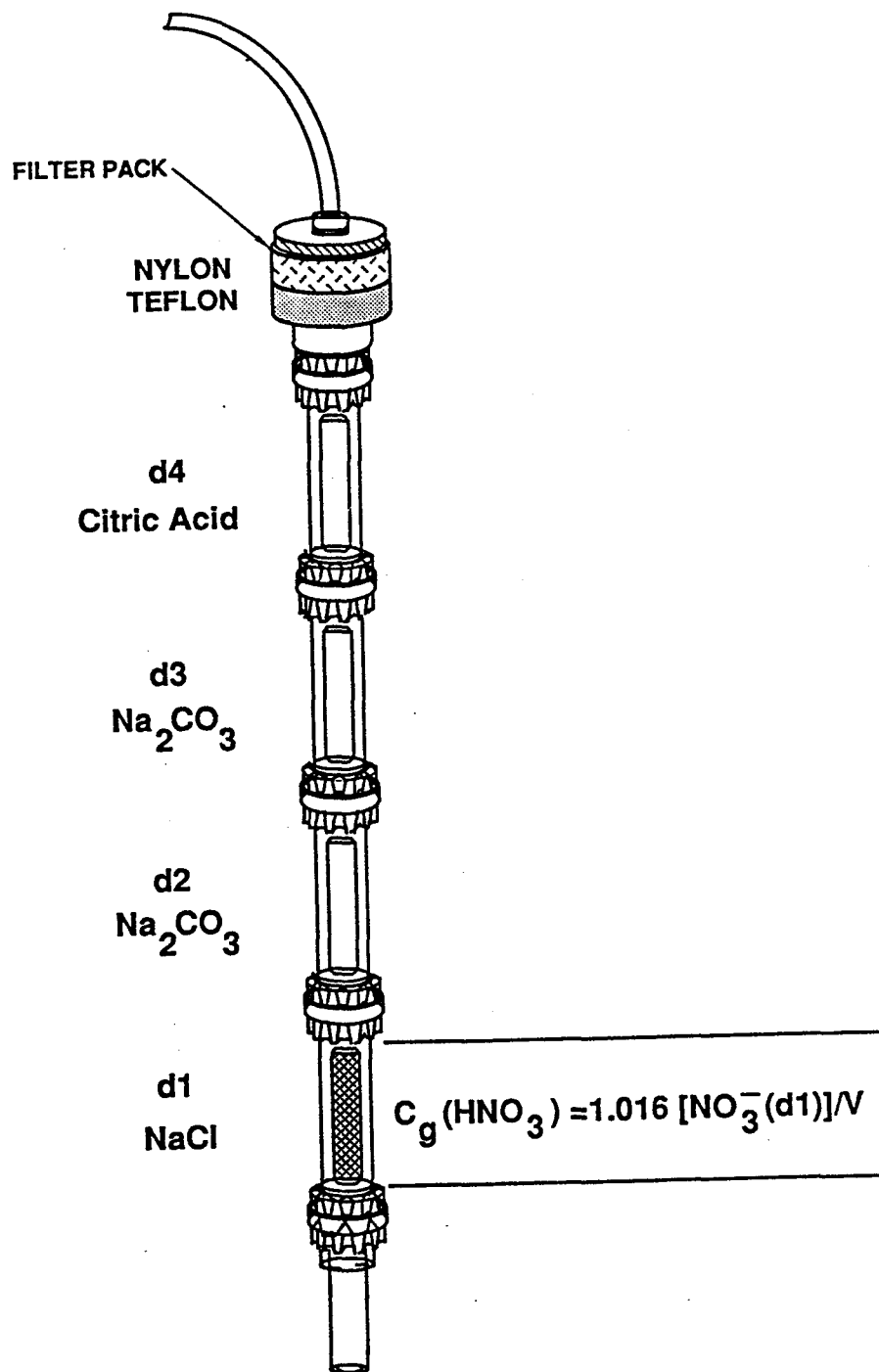


Figure 22. Nitric Acid Gas Measurement

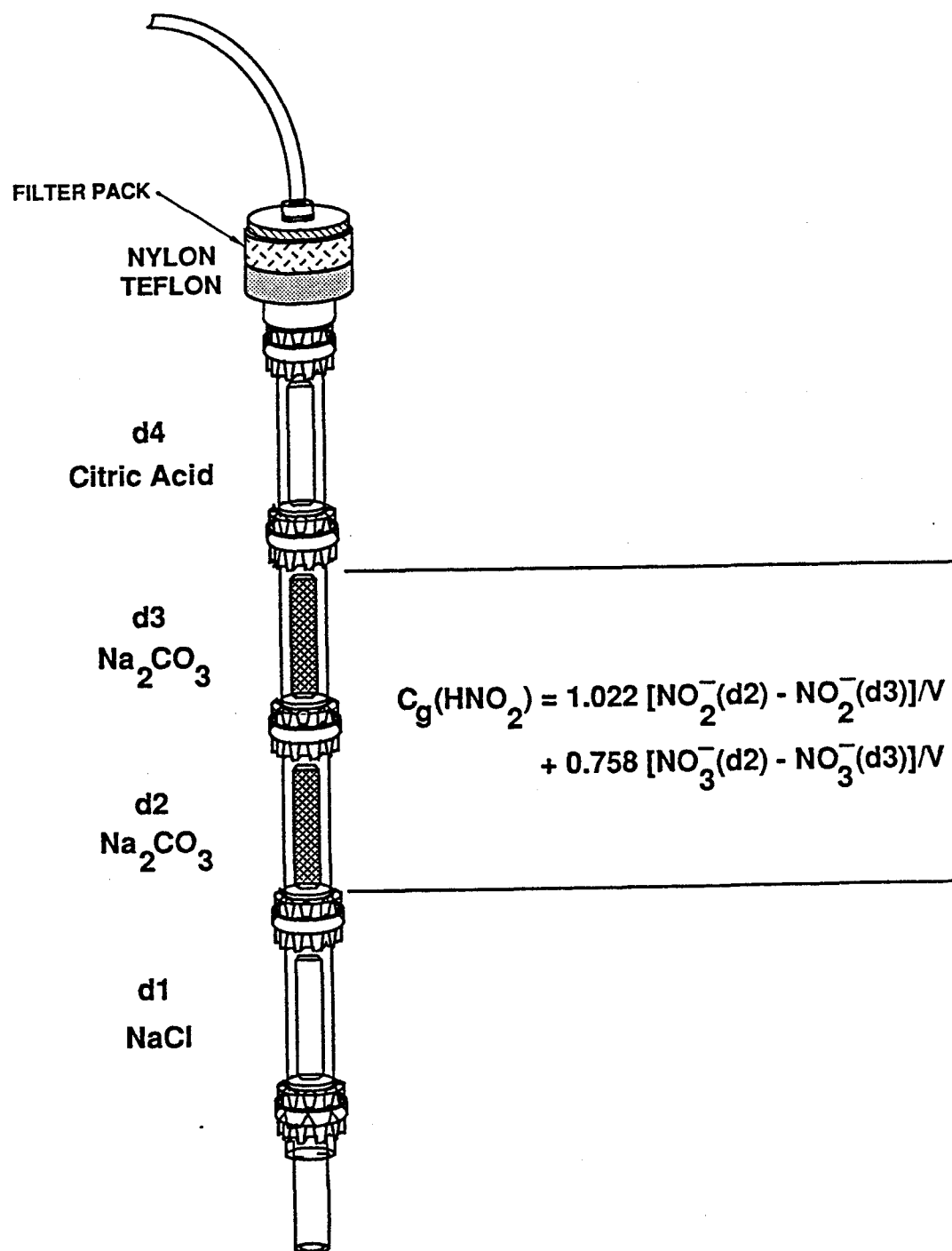


Figure 23. Nitrous Acid Gas Measurement

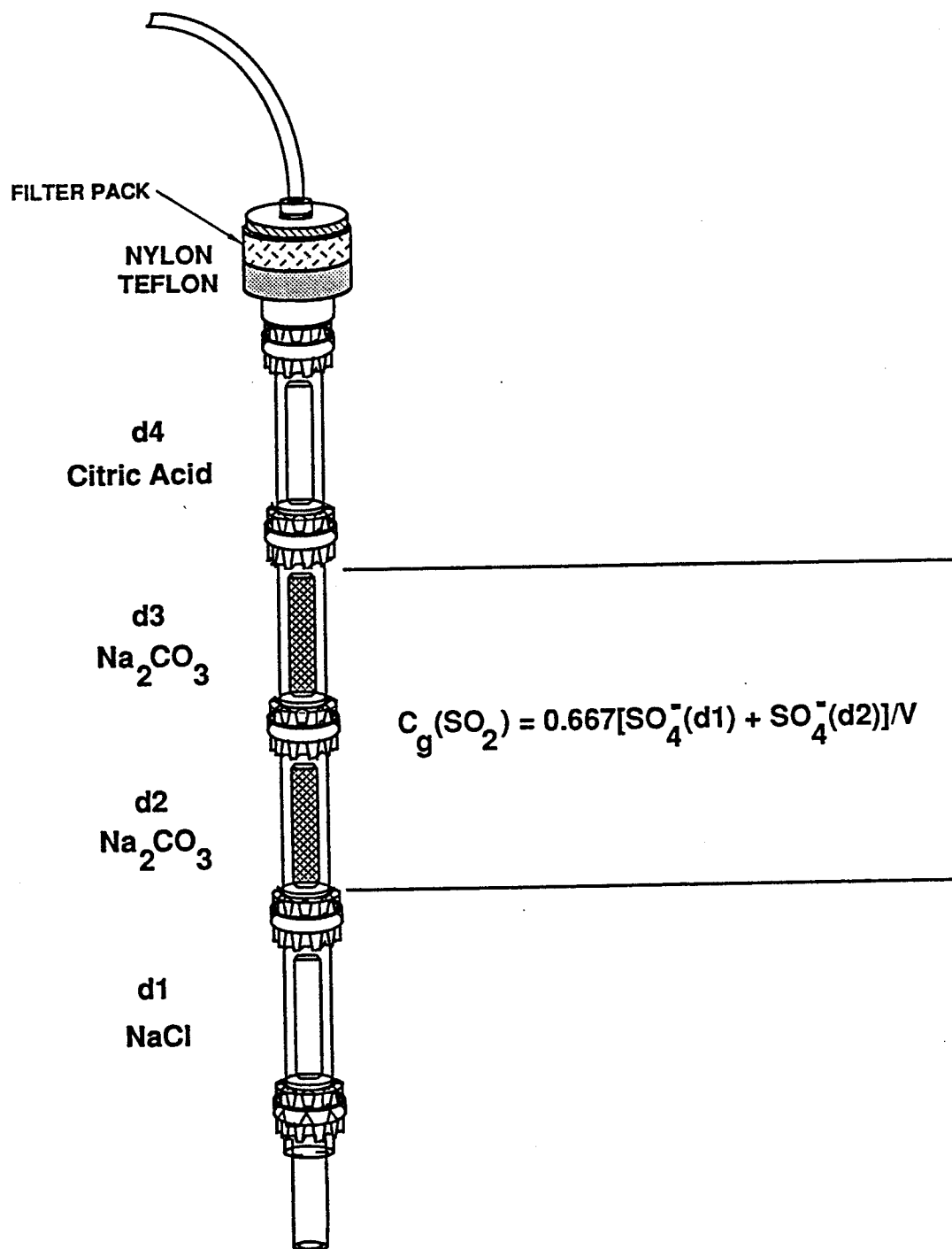


Figure 24. Sulfur Dioxide Gas Measurement

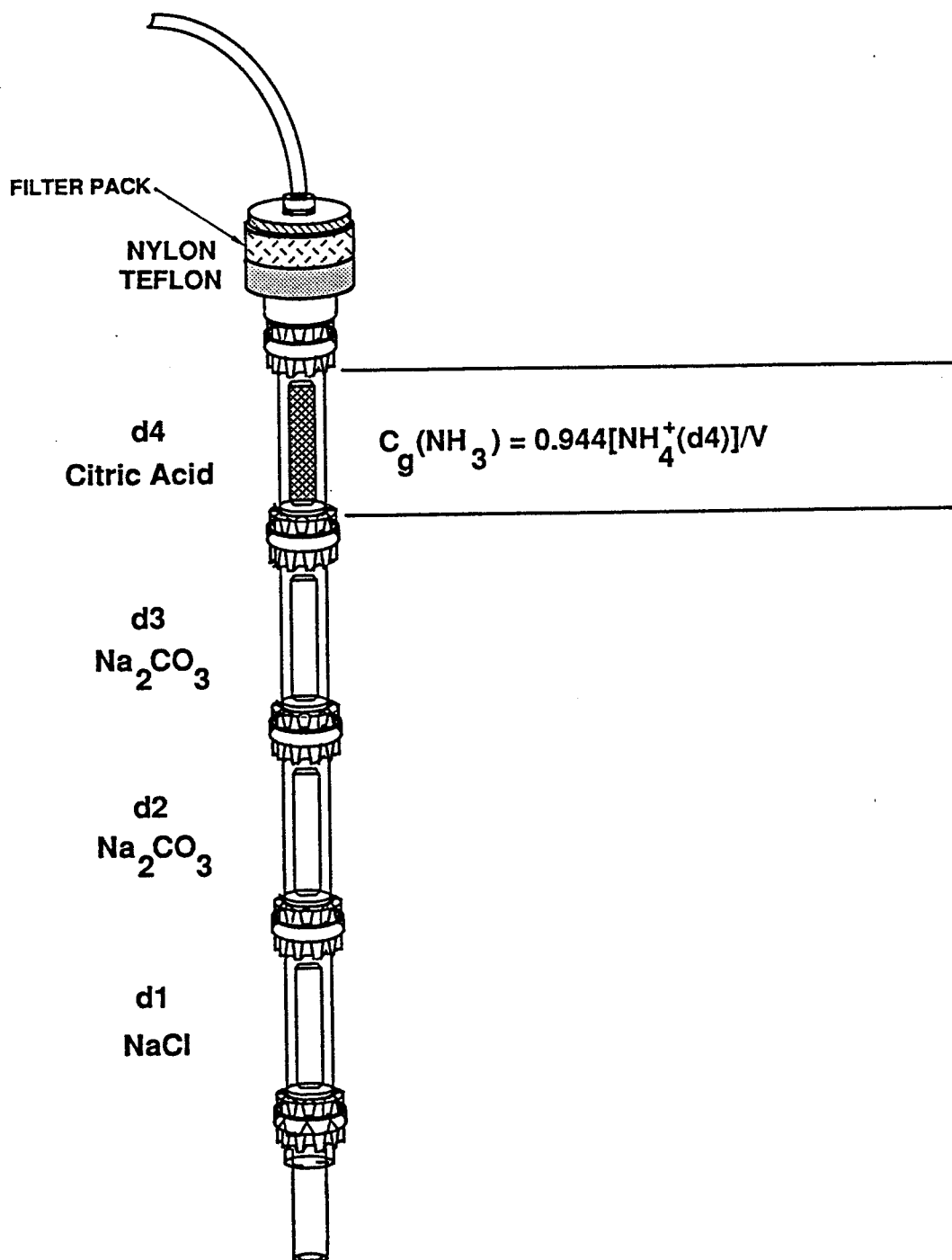


Figure 25. Ammonia Gas Measurement

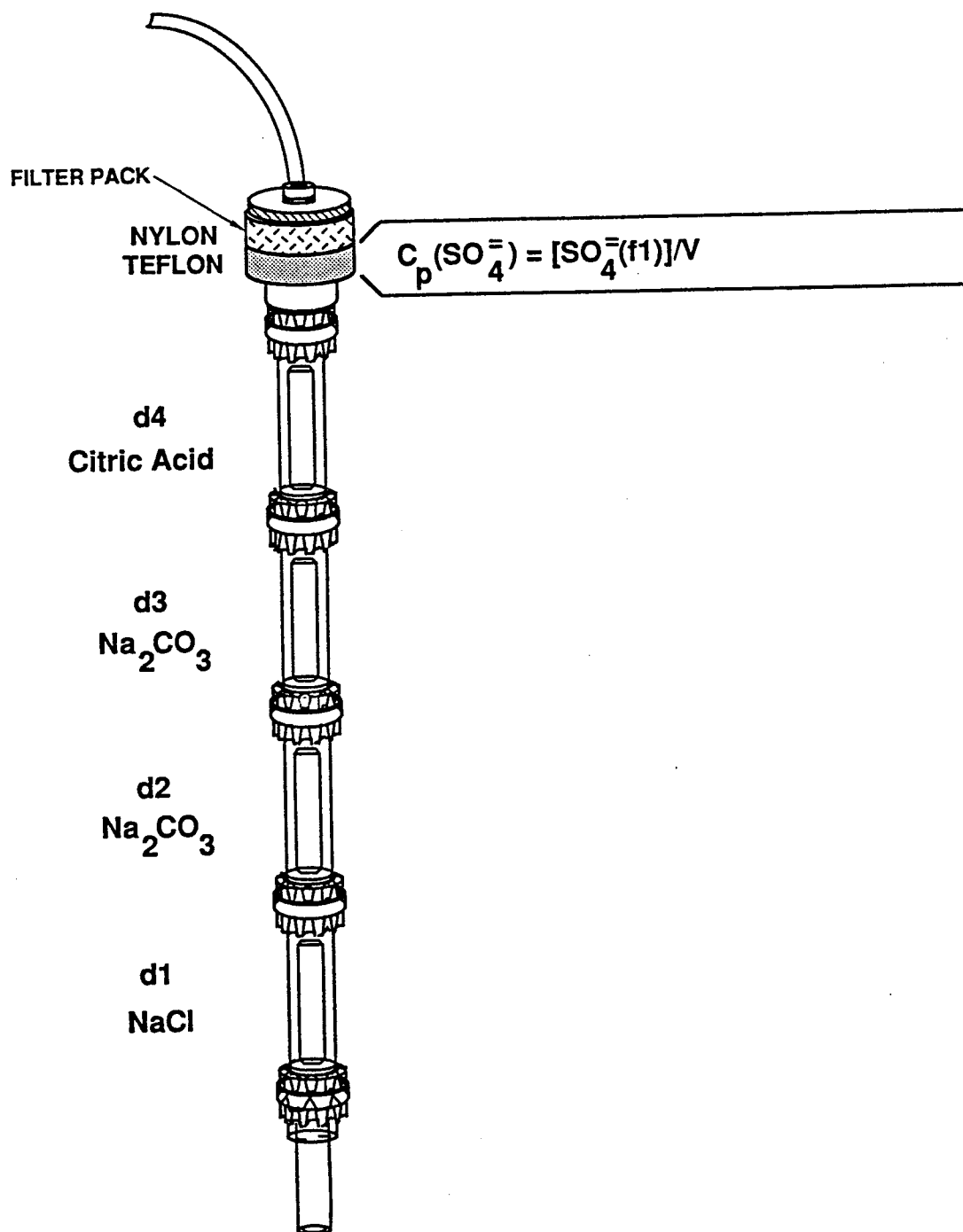


Figure 26. Particulate Sulfate Measurement

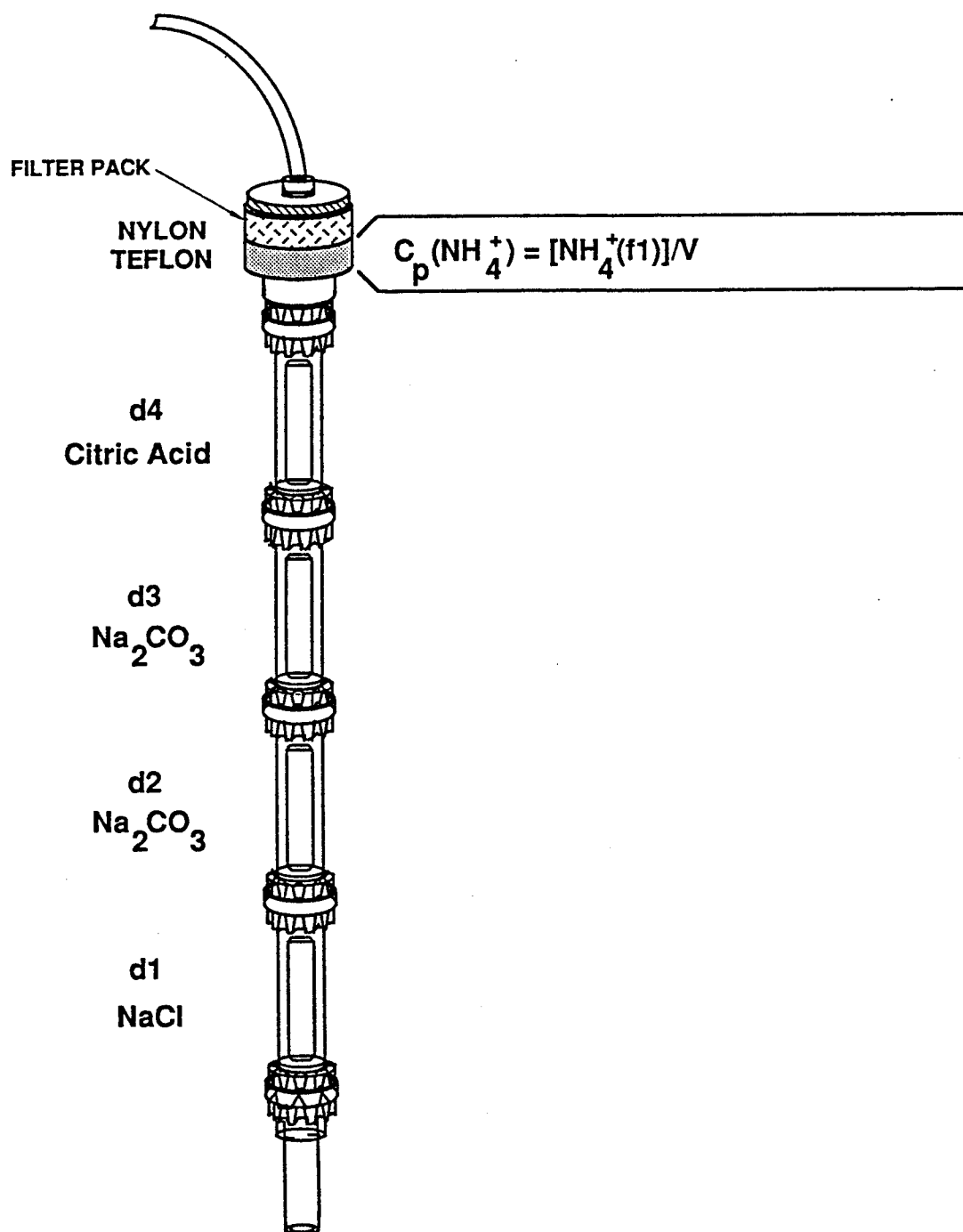


Figure 27. Particulate Ammonium Measurement

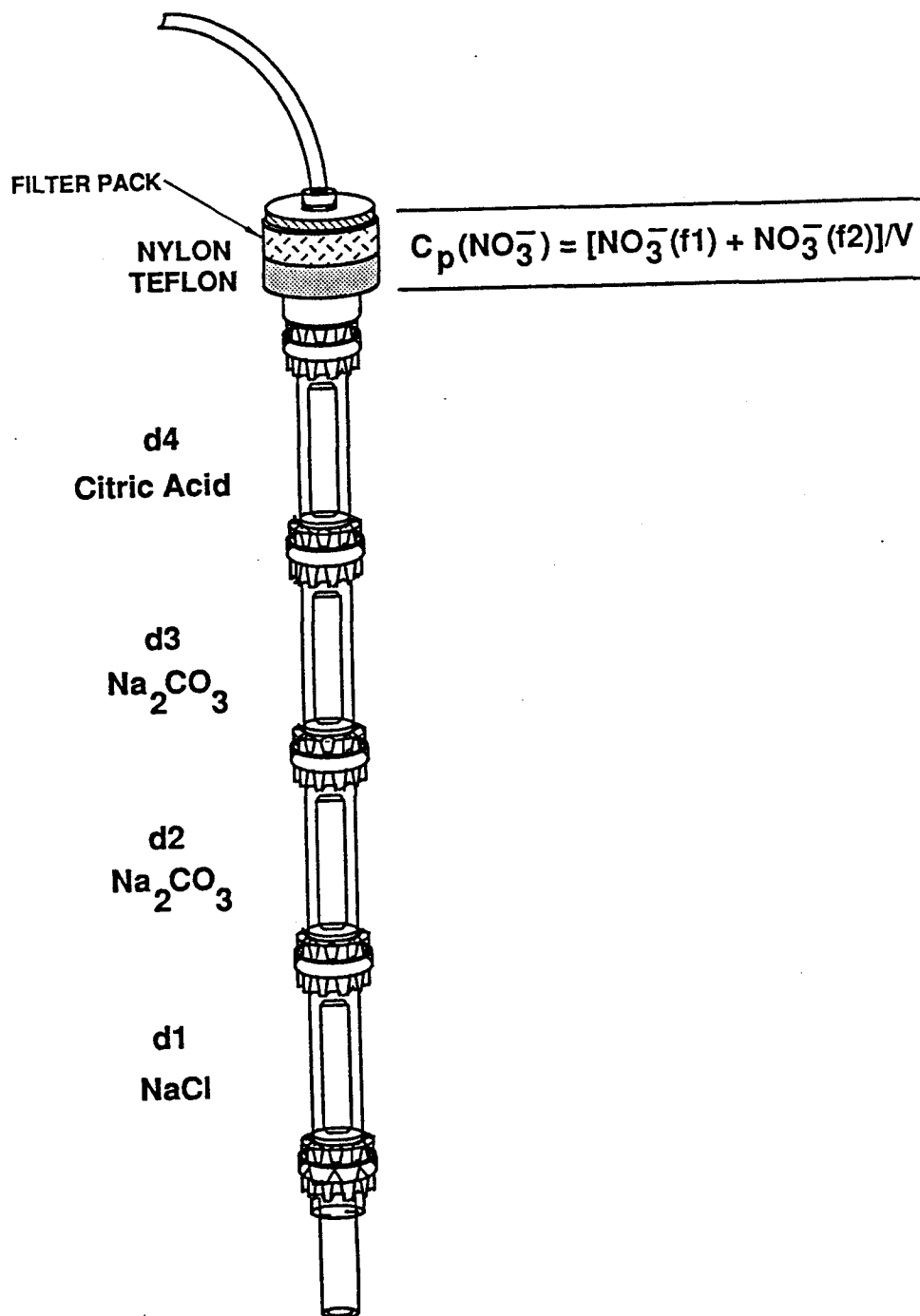


Figure 28. Particulate Nitrate Measurement

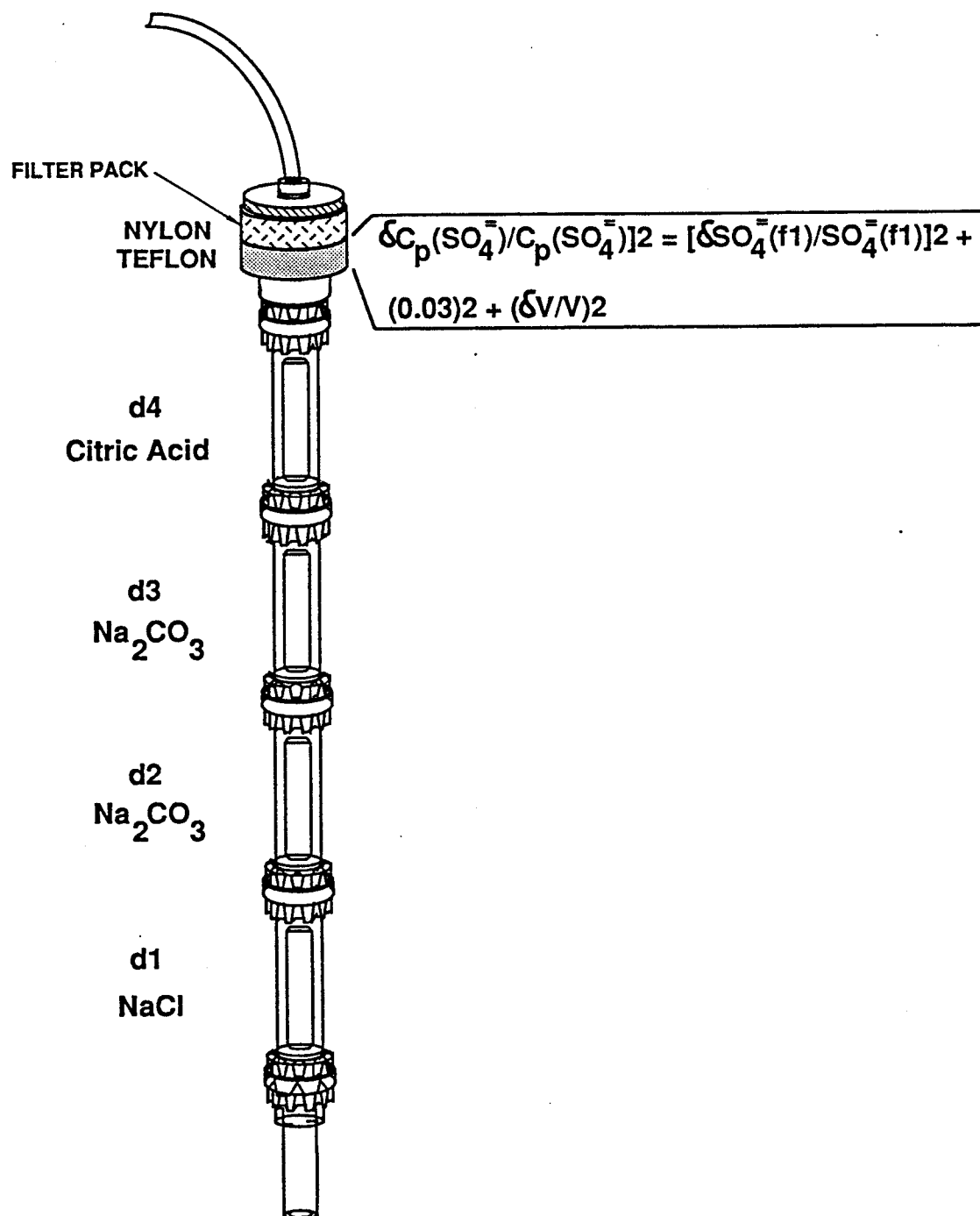


Figure 29. Particulate Sulfate Measurement and Uncertainties

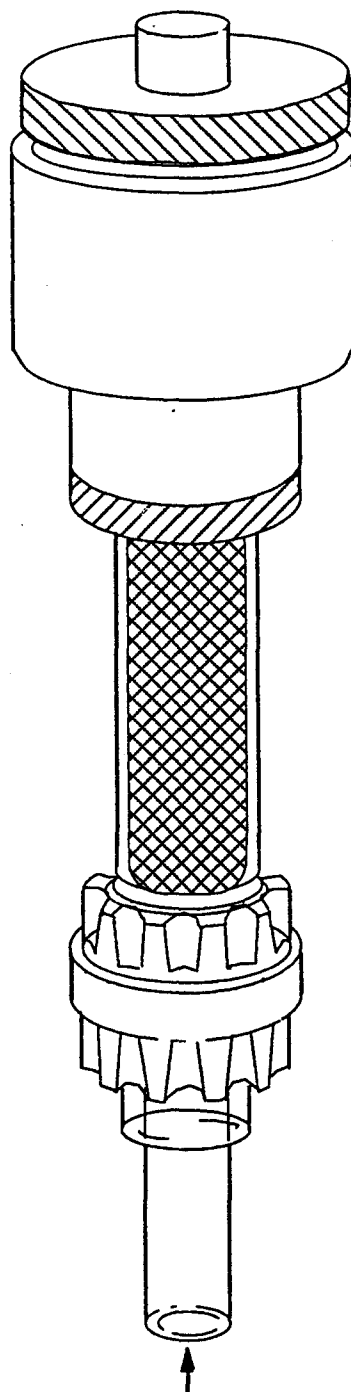


Figure 30. Annular Denuder Personal Sampler

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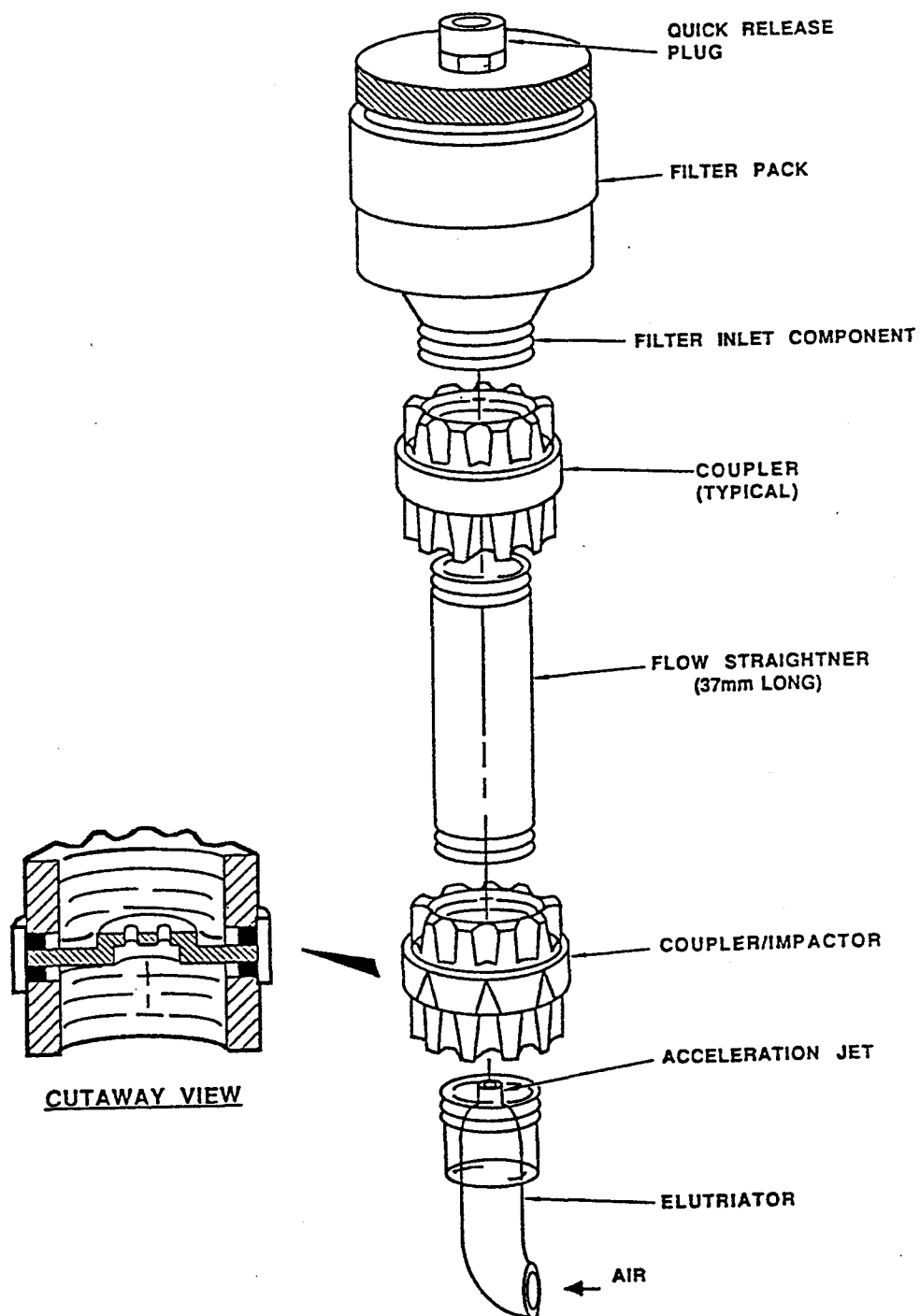


Figure 31. Fine Particle Sampler

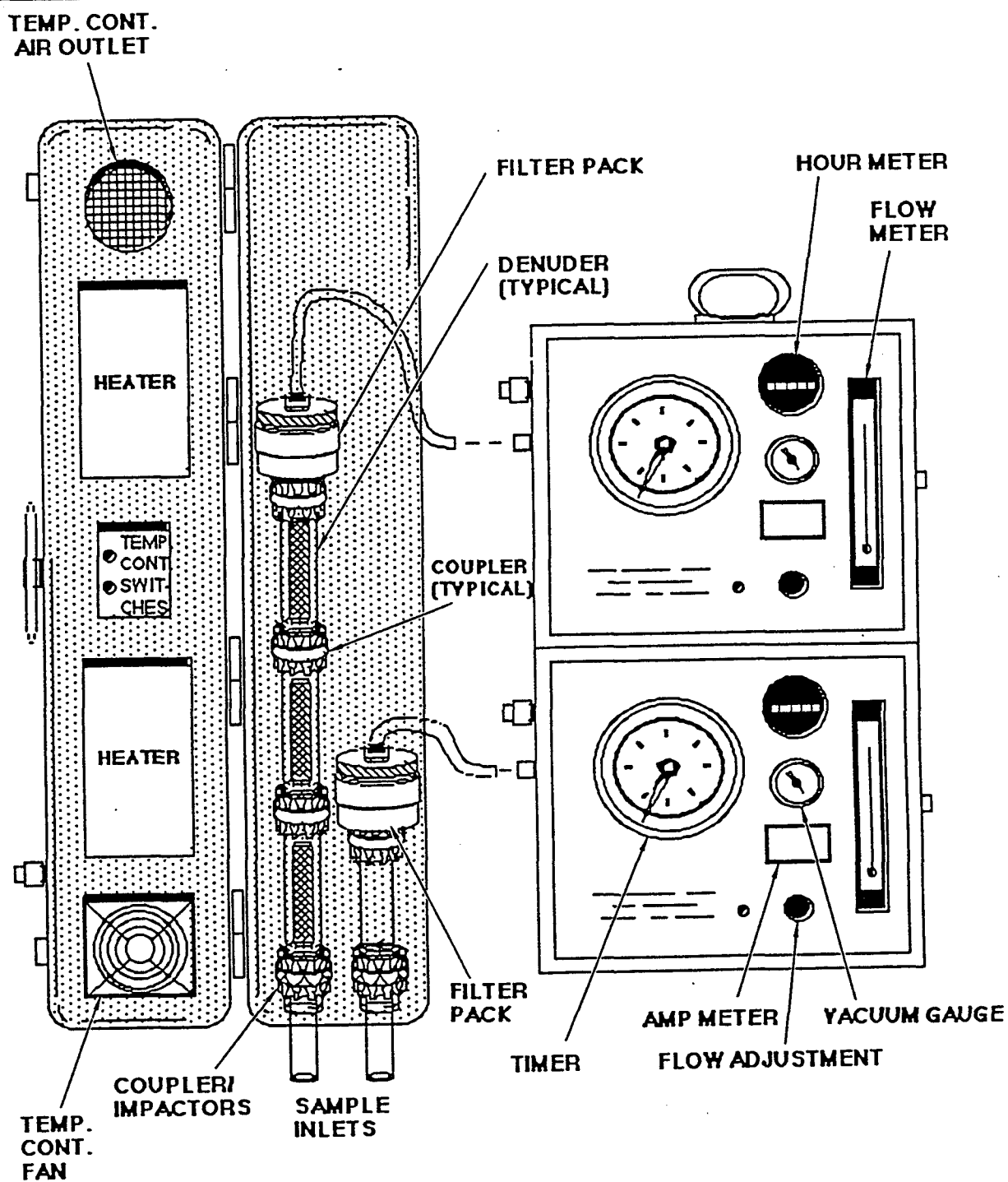


Figure 32. Annular Denuder System with Fine Particulate Sampler

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Spectra-Physics Integrator Program
for IC Analysis

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```
2 !SKIP INJECT THEN RESTART: GO TO 99
3 FI=2: F2=2: CA=1: !"COPY";: INPUT "V8=";: V9=1: V3=1: GO TO 25
5 FI=5: !"USE FILE 5": GO TO 18000
6 INPUT V4
7 ON V4 GO TO 24,65,3,5,30,255,220,229,205
24 F2=2: V3=0: CA=0
25 FI=F2: CS=1: IX=1: MC=0 : LC=1: RN=0: CW=.13: TFN"TS",1
26 T1=1.8: AC=1: AT=128 : PW=200: PT=5000: DP=3: MA=3260: MF=64
27 OF=-50: T1=.5: PW=6: PT=1000
29 !"CHECK PAPER AND CONDUCTIVITY ";
30 GOTO 98
31 IF RC>-.01 THEN 33
32 RN=-1*RC: !"NEXT RUN IS";RN;: RN=RN-1: GO TO 30
33 IF RC=0 THEN 2074
34 IF RC=999 THEN INPUT "SCALE=";V9: GOTO 30
35 IF RC=99 THEN ABORT
36 IF RC=1 THEN RA=1: GOTO 42
40 INPUT "INJECTIONS PER STATISTICS=";RA
42 V1=RN+1
43 FI=0: !"CHECK SAMPLER FOR LOAD AND RUN";
45 PLOT OFF: PT=5000: CA=0: INJECT : END
47 FI=F2: V2=RN+RC: !"SAMPLES FROM";V1"TO";V2"REPLICATES=";RA;
48 FI=F2: RT(4)=V8: RT(3)=V8*.87: RT(2)=V8*.62: RT(1)=V8*.34
49 CA=V3: PH=2: TT(8)=1.6+V8: TT(9)=2.9+V8: TT(10)=3.0+V8
50 PLOT A: INJECT : END
52 ! $10"PEAK HEIGHT(N)="$PHS(1)/1000,PHS(2)/1000,PHS(3)/1000"
55 TD(RN)=AC(1): TE(RN)=AC(2): TG(RN)=AC(3): TI(RN)=AC(4)
59 IF RA=1 THEN TD(RN)=-9.9
60 IF IX=1 THEN !;"RT SET",RT(1),RT(2),RT(3),RT(4) ELSE TD(RN)=-9.9
61 TA(RN)=LC(1): TZ(RN)=LC(2): TC(RN)=LC(3): TJ(RN)=LC(4)
62 IF RN=V2 THEN 190
64 GOTO 48
```

```
65 FI=2: RN=V2: PLOT OFF: INJECT : END
98 !"TOTAL NEW INJECTIONS=";
99 INPUT RC;
101 IF RC=-99 THEN 2: ELSE 31
190 V5=V5+RN : !"LOOP=75UL;COL=AS4A; S/N09317;PAST CAL=";V5
191 !"EL=.0018 nA2co3;.0017nAhco3=12.9US;10US=1v;fLOW=1.7ML/M=1200PSI
192 IF V3=0 THEN 210
193 !"X=ACTUAL +=CALCULATED": V5=0
194 TFN "T5",0 : ABORT: END
205 FI=F2: INPUT "SCALE=";V9
210 !TAB 15"PARTS PER MILLION (UG/ML)"
212 !" RUN NUMBER ",#9.03,CN(1),CN(2),CN(3),CN(4)
214 FOR K=V1 TO RN: !#9 K#9.3,TA(K)*V9,TZ(K)*V9,TC(K)*V9,TJ(K)*V9
215 IF TD(K)=-9.9 OR RA=1 THEN 218
216 !TAB 9 "AVERAGE" #10.3;TD(K)*V9,TE(K)*V9 ,TG(K)*V9, TI(K)*V9
218 A=A+(TA(K)*V9): B=B+(TZ(K)*V9): C=C+(TC(K)*V9): D=D+TJ(K)*V9
219 NEXT K: !TAB 15"SUM"#9.3 ;A,B,C,D: END
220 FI=9: GOTO 194
229 FI=8: F2=8: CA=1: !"COPY";: INPUT "V8=";V8;: V9=1: V3=1: GOTO 25
233 !Y;
255 INPUT "CHANGE END SAMPLE TO";V2: RC=V2-RN: GOTO 47
356 !"PEAK HEIGHTS=";: A=SIZE"PS": IF A>10 THEN A=10
358 FOR K=1 TO A : !#2 K #5 PSH(K)/1000"***";
360 NEXT K: ! : END
400 FOR I=1 TO 4 : ! KA(I),KB(I),KC(I),I: NEXT I: END
410 FOR I=1 TO 4 : !I;: INPUT KA(I),KB(I),KC(I): NEXT I: END
2050 STOP 64: END
2074 GOTO 6
8340 V="XF"GOSUB 8650NEXT !!GOTO 400
18635 !#8;T;: GOTO 18640
```