COMPREHENSIVE PERFORMANCE TEST REPORT AND NOTIFICATION OF COMPLIANCE FOR THE LIQUID CHEMICAL DESTRUCTOR

Prepared for:

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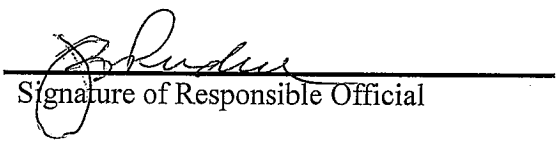
Franklin, TN

March 6, 2013

Revision 0

RESPONSIBLE OFFICIAL CERTIFICATION

I, the undersigned, am the responsible official as defined in 40 CFR Part 63 for the source for which this document is being submitted. I hereby certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements made and data contained in this document are true, accurate, and complete. Eastman's Liquid Chemical Destructor (PES B-248-2) is in compliance with the relevant standards of 40 CFR Part 63, Subpart EEE.

John G. Perdue	Utilities Division Superintendent
Name of Responsible Official	Title of Responsible Official
	3/6/13
Signature of Responsible Official	Date of Signature

EXECUTIVE SUMMARY

Eastman Chemical Company, Tennessee Operations (Eastman) owns and operates a hazardous waste incinerator at its facility in Kingsport, Tennessee designated as the liquid chemical destructor (LCD). The LCD is permitted as source B-248-2 in Eastman's Major Source Operating Permit (MSOP) 32. On September 12, 2008, Eastman submitted a Notification of Compliance that included results of the Comprehensive Performance Test (CPT) demonstrating that Eastman's LCD met the applicable final emission standards presented in 40 CFR Part 63 Subpart EEE -- National Emission Standards For Hazardous Air Pollutants From Hazardous Waste Combustors.

In accordance with 40 CFR §63.1207(d)(1), a periodic CPT must be commenced no later than 61 months after the date of commencing the previous CPT. Eastman planned to initiate testing on October 2, 2012 but was unable to achieve the target conditions. Eastman submitted a test extension request to TDEC on October 9, 2012 and a test extension was granted on October 16, 2012 until April 3, 2013. Eastman conducted the periodic CPT on December 11 and 12, 2012. Compliance with the applicable final standards in 40 CFR §63.1219 was demonstrated during the CPT. This CPT Report and Notification of Compliance is submitted to demonstrate compliance with the final standards of 40 CFR Part 63 Subpart EEE and to establish operating parameter limits to ensure ongoing compliance with these standards.

Stack gas emission samples were collected and analyzed for particulate matter, hydrogen chloride/chlorine, metals (chromium and lead), dioxins/furans, and total hydrocarbons. Compliance with the carbon monoxide emission standard was not demonstrated because Eastman has chosen to comply with the THC standard instead, as provided by 40 CFR §63.1219(a)(5). The CPT did not include demonstration of compliance with the Destruction and Removal Efficiency (DRE) standard because the DRE standard was demonstrated during the March 2003 CPT and is not required to be demonstrated again. Additionally, mercury emissions were not measured during the CPT because Eastman is using the maximum theoretical emission concentration approach to document on-going compliance with the mercury emission standard per 40 CFR §63.1207(m)(1).

The process and spiking streams sampled for the CPT included the Surrogate Waste feedstream, the Waste-Derived Fuel feedstream, the Waste EDA feedstream, an ash spike, a chlorine spike, and a metals spike. These streams were analyzed for multiple parameters.

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LIST OF ACRONYMS

12-HRA	12-Hour Rolling Average
APCS	Air Pollution Control System
AST	Alliance Source Testing, LLC from Decatur, Alabama
ASTM	ASTM International (formerly American Society for Testing and Materials)
AWFCO	Automatic Waste Feed Cutoff System
B-248	Building 248 at Eastman Chemical Company, Tennessee Operations
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CMS	Continuous Monitoring System
CMS PET	Continuous Monitoring System Performance Evaluation Test
CMS PETP	Continuous Monitoring System Performance Evaluation Test Plan
CPMS	Continuous Parameter Monitoring System
COA	Certificate of Analysis
COF	Certificate of Formulation
CPT	Comprehensive Performance Test
DCS	Distributed Control System
D/F	Dioxins/Furans
DRE	Destruction and Removal Efficiency
Eastman	Eastman Chemical Company, Tennessee Operations
EPA	Environmental Protection Agency
ESL	Environmental Services Laboratory
HHV	Higher Heating Value
HRA	Hourly Rolling Average
HWC MACT	Hazardous Waste Combustor Maximum Achievable Control Technologies
ICP-AES	Inductively Coupled Plasma-Atomic Emission Spectrometry
ID	Induced Draft
LCD	Liquid Chemical Destructor
L/G	Liquid-to-Gas Ratio
LVM	Low Volatility Metals
MTEC	Maximum Theoretical Emission Concentration
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOC	Notification of Compliance
OMA	One-Minute Average
OPLs	Operating Parameter Limits
PCDD/PCDF	Dioxins/Furans
PI	Plant Information
PM	Particulate Matter
POHCs	Principle Organic Hazardous Constituents
QA/QC	Quality Assurance/Quality Control
QAO	Quality Assurance Objective
QAPP	Quality Assurance Project Plan
RE	Removal Efficiency
SGS	SGS Analytical Perspectives of Wilmington, NC
SVM	Semi-Volatile Metals

LIST OF ACRONYMS (Continued)

TDAPC	Tennessee Division of Air Pollution Control
TDEC	Tennessee Department of Environment and Conservation
TDS	Total Dissolved Solids
TEQ	Toxicity Equivalence Quotient
THC	Total Hydrocarbons (as propane)
TSS	Total Suspended Solids
US EPA	United States Environmental Protection Agency
WESP	Wet Electrostatic Precipitator

LIST OF UNITS AND MEASUREMENTS

%	Percent
^{o}F	Degrees Fahrenheit
acfm	Actual cubic feet per minute
Btu/lb	British thermal units per pound
dscfm	Dry standard cubic feet per minute
dP	Differential pressure
dscm	Dry standard cubic meters
ft^3	Cubic feet
gpm	Gallons per minute
gr/dscf	Grains per dry standard cubic foot
in wc	Inches of water column
lb/hr	Pounds per hour
µg/dscm	Micrograms per dry standard cubic meter
µg/dscm, 7% O_2	Micrograms per dry standard cubic meter, corrected to 7% O_2
ng TEQ/dscm	Nanograms TEQ per dry standard cubic meter
ppmdv	Parts per million on a dry volume basis
ppmdv@ 7% O_2	Parts per million dry volume corrected to 7% O_2
ppmv	Parts per million volume
psig	Pounds per square inch gauge
SUS	Saybolt Universal Seconds
wt %	Percent by weight

LIST OF CHEMICAL SYMBOLS AND FORMULAS

As	Arsenic
Be	Beryllium
Cd	Cadmium
CO	Carbon Monoxide
CO_2	Carbon Dioxide
Cl_2	Chlorine Gas
Cr	Chromium
EDA	Ethylidene Diacetate
HCl	Hydrogen Chloride
Hg	Mercury
O_2	Oxygen
PCDD	Polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans
Pb	Lead
TCDD	Tetrachlorodibenzo-*p*-dioxin

1.0 INTRODUCTION

1.1 Facility and Regulatory Overview

Eastman Chemical Company, Tennessee Operations (Eastman) owns and operates a hazardous waste incinerator at its facility in Kingsport, Tennessee designated as the liquid chemical destructor (LCD). The LCD is permitted as source B-248-2 in Eastman's Major Source Operating Permit (MSOP) 32. The LCD is subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Hazardous Waste Combustors (HWC), codified as 40 CFR Part 63 Subpart EEE (§63.1200 to §63.1221). The NESHAP specifies emissions standards that reflect emissions performance of Maximum Achievable Control Technologies (MACT) and is commonly referred to as the HWC MACT. Eastman has a Title V Air Permit and has been identified as a major source based on the potential to emit regulated air pollutants as identified as 40 CFR §70.2.

On October 12, 2005, the U.S. Environmental Protection Agency (EPA) promulgated the "Final Standards for Hazardous Air Pollutants for Hazardous Waste Combustors; Final Rule" (70 FR 59402). Among other things, this rule established final HWC MACT emission standards for hazardous waste incinerators (see 40 CFR §63.1219). Facilities must be in compliance with the final standards by October 14, 2008, unless an extension of the compliance date is granted. Compliance with the standards is demonstrated through the conduct of a Comprehensive Performance Test (CPT) according to 40 CFR §63.1207(b)(1). Eastman demonstrated initial compliance with the final standards by conducting a CPT on October 3 and 4, 2007.

In accordance with 40 CFR §63.1207(d)(1), a periodic CPT must be commenced no later than 61 months after the date of commencing the previous CPT. Eastman planned to initiate testing on October 2, 2012 but was unable to achieve the target conditions. Eastman submitted a test extension request to the Tennessee Department of Environment and Conservation (TDEC) on October 9, 2012 and a test extension was granted on October 16, 2012 until April 3, 2013. Eastman conducted the periodic CPT on December 11 and 12, 2012. This CPT Report and Notification of Compliance (NOC) is submitted to document that Eastman's LCD is in compliance with the final emissions standards specified in 40 CFR §63.1219. Operating parameter limits (OPLs), along with the supporting CPT test results and methods are also presented in this document.

1.2 Objectives of the Comprehensive Performance Test

The CPT consisted of three replicate runs performed at one test condition. The CPT was conducted to demonstrate the performance of the LCD for controlling emissions of particulate

matter (PM), hydrogen chloride/chlorine (HCl/Cl_2), low volatility metals (LVM) (as chromium), semi-volatile metals (SVM) (as lead), dioxins/furans (D/F), and total hydrocarbons (THC).

The system's performance during the CPT with respect to the HWC MACT emission limits is summarized in Table 1-1. These results establish that the LCD system sufficiently controlled emissions to levels required by the standards. This demonstration of performance assures that emission limits will not be exceeded, provided that the LCD is operated within the OPLs proposed in this report.

As stated in the CPT Plan, compliance with the carbon monoxide (CO) emission standard was not demonstrated because Eastman has chosen to comply with the THC standard instead, as provided by 40 CFR §63.1219(a)(5).

The CPT did not include demonstration of compliance with the Destruction and Removal Efficiency (DRE) standard because the DRE standard was demonstrated during the March 2003 CPT. According to 40 CFR §63.1206(b)(7), facilities must document compliance with the DRE standard only once provided that they do not modify the source after the DRE test in a manner that could affect the ability of the source to achieve the DRE standard. No changes to the LCD that would affect DRE performance have been made since the March 2003 CPT.

Additionally, mercury (Hg) emissions were not measured during the CPT because Eastman is using the maximum theoretical emission concentration (MTEC) approach to document on-going compliance with the mercury emission standard per 40 CFR §63.1207(m)(1).

In accordance with the Continuous Monitoring System Performance Evaluation Test Plan (CMS PETP), all CMS instruments were calibrated prior to conducting the CPT. Calibration results for the Continuous Parameter Monitoring System (CPMS) instruments and Continuous Emissions Monitoring System (CEMS) are presented in Appendix II and Appendix III, respectively.

1.3 Scope and Purpose

This document reports the results of the LCD's CPT and CMS performance evaluation test (PET). The CPT and CMS PET were conducted according to the CPT Plan and CMS PETP submitted on October 4, 2011 and approved on April 9, 2012. The purpose of this document is to:

- Describe the activities associated with the CPT, including emissions, feedstream sampling and analysis, and process operating conditions;

Table 1-1
CPT Emissions Results Summary

Parameter	Units	Average	HWC MACT Emission Limit
Carbon Monoxide [a]	ppmv, dry, corrected to 7% O_2	N/A	100
Total Hydrocarbons (THC as propane) [a, b]	ppmv, dry, corrected to 7% O_2	0.06	10
Particulate Matter	gr/dscf, corrected to 7% O_2	0.004	0.013
Hydrogen Chloride/Chlorine	ppmv, dry, corrected to 7% O_2 (Cl^- equivalent)	23	32
Mercury [c]	µg/dscm, corrected to 7% O_2	N/A	130
Semi-Volatile Metals (SVM includes cadmium and lead)	µg/dscm, corrected to 7% O_2	< 55.3	230
Low-Volatility Metals (LVM includes arsenic, beryllium, and chromium)	µg/dscm, corrected to 7% O_2	< 43.3	92
Dioxins/Furans (PCDD/PCDF) [d]	ng/dscm TEQ, corrected to 7% O_2	0.032	0.40
DRE of POHCs [e]	%	N/A	99.99%

Notes:

[a] Eastman has chosen to continuously monitor THC rather than CO, as provided by 40 CFR §63.1219(a)(5).

[b] The value shown for THC is the maximum HRA value from the D/F sampling train timeframe (Runs 1-3) and the HCl/Cl_2 sampling train timeframe (Run 4).

[c] Eastman is using the maximum theoretical emission concentration (MTEC) approach to document on-going compliance with the mercury emission standard per 40 CFR §63.1207(m)(1). Therefore, emissions of mercury were not measured during the CPT.

[d] TEQ is toxic equivalent quotient to 2,3,7,8-TCDD. The results presented represent the theoretical worst-case emissions.

[e] In accordance with 40 CFR §63.1206(b)(7), Eastman is using the results from the March 2003 CPT to demonstrate compliance with the DRE standard.

- Present the results of the CPT;
- Discuss non-standard CPT activities or deviations from the approved plan and the impact of those activities on data quality;
- Propose revised OPLs for the LCD;
- Present results of the CMS PET; and
- Comply with NOC requirements.

The specific regulatory requirements included in the HWC MACT NOC are presented in Table 1-2. The section that addresses each requirement is also provided in Table 1-2.

Table 1-2
Regulatory Requirements for the Notification of Compliance

40 CFR Citation	Description	Report Section
§63.7(g)(1)	Submit results of a performance test that include: analysis of samples, determination of emissions, and raw data.	5.0, Appendix I
§63.9(h)(3); Title V Permit Condition B4.	NOC must be certified for truth, accuracy, and completeness by the responsible official. The NOC shall list §63.9(h)(2)(i)(A) - §63.9(h)(2)(i)(G). (Since the Title V permit does not specify requirements for the NOC, Eastman will follow the requirements in §63.9(h)(2)).	Page i
§63.9(h)(2)(i)(A)	Methods used to determine compliance	4.0
§63.9(h)(2)(i)(B)	Performance test results, opacity or visible emission observations, CMS Performance Evaluations, and/or monitoring procedures or methods used	3.0, 4.0, 5.0, Appendix I
§63.9(h)(2)(i)(C)	Methods for determining continuing compliance, including a description of monitoring and reporting requirements and test methods	6.0
§63.9(h)(2)(i)(D)	Type and quantity of Hazardous Air Pollutants (HAPs) emitted by the source reported in appropriate units and averaging times	1.2, 5.0
§63.9(h)(2)(i)(E)	Analysis demonstrating whether the affected source is a major source (using emissions data generated for this notification)	1.1, 5.0, Page ii
§63.9(h)(2)(i)(F)	Description of Air Pollution Control Equipment (APCE) (or method) for each emissions point, including each control device (or method) for each HAP and the control efficiency (%) for each control device (or method)	2.0, Tables 5-2, 5-3, 5-4, 5-5
§63.9(h)(2)(i)(G)	Statement by owner or operator of whether source has complied with the relevant standard or other requirements	Page i
§63.10(d)(2)	Performance test results	5.0, Appendix I
§63.10(e)(2)(i)	Submit CMS Performance Evaluation Report simultaneously with Performance Test Results	3.5, Appendix II and III
§63.1206(b)(11)	Calculation of Hazardous Waste Residence Time	3.1
§63.1206(c)(1)(ii)	Contain Operating Requirements of §63.1206(c) and §63.1209	6.0
§63.1206(c)(5)(ii)	Specify the method to control combustion system leaks, and if applicable, specify the monitoring and recording frequency of the pressure monitor, and its Automatic Waste Feed Cut Off (AWFCO) integration.	Table 6-5
§63.1207(j)(1)(i)	Within 90 days of CPT completion, the NOC must be postmarked documenting compliance with emission standards and CMS requirements, and identifying OPLs under §63.1209.	page i
§63.1207(m)	Mercury Maximum Theoretical Emission Concentration (MTEC)	1.2, Table 6-3
§63.1209(q)(1)(ii)	Specify the otherwise applicable requirements as a mode of operation	N/A

2.0 PROCESS DESCRIPTION

Hazardous and non-hazardous waste liquids are treated in the LCD. The LCD consists of the following systems:

- Waste receiving and storage system;
- Waste feed system;
- Combustion system;
- Air pollution control system (APCS);
- Instrumentation and control system;
- Automatic waste feed cutoff system (AWFCO); and
- Continuous emissions monitoring system.

A process schematic is included as Figure 2-1.

Liquid waste materials for treatment in the LCD are received in tanker trailers and in "dumpsters." These materials are stored in one of four vertical waste chemical storage tanks, stored in one of three horizontal storage tanks, or fed directly from the trailer or "dumpster" to the LCD.

The waste liquids are routed through a switching station, which allows feeding to the waste burners or nozzles from multiple feed locations. Wastes pass from the switching station through feed lines. The waste feedrate in each line is monitored by a flowmeter and is regulated by means of a control valve. A schematic of the LCD feed system is shown in Figure 2-2.

The LCD accepts only pumpable liquids for treatment. Liquid wastes are injected into the combustion chamber through three nozzles, while fuel oil can be burned in the main burner as supplemental fuel. One of the waste feed nozzles is air atomized; the other two utilize steam atomization. Liquid wastes can be fed at rates up to 3,600 lb/hr to the air-atomized nozzle and up to 8,600 lb/hr to each of the steam atomized nozzles. Combustion air can be added to the system through one of the waste nozzles, the main burner, a dedicated air nozzle, and induced air ports around the burners.

The combustion chamber is a horizontal, rectangular, refractory-lined chamber. The combustion chamber is operated at a vacuum (draft) at all times. The resulting combustion gas exits the combustion chamber through a refractory-lined duct and enters the air pollution control system.

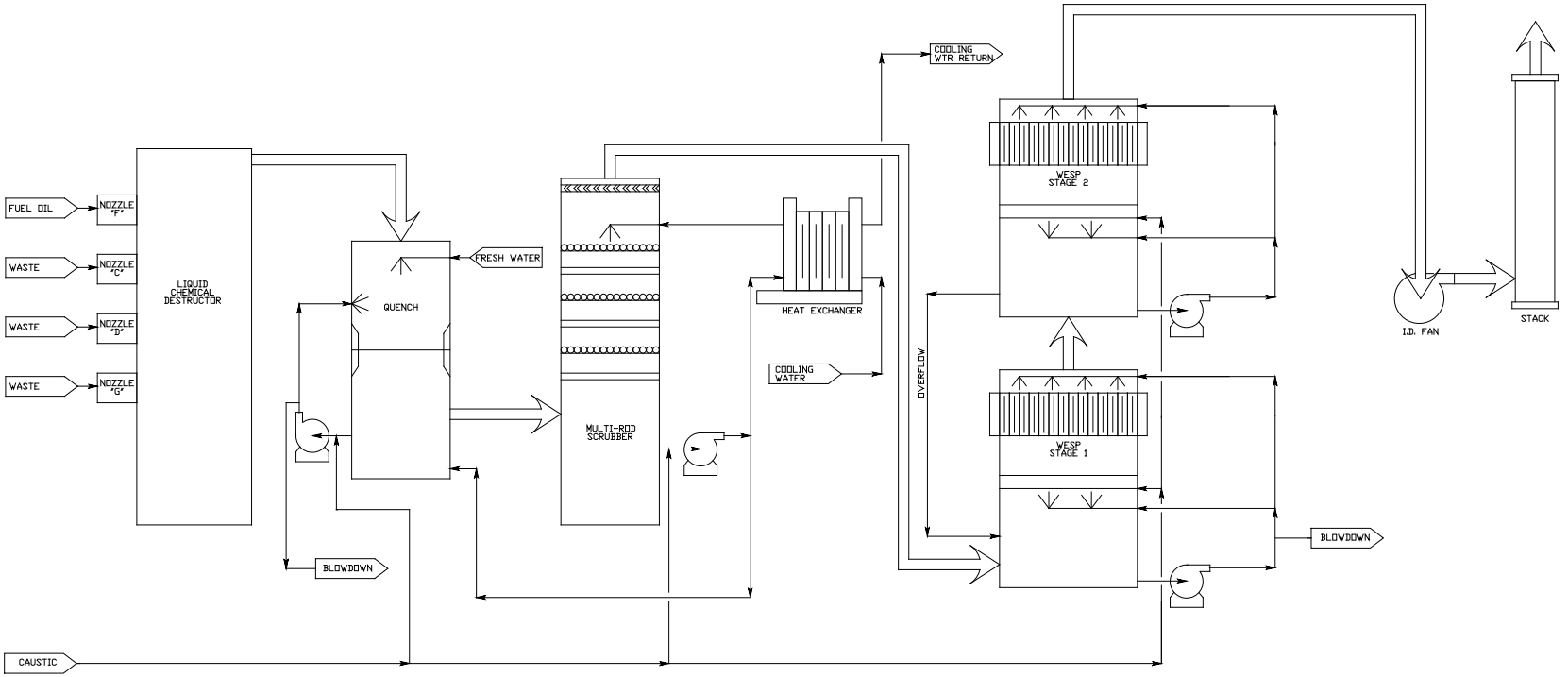


Figure 2-1
Process Flow Diagram for the Liquid Chemical Destructor System

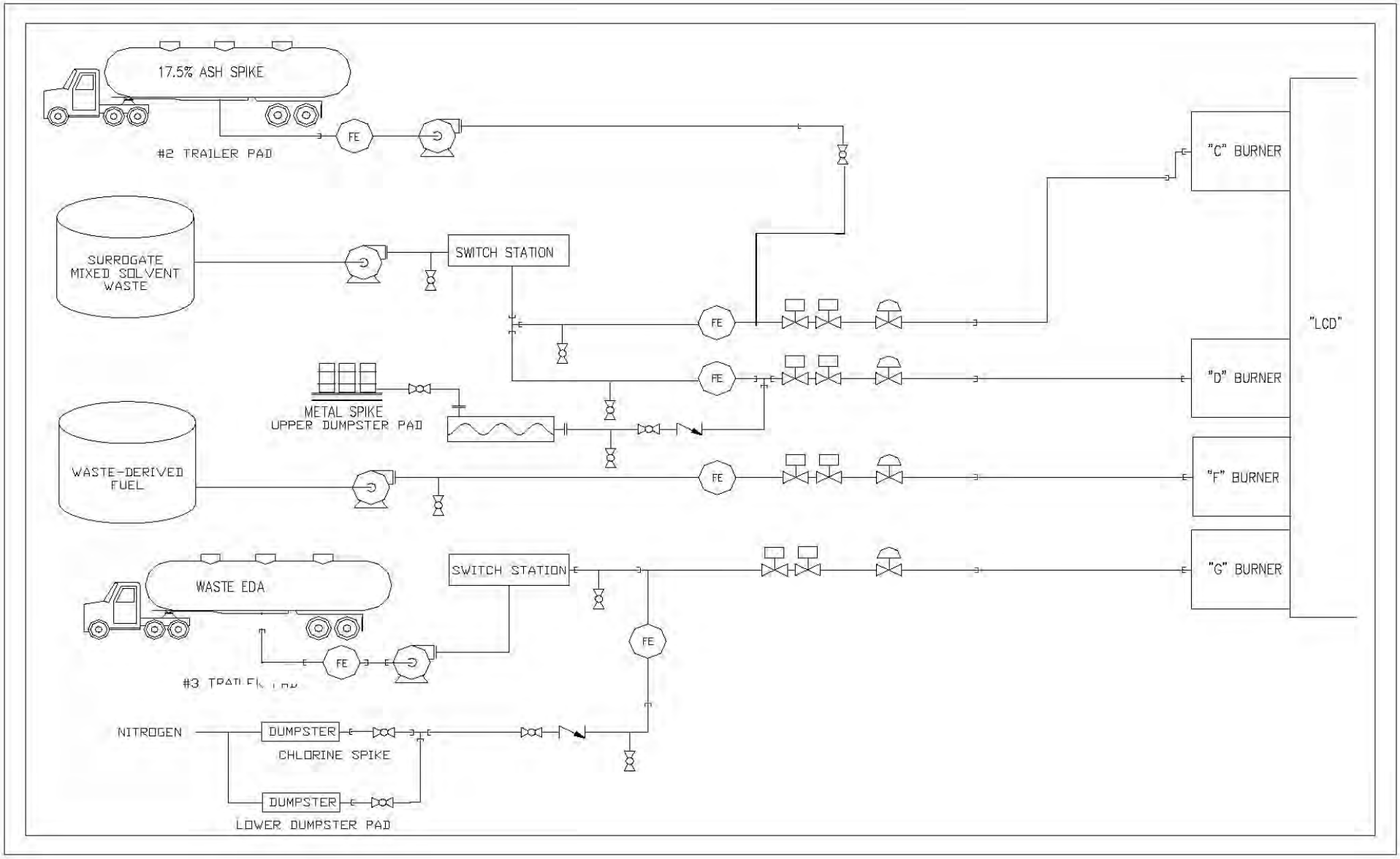


Figure 2-2
Liquid Chemical Destructor Feed System Schematic

Gas from the combustion chamber is ducted to the air pollution control system for conditioning and removal of particulate matter, toxic metals and acid gas. The ID fan maintains a vacuum throughout the combustion system and APCS, and the treated gas is released to the atmosphere through a stack. The APCS consists of the following components:

- Quench chamber;
- Condensing multi-rod scrubber;
- Two wet electrostatic precipitators in series, each of which is preceded by an irrigated marble bed scrubber; and
- Induced draft (ID) fan.

Hot combustion gas enters the quench chamber where it is cooled by water sprays to adiabatic saturation temperature. The saturated gas enters the multi-rod scrubber and flows upward through a series of six rod decks. Each deck consists of closely spaced rods. Recirculation water flows downward through the chamber and creates a froth layer at each of the rod decks. As the gas flows upward through this froth layer, acids and large particles are removed by absorption and inertial impaction. The recirculation water is cooled in a plate and frame heat exchanger and provides direct contact cooling of the gas. The gas is subcooled to temperatures as low as 120°F, causing condensation of excess water vapor. The subcooling and condensation decrease the volumetric flowrate of gas and create flux force/condensation scrubbing effects. These effects result in particle growth, making particles easier to remove in the downstream marble bed/wet electrostatic precipitator (WESP) control devices.

Subcooled, saturated gas exits the multi-rod scrubber and enters the bottom of the first of two WESPs in series. The gas flows upward through a distribution bed of marbles. Recirculation water is sprayed upward onto the marble bed, creating a froth zone immediately above the bed. The marble bed provides even distribution of the gas before it enters the electrode tubes. The intimate gas-liquid contact in the marble bed also provides additional surface area for acid gas absorption and particle removal via inertial impaction.

Gas exits the marble bed and flows upward through electrode tubes. A charging electrode is suspended in the center of each tube. The charging electrode ionizes the gas stream, which in turn charges the suspended particles. The charged particles are attracted to the wall of the tube, which acts as a collecting electrode. The tubes are surrounded by cooling liquid, providing non-contact cooling of the gas stream. The gas is slightly subcooled causing condensation which collects on the tube walls, flushing the captured particles from the system as it flows down the tube walls.

The gas exits the first WESP and enters an identical marble bed/WESP that provides an additional level of particulate removal. The cleaned, cooled gas exits the second WESP and is drawn through a variable speed ID fan, which provides the motive force throughout the APCS and combustion system. The ID fan exhausts to a stack.

The LCD is equipped with a distributed control system (DCS) that is connected to field instruments and controls. The DCS provides for monitoring, control, and recording of process parameters. An AWFCO system is integral to the DCS and shuts off waste feeds should a process parameter exceed its permitted value.

The concentrations of THC and O_2 in the stack gas are continuously monitored and recorded by a CEMS. For compliance with the HWC MACT Standard, Eastman will monitor THC rather than CO, per 40 CFR §63.1219(a)(5)(ii). The CEMS is integrated with the DCS and AWFCO system.

3.0 TESTING PROGRAM OVERVIEW

The purpose of this section is to provide an overview of the CPT. This overview includes a description of the CPT protocol, the CPT operating conditions, and the CPT execution. The CPT was executed in accordance with the approved CPT Plan, except as discussed in Section 2.3 of the Sampling and Analysis Report in Appendix I. The deviations from the CPT Plan and Quality Assurance Project Plan (QAPP) are discussed in Section 2.4 of the Sampling and Analysis Report in Appendix I. Additional details for sampling activities are provided in Section 4.0.

3.1 CPT Protocol

The CPT consisted of one test condition with three replicate runs. The performance test was designed to demonstrate worst-case conditions for the following pollutants:

- Particulate matter (PM);
- Hydrogen chloride/chlorine (HCl/Cl_2);
- Metals (chromium and lead);
- Dioxins and Furans (D/F); and
- Total hydrocarbons (THC).

Table 3-1 presents a summary of the CPT protocol and the operating conditions under which the CPT was conducted.

Maximum gas flowrate is a worst-case condition for all pollutants. This condition represents minimum residence time in the combustion chamber, which minimizes the destruction of organic compounds as well as minimizing the time that the APCS will have to act on the pollutants. The residence time was calculated in Table 5-1 of the CPT Plan to be approximately 1.6 to 1.7 seconds using the LCD volume (2382 ft^3) divided by the maximum gas flowrate (89,000 ft^3/min):

$$2382\ ft^3 \div 89{,}000\ ft^3/min * 60\ sec/min = \sim 1.6\ seconds$$

Maximum feedrate of the ash, chlorine, and metals will maximize the potential emissions of these pollutants. The minimum combustion chamber temperature will minimize organics destruction. A high chlorine feedrate and low combustion temperature are worst-case conditions for the formation of polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF).

Table 3-1
LCD CPT Protocol Summary

Key Operating Conditions	Emission Test Parameters	Spiking Materials	Feed and Process Sampling
• Minimum combustion chamber temperature • Maximum total (pumpable) hazardous waste feedrate to LCD • Maximum total ash feedrate • Maximum total (pumpable) metals feedrate (LVM and SVM) • Maximum total chlorine feedrate (organic plus inorganic) • Minimum rod scrubber recirculation liquid/gas ratio • Maximum rod scrubber water solids content (as calculated in the DCS) • Maximum rod scrubber exit gas temperature • Minimum WESP #1 recirculation liquid/gas ratio • Minimum WESP #2 recirculation liquid/gas ratio • Minimum WESP #2 recirculation pH • Minimum WESP power/gas ratio for WESP #2 • Maximum WESP #2 exit gas flow, dry basis	• PM • HCl/Cl_2 • Metals (Cr and Pb) • PCDD/PCDF • THC	• Ash as NaCl in aqueous solution • Metals as Cr and Pb acetates • Chlorine as perchloroethylene & methanol blend	<u>Waste Feedstreams</u> ➢ Surrogate Waste ➢ Waste-Derived Fuel ➢ Waste EDA • HHV • Ash • Chlorine • Metals (Cr, Pb) • Viscosity <u>Ash Spike</u> • TSS/TDS • Metals (Cr, Pb) <u>Metals Spike</u> • Archived Samples <u>Chlorine Spike</u> • Archived Samples

Minimum pHs and liquid-to-gas (L/G) ratios are worst-case parameters for HCl/Cl_2 removal. A high rod scrubber exit gas temperature reduces PM and metals removal efficiencies. Minimum WESP power-to-gas ratio is a worst-case parameter for emissions of particulate and metals.

The test was conducted using an actual waste stream, Waste EDA (which is primarily ethylidene diacetate), and a Surrogate Waste feedstream. The Surrogate Waste feedstream was formulated to be representative of the alcohol, ketone, and organic acid contents typically found in many waste streams burned in the incinerator. The surrogate stream was comprised of approximately 35% (±5%) methanol, 20% (±5%) acetone, 25% (±5%) acetic acid, and 20% (±5%) water. A liquid Waste-Derived Fuel feedstream was also fed to provide supplemental thermal input.

Three additional streams were fed to the incinerator to provide spiking of chlorine, ash, and metals. Perchloroethylene and methanol comprise the feedstream referred to as the chlorine spike. The ash spike fed to the incinerator was an aqueous NaCl solution. This stream also provided chloride spiking. The metals spiking was achieved by feeding an aqueous solution of chromium and lead acetates to the LCD. Chromium is representative of the LVM group and lead is representative of the SVM group. The waste streams and spikes fed to the incinerator during the CPT are listed and described in Table 3-2.

Figure 2-2 shows how waste was introduced to the incinerator during the test. The ash spike was pumped from a tanker trailer to the C burner. The Surrogate Waste was pumped from a waste tank and the feed was split between the C and D burners. The metal spike was pumped into the line downstream of the flow element monitoring the Surrogate Waste feed to the D burner. The metal spike feed tank rested on a scale so that the feedrate could be determined from the rate of weight loss. The Waste EDA was pumped from the #3 trailer pad to the G burner. The chlorine spike was also fed to the G burner. Manual valves were adjusted to control flow of Waste EDA and chlorine spike.

Multiple samples of these wastes and spikes were collected during each run of the test. The process stream and stack gas sampling and analysis activities are presented in Section 4.0.

During the test, stack sampling was performed to determine the emission levels of PM, HCl/Cl_2, chromium, lead, and PCDD/PCDF emissions. PCDD and PCDF emissions are referred to as dioxins/furans, or D/F emissions. The stack gas concentration for THC was also recorded. Emission performance results are presented in Section 5.0.

Table 3-2
CPT Waste and Spike Feeding

Feedstream	Description	Feed Location
Surrogate Waste [a]	Methanol Acetone Acetic Acid Water	C & D Burners
Waste EDA	Acetic Anhydride Ethylidene Organic Tars	G Burner
Chlorine Spike	Perchloroethylene (87 wt %) Methanol (13 wt %)	G Burner
Metals Spike	Chromium and Lead Acetates in Aqueous Solution (5.27 wt % Cr, 2.07 wt % Pb)	D Burner
Ash Spike	Sodium Chloride in Aqueous Solution (~ 17 wt % NaCl)	C Burner
Waste-Derived Fuel	High Btu Waste-Derived Fuel	F Burner

Notes:
[a] The CPT Plan stated that the surrogate waste stream would be composed of isopropanol, ethanol, acetone, acetic acid, and water. The actual surrogate waste stream selected for the CPT was composed of methanol, acetone, acetic acid, and water.

3.2 CPT Operating Conditions

The CPT was conducted under specified process operating conditions to ensure that measured emissions would not exceed allowable limits. Testing was performed using actual waste and fuel feeds as well as a surrogate waste stream. Additionally, the feedrates of specified constituents were enhanced to meet the test objectives using ash, chlorine, and metal spikes.

The process operating conditions were monitored and recorded by the CMS (except for the metal spike feedrate and the waste EDA feedrate). The CMS continuously samples parameters and evaluates the detector response once every 15 seconds. The CMS uses the 15-second values to compute one-minute averages for each parameter. These one-minute averages are recorded in a database referenced as the Plant Information (PI) System. It should be noted that data for the metal spike feedrate and the waste EDA feedrate were not monitored or recorded by the CMS. During the test, the metal spike feed tank was resting on a certified scale. The mass of the metal spike solution was recorded once per minute. The metal spike feedrate was determined as the time rate of change of the mass values. Appendix IV presents examples of the calculations used for determining operating conditions that were not recorded in the PI system. The feedrate for the Waste EDA was determined by using a portable flowmeter and manually logging the flowrate every minute. Calibration records for the portable Micromotion flowmeter are included in Appendix II.

Target operating conditions are presented in Table 6-3 of the approved CPT Plan. The demonstrated operating parameters were reasonably close to the target operating conditions. A comparison of the target values and the average of the one-minute average values from the CPT can be seen in Table 3-3. The values shown in this table are not the regulatory OPL values. The regulatory OPL values are shown in Section 6.0. Detailed operating parameter data collected during the CPT are included as Appendix V.

3.3 CPT Chronology

The CPT was conducted on December 11 and 12, 2012. The CPT successfully met all test objectives defined in the CPT Plan. A chronology of the CPT is provided in Table 3-4. Additional sampling and analysis details are included in the Sampling and Analysis Report in Appendix I.

Mr. John Webb, a representative from the TDEC Johnson City Field Office, was onsite on December 11 to observe the use of the Method 29 metals sampling train.

Table 3-3
CPT Operating Conditions

Parameter	Units	Target Value [a]	Run 1 [b] 12/11/12 (12:10-15:23)	Run 2 [b] 12/11/12 (16:12-19:50)	Run 3 [b] 12/11/12 (20:41-23:50)	Run 4 [b] 12/12/12 (15:00-17:09)
Minimum Combustion Chamber Temperature	°F	1,600	1,667	1,670	1,672	1,673
Maximum Total Hazardous (Pumpable) Waste Feedrate	lb/hr	Up to 9,000	6,998	7,121	7,209	7,023
Maximum Total Ash Feedrate [c]	lb/hr	~350	366	372	371	374
Maximum Total (Pumpable) Metals Feedrates [c]						
LVM (as Chromium)	lb/hr	~5.0	5.5	5.0	5.3	0.2
SVM (as Lead)	lb/hr	~2.0	2.1	1.9	2.0	0.0016
Maximum Total Chlorine Feedrate [c]	lb/hr	~500 [d]	509	515	504	506
Minimum Rod Scrubber Liquid/Gas Ratio	gal/1000 acfm	60 - 65	77	77	77	77
Maximum Quench Blowdown Solids Concentration	%	3	2.1	2.1	2.1	2.0
Maximum WESP #1 Blowdown Solids Concentration	%	4	3.4	3.5	3.3	3.4
Minimum WESP #1 Liquid/Gas Ratios	gal/1000 acfm	~10	11.0	11.1	10.7	10.8
Minimum WESP #2 Liquid/Gas Ratios	gal/1000 acfm	~10	11.0	11.0	10.9	10.5
Minimum WESP #2 Recirculation Liquid pH	std. Units	<3.0	4.9	3.4	4.5	4.0
Minimum WESP #2 Power/Gas Ratio	watts /1000 acfm	240 - 340	291	278	271	221
Maximum WESP #2 Exit Gas Flow	dscfm	17,000 [e]	16,809	16,806	16,838	16,876

Notes:

[a] Target values are from Table 6-3 of the LCD CPT Plan.

[b] Values shown for Runs 1-3 are the averages of the OMA values for each run of the D/F sampling train. Values shown for Run 4 are the average of the OMA values for HCl/Cl_2 sampling train. These are not the OPLs that will be established. See Section 6.0 for the proposed OPLs.

[c] The feedrate calculation uses one-half the detection limit for analytical results below the detection limit.

[d] Organic chlorine only. Additional chlorine was fed as part of the ash spike.

[e] Not including WESP purge air.

Table 3-4
Operating and Sampling Chronology

Run/Date/Time	Event
Run 1 - 12/11/12	
12:10	Begin Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
	Method 23 - Dioxin/Furan
13:10-13:25	Sampling Paused for Port Changes
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
13:31-13:36	Sampling Paused to Adjust Train on Monorail
	Method 23 - Dioxin/Furan
13:45-13:51	Sampling Paused Due to Sample Pump Replacement
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
13:45-13:53	Sampling paused for Port Changes
	Method 23 - Dioxin/Furan
14:31	Complete Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
15:23	Complete Sampling
	Method 23 - Dioxin/Furan
Run 2 - 12/11/12	
16:12	Begin Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
	Method 23 - Dioxin/Furan
17:12-17:22	Sampling Paused for Port Changes
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
17:42-18:20	Sampling Paused for Port Changes and to Replace Probe and Filter
	Method 23 - Dioxin/Furan
18:22	Complete Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
19:50	Complete Sampling
	Method 23 - Dioxin/Furan

Table 3-4
Operating and Sampling Chronology (continued)

Run/Date/Time	Event
Run 3 - 12/11/12	
20:41	Begin Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
	Method 23 - Dioxin/Furan
20:51-20:55	Sampling Paused Due to Sample Pump Replacement
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
21:45-21:57	Sampling Paused for Port Changes
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
22:11-22:20	Sampling Paused for Port Changes
	Method 23 - Dioxin/Furan
22:57	Complete Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
23:50	Complete Sampling
	Method 23 - Dioxin/Furan
Run 4 - 12/12/12 (HCl/Cl_2 only)	
15:00	Begin Sampling
	Method 26A - HCl/Cl_2
15:26-15:30	Sampling Paused to Allow EDA and Chlorine Spike to Stabilize
	Method 26A - HCl/Cl_2
16:04-16:09	Sampling Paused for Port Change
	Method 26A - HCl/Cl_2
17:09	Complete Sampling
	Method 26A - HCl/Cl_2

Prior to conducting the CPT, a CMS PET was conducted according to the approved CMS PETP. The CPMS calibration data are presented in Appendix II. Calibration results for the Continuous Emissions Monitoring System (CEMS) are presented in Appendix III. All calibrations were within acceptable limits.

Section 4.0 provides a summary of the CPT sampling and analysis activities. Additional details are provided in the Sampling and Analysis Report in Appendix I. The data packages for each emission parameter and feedstream are included as appendices to the Sampling and Analysis Report.

Facility personnel began establishing CPT feedstream rates, except for the metal spike, and operating conditions several hours before the CPT sampling began. The introduction of the metal spike was delayed to conserve quantities until all other target operating conditions for the test were established. Operating conditions were kept at steady-state for at least 30 minutes prior the start of testing and the metals spike feed was initiated at least 15 minutes prior to the start of testing. After all operating conditions were established and steady-state was achieved, including the metal spike feedrate, Run 1 was commenced at 12:10. Similarly, steady-state test conditions were established prior to the commencement of each subsequent test run. Table 3-4 presents a chronology of test events.

Alliance Source Testing, LLC (AST) from Decatur, Alabama conducted stack sampling using Methods 1 through 4 and Method 23/ALT-052 (D/F). Once the samples were collected, AST packaged and shipped the samples to SGS Analytical Perspectives (SGS) of Wilmington, NC for analysis of PCDDs and PCDFs.

Eastman's Environmental Services Laboratory (ESL) conducted the stack gas sampling and analysis for particulate matter (PM) and hydrogen chloride/chlorine (HCl/Cl_2). The metals sampling was conducted by Eastman's ESL and was analyzed by TestAmerica Laboratories, Inc. (TestAmerica).

Eastman's B-248 personnel collected the process samples and Eastman's ESL personnel composited the samples. Pace Analytical Services, Inc. (Pace Analytical) performed total chromium and lead analysis by inductively coupled plasma atomic emission spectrometry (ICP-AES) on the process samples. Pace Analytical also performed the chlorine, ash, and higher heating value (HHV) analyses on the process samples. The viscosity, total suspended solids (TSS), and total dissolved solids (TDS) analyses were conducted by Eastman's ESL.

Sampling train data and analytical results are presented in the Sampling and Analysis Report in Appendix I. A discussion of quality assurance/quality control (QA/QC) data for the analytical data is included in Appendix I, Section 5.0. Analytical data packages are presented in Appendix I as follows:

Appendix I-A	PM/HCl/Cl_2 Data Package
Appendix I-B	Dioxin/Furan Data Package
Appendix I-C	Metals Data Package
Appendix I-D	Feedstream and Ash Spike Data Package
Appendix I-E	Metals and Chlorine Spike Data Package

3.4 Quality Assurance / Quality Control

The CPT Plan and QAPP defined the objectives and protocols for the performance test. The CPT was executed in a manner consistent with the test plan. The purpose of this section is to discuss the QA/QC results and the deviations from the test plan. Although there were minor deviations from the test plan, they did not affect the overall validity of the test results.

3.4.1 QA/QC Results

Quantitative QA/QC measures, also called quality assurance objectives (QAO), are presented and described in detail in the QAPP that was submitted with the CPT Plan. The QA/QC results for the CPT are presented and described in detail in the Sampling and Analysis Report in Appendix I.

3.4.2 Non-Standard Test Events

Details on non-standard test events that occurred during testing are described in Section 2.3 of the Sampling and Analysis Report in Appendix I. There were no significant operational or sampling issues during testing that were not resolved. The non-standard test events are considered minor and do not compromise the validity of the data generated.

3.4.3 Deviations from the CPT Plan and QAPP

Details on deviations between actual test execution and the CPT Plan and QAPP are described in Section 2.4 of the Sampling and Analysis Report in Appendix I. As stated previously, these deviations are considered minor and do not compromise the validity of the data generated.

3.5 Continuous Monitoring System Performance Evaluation Test

The CMS PET was conducted according to the CMS PETP submitted on October 4, 2011 and approved on April 9, 2012. In accordance with the CMS PETP, all CMS instruments were calibrated prior to conducting the CPT. Eastman used manufacturer's procedures and working

knowledge of specific instruments to conduct the calibrations. Table 3-5 is a summary of the calibrations that were performed on the LCD CPMS instruments prior to conducting the CPT. All instruments were within calibration specifications noted in the calibration procedures. Calibration records for the CPMS instruments are presented in Appendix II.

Additionally, a portable flowmeter was used instead of the flowmeter checked during the CMS PET for the Waste EDA stream fed to the "G" burner. The feedrate for the Waste EDA was determined by manually logging the flowrate every minute. Calibration records for the portable Micromotion flowmeter are also included in Appendix II.

The performance evaluations for the permanently-installed THC and O_2 CEMS followed the requirements in Performance Specification 4B for O_2 CEMS and 8A for THC CEMS, found in 40 CFR Part 60, Appendix B. All instruments were within calibration specifications according to the calibration procedures. The results of the Relative Accuracy Test Audit (RATA) for the Continuous Emissions Monitoring System (CEMS) are presented in Appendix III.

Table 3-5
Continuous Parameter Monitoring System Calibrations

Tag Name	Measured Parameter(s)	Instrument	Calibration Prior to Performance Testing	Calibration Procedure #
TI-3105, 3104 & 3566	Combustion chamber exit temperature	Type K Metal Thermocouples	Calibrate per procedure	TEMS-5123-4
TI-3528	Stack gas temperature	Resistance Temperature Detector (RTDs)	Calibrate per procedure	TEMS-5038-4
FI-3552	Stack gas flowrate	McCrometer V-Cone® Gas Flowmeter /DP Pressure Transmitter	- Field comparison to pitot measurements	- DCS values compared to EPA Method 2 results
PI-3529	Stack gas pressure	Rosemount Pressure Sensor	Calibrate transmitter	TEMS-5013-4
PIC-3106, 3657, & 3106C	Combustion chamber pressure	Rosemount Pressure Sensor	Calibrate transmitter	TEMS-5013-4
FIC-3076, 3091, 3083, 1058, 3043	Feedrates of wastes, surrogates and spikes	Micro Motion Flowmeter	- Perform flow test - Zero flowmeter	- TEMS-5117-4 - TEMS-5116-4
FE/FT-3062	Feedrate of waste-derived fuel	Rosemount Flowmeter/Orifice Plate	-Calibrate Transmitter -Verify orifice dimensions	-Calibrate Transmitter -Verify orifice dimensions
AIC- 3527	WESP #2 recirculation liquid pH	Rosemount pH Analyzer	Calibrate per section 9.0 of Eastman Services Laboratory Method No. THSE-A-ES-9001-POT-32-1	Method THSE-A-ES-9001-POT-32
FI-3521	Liquid flowrate to rod scrubber	Bailey, Fischer & Porter Flowmeter	- Zero flowmeter - Perform flow test	- TEMS-5116-4 - TEMS-5122-4
FI-3548 & 3537	Liquid flowrates to WESPs #1 and 2	Rosemount Flowmeter/Orifice Plate	- Calibrate transmitter - Verify orifice dimensions	- TEMS-5013-4 - Physical measurement
FI-3556	Caustic solution flowrate	Rosemount	- Zero Flowmeter - Perform flow test	- TEMS-5116-4 - TEMS-5117-4
FI-3504	Quench/rod scrubber blowdown liquid flowrate	Endress Hauser Flowmeter	- Zero flowmeter - Perform flow test	- TEMS-5116-4 - TEMS-5117-4
FI-3547	WESP #1 blowdown flowrate	Bailey, Fischer & Porter flowmeter	- Zero flowmeter - Perform flow test	- TEMS-5116-4 - TEMS-5117-4
EI-3633 & 3613	WESP # 1 and 2 secondary voltage	Transducer Output From WESPs Power Units	Calibrate per procedure	TEMS-5120-4
EI-3633 & 3613	WESP #1 and 2 secondary current	Transducer Output From WESPs Power Units	Calibrate per procedure	TEMS-5121-4
TE-3515	Multi-rod scrubber exit gas temperature (^{o}F)	Resistance Temperature Device (RTD)	Calibrate per procedure	TEMS-5038-4
PS-3058	Atomization air pressure	Dwyer Pressure Switch	Calibrate per procedure	TEMS-5003-4
PS-3096, PS-3097	Atomization steam pressure	Barksdale & United/Ashcroft Pressure Switches	Calibrate per procedure	TEMS-5003-4
248-WI-1524	Weight of metals spike solution	Toledo Puma Weight Indicator	Calibrate per procedure	TEMS-5085-4

4.0 STACK GAS AND PROCESS SAMPLING AND ANALYSIS

The purpose of this section is to provide an overview of sampling and analysis activities for the CPT. The LCD feedstreams, ash spiking stream, and the stack emissions were sampled during the CPT and subsequently analyzed. The metals and chlorine spiking streams were sampled and were archived. Quantitative results are summarized in Section 5.0. A detailed Sampling and Analysis Report and the associated data packages are included in Appendix I.

4.1 Stack Gas Sampling and Analysis

The stack gas sampling and analytical methods shown in Table 4-1 were used to generate emissions performance data. Personnel from Eastman's ESL performed US EPA Methods 5/26A and Method 29. Alliance Source Testing, LLC (AST) performed US EPA and Method 23. US EPA Methods 1 through 4 were integral to all of the isokinetic trains. The permanently-installed CEMS were used for THC and O_2 measurements.

Detailed descriptions of the sampling and analytical methods are included in the QAPP for the CPT. Analysis of PM and HCl/Cl_2 was performed by the ESL. Metals analysis was performed by TestAmerica. SGS Analytical Perspectives performed the dioxin/furan analysis.

4.2 Process Sampling and Analysis

The LCD CPT feedstreams include the waste feedstreams, the waste-derived fuel feedstream, and the spiking feedstreams. All feedstreams were sampled by Eastman's LCD operations staff and transported to the ESL. The samples of the waste feedstreams, the waste-derived fuel feedstream, and the ash spike stream were analyzed by ESL and Pace Analytical. The samples collected of the chlorine spike and the metal spike were archived.

Eastman personnel formulated the liquid chlorine spike mixture at on-site facilities. The Certificate of Formulation (COF) for this stream was used in lieu of analysis. The metals spike was supplied by Triad Chemicals, Inc. in drums. No preparation of this spike was necessary prior to testing. The material only needed to be transferred from the supplied drums to the temporary feed tank located on a calibrated scale. A Certificate of Analysis (COA) from Triad Chemicals, Inc. was used in lieu of sample analysis. The COF for the chlorine spike and the COA for the metal spike are included in Appendix I-E.

Grab samples for the Waste EDA, Surrogate Waste, and Waste-Derived Fuel were collected at the start, end, and every 30 minutes during each test run. The grab samples were composited at the end of each test run to form a run sample for each waste stream. The composite samples for

Table 4-1
CPT Stack Gas Sampling and Analysis

Sampling Method	Number of Sampling Runs	Sampling Time per Run (hours) [a]	Analytical Parameters	Analytical Method [b]
EPA Method 1	1	N/A	Sampling and Traverse Point Locations	EPA Method 1
EPA Method 2	3	Continuous	Volumetric Flowrate	EPA Method 2
EPA Method 3/3A	3	Continuous	Molecular Weight	EPA Method 3/3A
EPA Method 4	3	Continuous	Moisture	EPA Method 4
EPA Method 5/26A	3	2	Particulate	EPA Method 5
			HCl/Cl_2	SW-846 Method 9057
EPA Method 23/ALT-052 [c]	3	3	PCDD/PCDF	EPA Method 23
EPA Method 29	3	2	Metals (Cr and Pb only)	SW-846 Method 6010B (Trace ICP-AES)
CEMS Performance Specifications 4B and 8A	3	Continuous	O_2	Installed O_2 CEMS PS-4B
			THC	Installed THC CEMS PS-8A

Notes:
[a] Methods 2, 4, and CEMS spanned the duration of each train.
[b] Methods are from 40 CFR Part 60 Appendix A or US EPA SW-846.
[c] ALT-052 is from the US EPA Technology Transfer Network/Emission Measurement Center.

each waste stream were analyzed for ash, higher heating value (HHV), total chlorine, chromium, lead, and viscosity. During the second run, duplicate samples were collected. The duplicate samples were composited to form a second Run 2 composite sample for each waste stream. These duplicate samples were analyzed for quality assurance purposes.

Grab samples of the metal, chlorine, and ash spiking feedstream were collected at the start and end of each test run. The metal and chlorine spike samples were archived in case future analysis was needed. The grab samples of the ash spike were composited for each run. Duplicate samples were collected during Run 2 and composited to form a duplicate Run 2 composite sample. The ash spike composite samples were analyzed for chromium, lead, TSS, and TDS.

Table 4-2 provides a summary the sampling frequencies and analytical parameters for each of the feedstreams sampled. A summary of the quantitative results for these streams is provided in Section 5.0. Additional analytical results for these streams are presented in Appendix I.

Table 4-2
CPT Process and Spiking Stream Sampling and Analysis

Stream	Sampling Method	Sampling Frequency	Analytical Parameters	Analytical Method
Waste EDA Surrogate Waste Waste-Derived Fuel	Taps in feed lines prior to spiking injection location	Grab at start, end and every 30 minutes during the run, composited for each run [a]	Ash	ASTM D482
			HHV	ASTM D5468
			Chlorine/chloride (inorganic & organic)	SW-846 9076
			Metals (Cr, Pb only)	SW-846 6010B
			Viscosity	ASTM D3236
Ash spike (NaCl in water)	Tap in feed line	Grab at start and end of each run, composited for each run [a]	Total suspended solids	SM 2540D
			Total dissolved solids	SM 2540C
			Metals (Cr, Pb only)	SW-846 6010B
Chlorine spike (Perchloroethylene / Methanol)	Tap in feed line	Grab at start and end of each run	Archived [b]	COF used in lieu of analysis
Metals spike (Cr and Pb acetates in water)	Tap in feed line	Grab at start and end of each run	Archived [b]	COA used in lieu of analysis

Notes:
[a] Duplicate samples were collected during the second test run for QA purposes.
[b] Samples were collected and archived; however, Certificates of Analysis and/or Formulation from the supplier were utilized in lieu of analysis.

5.0 CPT RESULTS

The quantitative results from the CPT are presented in this section. The data collected during the CPT verify that the emissions performance of the LCD is in compliance with the emissions standards specified in 40 CFR §63.1219. The quantitative results for the feed streams and spiking streams are also presented in this section.

5.1 Stack Gas Emission Results

The CPT successfully demonstrated the LCD system performance for the emissions of PM, HCl/Cl_2, LVM, SVM, and D/F below the level required by the HWC MACT standard. The performance test results for these parameters are presented in Table 5-1. This table shows the results from each run, the three run average, and the respective HWC MACT emission standard for each parameter.

Data generated from the continuous monitoring of THC and O_2 stack gas concentrations were used to calculate the demonstrated hourly rolling averages (HRAs) of THC emissions. The limit for THC emissions, as specified in the MACT Standard, is 10 ppmdv THC (reported as propane), corrected to 7% O_2, over an HRA. The maximum HRA of the THC stack gas concentration demonstrated during the CPT was below the required limit. The results for THC emissions can also be seen in Table 5-1. The LCD system performance for LVM, SVM, PM, and HCl/Cl_2 removal efficiencies (RE) are presented in Tables 5-2 through 5-5, respectively.

5.2 Feedstream and Spike Analysis Results

Table 4-4 through Table 4-7 of the Sampling and Analysis Report (see Appendix I) present the analytical results for each feedstream. These data confirm that the objectives defined in the CPT Plan were met. Data from the COF for the chlorine spike and the COA for the metal spike are shown in Table 4-8 and Table 4-9 of the Sampling and Analysis Report (see Appendix I). These feedstream data are used to establish OPLs as presented in Section 6.0. Detailed analytical data are provided in Appendices I-D and I-E for each of the sampled streams and the spiking streams, respectively.

Table 5-1
CPT Emissions Results for HWC MACT Emission Limits

Parameter	Units	Run 1	Run 2	Run 3	Run 4	Average	HWC MACT Standards (§63.1219(a))
Carbon Monoxide [a]	ppmv, dry, corrected to 7% O_2	N/A	N/A	N/A	N/A	N/A	100
Total Hydrocarbons (THC as propane) [a, b]	ppmv, dry, corrected to 7% O_2	0.06	0.02	0.04	0.06	0.06 [b]	10
Particulate Matter	gr/dscf, corrected to 7% O_2	0.003	0.003	0.007	N/A	0.004	0.013
Hydrogen Chloride/Chlorine	ppmv, dry, corrected to 7% O_2 (Cl^- equivalent)	21	22	N/A	27	23	32
Mercury [c]	µg/dscm, corrected to 7% O_2	N/A	N/A	N/A	N/A	N/A	130
Semi-Volatile Metals (SVM includes cadmium and lead)	µg/dscm, corrected to 7% O_2	< 53.1	< 53.0	< 59.7	N/A	< 55.3	230
Low-Volatility Metals (LVM includes arsenic, beryllium, and chromium)	µg/dscm, corrected to 7% O_2	< 39.5	< 40.4	50.10	N/A	< 43.3	92
Dioxins/Furans (PCDD/PCDF) [d]	ng/dscm TEQ, corrected to 7% O_2	0.027	0.033	0.035	N/A	0.032	0.40
DRE of POHCs [e]	%	N/A	N/A	N/A	N/A	N/A	99.99%

Notes:

[a] Eastman has chosen to continuously monitor THC rather than CO, as provided by 40 CFR §63.1219(a)(5).

[b] The values shown for THC are the maximum HRAs for each run during the D/F sampling train timeframe (Runs 1-3) and the HCl/Cl_2 sampling train timeframe (Run 4). The average value shown is the maximum HRA value for all three runs.

[c] Eastman is using the maximum theoretical emission concentration (MTEC) approach to document on-going compliance with the mercury emission standard per 40 CFR §63.1207(m)(1). Therefore, emissions of mercury were not measured during the CPT.

[d] TEQ is toxic equivalent quotient to 2,3,7,8-TCDD. The results presented represent the theoretical worst-case emissions.

[e] In accordance with 40 CFR §63.1206(b)(7), Eastman is using the results from the March 2003 CPT to demonstrate compliance with the DRE standard.

Table 5-2
Low Volatility Metals Removal Efficiency

Parameter	Units	Run 1	Run 2	Run 3	Average
Total LVM (as Cr) Feedrate [a]	lb/hr	5.50	5.10	5.31	5.30
LVM (as Cr) Emissions	lb/hr	<1.58E-03	<1.57E-03	1.99E-03	<1.72E-03
LVM (as Cr) Removal Efficiency	%	>99.97	>99.97	99.96	>99.97

Notes:
[a] Metal values determined not to be present at detectable levels were assumed to be present at one-half the analytical detection limit.

Table 5-3
Semi-Volatile Metals Removal Efficiency

Parameter	Units	Run 1	Run 2	Run 3	Average
Total SVM (as Pb) Feedrate [a]	lb/hr	2.08	1.93	2.00	2.00
SVM (as Pb) Emissions	lb/hr	<2.13E-03	<2.07E-03	<2.37E-03	<2.19E-03
SVM (as Pb) Removal Efficiency	%	>99.90	>99.89	>99.88	>99.89

Notes:
[a] Metal values determined not to be present at detectable levels were assumed to be present at one-half the analytical detection limit.

Table 5-4
Particulate Matter Removal Efficiency

Parameter	Units	Run 1	Run 2	Run 3	Average
Total Ash Feedrate [a]	lb/hr	366	372	371	370
PM Emissions	lb/hr	0.289	0.265	0.637	0.40
PM Removal Efficiency	%	99.92	99.93	99.83	99.89

Notes:
[a] Ash values determined not to be present at detectable levels were assumed to be present at one-half the analytical detection limit.

Table 5-5
Hydrogen Chloride/Chlorine Removal Efficiency

Parameter	Units	Run 1	Run 2	Run 4	Average
HCl Equivalent Feedrate [a]	lb/hr	750	755	753	752
HCl/Cl_2 Emissions (HCl equivalent)	lb/hr	1.213	1.316	1.533	1.354
HCl/Cl_2 Removal Efficiency	%	99.84	99.83	99.80	99.82

Notes:
[a] Chlorine values determined not to be present at detectable levels were assumed to be present at one-half the analytical detection limit.

6.0 PROPOSED OPERATING PARAMETER LIMITS

The purpose of this section is to use the CPT data to establish OPLs. Operating the LCD within the OPLs presented in this section will assure ongoing compliance with the HWC MACT standards. This is supported by the emission performance results presented in Section 5.0, the worst-case operating conditions under which this CPT was conducted, and the site specific considerations for setting OPLs, as presented in the CPT Plan. Examples of the calculations discussed in this section are presented in Appendix IV.

The HWC MACT standard specifies the operating parameters for which limits must be established based on performance testing. The applicable OPLs established from this CPT are presented in Table 6-1. DRE-related OPLs that were established based on the most conservative results from either this CPT or the March 2003 CPT are shown in Table 6-2. OPLs that were not established based on the results of this CPT are shown in Table 6-3, along with the basis used to establish these OPLs.

Each applicable OPL specified by the HWC MACT standard was calculated from test operating data recorded during the block of time associated with a particular sampling train. For example, the maximum chlorine feedrate OPL is established to assure on-going compliance with more than one emission standard and accordingly, is associated with more than one stack gas sampling train. Because the start and stop times may vary between stack gas sampling trains, Table 6-1 indicates more than one demonstrated OPL value for maximum chlorine feedrate depending on the sampling times (i.e., values for the PM/Metals train and the HCl/Cl_2 train). In this particular case, the most stringent OPL is applicable – the OPL demonstrated during the PM/Metals train.

OPLs for the maximum total feedrates of ash, chlorine/chloride, LVM, and SVM were calculated using the concentration of each of these hazardous constituents in each stream. The amount in each stream was determined from the sampling and analysis results, the COA for the metal spike, and the COF for the chlorine spike. The contributions of ash, chromium, and lead from the chlorine spike stream were negligible. The amount of ash from the metal spike is approximated as the sum of the metals content. The chloride content of the ash spike is included in the total chlorine feedrate. For the purpose of calculating the constituent feedrates, values determined not to be present at detectable levels were assumed to be present at one-half the analytical detection limit. A summary of the constituent feedrates from each feedstream is presented in Table 6-4.

The quench and WESP #1 blowdown liquids were not sampled during this CPT. Instead, the calculation method presented in the CPT Plan was used to determine the solids content in the

Table 6-1

Proposed Operating Parameter Limits Established Based on CPT Results

Parameter	Averaging Period	Basis for Operating Parameter Limit	Sampling Train	Run 1	Run 2	Run 3 (PM/Metals) Run 4 (HCl/Cl_2)	3-Run Average	OPL from Previous CPT [a]	Proposed Operating Parameter Limit
Directly Monitored OPLs									
Minimum WESP #2 recirculation liquid pH	HRA	Average of the 3 test run averages	HCl/Cl_2	5.2	3.5	4.0	4.2	3.4	4.2
Maximum rod scrubber exit gas temperature (^oF)	HRA	Average of the 3 test run averages	PM/Metals	128	128	128	128	129	128
Calculated OPLs									
Minimum multi-rod scrubber liquid input flow to gas flow ratio (L/G) (gpm/1000 acfm)	HRA	Average of the 3 test run averages	PM/Metals	77.6	77.7	77.1	77.5	66.6	77.5
			HCl/Cl_2	77.6	77.7	77.1	77.5		
Minimum WESP #1 liquid input flow to gas flow ratio (L/G) (gpm/1000 acfm)	HRA	Average of the 3 test run averages	HCl/Cl_2	11.0	11.1	10.8	11.0	10.5	11.0
Minimum WESP #2 liquid input flow to gas flow ratio (L/G) (gpm/1000 acfm)	HRA	Average of the 3 test run averages	HCl/Cl_2	11.0	11.0	10.5	10.9	10.2	10.9

Notes:

[a] These values are shown for comparison purposes only.

[b] Although the OPL for minimum WESP power to gas flow ratio applies to WESP #2, both WESPs must be energized when hazardous waste is being fed. In the event that there is an interruption of power to either WESP for more than 60 seconds, an AWFCO will also occur.

[c] Metals, ash, and chlorine values determined not to be present at detectable levels were assumed to be present at one-half the analytical detection limit.

Table 6-1

Proposed Operating Parameter Limits Established Based on CPT Results (continued)

Parameter	Averaging Period	Basis for Operating Parameter Limit	Sampling Train	Run 1	Run 2	Run 3 (PM/Metals) Run 4 (HCl/Cl_2)	3-Run Average	OPL from Previous CPT [a]	Proposed Operating Parameter Limit
Minimum wet electrostatic precipitator power to gas flow ratio for WESP #2 (watts/1000 acfm) [b]	HRA	Average of the 3 test run averages	PM/Metals	296	285	270	284	341	284
Maximum chlorine feedrate (lb/hr) [c]	12-HRA	Average of the 3 test run averages	PM/Metals	729	734	725	729	726	729
			HCl/Cl_2	729	734	732	732		
Maximum ash feedrate (lb/hr) [c]	12-HRA	Average of the 3 test run averages	PM/Metals	366	372	371	370	370	370
Maximum low volatility metals (As, Be, Cr) feedrate (lb/hr) [c]	12-HRA	Average of the 3 test run averages	PM/Metals	5.5	5.1	5.3	5.3	6.0	5.3
Maximum semi-volatile metals (Cd, Pb) feedrate (lb/hr) [c]	12-HRA	Average of the 3 test run averages	PM/Metals	2.1	1.9	2.0	2.0	2.2	2.0
Maximum quench blowdown solids concentration (%)	12-HRA	Average of the 3 test run averages	PM/Metals	2.2	2.1	2.1	2.1	1.9	2.1
Maximum WESP #1 blowdown solids concentration (%)	12-HRA	Average of the 3 test run averages	PM/Metals	3.3	3.4	3.2	3.3	3.6	3.3

Notes:

[a] These values are shown for comparison purposes only.

[b] Although the OPL for minimum WESP power to gas flow ratio applies to WESP #2, both WESPs must be energized when hazardous waste is being fed. In the event that there is an interruption of power to either WESP for more than 60 seconds, an AWFCO will also occur.

[c] Metals, ash, and chlorine values determined not to be present at detectable levels were assumed to be present at one-half the analytical detection limit.

Table 6-2

Proposed DRE-Related Operating Parameter Limits [a]

Parameter	Averaging Period	Basis for Operating Parameter Limit	Sampling Train	Run 1	Run 2	Run 3 (PM/Metals and D/F) Run 4 (HCl/Cl_2)	3-Run Average	March 2003 DRE CPT Result	Proposed Operating Parameter Limit
Directly monitored OPLs									
Minimum combustion chamber temperature (°F)	HRA	Average of the 3 test run averages OR value demonstrated during the March 2003 DRE test (most conservative value)	D/F	1,667	1,670	1,672	1,670	1,674	1,674
Calculated OPLs									
Maximum combustion gas flowrate (dscfm)	HRA	Average of the maximum HRAs for each of the 3 test runs OR value demonstrated during the March 2003 DRE test (most conservative value)	D/F	16,936	16,864	16,908	16,903	16,766	16,766
			PM/Metals	16,782	16,796	16,908	16,829		
			HCl/Cl_2	16,782	16,796	16,913	16,830		
Maximum hazardous waste feedrate to all burners (nozzles) (lb/hr)	HRA	Average of the maximum HRAs for each of the 3 test runs OR value demonstrated during the March 2003 DRE test (most conservative value)	D/F	7,090	7,178	7,247	7,172	7,508	7,172

Notes:

[a] The operating parameter limits shown in this table are related to DRE and to at least one more emission standard (e.g., minimum combustion chamber temperature relates to both DRE and D/F standards). Because the DRE test is not being repeated, the operating limit for these parameters will be set at the value demonstrated during the CPT or the value demonstrated during the March 2003 DRE test, whichever is more conservative.

Table 6-3
Proposed Operating Parameter Limits Not Established Based on CPT Results

Parameter	Averaging Period	Basis for Operating Parameter Limit	Proposed Operating Parameter Limit
Directly monitored OPLs			
Maximum combustion chamber pressure (in wc, gauge)	15 seconds	No change from limit specified in 09/15/2003 NOC	- 0.1 for more than 15 seconds
Maximum viscosity of wastes fed to air-atomized nozzles through unheated feed lines (SUS)	N/A	Waste characteristic limitation based on long term incinerator operating experience and nozzle capabilities	100
Maximum viscosity of wastes fed to air-atomized nozzles through heated (steam-traced) feed lines (SUS)	N/A	Waste characteristic limitation based on long term incinerator operating experience and nozzle capabilities	150
Maximum viscosity of wastes fed to steam-atomized nozzles (SUS)	N/A	Waste characteristic limitation based on long term incinerator operating experience and nozzle capabilities	250
Minimum air nozzle atomization pressure (inches of water)	OMA	No change from limit specified in 09/15/2003 NOC	18
Minimum steam nozzle atomization pressure (psig)	OMA	No change from limit specified in 09/15/2003 NOC	18.2
Emergency Safety Vent Open	N/A	Specified in the HWC MACT Rule	N/A
Calculated OPLs			
Maximum stack gas total hydrocarbon concentration (THC) (ppmv, 7% O_2, dry basis)	HRA	Specified in the HWC MACT rule	10
Maximum mercury feedrate (lb/hr)	12-HRA	Maximum theoretical emission concentration (MTEC)	130 µg/dscm, 7% O_2

Table 6-4
Constituent Feedrates from Each Feedstream [a]

Parameter	Waste EDA	Surrogate Waste	Waste-Derived Fuel	Ash Spike	Chlorine Spike	Metals Spike	Total
Ash (lb/hr)							
Run 1	1.77	0.16	0.37	356.56	-	7.36	366.21
Run 2	1.66	0.16	0.06	362.85	-	6.82	371.56
Run 3	1.59	0.16	0.02	362.42	-	7.10	371.30
Run 4	1.50	0.16	0.02	372.24	-	-	373.91
Average [b]	1.67	0.16	0.15	360.61	-	7.10	369.69
Chlorine (lb/hr)							
Run 1	0.25	0.16	0.02	216.30	512.29	-	729.01
Run 2	0.27	0.16	0.02	220.11	513.16	-	733.73
Run 3	0.26	0.16	0.02	219.85	504.32	-	724.62
Run 4	0.26	0.16	0.02	225.81	505.65	-	731.90
Average [b]	0.26	0.16	0.02	218.75	509.92	-	729.12
Average [c]	0.26	0.16	0.02	220.74	510.37	-	731.55
Chromium (lb/hr)							
Run 1	0.21	7.61E-04	9.85E-05	4.76E-04	-	5.29	5.50
Run 2	0.20	7.86E-04	1.00E-04	5.10E-04	-	4.90	5.10
Run 3	0.21	8.00E-04	9.79E-05	5.12E-04	-	5.10	5.31
Run 4	0.21	7.31E-04	9.50E-05	5.20E-04	-	-	0.21
Average [b]	0.21	7.82E-04	9.88E-05	4.99E-04	-	5.09	5.30
Lead (lb/hr)							
Run 1	2.50E-04	7.61E-04	9.85E-05	4.76E-04	-	2.08	2.08
Run 2	2.59E-04	7.86E-04	1.00E-04	5.10E-04	-	1.92	1.93
Run 3	2.79E-04	8.00E-04	9.79E-05	5.12E-04	-	2.00	2.00
Run 4	2.82E-04	7.31E-04	9.50E-05	5.20E-04	-	-	0.0016
Average [b]	2.63E-04	7.82E-04	9.88E-05	4.99E-04	-	2.00	2.00

Notes:

[a] Values determined not to be present at detectable levels were assumed to be present at one-half the analytical detection limit.

[b] These feedrate values are associated with the times from the PM/Metals sampling train (Runs 1, 2, and 3).

[c] These feedrate values are associated with the times from the HCl/Cl_2 sampling train (Runs 1, 2, and 4).

quench and WESP #1 blowdown liquids. The calculation uses the CPT operating conditions for total ash feedrate, caustic solution feedrate, and the blowdown liquid flowrate. During the initial CPT, samples of the quench and WESP #1 blowdown liquids were collected and analyzed for total dissolved and suspended solids. A comparison was performed between the calculated blowdown solids contents and the analytical results (see Table 7-6 of the initial CPT Report). The solids contents as determined by the analyses of blowdown samples did not exceed the levels determined using the proposed calculations. Therefore, this substantiates the methodology used to calculate the maximum quench and WESP #1 blowdown solids concentrations.

The OPLs specified in this report were developed using the sampling and analysis procedures as well as the calculation techniques specified in the approved CPT Plan. Based on the successful completion of the CPT, the completeness of data over the testing period, and the quality assurance procedures utilized for sampling and analysis, Eastman proposes that the OPLs specified in Tables 6-1 through 6-3 are adequate to ensure on-going compliance.

In addition to the OPLs discussed above, Eastman also operates in compliance with the operating requirements that are found in 40 CFR §63.1206(c) and are summarized in Table 6-5.

Table 6-5
Other Operating Requirements

Regulatory Citation	Description of Operating Requirements
§63.1206(c)(1)	**General:** Eastman must operate under the NOC operating requirements except during startups, shutdowns, and malfunctions and during performance tests conducted under approved test plans. Failure to comply with the operating requirements is failure to ensure compliance with the emission standards.
§63.1206(c)(2)	**Startup, shutdown, malfunction plan (SSMP):** Eastman complies with these requirements to (1) have a SSMP approved by the Tennessee Division of Air Pollution Control (TDAPC) that addresses these requirements, and (2) follow the AWFCO requirements during malfunctions, (3) investigate within 45 days, revise the SSMP as warranted, and report the results when there are more than 10 excessive exceedances during malfunctions within a 60 day period. Eastman does not burn hazardous wastes during startup and shutdown.
§63.1206(c)(3)(i)	**Automatic waste feed cutoff (AWFCO):** Eastman has a functioning AWFCO system that meets these requirements to (1) cut off hazardous waste under certain conditions, (2) duct gases to the air pollution control system during the AWFCO, (3) not restart hazardous waste feeds until OPLs are met, (4) cease hazardous waste feeds as quickly as possible if the AWFCO system fails, (5) investigate, record findings, and take corrective measures to minimize future AWFCOs, (6) report excessive exceedances, (7) do weekly testing of the AWFCO system.
§63.1206(c)(3)(ii)	**Automatic waste feed cutoff (AWFCO) – Ducting of combustion gases:** Eastman complies with this requirement to continue to duct combustion gases to the air pollution control system while hazardous waste remains in the combustion chamber.
§63.1206(c)(4)	**ESV Openings:** Eastman operates under an ESV operating plan which details procedures to stop feeds, shut down the combustor and maintain temperature and negative pressure, if possible. Eastman investigates ESV openings and takes appropriate corrective actions.
§63.1206(c)(5)	**Combustion system leaks:** Eastman complies with this requirement by complying with the OPL for maximum combustion chamber pressure shown in Table 6-3. This OPL is tied into the AWFCO system.
§63.1206(c)(6)	**Operator training and certification:** Eastman complies with these requirements to establish training programs for all categories of personnel whose activities may reasonably expect to directly affect emissions of hazardous air pollutants.
§63.1206(c)(7)	**Operation and maintenance plan:** Eastman complies with these requirements to prepare, record, and operate according to a plan that describes in detail procedures for operation, inspection, maintenance, and corrective measures for all components of the combustor that could affect emissions of hazardous air pollutants.

APPENDIX I

SAMPLING AND ANALYSIS REPORT

SAMPLING AND ANALYSIS REPORT
FOR THE
LIQUID CHEMICAL DESTRUCTOR
COMPREHENSIVE PERFORMANCE TEST

Prepared for:

Eastman Chemical Company

Tennessee Operations

Kingsport, TN

Prepared By:

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Franklin, TN

March 6, 2013

Revision 0

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Appendix I-C Metals Data Package
Appendix I-D Feedstream and Ash Spike Data Package
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LIST OF ACRONYMS

AST	Alliance Source Testing, LLC from Decatur, Alabama
ASTM	American Society for Testing and Materials
B-248	Eastman's Building 248
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CMS PET	Continuous Monitoring System Performance Evaluation Test
COA	Certificate of Analysis
COF	Certificate of Formulation
CPT	Comprehensive Performance Test
D/F	Dioxins/Furans
Eastman	Eastman Chemical Company, Tennessee Operations
ESL	Eastman's Environmental Services Laboratory
HHV	Higher Heating Value
HRCG	High-Resolution Gas Chromatography
HRMS	High-Resolution Mass Spectrometry
HWC MACT	Hazardous Waste Combustor Maximum Achievable Control Technology
LCD	Liquid Chemical Destructor
LVM	Low Volatility Metals
NELAC	National Environmental Laboratory Accreditation Conference
OPL	Operating Parameter Limit
PM	Particulate Matter
QA	Quality Assurance
QAM	Quality Assurance Manager
QAO	Quality Assurance Objective
QAPP	Quality Assurance Project Plan
QC	Quality Control
RATA	Relative Accuracy Test Audit
RP	Range Percent
RPD	Relative Percent Difference
RPT	Repeatability
SGS	SGS Analytical Perspectives of Wilmington, NC
SVM	Semi-Volatile Metals
TDEC	Tennessee Department of Environment and Conservation
TDS	Total Dissolved Solids
THC	Total Hydrocarbons (as propane)
TSS	Total Suspended Solids
US EPA	United States Environmental Protection Agency

LIST OF UNITS AND MEASUREMENTS

acfm	Actual cubic feet per minute
Btu/lb	British thermal unit per pound mass
dscf	Dry standard cubic feet
dscfm	Dry standard cubic feet per minute
dscm	Dry standard cubic meter
g	Grams
gr/dscf	Grains per dry standard cubic feet
lb/hr	Pounds per hour
mg/dscm	Milligrams per dry standard cubic meter
µg	Micrograms
µg/dscm	Micrograms per dry standard cubic meter
µg/g	Micrograms per gram
ppmw	Part per million by weight
ppmdv	Parts per million dry volume
%	Percent
@ 7% O_2	Corrected to 7% oxygen

LIST OF CHEMICAL SYMBOLS AND FORMULAS

Cl_2	Chlorine Gas
Cr	Chromium
EDA	Ethylidene Diacetate
HCl	Hydrogen Chloride
H_2SO_4	Sulfuric Acid
NaOH	Sodium Hydroxide
O_2	Oxygen
Pb	Lead
PCDD	Polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans

1.0 INTRODUCTION

Eastman Chemical Company, Tennessee Operations (Eastman) is submitting this report as Appendix I of the *Comprehensive Performance Test Report and Notification of Compliance for the Liquid Chemical Destructor*. The Comprehensive Performance Test (CPT) was conducted on Eastman's liquid chemical destructor (LCD) at its Kingsport, TN facility on December 11 and 12, 2012. The intent of the test was to demonstrate compliance with the final Hazardous Waste Combustor Maximum Achievable Control Technology (HWC MACT) emissions standards specified in 40 CFR Part 63 Subpart EEE and to establish operating parameter limits (OPLs) specified in 40 CFR §63.1209.

The performance of the LCD and its associated air pollution control equipment during the CPT established that the LCD system emissions were sufficiently controlled to levels required by the HWC MACT standard. The CPT was conducted to demonstrate the performance of the LCD for minimizing the following emission parameters:

- Particulate Matter (PM)
- Hydrogen Chloride/Chlorine (HCl/Cl_2)
- Low volatility metals (LVM) (as chromium)
- Semi-volatile metals (SVM) (as lead)
- Dioxins/furans (D/F)
- Total hydrocarbons (THC)

This report includes:

- Summary of sampling execution
- Overview of stack sampling and analysis
- Summary of test results
- Summary of the Quality Assurance/Quality Control (QA/QC) results for the stack gas analysis
- Summary of the QA/QC results for the process stream analysis

The data packages for testing results are included as appendices to this Sampling and Analysis Report. The data packages are found in the following appendices:

- $PM/HCl/Cl_2$ Data Package — Appendix I-A
- Dioxin/Furan Data Package — Appendix I-B
- Metals Data Package — Appendix I-C
- Feedstream and Ash Spike Data Package — Appendix I-D
- Metals and Chlorine Spike Data Package — Appendix I-E

2.0 CPT EXECUTION

This section provides an overview of the sampling execution and chronology for the CPT and includes non-standard testing events and deviations between the test execution and the CPT Plan and QAPP. The non-standard events or deviations addressed in this section did not compromise the validity of the test data for the intended purposes. Deviations from the *Quality Assurance Project Plan for the Comprehensive Performance Test (CPT) on Eastman's Liquid Chemical Destructor in Kingsport, Tennessee* (QAPP) and *Comprehensive Performance Test Plan for the Liquid Chemical Destructor* (CPT Plan) are also addressed in this section. A summary of the sampling protocol is provided in Table 2-1.

2.1 Agency Oversight

Mr. John Webb, a representative from the Tennessee Department of Environment and Conservation (TDEC) Johnson City Field Office, was onsite on December 11 to observe the use of the Method 29 metals sampling train.

2.2 CPT Chronology

The CPT was conducted on December 11 and 12, 2012. The CPT successfully met all test objectives defined in the CPT Plan. A chronology of the CPT is provided in Table 2-2. A detailed discussion of non-standard events that occurred during the test is included in Section 2.3. The port change information for each sampling train during the CPT is provided in Table 2-3.

2.3 Non-Standard Test Events

The following discussion provides details on non-standard test events that occurred during testing. There were no significant operational or sampling issues during testing that were not resolved. The events below are considered minor and do not compromise the validity of the data generated.

2.3.1 Adjusting Train on Monorail

Stack sampling for the Method 23 train was paused from 13:31 to 13:36 during Run 1 of the CPT adjust the train on the monorail. This pause did not have an adverse impact on the data collected during the CPT.

2.3.2 Sample Pump Replacement

Stack sampling for the Method 5/26A and Method 29 trains was paused from 13:45 to 13:51 during Run 1 of the CPT and from 20:51 to 20:55 during Run 3 of the CPT to replace the sample pump. These pauses did not have an adverse impact on the data collected during the CPT.

Table 2-1
CPT Sampling Protocol Summary

Stream	Sampling Method	Analytical Parameter	Analytical Method
Stack Gas	EPA Method 1	Sampling and Traverse Point Locations	EPA Method 1
	EPA Method 2	Stack Gas Velocity and Flow Determination	EPA Method 2
	EPA Method 3/3A	Stack Gas Composition And Molecular Weight	EPA Method 3/3A
	EPA Method 4	Stack Gas Moisture	EPA Method 4
	EPA Method 5/26A	Particulate Matter	EPA Method 5
		HCl/Cl_2	SW-846 Method 9057
	EPA Method 29	Metals (Cr and Pb only)	SW-846 6010B (Trace ICP-AES)
	EPA Method 23/ ALT-052	PCDD/PCDF	EPA Method 23
	Installed CEMS (per EPA PS-4B and PS-8A)	O_2	Installed O_2 CEMS
		THC	Installed THC CEMS
Waste EDA Surrogate Waste Waste-Derived Fuel	Taps in feed lines prior to spiking injection location (based on ASTM D-4057)	Ash	ASTM D482
		HHV	ASTM D5468
		Chlorine/chloride (inorganic & organic)	SW-846 Method 9076
		Metals (Cr, Pb only)	SW-846 Method 6010B
		Viscosity	ASTM D3236
Ash Spike (NaCl in water)	Tap in feed line (based on ASTM D-4057)	Total suspended solids	SM 2540D
		Total dissolved solids	SM 2540C
		Metals (Cr, Pb only)	SW-846 Method 6010B
Chlorine Spike (Perchloroethylene / Methanol)	Tap in feed line (based on ASTM D-4057)	Archived [a]	COF used in lieu of analysis
Metals Spike (Cr and Pb acetates in water)	Tap in feed line (based on ASTM D-4057)	Archived [a]	COA used in lieu of analysis

Notes:
[a] A sample was collected and archived; however, Certificates of Analysis and/or Formulation from the supplier were utilized in lieu of analysis.

Table 2-2
CPT Operating and Sampling Chronology

Run/Date/Time	Event
Run 1 - 12/11/12	
12:10	Begin Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
	Method 23 - Dioxin/Furan
13:10-13:25	Sampling Paused for Port Changes
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
13:31-13:36	Sampling Paused to Adjust Train on Monorail
	Method 23 - Dioxin/Furan
13:45-13:51	Sampling Paused Due to Sample Pump Replacement
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
13:45-13:53	Sampling paused for Port Changes
	Method 23 - Dioxin/Furan
14:31	Complete Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
15:23	Complete Sampling
	Method 23 - Dioxin/Furan
Run 2 - 12/11/12	
16:12	Begin Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
	Method 23 - Dioxin/Furan
17:12-17:22	Sampling Paused for Port Changes
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
17:42-18:20	Sampling Paused for Port Changes and to Replace Probe and Filter
	Method 23 - Dioxin/Furan
18:22	Complete Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
19:50	Complete Sampling
	Method 23 - Dioxin/Furan

Table 2-2
CPT Operating and Sampling Chronology (continued)

Run/Date/Time	Event
Run 3 - 12/11/12	
20:41	Begin Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
	Method 23 - Dioxin/Furan
20:51-20:55	Sampling Paused Due to Sample Pump Replacement
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
21:45-21:57	Sampling Paused for Port Changes
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
22:11-22:20	Sampling Paused for Port Changes
	Method 23 - Dioxin/Furan
22:57	Complete Sampling
	Method 5/26A - PM/HCl/Cl_2
	Method 29 - Metals
23:50	Complete Sampling
	Method 23 - Dioxin/Furan
Run 4 - 12/12/12 (HCl/Cl_2 only)	
15:00	Begin Sampling
	Method 26A - HCl/Cl_2
15:26-15:30	Sampling Paused to Allow EDA and Chlorine Spike to Stabilize
	Method 26A - HCl/Cl_2
16:04-16:09	Sampling Paused for Port Change
	Method 26A - HCl/Cl_2
17:09	Complete Sampling
	Method 26A - HCl/Cl_2

Table 2-3
CPT Sampling Port Change Times [a]

Analytical Method	Emission Parameter	First Port		Second Port	
		Start	Stop	Start	Stop
Run 1 (12/11/12)					
Method 5/26A	PM/HCl/Cl_2	12:10	13:10	13:25	14:31
Method 29	Metals	12:10	13:10	13:25	14:31
Method 23	PCDD/PCDF	12:10	13:45	13:53	15:23
Run 2 (12/11/12)					
Method 5/26A	PM/HCl/Cl_2	16:12	17:12	17:22	18:22
Method 29	Metals	16:12	17:12	17:22	18:22
Method 23	PCDD/PCDF	16:12	17:42	18:20	19:50
Run 3 (12/11/12)					
Method 5/26A [b]	PM/HCl/Cl_2 [b]	20:41	21:45	21:57	22:57
Method 29	Metals	20:41	21:45	21:57	22:57
Method 23	PCDD/PCDF	20:41	22:11	22:20	23:50
Run 4 (12/12/12)					
Method 26A	HCl/Cl_2	15:00	16:04	16:09	17:09

Notes:

[a] See Table 2-2 for a description of any other sampling train pauses.

[b] Method 26A (HCl/Cl_2) was invalidated because there was a problem with the vacuum pump and caustic solution was sucked backwards from the 4th impinger to the 3rd impinger. The impingers were recovered and archived but not analyzed. Run 4 was conducted for HCl/Cl_2 the following day.

2.3.3 Probe and Filter Replacement

Stack sampling for the Method 23 train was paused from 17:42 to 18:20 during Run 2 of the CPT for a port change and to replace the probe and filter. After a successful leak check following sampling from port A, a leak was created when moving the train between ports A & B. The glassware shifted while moving and pinched an O-ring between the condenser and short stem impinger. The contracted stack sampling firm changed the probe and filter while troubleshooting the leak. This pause did not have an adverse impact on the data collected during the CPT.

2.3.4 Stabilization of Waste EDA Stream and Chlorine Spike

Stack sampling for the Method 26A sampling train was paused from 15:26 to 15:30 during Run 4 of the CPT because the flow of EDA and the chlorine spike through Burner G began to fluctuate. The EDA and the chlorine spike stabilized and sampling was resumed. The pause did not have an adverse impact on the data collected during the CPT.

2.3.5 Portable Flowmeter for the Waste EDA Stream

A portable flowmeter was used instead of the flowmeter checked during the CMS PET for the Waste EDA stream fed to the "G" burner. The feedrate for the Waste EDA was determined by manually logging the flowrate every minute. Calibration records for the portable Micromotion flowmeter are also included in Appendix II.

2.3.6 HCl/Cl_2 Sampling Train Invalidated for Run 3

The Method 26A (HCl/Cl_2) sampling train was invalidated for Run 3 because there was a problem with the vacuum pump and caustic solution was sucked backwards from the 4th impinger to the 3rd impinger. The impingers were recovered and archived but not analyzed. Run 4 was conducted for HCl/Cl_2 the following day. All feedstreams were the same for Run 4 except the metals spike was not fed during Run 4, which did not compromise the validity of the HCl/Cl_2 train results. More information regarding Run 3 is included in Appendix I-A.

2.4 Deviations from the CPT Plan and QAPP

The following discussion provides details on deviations between actual test execution and what was stated in the CPT Plan and QAPP. As stated previously, these deviations are considered minor and do not compromise the validity of the data generated.

2.4.1 EPA Method 23/ALT-052 Recovery Procedure

The recovery procedure presented in Figure 4-3 of the QAPP was not followed exactly. The recovery procedure in Figure 4-3 showed the acetone and toluene rinses being combined into a single container. As described in Section 4.3 of AST's report (see Appendix I-B), the acetone

and toluene rinses were placed into separate containers. They were later combined at the laboratory. Combining the acetone and toluene rinses, filter and XAD-2 trap into one sample prior to extraction and analysis is acceptable per ALT-052. Therefore, this deviation did not have an adverse effect on the data collected for the CPT.

2.4.2 Chlorine Spike Purity

Two certificates of formulation (COFs) were provided for the two lots of chlorine spike used during the test. One COF stated that the perchloroethylene in the spike was between 99.985% and 99.995% pure. The other COF stated that the perchloroethylene in the spike was 100% pure. A purity of 99.985% was utilized in calculations which generated a slightly conservative (i.e. low) value for the chlorine feedrate.

2.4.3 Surrogate Waste Stream Composition

The CPT Plan stated that the surrogate waste stream would be composed of isopropanol, ethanol, acetone, acetic acid, and water. The actual surrogate waste stream selected for the CPT was composed of methanol, acetone, acetic acid, and water.

2.4.4 Total Dissolved Solids and Total Suspended Solids Precision Requirement

Table 3-1 of the QAPP listed the precision requirement for TSS and TDS as “RPD: LCP” where LCP means laboratory certification program. LCP should not have been listed as a precision requirement for these parameters in the ash spike because the laboratory’s limits on these parameters apply to a different matrix. This is discussed further in Section 5.3.2.

3.0 SAMPLING AND ANALYSIS METHODS

The purpose of this section is to provide an overview of the CPT sampling and analytical procedures.

3.1 EPA Method 1 (Sampling/Traverse Points Determination)

During preliminary sampling, the sampling location and the sampling points were inspected to ensure that they met EPA Method 1 criteria. The approximate sampling points are depicted in Figure 3-1. Actual sampling points are presented in Appendix I-A, Appendix I-B and Appendix I-C.

3.2 EPA Method 2 (Stack Gas Velocity and Flow Determination)

The sampling and analytical procedures outlined in this method were conducted to determine the stack gas velocity and flowrate. The stack gas velocity was determined using the gas density and measurements of the velocity from a Type S pitot tube. The Type S pitot tubes used conformed to the geometric specifications outlined in EPA Method 2.

3.3 EPA Method 3/3A (Stack Gas Composition and Molecular Weight)

The sampling and analytical procedures outlined in this method were used to determine the stack gas composition and molecular weight.

3.4 EPA Method 4 (Stack Gas Moisture Content)

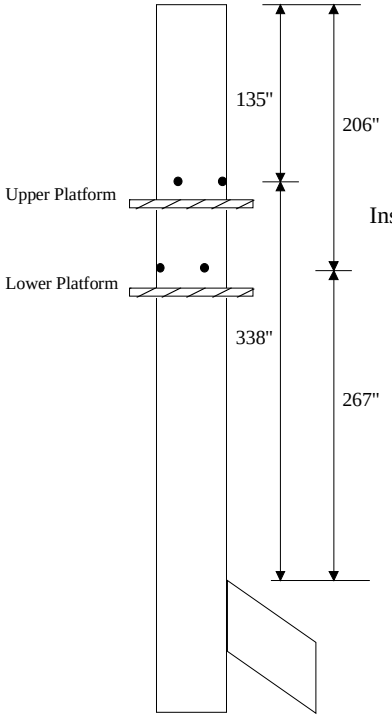
Applying this method, a gas sample was extracted from the stack through a series of impingers that contained reagents. The impingers were connected in series and contained in an ice bath in order to ensure condensation of the moisture in the gas stream. Any moisture that was not condensed in the impingers was captured in the silica gel, ensuring that all moisture was weighed and entered into the moisture calculations.

3.5 Installed CEMS (Total Hydrocarbons and Oxygen)

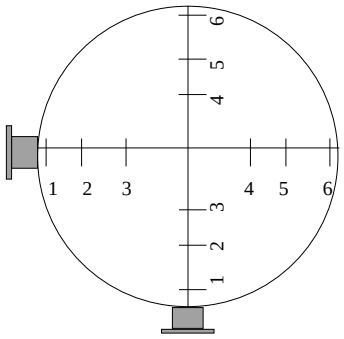
The permanently-installed THC CEMS was used to continuously measure stack gas concentrations of total hydrocarbons (THC) as propane during the CPT. Prior to the CPT, a Continuous Monitoring System Performance Evaluation Test (CMS PET) and a Relative Accuracy Test Audit (RATA) were conducted. The THC CEMS met the requirements of Performance Specification 8A in 40 CFR 60, Appendix B.

The permanently-installed O_2 CEMS was used to continuously measure stack gas concentrations of O_2 during the CPT. Measured O_2 concentrations were used to correct pollutant emission levels to 7% O_2, as applicable, and to determine molecular weight. The O_2 CEMS met the requirements of Performance Specification 4B in 40 CFR 60, Appendix B during the CMS PET and RATA.

Figure 3-1
Diagram of the LCD Sampling Ports

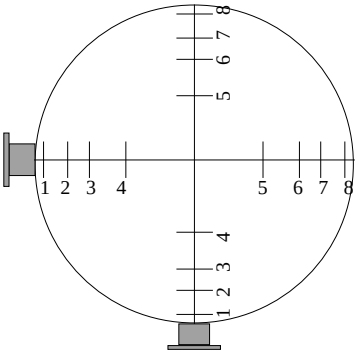


Inside Stack Diameter = 42"



Upper Sampling Platform
Distance Upstream from Flow Disturbance = 135 inches = 3.2 diameters
Distance Downstream from Flow Disturbance = 338 inches = 8 diameters
Total Number of Traverse Points = 12

Traverse Pt	% of ID	Distance from Inside of Duct Wall, inches
1	4.4	1.85
2	14.6	6.13
3	29.6	12.43
4	70.4	29.57
5	85.4	35.87
6	95.6	40.15



Lower Sampling Platform
Distance Upstream from Flow Disturbance = 206 inches = 4.8 diameters
Distance Downstream from Flow Disturbance = 267 inches = 6.3 diameters
Total Number of Traverse Points = 16

Traverse Pt	% of ID	Distance from Inside of Duct Wall, inches
1	3.2	1.34
2	10.5	4.41
3	19.4	8.15
4	32.3	13.57
5	67.7	28.43
6	80.6	33.85
7	89.5	37.59
8	96.8	40.66

3.6 EPA Method 5/26A (PM/HCl/Cl_2)

EPA Methods 5 and 26A were performed using a combined sampling train. EPA Method 5 was used for the determination of PM emissions and EPA Method 26A was used for the determination of hydrogen chloride and chlorine (HCl/Cl_2) emissions. Using the combined method, a gas sample was isokinetically withdrawn from the stack through a filter and absorbing solutions. The filter collects particles from the gas stream. HCl gas was absorbed in acidic impingers containing sulfuric acid (H_2SO_4), while Cl_2 was absorbed and reacted in the alkaline impingers containing sodium hydroxide (NaOH). The amount of PM collected was determined by Eastman's ESL by using EPA Method 5. The ESL also performed the HCl/Cl_2 analysis of the acidic and alkaline impinger solutions using ion chromatography (SW-846 Method 9057).

3.7 EPA Method 23 / ALT-052 (Dioxins and Furans)

Alliance Source Testing, LLC (AST) from Decatur, Alabama conducted the sampling procedures outlined in EPA Method 23 and the recovery procedure described in ALT-052 to determine the emissions of polychlorinated dibenzo-(p)-dioxin and dibenzofurans (PCDDs/PCDFs) during the CPT. Using this method, gaseous and particulate pollutants were withdrawn isokinetically from the LCD and collected in a multicomponent train. Each sample was collected on a glass fiber filter and on a packed column of adsorbent material. SGS Analytical Perspectives (SGS) of Wilmington, NC performed the analysis of the samples using EPA Method 23. SGS extracted the PCDDs and PCDFs from the sample media, separated them by high-resolution gas chromatography (HRCG), and measured them by high-resolution mass spectrometry (HRMS).

3.8 EPA Method 29 (Chromium and Lead)

Using EPA Method 29, stack gas was isokinetically sampled to collect metals in a multi-component sampling train that consisted of a heated filter and a series of chilled impingers. The analysis of the Method 29 samples was performed by TestAmerica Laboratories, Inc. (TestAmerica) of Knoxville, TN. The stack gas samples were prepared and analyzed using TestAmerica standard operating procedure KNOX-MT-0006 which is based on EPA SW-846 Method 0060, "Determination of Metals in Stack Gas Emissions," and Method 29, "Determination of Metals Emissions from Stationary Sources." SW-846 Method 6010B, as incorporated in TestAmerica standard operating procedure KNOX-MT-0007, was used to perform the final instrument analysis.

3.9 Process Sampling and Analysis

The LCD CPT feedstreams include the waste feedstreams, the waste-derived fuel feedstream, and the spiking feedstreams. All feedstreams were sampled by Eastman's LCD operations staff and transported to the ESL. The samples of the waste feedstreams, the fuel feedstream, and the

ash spike stream were analyzed by ESL and Pace Analytical Services, Inc. (Pace Analytical). The samples collected from the chlorine spike and the metal spike were archived.

Grab samples for the Waste EDA, Surrogate Waste, and Waste-Derived Fuel were collected within 30 minutes of the start and end of each run, and every 30 minutes during each test run. The grab samples for each stream were composited at the end of each test run. The composite samples for each waste stream were analyzed for ash, higher heating value (HHV), total chlorine, chromium, lead, and viscosity. During the second run, duplicate samples were collected. The duplicate samples were composited to form a second Run 2 composite sample for each waste stream. These duplicate samples were analyzed for quality assurance purposes.

Grab samples of the metal, chlorine, and ash spiking feedstream were collected at the start and end of each test run. The metal and chlorine spike samples were archived in case future analysis was needed. The grab samples of the ash spike were composited for each run. Duplicate samples were collected during Run 2 and composited to form a duplicate Run 2 composite sample. The ash spike composite samples were analyzed for chromium, lead, total suspended solids (TSS), and total dissolved solids (TDS).

The methods used for each analysis are described in Section 4.0.

4.0 TEST RESULTS

This section presents the analytical and emission results for the stack gas samples. The analytical results for the process and ash spike samples are also included in this section. Eastman's Environmental Services Laboratory (ESL) conducted the sampling and the analysis for the particulate matter (PM) and hydrogen chloride/chlorine (HCl/Cl_2) stack gas samples. The metals sampling was conducted by ESL and was analyzed by TestAmerica Laboratories, Inc. (TestAmerica). Dioxins and furans were sampled by Alliance Source Testing, LLC (AST) and were analyzed by SGS Analytical Perspectives (SGS). Eastman's Building 248 (B-248) personnel collected the process samples and Eastman's ESL personnel composited the samples. Pace Analytical Services, Inc. (Pace Analytical) performed total chromium and lead analysis by ICP on the process samples and also performed the chlorine, ash, and HHV analyses on the process samples. All other process sample analyses (viscosity, TSS, and TDS) were conducted by Eastman's ESL. It should be noted that the values presented in this report and in the appendices may differ slightly in the least significant digit due to minor rounding differences. The spreadsheet calculations utilizing the original data set are more precise than manually entering the significant digits of the values shown into a spreadsheet.

The stack gas flow measurements and analytical results for the Method 5/26A sampling train are provided in Table 4-1. The data are presented on a run-by-run basis and are averaged for the test. The data provided include the amount detected, the concentration in the stack gas, and the emission rate of the constituent. The data package for PM and HCl/Cl_2 is provided as Appendix I-A.

The Method 23 sampling train measurement summary is provided in Table 4-2. AST used Method 23 and ALT-052 for the determination of PCDD and PCDF concentrations and emission rates. The oxygen data recorded by Eastman's installed continuous emission monitoring system (CEMS) unit was used in the calculations of emission rates and to correct the concentration to seven percent oxygen. The data package for PCDDs and PCDFs is provided as Appendix I-B.

The stack gas flow measurements, the stack gas concentration, and the emission rate for each metal obtained from the Method 29 sampling train are provided in Table 4-3. The metals analysis was performed in accordance with the National Environmental Laboratory Accreditation Conference (NELAC) requirements. The metals data package is provided as Appendix I-C.

The process samples were collected by B-248 personnel and were transported to the laboratory at Building 54 on ice in coolers. ESL personnel composited the samples in the laboratory and the samples were refrigerated until they were analyzed. The samples sent to Pace Analytical were

Table 4-1
CPT Emissions Summary for EPA Method 5/26A

Parameter	Run 1	Run 2	Run 3	Run 4 [a]	Average
Test Date	12/11/2012	12/11/2012	12/11/2012	12/12/2012	---
Start Time	12:10	16:12	20:41	15:00	---
Finish Time	14:31	18:22	22:57	17:09	---
Sample Volume, dscf	77.78	77.06	81.22	77.30	78.34
O_2 Percent, dry [b]	13.3	13.1	13.0	13.2	13.2
Gas Flow Rate, acfm	24,314	24,237	25,384	24,169	24,526
Gas Flow Rate, dscfm	18,471	18,382	19,160	18,258	18,568
Percent Isokinetic	99	98.6	99.7	99.6	99.2
Particulate Matter Emissions					
Total Particulate Catch, g	9.20E-03	8.40E-03	2.04E-02	N/A	1.27E-02
Concentration, gr/dscf	0.0018	0.0017	0.0039	N/A	0.0025
Concentration, gr/dscf @ 7% O_2 [b]	0.0033	0.0030	0.0068	N/A	0.0044
Emission Rate, lb/hr	0.29	0.27	0.64	N/A	0.40
Hydrogen Chloride Emissions					
HCl mass, µg	2,705	3,795	N/A	3,273	3,258
Concentration, ppmdv	0.81	1.15	N/A	0.99	0.98
Concentration, ppmdv @ 7% O_2 [b]	1.47	2.03	N/A	1.77	1.76
Emission rate, lb/hr	0.08	0.12	N/A	0.10	0.10
Chlorine Emissions					
Cl_2 mass, µg	34,916	36,817	N/A	44,544	38,759
Concentration, ppmdv	5.38	5.72	N/A	6.90	6.00
Concentration, ppmdv @ 7% O_2 [b]	9.77	10.14	N/A	12.38	10.77
Emission rate, lb/hr	1.10	1.16	N/A	1.39	1.22
Combined Results (as Cl^- equivalents)					
Concentration, ppmdv @ 7% O_2 [b] (as Cl^- equivalents)	21.0	22.3	N/A	26.5	23.3

Notes:
[a] Method 26A sampling train only
[b] CEMS O_2 value used for molecular weight determination and to correct values to 7% O_2.

Table 4-2

CPT Emissions Summary for EPA Method 23

Parameter		Run 1	Run 2	Run 3	Average
Test Date		12/11/2012	12/11/2012	12/11/2012	---
Start Time		12:10	16:12	20:41	---
Finish Time		15:23	19:50	23:50	---
Sample Volume, scf		115.863	117.712	119.360	117.645
O_2 Percent, dry [a]		13.3	13.1	13.0	13.1
Gas Flow Rate, acfm		24,560	24,292	24,693	24,515
Gas Flow Rate, dscfm		18,502	18,365	18,586	18,484
Percent Isokinetic		96.6	95.6	99.1	97.1
Dioxin and Furan Emissions [b]					
Compound	**TEF**	**ng/dscm @ 7% O_2**	**ng/dscm @ 7% O_2**	**ng/dscm @ 7% O_2**	**ng/dscm @ 7% O_2**
2,3,7,8-TCDD	1	< 0.0011	< 0.0009	0.0017	< 0.0012
1,2,3,7,8-PeCDD	0.5	0.0026	0.0042	0.0029	0.0032
1,2,3,4,7,8-HxCDD	0.1	0.0032	0.0030	0.0023	0.0028
1,2,3,6,7,8-HxCDD	0.1	0.0063	0.0051	{0.0036}	0.0050
1,2,3,7,8,9-HxCDD	0.1	0.0041	{0.0039}	0.0039	0.0039
1,2,3,4,6,7,8-HpCDD	0.01	0.0168	0.0246	0.0208	0.0207
OCDD	0.0001	0.0213	0.0343	0.0248	0.0268
2,3,7,8-TCDF	0.1	0.0152	0.0136	0.0149	0.0145
1,2,3,7,8-PeCDF	0.05	0.0167	0.0199	0.0237	0.0201
2,3,4,7,8-PnCDF	0.5	0.0264	0.0305	0.0328	0.0299
1,2,3,4,7,8-HxCDF	0.1	0.0287	0.0381	0.0412	0.0360
1,2,3,6,7,8-HxCDF	0.1	0.0207	0.0308	0.0325	0.0280
2,3,4,6,7,8-HxCDF	0.1	0.0196	0.0280	0.0283	0.0253
1,2,3,7,8,9-HxCDF	0.1	< 0.0015	< 0.0020	< 0.0019	< 0.0018
1,2,3,4,6,7,8-HpCDF	0.01	0.0511 [d]	0.0791	0.0875	0.0726
1,2,3,4,7,8,9-HpCDF	0.01	0.0103	0.0155	0.0170	0.0143
OCDF	0.001	0.2102 [d]	0.1705 [d]	0.1572 [d]	0.1793
ITEF TEQ (ND=DL; EMPC=EMPC) [c]		0.027	0.033	0.035	0.032

DL Detection Limit EMPC Estimated Maximum Possible Concentration
ND Non-detect ITEF TEQ International Toxic Equivalent Factor Toxic Equivalent Quotient

Notes:

[a] CEMS O_2 value used for molecular weight determination and to correct values to 7% O_2.

[b] Values that were not detected are preceded by a "<". Estimated Maximum Possible Concentration values are surrounded by a "{}".

[c] Values represent theoretical maximum concentrations.

[d] Found in the method blank at a concentration at least 10% of the concentration in the sample. See Section 5.3.5 for more details.

Table 4-3
CPT Emissions Summary for EPA Method 29

Parameter	Run 1	Run 2	Run 3	Average
Test Date	12/11/2012	12/11/2012	12/11/2012	---
Start Time	12:10	16:12	20:41	---
Finish Time	14:31	18:22	22:57	---
Sample Volume, dscf	82.06	77.52	78.21	79.27
O_2 Percent, dry [a]	13.3	13.1	13.0	13.1
Gas Flow Rate, acfm	25,767	24,537	24,771	25,025
Gas Flow Rate, dscfm	19,459	18,434	18,576	18,823
Percent Isokinetic	99.2	98.9	99.0	99.0
Chromium Results				
Front-Half Catch Weight (µg)	49.9	49.3	62.0	53.7
Back-Half Catch Weight (µg)	< 0.62	< 0.73	1.40	< 0.92
Blank Correction Weight (µg)	0	0	0	0
Total Catch Weight (µg)	< 50.52	< 50.03	63.40	< 54.65
Concentration, µg/dscm @ 7% O_2 [a]	< 39.53	< 40.39	< 50.10	< 43.34
Emission rate, lb/hr	< 1.58E-03	< 1.57E-03	< 1.99E-03	< 1.72E-03
Lead Results				
Front-Half Catch Weight (µg)	67.5	65.4	75.3	69.4
Back-Half Catch Weight (µg)	< 0.40	< 0.30	< 0.28	< 0.33
Blank Correction Weight (µg)	0	0	0	0
Total Catch Weight (µg)	< 67.90	< 65.70	75.58	< 69.73
Concentration, µg/dscm @ 7% O_2 [a]	< 53.13	< 53.04	< 59.72	< 55.30
Emission rate, lb/hr	< 2.13E-03	< 2.07E-03	< 2.37E-03	< 2.19E-03

Notes:
[a] CEMS O_2 value used for molecular weight determination and to correct values to 7% O_2.

placed on ice in a cooler. Analytical data for the Surrogate Waste feedstream, the Waste-Derived Fuel feedstream, the Waste EDA feedstream, and the ash spike feedstream are included in Tables 4-4, 4-5, 4-6, and 4-7, respectively. Pace Analytical analyzed the feedstream samples for total chromium and lead according to SW-846 Methods 3050 and 6010B, for ash according to ASTM D482, for heating value according to ASTM D5468, and for chlorine according to SW-846 Method 9076. Eastman's ESL analyzed the streams for viscosity using ASTM D3236. Eastman's ESL also analyzed the ash spike stream for total suspended solids (TSS) and total dissolved solids (TDS) by SM 2540D and SM 2540C, respectively. The feedstream and ash spike data package is provided as Appendix I-D.

Samples of the chlorine and metals spikes were archived and were not analyzed. The Certificate of Analysis (COA) for the metals spike and the Certificate of Formulation (COF) for the chlorine spike were used in lieu of analysis. Data from the COA for the metal spike and the COF for the chlorine spike are shown in Tables 4-8 and 4-9. The feedrate data, the COA and the COF are provided in Appendix I-E.

Table 4-4

CPT Analytical Results for Surrogate Waste Feedstream [a]

Parameter	Analytical Method	Units	Run 1	Run 2	Run 2 Duplicate	Run 3	Run 4
Ash	ASTM D482	%	<0.010	<0.010	<0.010	<0.010	<0.010
Heating Value	ASTM D5468	Btu/lb	6,890	6,860	6,650	6,870	6,840
Chlorine	SW-846 9076	%	<0.010	<0.010	<0.010	<0.010	<0.010
Chromium	SW-846 6010B	µg/g	<0.49	<0.49	<0.50	<0.49	<0.47
Lead	SW-846 6010B	µg/g	<0.49	<0.49	<0.50	<0.49	<0.47
Viscosity	ASTM D3236	SUS at 80 °F	<32	<32	<32	<32	33

Notes:

[a] "<" Indicates that the constituent was not detected or the concentration was below the method detection limit.

Table 4-5
CPT Analytical Results for the Waste-Derived Fuel Feedstream [a]

Parameter	Analytical Method	Units	Run 1	Run 2	Run 2 Duplicate	Run 3	Run 4
Ash	ASTM D482	%	0.091	0.016	0.066	<0.010	<0.010
Heating Value	ASTM D5468	Btu/lb	19,310	17,480	19,280	19,240	17,630
Chlorine	SW-846 9076	%	<0.010	<0.010	<0.010	<0.010	<0.010
Chromium	SW-846 6010B	µg/g	<0.49	<0.50	<0.50	<0.49	<0.49
Lead	SW-846 6010B	µg/g	<0.49	<0.50	<0.50	<0.49	<0.49
Viscosity	ASTM D3236	SUS at 80 °F	37	39	35	36	39

Notes:
[a] "<" Indicates that the constituent was not detected or the concentration was below the method detection limit.

Table 4-6

CPT Analytical Results for the Waste EDA Feedstream [a]

Parameter	Analytical Method	Units	Run 1	Run 2	Run 2 Duplicate	Run 3	Run 4
Ash	ASTM D482	%	0.17	0.16	0.13	0.14	0.13
Heating Value	ASTM D5468	Btu/lb	7,910	7,470	7,910	7,900	7,920
Chlorine	SW-846 9076	%	0.024	0.026	0.020	0.023	0.023
Chromium	SW-846 6010B	µg/g	206	189	189	183	184
Lead	SW-846 6010B	µg/g	<0.48	<0.50	<0.49	<0.49	<0.49
Viscosity	ASTM D3236	SUS at 80 °F	32	32	34	34	33

Notes:

[a] "<" Indicates that the constituent was not detected or the concentration was below the method detection limit.

Table 4-7

CPT Analytical Results for the Ash Spike Feedstream [a]

Parameter	Analytical Method	Units	Run 1	Run 2	Run 2 Duplicate	Run 3	Run 4
Ash [b]	N/A [b]	%	17.62	17.80	15.31	17.71	17.89
Chlorine [b]	N/A [b]	%	10.689	10.797	9.285	10.743	10.851
Chromium	SW-846 6010B	µg/g	<0.47	<0.50	<0.48	<0.50	<0.50
Lead	SW-846 6010B	µg/g	<0.47	<0.50	<0.48	<0.50	<0.50
Total Dissolved Solids	SM 2540C	mg/L	198,000	200,000	172,000	199,000	201,000
Total Suspended Solids	SM 2540D	mg/L	29.2	24.1	29.3	34.6	28.3

Notes:

[a] "<" Indicates that the constituent was not detected or the concentration was below the method detection limit.

[b] Calculated based on the total solids being NaCl.

Table 4-8

Chlorine Spike Formulation Summary

Compound	Blend 1			Blend 2		
	Purity from Manufacturer	**Quantity in Blend**	**% by Weight**	**Purity from Manufacturer**	**Quantity in Blend**	**% by Weight**
Perchloroethylene (Tetrachloroethene)	99.985% [a]	14,000 pounds	87.00%	100%	9,100 pounds	87.00%
Methanol	99.98%	2,082 pounds	13.00%	99.98%	1,350 pounds	13.00%

Notes:

[a] The certificate of formulation provided a range for the purity. See Section 2.4.2 for further details.

Table 4-9
Metal Spike Composition Summary

Element	Compound	Element Target Concentration	Element Analyzed Concentration
Lead	Lead Acetate	2.0%	2.07%
Chromium	Chromium Acetate	5.0%	5.27%

5.0 QUALITY ASSURANCE/QUALITY CONTROL

5.1 Sampling Train Validation

The Quality Assurance Manager (QAM) reviewed all the field sampling data and other reported data. The QAM, in his judgment, has verified that all appropriate data has been received. No missing data were discovered that would jeopardize use of the data for the intended objectives. The QAM reviewed the quality of the laboratory work and verified that appropriate actions were taken to ensure that quality standards were met. Quality standards were based upon:

- The representativeness of the sample,
- The maintenance and cleanliness of sampling equipment, and
- The adherence to an approved, written sample collection procedure.

5.2 Analytical QA/QC Results

A review was completed of the analytical data by Mr. Dennis R. Knisley, P.E. of Franklin Engineering Group, Inc. (Franklin Engineering). This review was based upon:

- The use of approved analytical procedures,
- Use of calibrated instrumentation,
- Acceptable results from analyses of quality control samples, and
- Precision and accuracy Quality Assurance Objectives (QAO) results and goals as presented in the QAPP. While some QAOs were not achieved, the validity of the data was not jeopardized.

5.3 Analytical QC Discussions

The objective of a quality assurance/quality control (QA/QC) program is to assure that the precision and accuracy of all environmental data generated are within the QAO. QAO were provided in the QAPP and are provided with each of the analytical reports in the appendices, where appropriate. A summary of the QAO for each sampling parameter is provided in Table 5-1. The QAO considered for evaluation are precision and accuracy. Precision is measured by relative percent difference (RPD), repeatability (RPT), or range percent (RP). Accuracy is measured by percent recovery. A detailed discussion of all data quality objectives is provided in the following subsections.

5.3.1 Process Samples - Waste Streams

The waste streams include the Surrogate Waste, the Waste-Derived Fuel, and the Waste EDA streams. With the exception of the viscosity analysis, all analyses were conducted at Pace Analytical. The viscosity analysis was conducted by Eastman's ESL.

Table 5-1
CPT Analytical Quality Assurance Objective Summary

Parameter	Analytical Parameter	Analytical Method	Precision (RPD, RP)	Accuracy (%R)	Precision Pass/Fail	Accuracy Pass/Fail
Surrogate Waste	Ash	ASTM D482	0.32 % RP	N/A	N/A [a]	--
	HHV	ASTM D5468	N/A	95 – 105%	--	PASS
	Chlorine	SW-846 9076	± 20 % RPD	80 – 120 % [b] MS or MS DUP	PASS	See note b
	Chromium	SW-846 3050/6010B	± 20 % RPD	75 – 125 % MS, MS DUP or PS	N/A [a]	PASS
	Lead	SW-846 3050/6010B	± 20 % RPD	75 – 125 % MS, MS DUP or PS	N/A [a]	PASS
	Viscosity	ASTM D3236	N/A	N/A	--	--
Waste-Derived Fuel	Ash	ASTM D482	0.32 % RP	N/A	FAIL [c]	--
	HHV	ASTM D5468	N/A	95 – 105%	--	PASS
	Chlorine	SW-846 9076	± 20 % RPD	80 – 120 % MS or MS DUP	PASS	PASS
	Chromium	SW-846 3050/6010B	± 20 % RPD	75 – 125 % MS, MS DUP or PS	N/A [a]	PASS

RP - Range Percent
N/A - Not Applicable or Not Available
MS - Matrix Spike
PS - Post Spike
LCP – Laboratory
RPD - Relative Percent Difference

Notes:

[a] The concentrations for the samples were below the detection limit; therefore, the calculation of RP or RPD is not applicable. See Section 5.3.1 for an explanation.

[b] The QAPP specified an accuracy of 80-120%. The laboratory accuracy for this parameter is 75-125%. This parameter did not achieve the QAPP guidelines, but did achieve the laboratory guidelines. See Section 5.3.1 for an explanation.

[c] The parameter did not meet the QA requirements. However, the contribution of ash from this feedstream is minor compared to the other streams fed during the CPT. See Section 5.3.1 for more information.

[d] The laboratory limits for this parameter do not apply to this matrix. See Section 5.3.2 for more information.

[e] The post digestion spike duplicate percent recovery for lead (68.2%) was outside of the control limits specified in the QAPP (75-125%). See Section 5.3.4 for more information.

Table 5-1
CPT Analytical Quality Assurance Objective Summary (continued)

Parameter	Analytical Parameter	Analytical Method	Precision (RPD, RP)	Accuracy (%R)	Precision Pass/Fail	Accuracy Pass/Fail
Waste-Derived Fuel (cont'd)	Lead	SW-846 3050/6010B	± 20 % RPD	75 – 125 % MS, MS DUP or PS	N/A [a]	PASS
	Viscosity	ASTM D3236	N/A	N/A	--	--
Waste EDA	Ash	ASTM D482	0.32 % RP	N/A	FAIL [c]	--
	HHV	ASTM D5468	N/A	95 – 105%	--	PASS
	Chlorine	SW-846 9076	± 20 % RPD	80 – 120 % MS or MS DUP	PASS	PASS
	Chromium	SW-846 3050/6010B	± 20 % RPD	75 – 125 % MS, MS DUP or PS	PASS	PASS
	Lead	SW-846 3050/6010B	± 20 % RPD	75 – 125 % MS, MS DUP or PS	N/A [a]	PASS
	Viscosity	ASTM D3236	N/A	N/A	--	--
Ash Spike (NaCl/water)	Total Suspended Solids	SM 2540D	RPD: LCP [d]	N/A	19.5% [d]	--
	Total Dissolved Solids	SM 2540C	RPD: LCP [d]	N/A	15.0% [d]	--
	Chromium	SW-846 3050/6010B	± 20 % RPD	75 - 125 % MS, MS DUP	N/A [a]	PASS
	Lead	SW-846 3050/6010B	± 20 % RPD	75 - 125 % MS, MS DUP	N/A [a]	PASS

RP - Range Percent
N/A - Not Applicable or Not Available
MS - Matrix Spike
PS - Post Spike
LCP – Laboratory
RPD - Relative Percent Difference

Notes:

[a] The concentrations for the samples were below the detection limit; therefore, the calculation of RP or RPD is not applicable. See Section 5.3.1 for an explanation.

[b] The QAPP specified an accuracy of 80-120%. The laboratory accuracy for this parameter is 75-125%. This parameter did not achieve the QAPP guidelines, but did achieve the laboratory guidelines. See Section 5.3.1 for an explanation.

[c] The parameter did not meet the QA requirements. However, the contribution of ash from this feedstream is minor compared to the other streams fed during the CPT. See Section 5.3.1 for more information.

[d] The laboratory limits for this parameter do not apply to this matrix. See Section 5.3.2 for more information.

[e] The post digestion spike duplicate percent recovery for lead (68.2%) was outside of the control limits specified in the QAPP (75-125%). See Section 5.3.4 for more information.

Table 5-1
CPT Analytical Quality Assurance Objective Summary (continued)

Parameter	Analytical Parameter	Analytical Method	Precision (RPD, RP)	Accuracy (%R)	Precision Pass/Fail	Accuracy Pass/Fail
Stack Gas	PM	EPA Method 5	N/A	N/A	--	--
	HCl/Cl_2	SW-846 Method 9057	± 10% RPD	90-110 % MS, MS DUP	PASS	PASS
	Dioxin/Furans	EPA Method 23	N/A	Internal Standards: 40 - 130 %; Surrogate Standards: 70-130%	--	PASS
	Chromium	SW-846 6010B	± 20 % RPD	75 - 125 % PS, PS DUP	PASS	PASS
	Lead	SW-846 6010B	± 20 % RPD	75 - 125 % PS, PS DUP	PASS	FAIL [e]

RP - Range Percent
N/A - Not Applicable or Not Available
MS - Matrix Spike
PS - Post Spike
LCP – Laboratory
RPD - Relative Percent Difference

Notes:

[a] The concentrations for the samples were below the detection limit; therefore, the calculation of RP or RPD is not applicable. See Section 5.3.1 for an explanation.

[b] The QAPP specified an accuracy of 80-120%. The laboratory accuracy for this parameter is 75-125%. This parameter did not achieve the QAPP guidelines, but did achieve the laboratory guidelines. See Section 5.3.1 for an explanation.

[c] The parameter did not meet the QA requirements. However, the contribution of ash from this feedstream is minor compared to the other streams fed during the CPT. See Section 5.3.1 for more information.

[d] The laboratory limits for this parameter do not apply to this matrix. See Section 5.3.2 for more information.

[e] The post digestion spike duplicate percent recovery for lead (68.2%) was outside of the control limits specified in the QAPP (75-125%). See Section 5.3.4 for more information.

The metals results reported by Pace Analytical conform to the most current National Environmental Laboratory Accreditation Conference (NELAC) standards. Pace Analytical does not hold NELAC accreditation for chlorine, ash, or heating value analyses.

Surrogate Waste

The ash range percent (RP) of the duplicate samples was unable to be calculated because the ash content for the waste samples was below the detection limit; therefore, the calculation of RP is not applicable.

The chlorine matrix spike duplicate percent recovery (79%) was outside of the limits specified in the QAPP (80-120%). However, this parameter fell within the laboratory limits of 75-125%. Because the Surrogate Waste stream is such a minor source of chlorine compared to the other streams fed during the CPT, the results from this analysis are insignificant in the overall result of the CPT. Therefore, this does not compromise the validity of the data generated during the test.

The metals (chromium and lead) relative percent difference (RPD) of the duplicate samples was unable to be calculated because the metals content for the waste samples was below the detection limit; therefore, the calculation of RPD is not applicable.

Waste-Derived Fuel

The precision for ash exceeded the limit specified in the QAPP (0.32% RP). Ash from this feedstream accounts for less than 0.1% of the ash fed during the CPT. Because the Waste-Derived Fuel stream is such a minor source of ash compared to the other streams fed during the CPT, the results from this analysis are insignificant in the overall result of the CPT. Therefore, this does not compromise the validity of the data generated during the test.

The metals (chromium and lead) RPD of the duplicate samples was unable to be calculated because the metals content for the waste samples was below the detection limit; therefore, the calculation of RPD is not applicable.

Waste EDA

The precision for ash exceeded the limit specified in the QAPP (0.32% RP). Ash from this feedstream accounts for less than 0.5% of the ash fed during the CPT. Because the Waste EDA stream is such a minor source of ash compared to the other streams fed during the CPT, the results from this analysis are insignificant in the overall result of the CPT. Therefore, this does not compromise the validity of the data generated during the test.

The lead RPD of the duplicate samples was unable to be calculated because the lead content for the waste samples was below the detection limit; therefore, the calculation of RPD is not applicable.

5.3.2 Process Sample - Ash Spike

The TSS and TDS analyses were conducted at Eastman's ESL. The metals analysis was conducted by Pace Analytical and the metals results reported conform to the most current NELAC standards. A QA/QC issue was noted for the metals (chromium and lead) RPD of the duplicate samples. The chromium and lead concentrations for the ash spike samples were below the detection limit; therefore, the calculation of RPD is not applicable.

Table 3-1 of the QAPP listed the precision requirement for TSS and TDS as "RPD: LCP" where LCP means laboratory certification program. LCP should not have been listed as a precision requirement for these parameters in the ash spike because the laboratory's limits on these parameters apply to wastewater effluent. The LCP criteria the QAPP referred to is not appropriate because it corresponds to a different sample matrix. However, when the precision was calculated between the Run 2 and Run 2 duplicate samples, reasonable RPDs of 19.5% for TSS and 15% for TDS were obtained.

5.3.3 Emissions Sample - HCl/Cl_2

Eastman's ESL performed the analysis of HCl/Cl_2. All QA requirements were met.

It should be noted that one minor deviation from normal practice was encountered in the laboratory. Some of the sample from the alkaline impinger contents and rinse from Run 1 were spilled in the laboratory. While this did not affect the ion chromatography analysis for the Cl_2 concentration in the sample, the original volume of the sample (before the spill) was needed to calculate the Cl_2 emissions.

The following procedure was used to determine the original volume of the sample:

1. Once the sample container is empty, make 5 separate determinations of the volume of water required to fill the container to the mark indicating the original volume of sample.
2. Calculate the average and standard deviation of these 5 determinations to estimate the original volume of sample in the container.
3. Compare this estimate to the 300 mL +/- 3 mL expected in the original sample volume (determined from the recorded volumes transferred from the alkaline impingers (96 mL +

104 mL = 200 mL) plus the 100 mL of water used to rinse the impingers (from the ESL procedure)).

As can be seen on the summary page for the Cl_2 results in Appendix I-A, a sample volume of 297 mL was determined by using the average of 5 volumes of water used to refill to the sample fill line. The standard deviation of these 5 measurements was 2.74 mL. While 297 mL compares satisfactorily with the estimated sample volume of 300 mL +/- 3 mL, a sample volume of 300 mL was used in the Cl_2 emission calculations because it is slightly more conservative than 297 mL.

5.3.4 Emissions Sample - Chromium and Lead

TestAmerica was contracted to perform the analysis of chromium and lead in the stack gas. Chromium was detected in the front-half of the reagent blank but it was less than the reporting limit. No blank correction was performed on the chromium results.

The post digestion spike duplicate percent recovery for lead (68.2%) was outside the control limits (75-125%). On page 5 of their test report, TestAmerica states that the laboratory control samples showed acceptable results indicating that the analysis was in control. Results outside of limits do not necessarily reflect poor method performance due to high lead concentrations in the sample relative to the spike level.

5.3.5 Emissions Sample - Dioxins and Furans

AST conducted stack gas sampling for dioxins and furans and SGS was contracted to perform the analysis of dioxins and furans. AST was responsible for producing the analysis report and concluded that data quality was maintained throughout the project. Leak checks and isokinetic QA criteria were met. The sampling trains were leak checked prior to and immediately after sampling. The only leak that occurred was between sampling ports and is described in Section 2.3.3. The sampling rates were within the 100% ±10% criterion established for isokinetic sampling. Equipment calibration data are presented in Appendix D of AST's report.

The method blank yielded detectable results for the following 2 congeners - 1,2,3,4,6,7,8-HpCDF and OCDF. 1,2,3,4,6,7,8-HpCDF was approximately 6 times the detection limit while OCDF was approximately 105 times the detection limit. These two congeners were detected in each of the run samples. SGS stated that the results for these two congeners should be qualified as likely originating from laboratory background. Despite this qualifier, Eastman has included the reported results in the PCDD/PCDF emissions calculation and the emissions are still well below the HWC MACT standard.

5.4 Sampling Train Leak Checks

To ensure proper operation of the sampling trains, pre-test and post-test leak checks were conducted. The trains were post-test leak-checked according to the sampling method before any sample recovery occurred. All leak checks were considered acceptable. Leak check data can be found in the data packages in the appendices to this report.

APPENDIX I-A

PM/HCl/Cl_2 DATA PACKAGE

Company: EASTMAN CHEMICAL COMPANY
Project name: 12-0311
Location: LCD
Testing personnel:

	1	2	3	Average
Test Date	12/11/12	12/11/12	12/11/12	--
Start Time	12:10	16:12	20:41	--
Finish Time	14:31	18:22	21:57	--
Net Test Time, minutes	120	120	120	120
Vol. Sampled at STP, cu. ft.	77.78	77.06	81.22	78.69
Stack Gas Temperature, F	122.7	123.2	125.1	123.6
Moisture Content, % by volume	12.12	12.19	12.32	12.21
CO2 Percent, dry	6.3	6.4	6.4	6.4
O2 Percent, dry	13.3	13.1	13.0	13.1
CO Percent, dry	0.0	0.0	0.0	0.0
N2 Percent, dry	80.4	80.5	80.6	80.5
Excess Air, Percent	167.8	160.7	157.0	161.8
Stack Velocity, ft/min	2527	2519	2639	2562
Gas Flow Rate, acfm	24314	24237	25384	24645
Gas Flow Rate, scfm	21,017	20,933	21,852	21,267
Gas Flow Rate, dscfm	18471	18382	19160	18671
Particulate Concentration, gr/dscf	0.0018	0.0017	0.0039	0.0025
Part. Conc. at 7% O2, gr/dscf	0.0033	0.0030	0.0068	0.0044
Particulate Mass Rate, lb/MMBtu	0.0074	0.0068	0.0156	0.0099
Particulate Mass Rate, lb/hr	0.29	0.27	0.64	0.40
Particulate Mass Rate, ton/yr	1.27	1.16	2.79	1.74
Percent Isokinetic	99.0	98.6	99.7	NA

Run # 1

Proj # 12-0311
Location LCD

Initial conditions:

Initial impingers volume	450	ml
Initial impingers mass	400.0	g

Test parameters:

Nozzle diameter	0.25	in.
Pitot tube coefficient	0.84	--
Y-factor	0.9929	--
Barometric pressure	28.56	in. Hg
Stack static pressure	-0.26	in. H_2O g.

Start time 12:10
Date 12/11/12

Point #	Gas Volume cu ft	DeltaP in. H_2O	Delta-H in. H_2O req'd	Delta-H in. H_2O actual	Stack Temp. F		Meter Outlet F	Sample Time min
init.	473.211							
1	480.530	0.50	1.57	1.57	120		49	10.0
2	487.410	0.55	1.72	1.72	121		50	10.0
3	494.010	0.52	1.63	1.63	124		51	10.0
4	500.800	0.45	1.41	1.41	123		52	10.0
5	507.050	0.44	1.38	1.38	121		53	10.0
6	513.300	0.42	1.32	1.32	124		53	10.0
7	519.730	0.46	1.44	1.44	123		52	10.0
8	526.090	0.46	1.44	1.44	122		52	10.0
9	532.470	0.47	1.47	1.47	122		51	10.0
10	539.190	0.49	1.53	1.53	123		51	10.0
11	546.180	0.50	1.57	1.57	124		51	10.0
12	552.500	0.44	1.38	1.38	125		52	10.0
13			0.00					
14			0.00					
15			0.00					
16			0.00					
17			0.00					
18			0.00					
19			0.00					
20			0.00					
21			0.00					
22			0.00					
23			0.00					
24			0.00					
25			0.00					
26			0.00					
27			0.00					
28			0.00					
29			0.00					
30			0.00					
31			0.00					
32			0.00					

Finish time 14:31

Final conditions:

Final impingers volume	662	ml
Final impingers mass	415.8	g
Particulate mass	0.0092	g
Volume of dry gas sampled	79.214	cu. ft.
Percent CO2	6.3	%
Percent O2	13.3	%
Percent CO	0.0	%
Sample time	120	min.

Initial conditions:

Initial impingers volume	450	ml
Initial impingers mass	400.0	g

Test parameters:

Nozzle diameter	0.25	in.
Pitot tube coefficient	0.84	--
Y-factor	0.9929	--
Barometric pressure	28.56	in. Hg
Stack static pressure	-0.26	in. H_2O g.

Start time	16:12
Date	12/11/12

Point #	Gas Volume cu ft	DeltaP in. H_2O	Delta-H in. H_2O req'd	actual	Stack Temp. F		Meter Outlet F	Sample Time min
init.	552.675							
1	558.910	0.46	1.44	1.44	122		49	10.0
2	565.500	0.47	1.47	1.47	124		50	10.0
3	571.900	0.45	1.41	1.41	124		51	10.0
4	578.590	0.50	1.57	1.57	123		51	10.0
5	585.250	0.49	1.53	1.53	124		52	10.0
6	591.565	0.43	1.35	1.35	123		52	10.0
7	597.970	0.47	1.47	1.47	120		51	10.0
8	604.850	0.54	1.69	1.69	120		51	10.0
9	611.970	0.53	1.66	1.66	125		53	10.0
10	618.610	0.47	1.47	1.47	125		54	10.0
11	625.150	0.45	1.41	1.41	123		56	10.0
12	631.320	0.40	1.25	1.25	125		56	10.0
13			0.00					
14			0.00					
15			0.00					
16			0.00					
17			0.00					
18			0.00					
19			0.00					
20			0.00					
21			0.00					
22			0.00					
23			0.00					
24			0.00					
25			0.00					
26			0.00					
27			0.00					
28			0.00					
29			0.00					
30			0.00					
31			0.00					
32			0.00					

Finish time	18:22

Final conditions:

Final impingers volume	664	ml
Final impingers mass	413.2	g
Particulate mass	0.0084	g
Volume of dry gas sampled	78.605	cu. ft.
Percent CO2	6.4	%
Percent O2	13.1	%
Percent CO	0.0	%
Sample time	120	min.

Initial conditions:

Initial impinger volume	450	ml
Initial impingers mass	400.0	g

Test parameters:

Nozzle diameter	0.25	in.
Pitot tube coefficient	0.84	--
Y-factor	0.9929	--
Barometric pressure	28.56	in. Hg
Stack static pressure	-0.26	in. H_2O g.

Start time 20:41
Date 12/11/12

Point #	Gas Volume cu ft	DeltaP in. H_2O	Delta-H in. H_2O req'd	actual	Stack Temp. F		Meter Outlet F	Sample Time min
init.	634.255							
1	641.245	0.57	1.79	1.79	125		45	10.0
2	648.520	0.59	1.85	1.85	126		47	10.0
3	655.670	0.57	1.79	1.79	126		48	10.0
4	662.780	0.56	1.75	1.75	125		50	10.0
5	669.300	0.47	1.47	1.47	125		52	10.0
6	675.621	0.43	1.35	1.35	124		53	10.0
7	682.600	0.50	1.57	1.57	123		53	10.0
8	689.350	0.49	1.53	1.53	125		54	10.0
9	696.250	0.50	1.57	1.57	125		55	10.0
10	703.700	0.55	1.72	1.72	126		56	10.0
11	710.650	0.53	1.66	1.66	126		57	10.0
12	717.125	0.43	1.35	1.35	125		58	10.0
13			0.00					
14			0.00					
15			0.00					
16			0.00					
17			0.00					
18			0.00					
19			0.00					
20			0.00					
21			0.00					
22			0.00					
23			0.00					
24			0.00					
25			0.00					
26			0.00					
27			0.00					
28			0.00					
29			0.00					
30			0.00					
31			0.00					
32			0.00					

Finish time 21:57

Final conditions:

Final impingers Volume	678	ml
Final impingers mass	414.4	g
Particulate mass	0.0204	g
Volume of dry gas sampled	82.846	cu. ft.
Percent CO2	6.4	%
Percent O2	13.0	%
Percent CO	0.0	%
Sample time	120	min.

Input for instantaneous isokinetic and delta-H calculations and constants for tests

Assumed values:

Moisture	13.50	%
Percent CO2	6.00	%
Percent O2	13.00	%
Percent CO	0.00	%
delta-H-@	1.8935	in. H2O
avg meter temp, assumed	65.00	deg F
assumed stack temp.	125.00	deg F

Actual values

F-sub-C for fuel		1800 for bituminous coal
Stack area	9.62	ft^2
Allowable particulate		lb/MMBtu

RUN # 1 Project # 12-0311
12/11/12

Delta p	Sqrt of Delta P		delta H (in. H2O)			Meter Outlet Temperature (deg F)		Stack Temperature (deg F)
0.500	0.707		1.57			49		120
0.550	0.742		1.72			50		121
0.520	0.721		1.63			51		124
0.450	0.671		1.41			52		123
0.440	0.663		1.38			53		121
0.420	0.648		1.32			53		124
0.460	0.678		1.44			52		123
0.460	0.678		1.44			52		122
0.470	0.686		1.47			51		122
0.490	0.700		1.53			51		123
0.500	0.707		1.57			51		124
0.440	0.663		1.38			52		125
Average	0.689		1.488			51.4		122.7

RUN # 2 Project # 12-0311
12/11/12

Delta p	Sqrt of Delta P		delta H (in. H2O)			Meter Outlet Temperature (deg F)		Stack Temperature (deg F)
0.460	0.678		1.44			49		122
0.470	0.686		1.47			50		124
0.450	0.671		1.41			51		124
0.500	0.707		1.57			51		123
0.490	0.700		1.53			52		124
0.430	0.656		1.35			52		123
0.470	0.686		1.47			51		120
0.540	0.735		1.69			51		120
0.530	0.728		1.66			53		125
0.470	0.686		1.47			54		125
0.450	0.671		1.41			56		123
0.400	0.632		1.25			56		125
Average	0.686		1.477			52.2		123.167

RUN # 3 Project # 12-0311
12/11/12

Delta p	Sqrt of Delta P		delta H (in. H2O)			Meter Outlet Temperature (deg F)		Stack Temperature (deg F)
0.570	0.755		1.79			45		125
0.590	0.768		1.85			47		126
0.570	0.755		1.79			48		126
0.560	0.748		1.75			50		125
0.470	0.686		1.47			52		125
0.430	0.656		1.35			53		124
0.500	0.707		1.57			53		123
0.490	0.700		1.53			54		125
0.500	0.707		1.57			55		125
0.550	0.742		1.72			56		126
0.530	0.728		1.66			57		126
0.430	0.656		1.35			58		125
Average	0.717		1.617			52.3		125.083

RUN # 1 Project Number: 12-0311
12/11/12

Impingers Initial mass, Wi	400	g
Impingers Final mass, Wf	415.80	g
Initial volume of water (ml), Vi	450	ml
Final volume of water (ml), Vf	662	ml
Initial volume in dry gas meter	473.21	cubic feet
Volume measured by dry gas meter, Vm	79.21	cubic feet
Delta H	1.49	in. H2O
Y-factor, gamma	0.993	--
Barometric Pressure, Pb	28.56	in. Hg
Temperature of the meter box, Tm	51.4	F
Percent CO2, %CO2	6.3	%
Percent O2, %O2	13.3	%
Percent CO, %CO	0.0	%
Percent N2, %N2	80.4	%
Average Sqrt Delta P, (DeltaP)^0.5	0.689	in^.5 water
Average Stack Temperature, Ts	122.7	F
Stack static pressure, Pstat	-0.3	in. water gage
Pressure in the stack, Ps	28.54	in Hg
Stack effective diameter	42.0	in.
Stack area, As	9.62	ft^2
Nozzle Diameter	0.250	in.
Nozzle Area, An	0.000341	ft^2
Sample Time, Time	120.0	minutes
Particulate Mass, Mn	0.0092	grams
Pitot Tube Coefficient, Cp	0.840	
F-sub-C for particulates, Fc	1800	

INPUT PARAMETERS

RUN # 2 Project Number: 12-0311
12/11/12

Impingers Initial mass, Wi	400.00	g
Impingers Final mass, Wf	413.20	g
Initial volume of water (ml), Vi	450.00	ml
Final volume of water (ml), Vf	664.00	ml
Initial volume in dry gas meter	552.68	cubic feet
Volume measured by dry gas meter, Vm	78.61	cubic feet
Delta H	1.48	in. H2O
Y-factor, gamma	0.993	--
Barometric Pressure, Pb	28.56	in. Hg
Temperature of the meter box, Tm	52.2	F
Percent CO2, %CO2	6.4	%
Percent O2, %O2	13.1	%
Percent CO, %CO	0.0	%
Percent N2, %N2	80.5	%
Average Sqrt Delta P, (DeltaP)^0.5	0.686	in^.5 water
Average Stack Temperature, Ts	123.2	F
Stack static pressure, Pstat	-0.260	in. water gage
Pressure in the stack, Ps	28.54	in Hg
Stack effective diameter	42.0	in.
Stack area, As	9.62	ft^2
Nozzle Diameter	0.250	in.
Nozzle Area, An	0.000341	ft^2
Sample Time, Time	120.0	minutes
Particulate Mass, Mn	0.0084	grams
Pitot Tube Coefficient, Cp	0.840	
F-sub-C for particulates, Fc	1800	

INPUT PARAMETERS

RUN # 3 Project Number: 12-0311
12/11/12

Impingers Initial mass, Wi	400	g
Impingers Final mass, Wf	414.4	g
Initial volume of water (ml), Vi	450.0	ml
Final volume of water (ml), Vf	678.0	ml
Initial volume in dry gas meter	634.255	cubic feet
Volume measured by dry gas meter, Vm	82.85	cubic feet
Delta H	1.62	in. H2O
Y-factor, gamma	0.993	--
Barometric Pressure, Pb	28.56	in. Hg
Temperature of the meter box, Tm	52.3	F
Percent CO2, %CO2	6.4	%
Percent O2, %O2	13.0	%
Percent CO, %CO	0.0	%
Percent N2, %N2	80.6	%
Average Sqrt Delta P, (DeltaP)^0.5	0.717	in^.5 water
Average Stack Temperature, Ts	125.1	F
Stack static pressure, Pstat	-0.260	in. water gage
Pressure in the stack, Ps	28.54	in Hg
Stack effective diameter	42.0	in.
Stack area, As	9.62	ft^2
Nozzle Diameter	0.250	in.
Nozzle Area, An	0.000341	ft^2
Sample Time, Time	120.0	minutes
Particulate Mass, Mn	0.0204	grams
Pitot Tube Coefficient, Cp	0.840	
F-sub-C for particulates, Fc	1800	

Test Identification Label

RUN # 1 Project Number 12-0311

Stack Sampling Results 12/11/12

Volume of Water Collected

Vwstd = (Wf- Wi) * 0.04715 + (Vf - Vi) * 0.04707

Vwstd = 10.72 std. cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/(Tm+460)

Vmstd = 77.78 cubic feet

Moisture Content

Moisture Content from Impingers
Bwi = Vwstd/(Vmstd + Vwstd)
Bwi = 0.1212

Moisture Content at Saturation
Bwsatn= (10^(7.96681-(1668.21/(228 +(Ts-32)/1.8))/760*29.921)/
(Pb + Pstat/13.6)
Bwsatn= 0.1299

Moisture Content used in calculations
Bwo= 0.1212

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.540

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(Bwo)

Ms = 28.142

Velocity of Stack Gas

Vs = 85.49*Cp*(DeltaP)^.5 ((Ts+460) /Ps/Ms)^.5*60

Vs = 2527 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 24,314 CFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 21,017 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 18,471 DSCFM

Vsstd = Qstd/As

Vsstd = 1920 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.990

Particulate Mass Rate

Cs = (15.43)(Mn)/Vmstd E = Cs * Fc * 100 / CO2

Cs = 0.0018 gr/dscf 0.0074 lb/MMBtu

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.29 lbs/hr 1.3 ton/yr

Particulate Concentration @ 7 % O2

Csc = Cs (14)/(21-O2)

Csc = 0.0033 gr/dscf

Excess air

% EA = 100 * (O2 - 0.5 * CO) / (0.264 * N2 - O2 - 0.5 * CO)

% EA = 167.81 %

Test Identification Label

RUN # 2 Project Number 12-0311

Stack Sampling Results 12/11/12

Volume of Water Collected

Vwstd = (Wf- Wi) * 0.04715 + (Vf - Vi) * 0.04707

Vwstd = 10.70 std. cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/(Tm+460)

Vmstd = 77.06 cubic feet

Moisture Content

Moisture Content from Impingers
Bwi = Vwstd/(Vmstd + Vwstd)
Bwi = 0.1219

Moisture Content at Saturation
Bwsatn= (10^(7.96681-(1668.21/(228 +(Ts-32)/1.8))/760*29.921)/
(Pb + Pstat/13.6)
Bwsatn= 0.1317

Moisture Content used in calculations
Bwo= 0.1219

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.55

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(Bwo)

Ms = 28.14

Velocity of Stack Gas

Vs = 85.49*Cp*(DeltaP)^.5 ((Ts+460)/Ps/Ms)^.5*60

Vs = 2519 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 24,237 CFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 20,933 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 18,382 DSCFM

Vsstd = Qstd/As

Vsstd = 1911 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.986

Particulate Mass Rate

Cs = (15.43)(Mn)/Vmstd E = C * Fc * 100 / CO2

Cs = 0.0017 gr/dscf 0.0068 lb/MMBtu

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.27 lbs/hr 1.2 ton/yr

Particulate Concentration @ 7 % O2

Csc = Cs (14)/(21-O2)

Csc = 0.0030 gr/dscf

Excess air

% EA = 100 * (O2 - 0.5 * CO) / (0.264 * N2 - O2 - 0.5 * CO)

% EA = 160.70 %

Test Identification Label

RUN # 3 Project Number 12-0311

Stack Sampling Results 12/11/12

Volume of Water Collected

Vwstd = (Wf- Wi) * 0.04715 + (Vf - Vi) * 0.04707

Vwstd = 11.41 std. cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/(Tm+460)

Vmstd = 81.22 cubic feet

Moisture Content

Moisture Content from Impingers
Bwi = Vwstd/(Vmstd + Vwstd)
Bwi = 0.1232

Moisture Content at Saturation
Bwsatn= (10^(7.96681-(1668.21/(228 +(Ts-32)/1.8))/760*29.921)/
(Pb + Pstat/13.6)
Bwsatn= 0.1388

Moisture Content used in calculations
Bwo= 0.1232

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.54

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(Bwo)

Ms = 28.12

Velocity of Stack Gas

Vs = 85.49*Cp*(DeltaP)^.5 ((Ts+460)/Ps/Ms)^.5*60

Vs = 2639 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 25,384 CFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 21,852 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 19,160 DSCFM

Vsstd = Qstd/As

Vsstd = 1992 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.997

Particulate Mass Rate

Cs = (15.43)(Mn)/Vmstd E = C * Fc * 100 / CO2

Cs = 0.0039 gr/dscf 0.0156 lb/MMBtu

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.64 lbs/hr 2.8 ton/yr

Particulate Concentration @ 7 % O2

Csc = Cs (14)/(21-O2)

Csc = 0.0068 gr/dscf

Excess air

% EA = 100 * (O2 - 0.5 * CO) / (0.264 * N2 - O2 - 0.5 * CO)

% EA = 157.04 %

Gravimetric Analysis Summary

Project ID: 12-0311

Building: 248 Sampling Location: LCD

	Run 1	Run 2	Run 3
Acetone Blank Container ID:	BK23	BK23	BK23
Probe Wash Container ID:	BK28	BK19	BK27
Filter Container ID:	P10	P5	P3
NET Probe Wash Catch (g)	0.0024	0.0021	0.0055
NET Filter Catch (g)	0.0068	0.0063	0.0149
TOTAL Particulate Catch (g)	0.0092	0.0084	0.0204

Project ID: 12-0311 2 of 8
Run: 1
Location: LCD

TARE Filter Weight Container ID: P10

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
12/3/2012 7:55	8.2496				
12/3/2012 14:45	8.2498	0.0002	Constant Weight	8.2498	6.8

Tare Weight = 8.2498 g

FINAL Filter Weight Container ID: P10

Date & Time	Weight (g)	Difference (g)/(%)			Hours Between Weighings
12/13/2012 7:40	8.2564				
12/13/2012 14:15	8.2566	0.0002/2.99	Constant Weight	8.2566	6.6

Final Weight = 8.2566 g

Net Weight = 0.0068 g

Project ID: 12-0311
Run: 1
Location: LCD

TARE Probe Wash Weight Container ID: BK28

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
12/3/2012 9:11	121.4968				
12/3/2012 15:36	121.4966	0.0002	Constant Weight	121.4966	6.4

Tare Weight = 121.4966 g

FINAL Probe Wash Weight Container ID: BK28

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
12/13/2012 7:48	121.4990				
12/13/2012 14:28	121.4991	0.0001	Constant Weight	121.4991	6.7

Volume: 200 mL

Final Weight = 121.4991 g

Blank Weight = 0.0001 g

Net Weight = 0.0024 g

Project ID: 12-0311
Run: 2
Location: LCD

TARE Filter Weight Container ID: P5

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
12/3/2012 7:54	8.3024				
12/3/2012 14:35	8.3027	0.0003	Constant Weight	8.3027	6.7

Tare Weight = 8.3027 g

FINAl Filter Weight Container ID: P5

Date & Time	Weight (g)	Difference (g)/(%)			Hours Between Weighings
12/13/2012 7:42	8.3088				
12/13/2012 14:17	8.3090	0.0002/3.23	Constant Weight	8.3090	6.6

Final Weight = 8.3090 g

Net Weight = 0.0063 g

Project ID: 12-0311
Run: 2
Location: LCD

TARE Probe Wash Weight Container ID: BK19

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
12/3/2012 9:12	106.9310				
12/3/2012 15:45	106.9311	0.0001	Constant Weight	106.9311	6.6

Tare Weight = 106.9311 g

FINAL Probe Wash Weight Container ID: BK19

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
12/13/2012 7:51	106.9336				
12/13/2012 14:27	106.9333	0.0003	Constant Weight	106.9333	6.6

Volume: 200 mL

Final Weight = 106.9333 g

Blank Weight = 0.0001 g

Net Weight = 0.0021 g

Project ID: 12-0311
Run: 3
Location: LCD

TARE Filter Weight — Container ID: P3

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
12/3/2012 7:52	8.2992				
12/3/2012 14:30	8.2994	0.0002	Constant W	8.2994	6.6

Tare Weight = 8.2994 g

FINAL Filter Weight — Container ID: P3

Date & Time	Weight (g)	Difference (g)/(%)			Hours Between Weighings
12/13/2012 7:45	8.3142				
12/13/2012 14:20	8.3143	0.0001/0.6	Constant W	8.3143	6.6

Final Weight = 8.3143 g

Net Weight = 0.0149 g

Project ID: 12-0311
Run: 3
Location: LCD

TARE Probe Wash Weight — Container ID: BK27

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
12/3/2012 9:16	120.4496				
12/3/2012 15:46	120.4496	0	Constant W	120.4496	6.5

Tare Weight = 120.4496 g

FINAL Probe Wash Weight — Container ID: BK27

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
12/13/2012 7:51	120.4551				
12/13/2012 14:25	120.4552	0.0001	Constant W	120.4552	6.6

Volume: 200 mL

Final Weight = 120.4552 g

Blank Weight = 0.0001 g

Net Weight = 0.0055 g

Project ID: 12-0311 8 of 8
Run: Acetone Blank
Location: LCD

TARE Probe Wash Weight Container ID: BK23

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
8/23/2010 9:30	116.6047				
8/24/2010 11:10	116.6046	1E-04	Constant W	116.6046	25.7

Tare Weight = 116.6046 g

FINAL Probe Wash Weight Container ID: BK23

Date & Time	Weight (g)	Difference (g)			Hours Between Weighings
8/25/2010 12:30	116.6047				
8/26/2010 7:30	116.6047	0.0000	Constant W	116.6047	19.0

Volume: 200 mL Final Weight = 116.6047 g

Density: 0.7920 g/mL Net Weight = 0.0001 g

Allowable Blank Correction: 0.0016 g

Acetone Blank Value:	0.0000005 g/mL

Eastman Chemical Company

Environmental Services Laboratory

GRAVIMETRIC ANALYSIS

PROJECT ID: 12-0311

FILTER NO.: F-13

SAMPLE ID: R-1 CONTAINER ID: P10

LOT NO.: 56079

☑ Filter ☐ Acetone ☐ Other ____ ☑ Petri Dish ☐ Beaker ☐ Other ____

CA			Analyst
12-3-12			Date
0755			Time
82496			Weight (g)
CA			Analyst
12-3-12			Date
1445			Time
82498			Weight (g)
			Volume (mL)

Constant Weight (g) 82498

☑ Tare ☐ Final

SAMPLE ID: 12-0331 CONTAINER ID: P10

☑ Filter ☐ Acetone ☐ Other ____ ☑ Petri Dish ☐ Beaker ☐ Other ____

CA			Analyst
12-13-12			Date
0740			Time
82564			Weight (g)
CA			Analyst
12-13-12			Date
1415			Time
82566			Weight (g)
			Volume (mL)

Constant Weight (g) 82566

☐ Tare ☑ Final

Data entry: ____ Data entry review: ____ Number of sheets: ____

Eastman Chemical Company

Environmental Services Laboratory

GRAVIMETRIC ANALYSIS

PROJECT ID: 12-0311 FILTER NO.: _____

SAMPLE ID: R-1 CONTAINER ID: BK28 LOT NO.: _____

☐ Filter ☑ Acetone ☐ Other_____ ☐ Petri Dish ☑ Beaker ☐ Other_____

CA			Analyst
12-3-12			Date
0911			Time
1214968			Weight (g)
CA			Analyst
12-3-12			Date
1536			Time
1214966			Weight (g)
			Volume (mL)

Constant Weight (g) 1214966

☑ Tare ☐ Final

SAMPLE ID: 12-0331 CONTAINER ID: BK28

☐ Filter ☑ Acetone ☐ Other_____ ☐ Petri Dish ☑ Beaker ☐ Other_____

CA			Analyst
12-13-12			Date
0748			Time
1214990			Weight (g)
CA			Analyst
12-13-12			Date
1428			Time
1214991			Weight (g)
			Volume (mL)

Constant Weight (g) 1214991 260

☐ Tare ☑ Final

Data entry: _____ Data entry review: _____ Number of sheets: ____

Eastman Chemical Company

Environmental Services Laboratory

GRAVIMETRIC ANALYSIS

PROJECT ID: 12-0311

FILTER NO.: F12
56079

SAMPLE ID: R-2 CONTAINER ID: P5

LOT NO.:

☑ Filter ☐ Acetone ☐ Other_____ ☑ Petri Dish ☐ Beaker ☐ Other_____

CA			Analyst
12-3-12			Date
0754			Time
83024			Weight (g)
CA			Analyst
12-3-12			Date
1435			Time
83027			Weight (g)
			Volume (mL)

Constant Weight (g) 83027

☑ Tare ☐ Final

SAMPLE ID: 12-0331 CONTAINER ID: P5

☑ Filter ☐ Acetone ☐ Other_____ ☑ Petri Dish ☐ Beaker ☐ Other_____

CA			Analyst
12-13-12			Date
0742			Time
83088			Weight (g)
CA			Analyst
12-13-12			Date
1417			Time
83090			Weight (g)
			Volume (mL)

Constant Weight (g) 83090

☐ Tare ☑ Final

Data entry: _____ Data entry review: _____ Number of sheets: ____

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GRAVIMETRIC ANALYSIS

PROJECT ID: 13-0311 FILTER NO.: _____

SAMPLE ID: R-2 CONTAINER ID: BK19 LOT NO.: _____

☐ Filter ☑ Acetone ☐ Other_____ ☐ Petri Dish ☑ Beaker ☐ Other_____

CA			Analyst
12-3-12			Date
0912			Time
106931.0			Weight (g)
CA			Analyst
12-3-12			Date
1545			Time
106931.1			Weight (g)
			Volume (mL)

Constant Weight (g) 106931.1

☑ Tare ☐ Final

SAMPLE ID: 12-0311 CONTAINER ID: BK19

☐ Filter ☑ Acetone ☐ Other_____ ☐ Petri Dish ☑ Beaker ☐ Other_____

CA			Analyst
12-13-12			Date
0751			Time
106936			Weight (g)
CA			Analyst
12-13-12			Date
1427			Time
106933			Weight (g)
			Volume (mL)

Constant Weight (g) 106933 200

☐ Tare ☑ Final

Data entry: _____ Data entry review: _____ Number of sheets: ____

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GRAVIMETRIC ANALYSIS

PROJECT ID: 12-0311

FILTER NO.: F-10

SAMPLE ID: R-3 CONTAINER ID: P3

LOT NO.: 56079

☑ Filter ☐ Acetone ☐ Other ____ ☑ Petri Dish ☐ Beaker ☐ Other ____

CA			Analyst
12-3-12			Date
0752			Time
82992			Weight (g)
CA			Analyst
12-3-12			Date
1430			Time
82994			Weight (g)
			Volume (mL)

Constant Weight (g) 82994

☑ Tare ☐ Final

SAMPLE ID: 12-0311 CONTAINER ID: P3

☑ Filter ☐ Acetone ☐ Other ____ ☑ Petri Dish ☐ Beaker ☐ Other ____

CA			Analyst
12-13-12			Date
0745			Time
83142			Weight (g)
CA			Analyst
12-13-12			Date
1420			Time
83143			Weight (g)
			Volume (mL)

Constant Weight (g) 83143

☐ Tare ☑ Final

Data entry: ____ Data entry review: ____ Number of sheets: ____

Eastman Chemical Company

Environmental Services Laboratory

GRAVIMETRIC ANALYSIS

PROJECT ID: 12-0311

FILTER NO.: _____

SAMPLE ID: R-3 CONTAINER ID: BK27 LOT NO.: _____

☐ Filter ☑ Acetone ☐ Other_____ ☐ Petri Dish ☑ Beaker ☐ Other_____

CA			Analyst
12-3-12			Date
0916			Time
1204496			Weight (g)
CA			Analyst
12-3-12			Date
1546			Time
1204496			Weight (g)
			Volume (mL)

Constant Weight (g) 1204496 ____

☑ Tare ☐ Final

SAMPLE ID: 12-0311 CONTAINER ID: BK27

☐ Filter ☑ Acetone ☐ Other_____ ☐ Petri Dish ☑ Beaker ☐ Other_____

CA			Analyst
12-13-12			Date
0751			Time
1204551			Weight (g)
CA			Analyst
12-13-12			Date
1425			Time
1204552			Weight (g)
			Volume (mL)

Constant Weight (g) 1204552 260

☐ Tare ☑ Final

Data entry: _____ Data entry review: _____ Number of sheets: ____

Eastman Chemical Company

Environmental Services Laboratory

GRAVIMETRIC ANALYSIS

PROJECT ID: Acetone BLANK Lot# 1001249 FILTER NO.: _____

SAMPLE ID: _____ CONTAINER ID: BK23 LOT NO.: _____

☐ Filter ☑ Acetone ☐ Other_____ ☐ Petri Dish ☑ Beaker ☐ Other_____

CA			Analyst
8-23-10			Date
0930			Time
1166047			Weight (g)
CA			Analyst
8-24-10			Date
1110			Time
1166046			Weight (g)
			Volume (mL)

Constant Weight (g): 1166046

☑ Tare ☐ Final

SAMPLE ID: Acetone Blank CONTAINER ID: BK23

☐ Filter ☑ Acetone ☐ Other_____ ☐ Petri Dish ☑ Beaker ☐ Other_____

CA			Analyst
8-25-10			Date
1230			Time
1166047			Weight (g)
CA			Analyst
8-26-10			Date
0730			Time
1166047			Weight (g)
			Volume (mL)

Constant Weight (g): 1166047 Volume (mL): 200

☐ Tare ☑ Final

Data entry: _____ Data entry review: _____ Number of sheets: _____

Company: EASTMAN CHEMICAL COMPANY
Project name: 12-0311
Location: LCD
Testing personnel:

	1	2	4	Average
Test Date	12/11/12	12/11/12	12/12/12	--
Start Time	12:10	16:12	15:00	--
Finish Time	14:31	18:22	17:09	--
Net Test Time, minutes	120	120	120	120
Vol. Sampled at STP, cu. ft.	77.78	77.06	77.30	77.38
Stack Gas Temperature, F	122.7	123.2	125.2	123.7
Moisture Content, % by volume	12.12	12.19	12.95	12.42
CO2 Percent, dry	6.3	6.4	6.1	6.3
O2 Percent, dry	13.3	13.1	13.2	13.2
CO Percent, dry	0.0	0.0	0.0	0.0
N2 Percent, dry	80.4	80.5	80.7	80.5
Excess Air, Percent	167.8	160.7	162.9	163.8
Stack Velocity, ft/min	2527	2519	2512	2520
Gas Flow Rate, acfm	24314	24237	24169	24240
Gas Flow Rate, scfm	21,017	20,933	20,976	20,976
Gas Flow Rate, dscfm	18471	18382	18260	18371
Particulate Concentration, gr/dscf	0.0000	0.0000	0.0000	0.0000
Part. Conc. at 7% O2, gr/dscf	0.0000	0.0000	0.0000	0.0000
Particulate Mass Rate, lb/MMBtu	0.0000	0.0000	0.0000	0.0000
Particulate Mass Rate, lb/hr	0.00	0.00	0.00	0.00
Particulate Mass Rate, ton/yr	0.00	0.00	0.00	0.00
Percent Isokinetic	99.0	98.6	99.6	NA

Run # 1

Proj # 12-0311
Location LCD

Initial conditions:

Initial impingers volume	450	ml
Initial impingers mass	400.0	g

Test parameters:

Nozzle diameter	0.25	in.
Pitot tube coefficient	0.84	--
Y-factor	0.9929	--
Barometric pressure	28.56	in. Hg
Stack static pressure	-0.26	in. H_2O g.

Start time 12:10
Date 12/11/12

Point #	Gas Volume cu ft	DeltaP in. H_2O	Delta-H in. H_2O req'd	actual	Stack Temp. F		Meter Outlet F	Sample Time min
init.	473.211							
1	480.530	0.50	1.57	1.57	120		49	10.0
2	487.410	0.55	1.72	1.72	121		50	10.0
3	494.010	0.52	1.63	1.63	124		51	10.0
4	500.800	0.45	1.41	1.41	123		52	10.0
5	507.050	0.44	1.38	1.38	121		53	10.0
6	513.300	0.42	1.32	1.32	124		53	10.0
7	519.730	0.46	1.44	1.44	123		52	10.0
8	526.090	0.46	1.44	1.44	122		52	10.0
9	532.470	0.47	1.47	1.47	122		51	10.0
10	539.190	0.49	1.53	1.53	123		51	10.0
11	546.180	0.50	1.57	1.57	124		51	10.0
12	552.500	0.44	1.38	1.38	125		52	10.0
13			0.00					
14			0.00					
15			0.00					
16			0.00					
17			0.00					
18			0.00					
19			0.00					
20			0.00					
21			0.00					
22			0.00					
23			0.00					
24			0.00					
25			0.00					
26			0.00					
27			0.00					
28			0.00					
29			0.00					
30			0.00					
31			0.00					
32			0.00					

Finish time 14:31

Final conditions:

Final impingers volume	662	ml
Final impingers mass	415.8	g
Particulate mass		g
Volume of dry gas sampled	79.214	cu. ft.
Percent CO2	6.3	%
Percent O2	13.3	%
Percent CO	0.0	%
Sample time	120	min.

Initial conditions:

Initial impingers volume	450	ml
Initial impingers mass	400.0	g

Test parameters:

Nozzle diameter	0.25	in.
Pitot tube coefficient	0.84	--
Y-factor	0.9929	--
Barometric pressure	28.56	in. Hg
Stack static pressure	-0.26	in. H_2O g.

Start time	16:12
Date	12/11/12

Point #	Gas Volume cu ft	DeltaP in. H_2O	Delta-H in. H_2O req'd	actual	Stack Temp. F		Meter Outlet F	Sample Time min
init.	552.675							
1	558.910	0.46	1.44	1.44	122		49	10.0
2	565.500	0.47	1.47	1.47	124		50	10.0
3	571.900	0.45	1.41	1.41	124		51	10.0
4	578.590	0.50	1.57	1.57	123		51	10.0
5	585.250	0.49	1.53	1.53	124		52	10.0
6	591.565	0.43	1.35	1.35	123		52	10.0
7	597.970	0.47	1.47	1.47	120		51	10.0
8	604.850	0.54	1.69	1.69	120		51	10.0
9	611.970	0.53	1.66	1.66	125		53	10.0
10	618.610	0.47	1.47	1.47	125		54	10.0
11	625.150	0.45	1.41	1.41	123		56	10.0
12	631.320	0.40	1.25	1.25	125		56	10.0
13			0.00					
14			0.00					
15			0.00					
16			0.00					
17			0.00					
18			0.00					
19			0.00					
20			0.00					
21			0.00					
22			0.00					
23			0.00					
24			0.00					
25			0.00					
26			0.00					
27			0.00					
28			0.00					
29			0.00					
30			0.00					
31			0.00					
32			0.00					

Finish time	18:22

Final conditions:

Final impingers volume	664	ml
Final impingers mass	413.2	g
Particulate mass		g
Volume of dry gas sampled	78.605	cu. ft.
Percent CO2	6.4	%
Percent O2	13.1	%
Percent CO	0.0	%
Sample time	120	min.

Initial conditions:

Initial impinger volume	450	ml
Initial impingers mass	400.0	g

Test parameters:

Nozzle diameter	0.25	in.
Pitot tube coefficient	0.84	--
Y-factor	0.9929	--
Barometric pressure	28.80	in. Hg
Stack static pressure	-0.28	in. H_2O g.

Start time	15:00
Date	12/12/12

Point #	Gas Volume cu ft	DeltaP in. H_2O	Delta-H in. H_2O req'd	actual	Stack Temp. F		Meter Outlet F	Sample Time min
init.	736.615							
1	742.630	0.42	1.30	1.30	125		53	10.0
2	748.830	0.43	1.33	1.33	125		53	10.0
3	755.260	0.45	1.40	1.40	125		54	10.0
4	762.000	0.52	1.61	1.61	125		54	10.0
5	768.920	0.53	1.64	1.64	126		56	10.0
6	775.760	0.49	1.52	1.52	126		57	10.0
7	782.580	0.49	1.52	1.52	125		58	10.0
8	789.270	0.50	1.55	1.55	125		59	10.0
9	795.670	0.47	1.46	1.46	125		59	10.0
10	802.900	0.47	1.46	1.46	124		60	10.0
11	809.510	0.45	1.40	1.40	125		61	10.0
12	815.700	0.41	1.27	1.27	126		61	10.0
13			0.00					
14			0.00					
15			0.00					
16			0.00					
17			0.00					
18			0.00					
19			0.00					
20			0.00					
21			0.00					
22			0.00					
23			0.00					
24			0.00					
25			0.00					
26			0.00					
27			0.00					
28			0.00					
29			0.00					
30			0.00					
31			0.00					
32			0.00					

Finish time	17:09

Final conditions:

Final impingers Volume	680	ml
Final impingers mass	414.3	g
Particulate mass		g
Volume of dry gas sampled	78.950	cu. ft.
Percent CO2	6.1	%
Percent O2	13.2	%
Percent CO	0.0	%
Sample time	120	min.

Input for instantaneous isokinetic and delta-H calculations and constants for tests

Assumed values:	Runs 1 & 2		Run 4
Moisture	13.50	%	13.50
Percent CO2	6.00	%	6.00
Percent O2	13.00	%	13.00
Percent CO	0.00	%	0.00
delta-H-@	1.8935	in. H2O	1.8935
avg meter temp, assumed	65.00	deg F	60.00
assumed stack temp.	125.00	deg F	125.00

Actual values

F-sub-C for fuel		1800 for bituminous coal
Stack area	9.62	ft^2
Allowable particulate		lb/MMBtu

RUN # 1 Project # 12-0311
12/11/12

Delta p	Sqrt of Delta P		delta H (in. H2O)			Meter Outlet Temperature (deg F)		Stack Temperature (deg F)
0.500	0.707		1.57			49		120
0.550	0.742		1.72			50		121
0.520	0.721		1.63			51		124
0.450	0.671		1.41			52		123
0.440	0.663		1.38			53		121
0.420	0.648		1.32			53		124
0.460	0.678		1.44			52		123
0.460	0.678		1.44			52		122
0.470	0.686		1.47			51		122
0.490	0.700		1.53			51		123
0.500	0.707		1.57			51		124
0.440	0.663		1.38			52		125
Average	0.689		1.488			51.4		122.7

RUN # 2 Project # 12-0311
12/11/12

Delta p	Sqrt of Delta P		delta H (in. H2O)			Meter Outlet Temperature (deg F)		Stack Temperature (deg F)
0.460	0.678		1.44			49		122
0.470	0.686		1.47			50		124
0.450	0.671		1.41			51		124
0.500	0.707		1.57			51		123
0.490	0.700		1.53			52		124
0.430	0.656		1.35			52		123
0.470	0.686		1.47			51		120
0.540	0.735		1.69			51		120
0.530	0.728		1.66			53		125
0.470	0.686		1.47			54		125
0.450	0.671		1.41			56		123
0.400	0.632		1.25			56		125
Average	0.686		1.477			52.2		123.167

RUN # 4 Project # 12-0311
12/12/12

Delta p	Sqrt of Delta P		delta H (in. H2O)			Meter Outlet Temperature (deg F)		Stack Temperature (deg F)
0.420	0.648		1.30			53		125
0.430	0.656		1.33			53		125
0.450	0.671		1.40			54		125
0.520	0.721		1.61			54		125
0.530	0.728		1.64			56		126
0.490	0.700		1.52			57		126
0.490	0.700		1.52			58		125
0.500	0.707		1.55			59		125
0.470	0.686		1.46			59		125
0.470	0.686		1.46			60		124
0.450	0.671		1.40			61		125
0.410	0.640		1.27			61		126
Average	0.684		1.455			57.1		125.167

RUN # 1 Project Number: 12-0311
12/11/12

Impingers Initial mass, Wi	400	g
Impingers Final mass, Wf	415.80	g
Initial volume of water (ml), Vi	450	ml
Final volume of water (ml), Vf	662	ml
Initial volume in dry gas meter	473.21	cubic feet
Volume measured by dry gas meter, Vm	79.21	cubic feet
Delta H	1.49	in. H2O
Y-factor, gamma	0.993	--
Barometric Pressure, Pb	28.56	in. Hg
Temperature of the meter box, Tm	51.4	F
Percent CO2, %CO2	6.3	%
Percent O2, %O2	13.3	%
Percent CO, %CO	0.0	%
Percent N2, %N2	80.4	%
Average Sqrt Delta P, (DeltaP)^0.5	0.689	in^.5 water
Average Stack Temperature, Ts	122.7	F
Stack static pressure, Pstat	-0.3	in. water gage
Pressure in the stack, Ps	28.54	in Hg
Stack effective diameter	42.0	in.
Stack area, As	9.62	ft^2
Nozzle Diameter	0.250	in.
Nozzle Area, An	0.000341	ft^2
Sample Time, Time	120.0	minutes
Particulate Mass, Mn		grams
Pitot Tube Coefficient, Cp	0.840	
F-sub-C for particulates, Fc	1800	

INPUT PARAMETERS

RUN # 2 Project Number: 12-0311
12/11/12

Impingers Initial mass, Wi	400.00	g
Impingers Final mass, Wf	413.20	g
Initial volume of water (ml), Vi	450.00	ml
Final volume of water (ml), Vf	664.00	ml
Initial volume in dry gas meter	552.68	cubic feet
Volume measured by dry gas meter, Vm	78.61	cubic feet
Delta H	1.48	in. H2O
Y-factor, gamma	0.993	--
Barometric Pressure, Pb	28.56	in. Hg
Temperature of the meter box, Tm	52.2	F
Percent CO2, %CO2	6.4	%
Percent O2, %O2	13.1	%
Percent CO, %CO	0.0	%
Percent N2, %N2	80.5	%
Average Sqrt Delta P, (DeltaP)^0.5	0.686	in^.5 water
Average Stack Temperature, Ts	123.2	F
Stack static pressure, Pstat	-0.260	in. water gage
Pressure in the stack, Ps	28.54	in Hg
Stack effective diameter	42.0	in.
Stack area, As	9.62	ft^2
Nozzle Diameter	0.250	in.
Nozzle Area, An	0.000341	ft^2
Sample Time, Time	120.0	minutes
Particulate Mass, Mn		grams
Pitot Tube Coefficient, Cp	0.840	
F-sub-C for particulates, Fc	1800	

INPUT PARAMETERS

RUN # 4 Project Number: 12-0311
12/12/12

Impingers Initial mass, Wi	400	g
Impingers Final mass, Wf	414.3	g
Initial volume of water (ml), Vi	450.0	ml
Final volume of water (ml), Vf	680.0	ml
Initial volume in dry gas meter	736.615	cubic feet
Volume measured by dry gas meter, Vm	78.95	cubic feet
Delta H	1.46	in. H2O
Y-factor, gamma	0.993	--
Barometric Pressure, Pb	28.80	in. Hg
Temperature of the meter box, Tm	57.1	F
Percent CO2, %CO2	6.1	%
Percent O2, %O2	13.2	%
Percent CO, %CO	0.0	%
Percent N2, %N2	80.7	%
Average Sqrt Delta P, (DeltaP)^0.5	0.684	in^.5 water
Average Stack Temperature, Ts	125.2	F
Stack static pressure, Pstat	-0.280	in. water gage
Pressure in the stack, Ps	28.78	in Hg
Stack effective diameter	42.0	in.
Stack area, As	9.62	ft^2
Nozzle Diameter	0.250	in.
Nozzle Area, An	0.000341	ft^2
Sample Time, Time	120.0	minutes
Particulate Mass, Mn		grams
Pitot Tube Coefficient, Cp	0.840	
F-sub-C for particulates, Fc	1800	

Test Identification Label

RUN # 1 Project Number 12-0311

Stack Sampling Results 12/11/12

Volume of Water Collected

Vwstd = (Wf- Wi) * 0.04715 + (Vf - Vi) * 0.04707

Vwstd = 10.72 std. cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/(Tm+460)

Vmstd = 77.78 cubic feet

Moisture Content

Moisture Content from Impingers
Bwi = Vwstd/(Vmstd + Vwstd)
Bwi = 0.1212

Moisture Content at Saturation
Bwsatn= (10^(7.96681-(1668.21/(228 +(Ts-32)/1.8))/760*29.921)/
(Pb + Pstat/13.6)
Bwsatn= 0.1299

Moisture Content used in calculations
Bwo= 0.1212

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.540

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(Bwo)

Ms = 28.142

Velocity of Stack Gas

Vs = 85.49*Cp*(DeltaP)^.5 ((Ts+460) /Ps/Ms)^.5*60

Vs = 2527 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 24,314 CFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 21,017 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 18,471 DSCFM

Vsstd = Qstd/As

Vsstd = 1920 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.990

Particulate Mass Rate

Cs = (15.43)(Mn)/Vmstd E = Cs * Fc * 100 / CO2

Cs = 0.0000 gr/dscf 0.0000 lb/MMBtu

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00 lbs/hr 0.0 ton/yr

Particulate Concentration @ 7 % O2

Csc = Cs (14)/(21-O2)

Csc = 0.0000 gr/dscf

Excess air

% EA = 100 * (O2 - 0.5 * CO) / (0.264 * N2 - O2 - 0.5 * CO)

% EA = 167.81 %

Test Identification Label

RUN # 2 Project Number 12-0311

Stack Sampling Results 12/11/12

Volume of Water Collected

Vwstd = (Wf- Wi) * 0.04715 + (Vf - Vi) * 0.04707

Vwstd = 10.70 std. cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/(Tm+460)

Vmstd = 77.06 cubic feet

Moisture Content

Moisture Content from Impingers
Bwi = Vwstd/(Vmstd + Vwstd)
Bwi = 0.1219

Moisture Content at Saturation
Bwsatn= (10^(7.96681-(1668.21/(228 +(Ts-32)/1.8))/760*29.921)/
(Pb + Pstat/13.6)
Bwsatn= 0.1317

Moisture Content used in calculations
Bwo= 0.1219

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.55

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(Bwo)

Ms = 28.14

Velocity of Stack Gas

Vs = 85.49*Cp*(DeltaP)^.5 ((Ts+460)/Ps/Ms)^.5*60

Vs = 2519 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 24,237 CFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 20,933 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 18,382 DSCFM

Vsstd = Qstd/As

Vsstd = 1911 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.986

Particulate Mass Rate

Cs = (15.43)(Mn)/Vmstd E = C * Fc * 100 / CO2

Cs = 0.0000 gr/dscf 0.0000 lb/MMBtu

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00 lbs/hr 0.0 ton/yr

Particulate Concentration @ 7 % O2

Csc = Cs (14)/(21-O2)

Csc = 0.0000 gr/dscf

Excess air

% EA = 100 * (O2 - 0.5 * CO) / (0.264 * N2 - O2 - 0.5 * CO)

% EA = 160.70 %

Test Identification Label

RUN # 4 Project Number 12-0311

Stack Sampling Results 12/12/12

Volume of Water Collected

Vwstd = (Wf- Wi) * 0.04715 + (Vf - Vi) * 0.04707

Vwstd = 11.50 std. cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/(Tm+460)

Vmstd = 77.30 cubic feet

Moisture Content

Moisture Content from Impingers
Bwi = Vwstd/(Vmstd + Vwstd)
Bwi = 0.1295

Moisture Content at Saturation
Bwsatn= (10^(7.96681-(1668.21/(228 +(Ts-32)/1.8))/760*29.921)/
(Pb + Pstat/13.6)
Bwsatn= 0.1380

Moisture Content used in calculations
Bwo= 0.1295

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.50

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(Bwo)

Ms = 28.01

Velocity of Stack Gas

Vs = 85.49*Cp*(DeltaP)^.5 ((Ts+460)/Ps/Ms)^.5*60

Vs = 2512 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 24,169 CFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 20,976 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 18,260 DSCFM

Vsstd = Qstd/As

Vsstd = 1898 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.996

Particulate Mass Rate

Cs = (15.43)(Mn)/Vmstd E = C * Fc * 100 / CO2

Cs = 0.0000 gr/dscf 0.0000 lb/MMBtu

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00 lbs/hr 0.0 ton/yr

Particulate Concentration @ 7 % O2

Csc = Cs (14)/(21-O2)

Csc = 0.0000 gr/dscf

Excess air

% EA = 100 * (O2 - 0.5 * CO) / (0.264 * N2 - O2 - 0.5 * CO)

% EA = 162.87 %

Results of Isokinetic Sampling
HCl/Cl2 Sampling Train Project No. 12-0311

Selected Sampling Parameters

Run	1	2	4
Volume of Gas Metered, Standard Conditions, Vmstd			
dscf	77.777	77.064	77.303
dscm	2.2024	2.1822	2.1890
Oxygen concentration, %vol dry	13.3	13.1	13.2
Gas flow, dscfm	18,471	18,382	18,260
Gas flow, dscmm	523	521	517

HCl Results

Run	1		2		4		Average	
		corrected to 7% O2		corrected to 7% O2		corrected to 7% O2		corrected to 7% O2
Concentration, ug/dscm	1228.3	2233.3	1739.0	3081.7	1495.3	2683.9	1487.5	2666.3
Concentration, ppmdv	0.8099	1.4726	1.1466	2.0320	0.9860	1.7697	0.9808	1.7581
Emission rate, lb/hr	0.0850		0.1197		0.1023		0.1023	
Emission rate, g/sec	0.0107		0.0151		0.0129		0.0129	

Cl2 Results

Run	1		2		4		Average	
		corrected to 7% O2		corrected to 7% O2		corrected to 7% O2		corrected to 7% O2
Concentration, ug/dscm	15853.7	28824.9	16871.2	29898.3	20349.2	36524.2	17691.4	31749.2
Concentration, ppmdv	5.3757	9.7739	5.7207	10.1379	6.9000	12.3846	5.9988	10.7655
Emission rate, lb/hr	1.0968		1.1616		1.3918		1.2167	
Emission rate, g/sec	0.1382		0.1464		0.1754		0.1533	

Combined Results

Run	1		2		4		Average	
		corrected to 7% O2		corrected to 7% O2		corrected to 7% O2		corrected to 7% O2
Concentration, ug/dscm	17533.7	31058.3	19090.8	32980.0	22424.3	39208.1	19683.0	34415.5
Concentration, ppmdv as HCl equivalents	11.5612	21.0204	12.5879	22.3077	14.7859	26.5388	12.9784	23.2890

Results of Isokinetic Sampling
HCl/Cl2 Sampling Train

Project No. 12-0311

Analytical Results

Run	1	2	4	Field Blank
Acid Impingers				
Sample volume, mL	750	681	670	345
Chloride concentration, ug/mL				
Injection 1	3.500	5.392	4.790	<0.04
Injection 2	3.514	5.444	4.710	<0.04
Difference from Mean, %	0.39	0.96	1.69	NA
Dilution Factor	1.00	1.00	1.00	1.00
HCl mass, ug	2705.3	3794.8	3273.2	NA
Caustic Impingers				
Sample volume, mL	300	300	305	292
Chloride concentration, ug/mL				
Injection 1	5.852	6.140	7.295	<0.04
Injection 2	5.786	6.132	7.310	<0.04
Difference from Mean, %	1.14	0.14	0.20	NA
Dilution Factor	20.00	20.00	20.00	1.00
Chlorine mass, ug	34916	36817	44544	NA
Reagent Blanks	DI Water	H2SO4	NaOH	
Sample volume, mL	199	448	199	
Chloride concentration, ug/mL				
Injection 1	<0.04	<0.04	<0.04	
Injection 2	<0.04	<0.04	<0.04	
Difference from Mean, %	NA	NA	NA	
Chloride mass, ug	NA	NA	NA	

December 2012 LCD Project 12-0311 CPT HCl analysis

HCl Ck std	Conc in ppm				
	inj 1	inj 2	Average	% error	RPD
4.99	4.935	4.902	4.92	-1.51	0.68
4.99	4.915	4.935	4.93	-1.38	-0.41
4.99	4.922	4.963	4.94	-1.03	-0.84
4.99	4.846	4.894	4.87	-2.48	-0.98

Samples	Conc in ppm				Dilution	Actual	
	inj 1	inj 2	Average	RPD	factor	Conc ppm	Volume mL
12-0311 M26A RGB C08 (DI water Blank)	<0.04	<0.04	<0.04	Not applicable	1.00	<0.04	199
12-0311 M26A RGB C06 (H2SO4 Reagent blank)	<0.04	<0.04	<0.04	Not applicable	1.00	<0.04	448
12-0311 M26A FB C03 (Field blank)	<0.04	<0.04	<0.04	Not applicable	1.00	<0.04	345
12-0311 M26A R01 C03 (Run 1)	3.500	3.514	3.507	0.39	1.00	3.51	750
12-0311 M26A R02 C03 (Run 2)	5.392	5.444	5.418	0.96	1.00	5.42	681
12-0311 M26A R04 C03 (Run 4)	4.790	4.710	4.750	-1.69	1.00	4.75	670

	Theoretical		Conc in ppm			Inj 1 Percent	Inj 2 Percent
	Matrix spike in ppm	inj 1	inj 2	Average	RPD	Recovery	Recovery
Run 2 Matrix spike	4.99	7.707	7.713	7.71	-0.09	100.16	100.29

Reviewed by : Matthew J Bey

Date: 12/21/12

Cl_2 RR3 1/11/13

December 2012 LCD Project 12-0311 CPT HCl analysis

Cl2 Ck std	Conc in ppm				
	inj 1	inj 2	Average	% error	RPD
4.99	4.840	4.862	4.85	-2.87	-0.45
4.99	4.845	4.789	4.82	-3.55	1.16
4.99	5.372	5.312	5.34	6.96	1.11
4.99	5.427	5.419	5.42	8.68	0.15
4.99	5.297	5.297	5.30	6.07	-0.01
4.99	5.363	5.346	5.35	7.22	0.33

Samples	Conc in ppm				Dilution	Actual	
	inj 1	inj 2	Average	RPD	factor	Conc ppm	Volume mL
12-0311 M26A RGB C08 (DI water Blank)	<0.04	<0.04	<0.04	Not applicable	1.00	<0.04	199
12-0311 M26A RGB C07 (NaOH Reagent blank)	<0.04	<0.04	<0.04	Not applicable	1.00	<0.04	199
12-0311 M26A FB C04 (Field blank)	<0.04	<0.04	<0.04	Not applicable	1.00	<0.04	292
12-0311 M26A R01 C04 (Run 1)	5.852	5.786	5.819	-1.14	20.00	116.39	297*
12-0311 M26A R02 C04 (Run 2)	6.140	6.132	6.136	-0.14	20.00	122.72	300
12-0311 M26A R04 C04 (Run 4)	7.295	7.310	7.302	0.20	20.00	146.05	305

	Theoretical	Conc in ppm			Inj 1 Percent	Inj 2 Percent
	Matrix spike in ppm	inj 1	inj 2	Average	RPD	Recovery	Recovery
Run 2.Matrix spike	2.50	5.711	5.744	5.73	-0.58	105.91	107.25

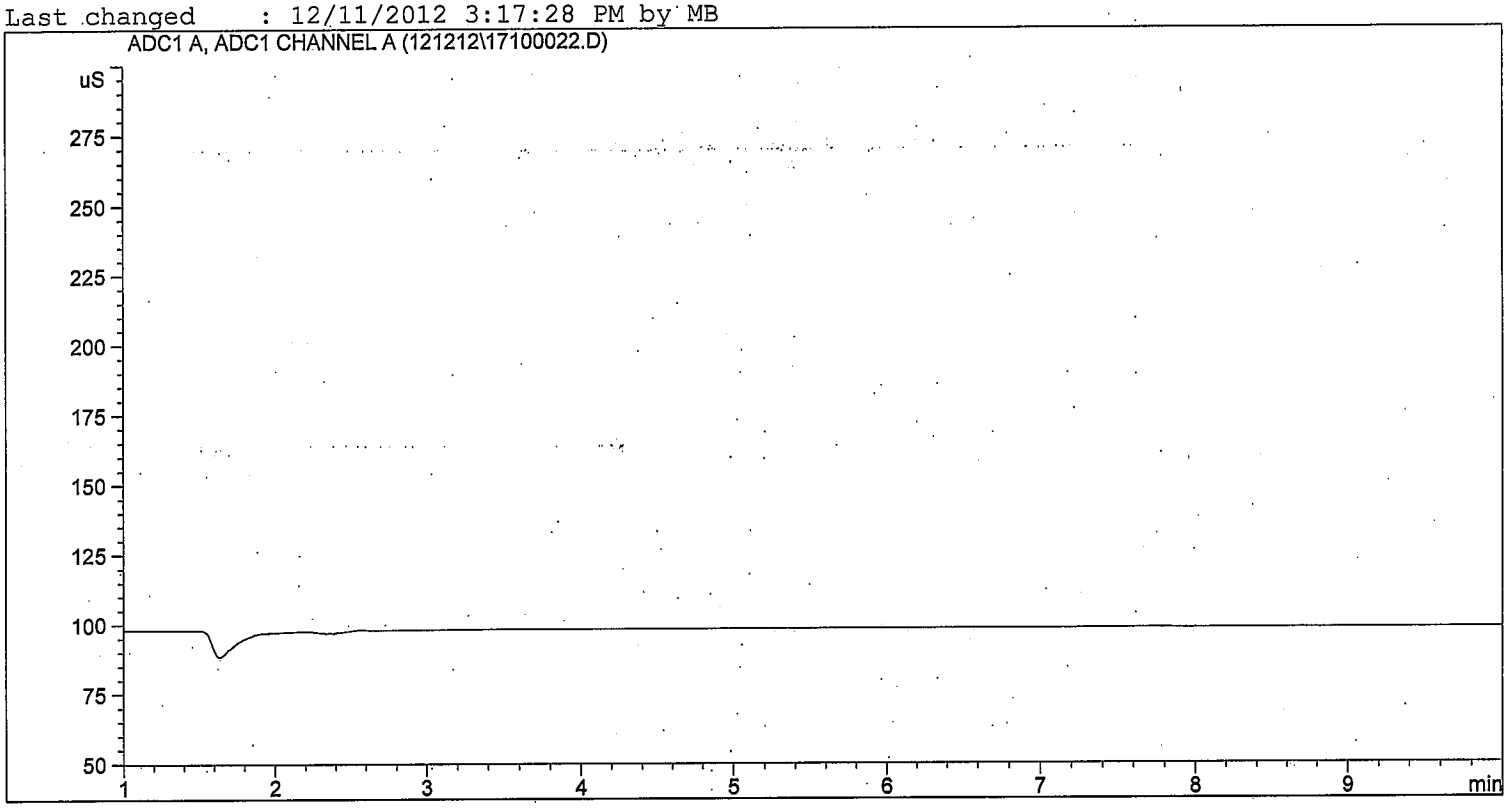
* Sample volume determined by the average of 5 volumes of water used to refill to sample fill line.

Reviewed by : Matthew Bay

Date: 12/21/12

water

Injection Date : 12/12/2012 8:46:08 AM
Sample Name : H2O Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

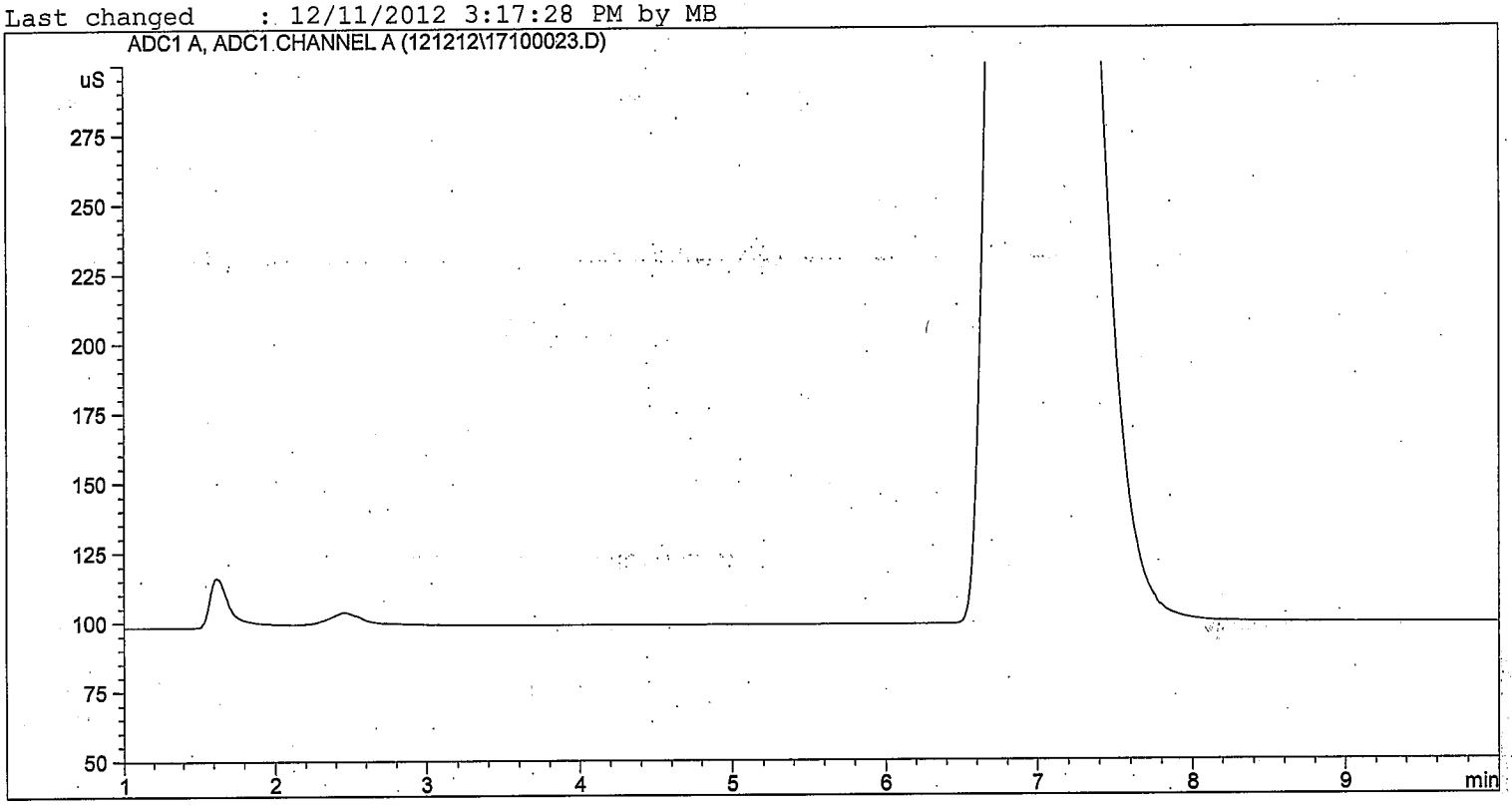
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

Lab Reagent Blank

Injection Date : 12/12/2012 9:01:38 AM
Sample Name : ReagentBlank Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

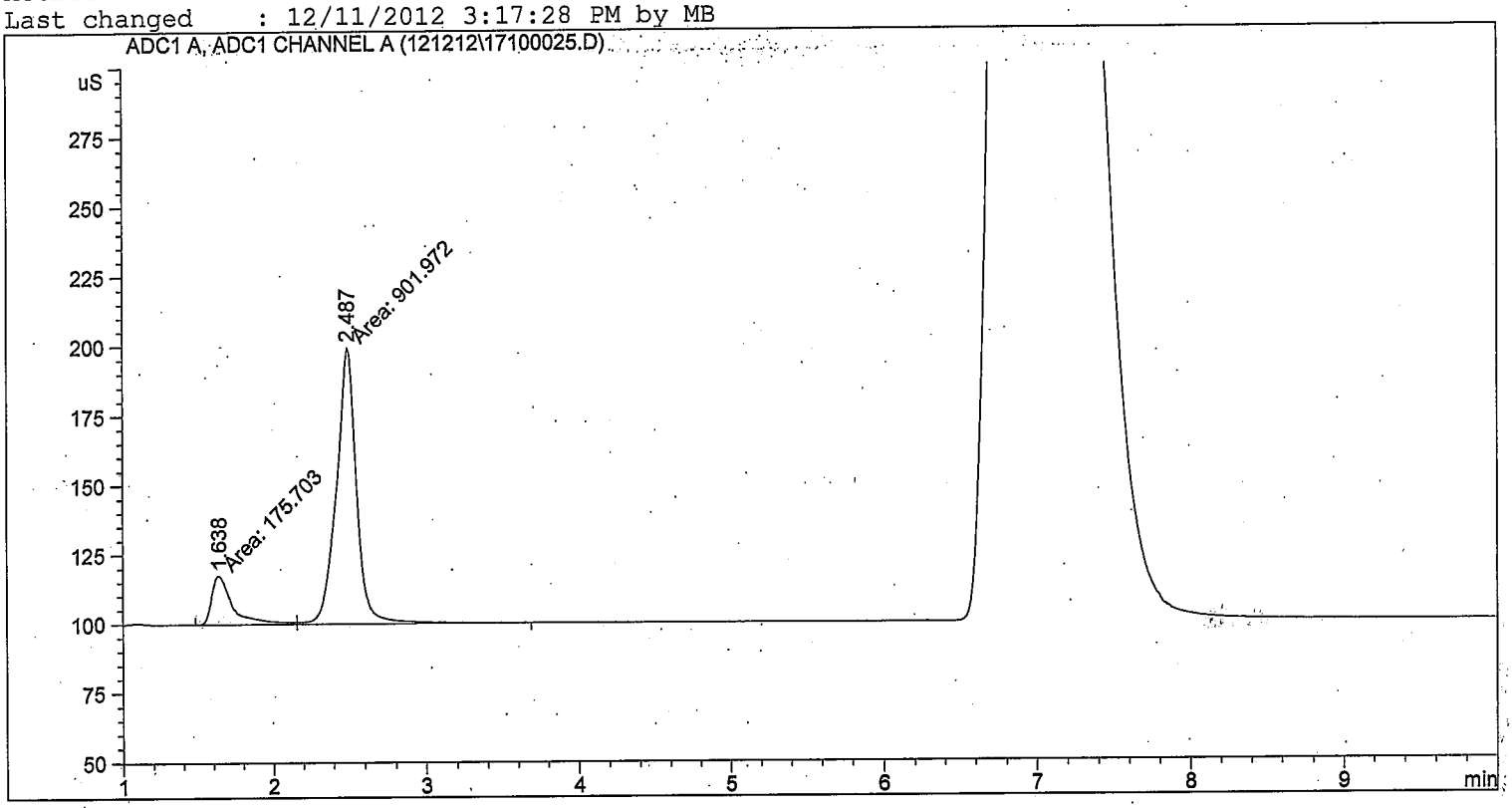
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

4.99 NIST CK STD

```
Injection Date  : 12/12/2012 10:01:01 AM
Sample Name     : NIST CK STD                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 3:17:28 PM by MB
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 3:17:20 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

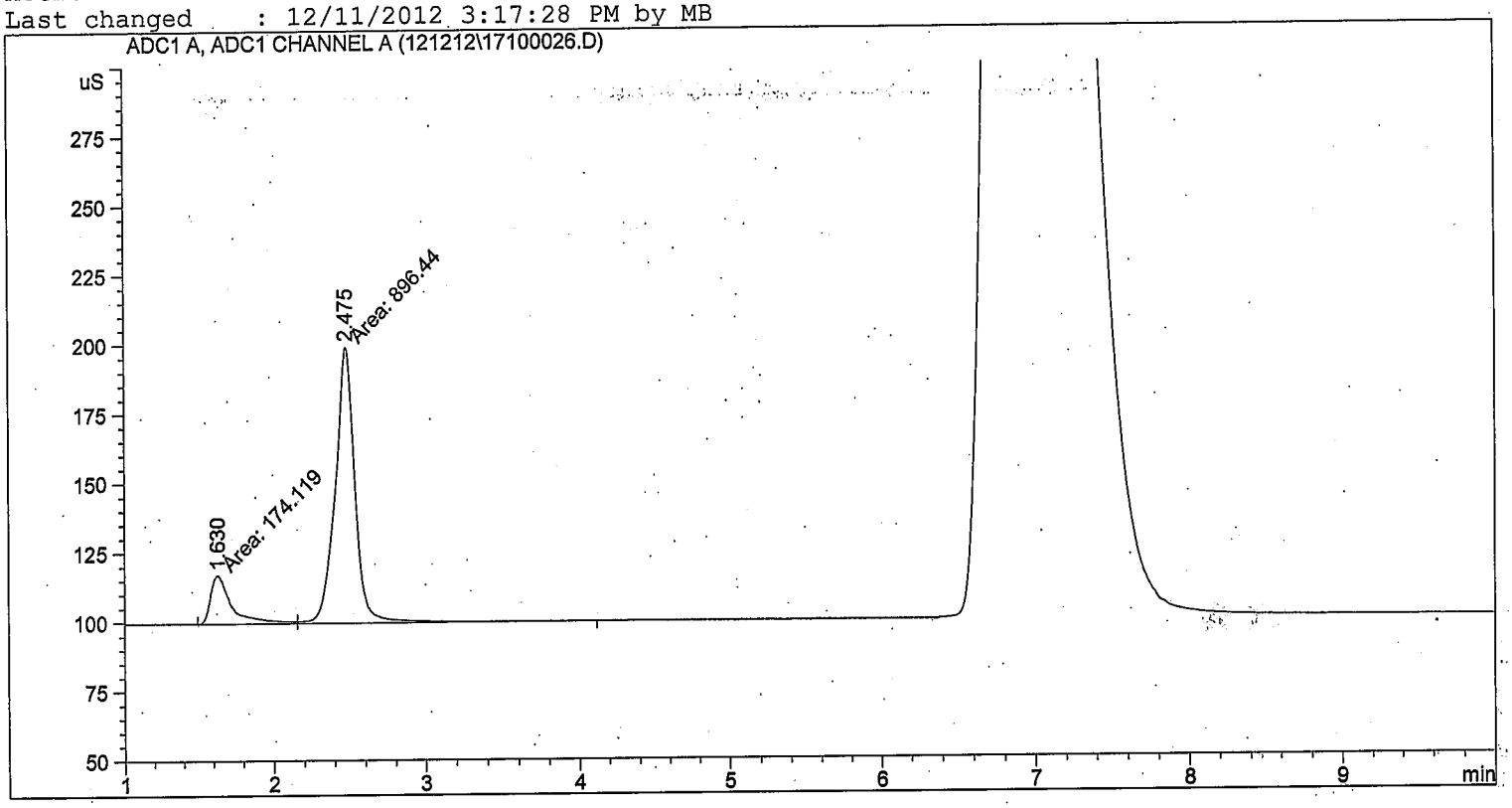
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.638	MF	175.70262	0.00000	0.00000		?
2.487	FM	901.97156	5.47183e-3	4.93544		Chloride
Totals :				4.93544		

Results obtained with enhanced integrator!

*** End of Report ***

4.99 NIST CK STD

Injection Date : 12/12/2012 10:16:27 AM
Sample Name : NIST CK STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

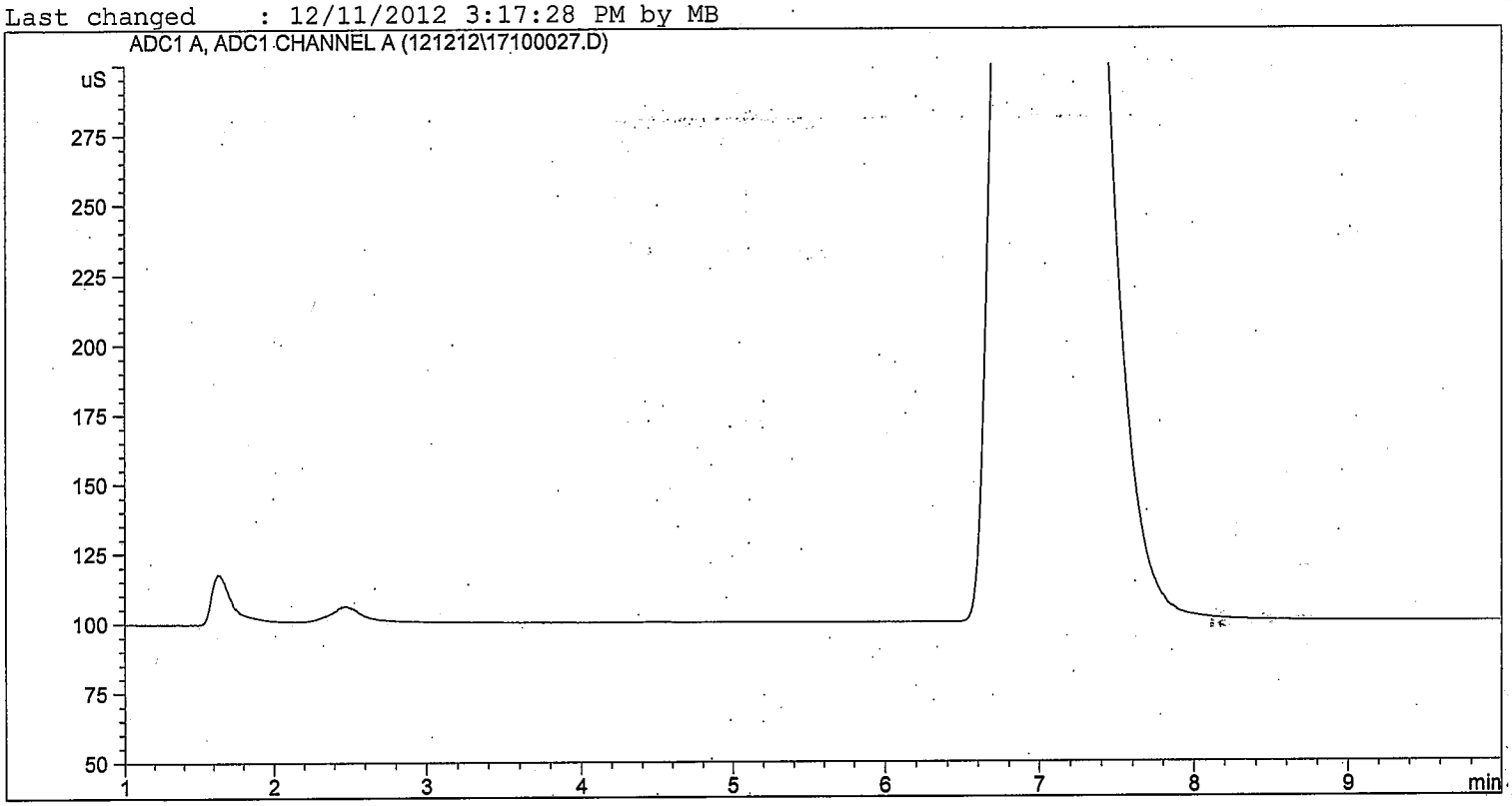
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.630	MF	174.11855	0.00000	0.00000		?
2.475	FM	896.43976	5.46836e-3	4.90205		Chloride
Totals :				4.90205		

Results obtained with enhanced integrator!

*** End of Report ***

Lab Reagent Blank

Injection Date : 12/12/2012 10:35:52 AM
Sample Name : ReagentBlank Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

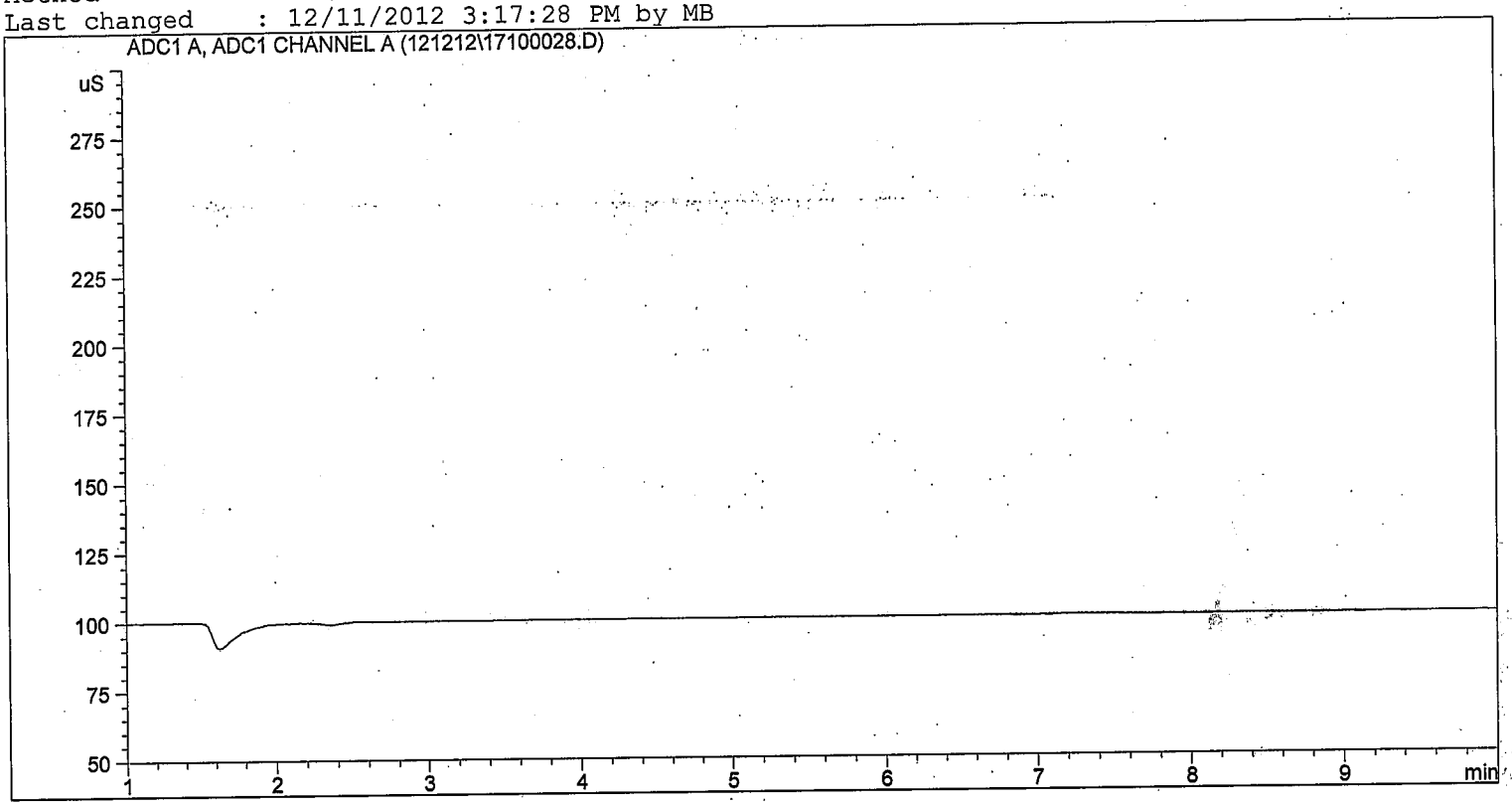
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A RGB C08 vol=199mL

Injection Date : 12/12/2012 12:45:18 PM
Sample Name : RGB C08 DI H2O Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

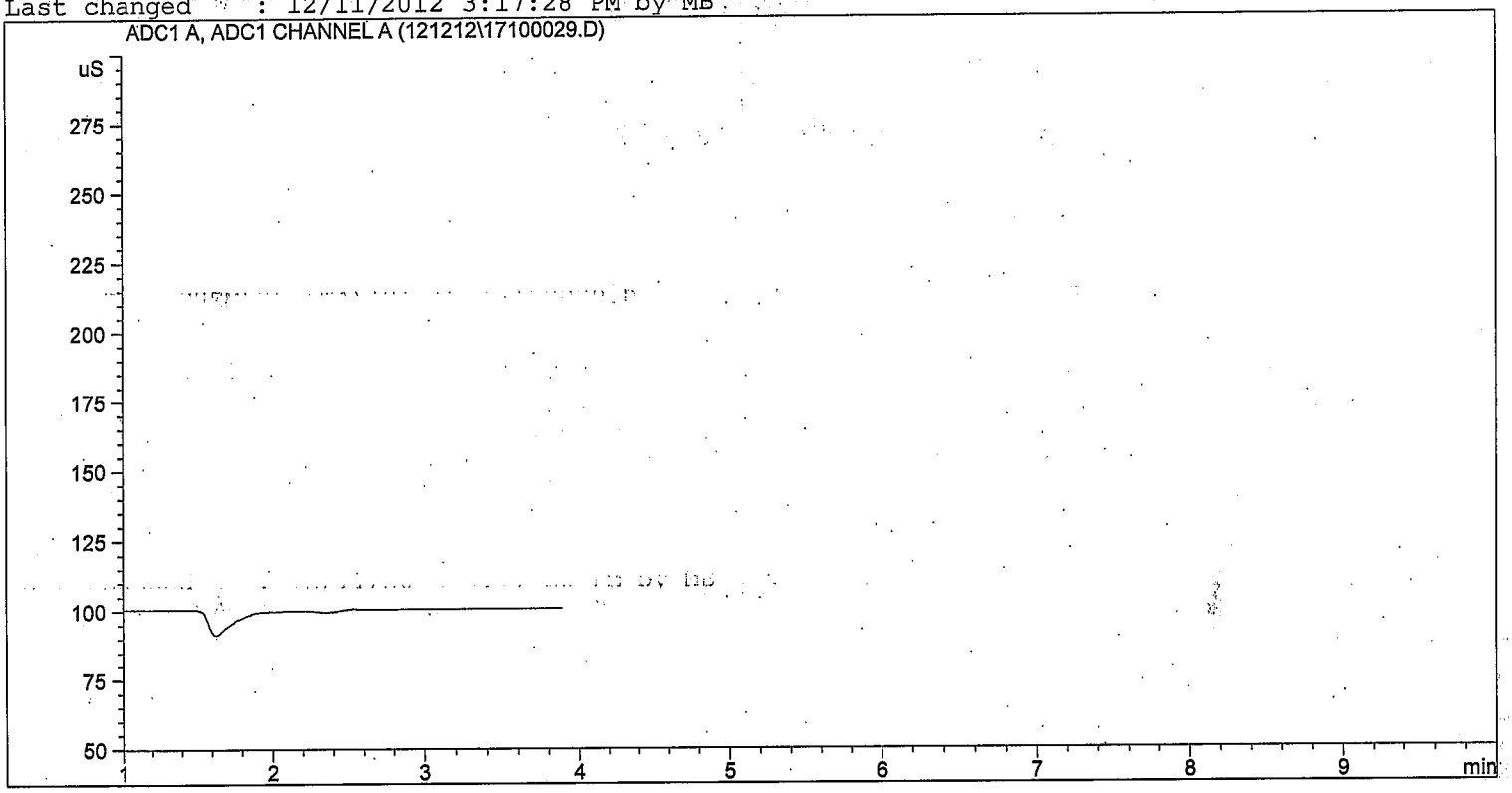
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A RGB C08 vol=199mL

Injection Date : 12/12/2012 1:03:27 PM
Sample Name : RGB C08 DI H2O Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

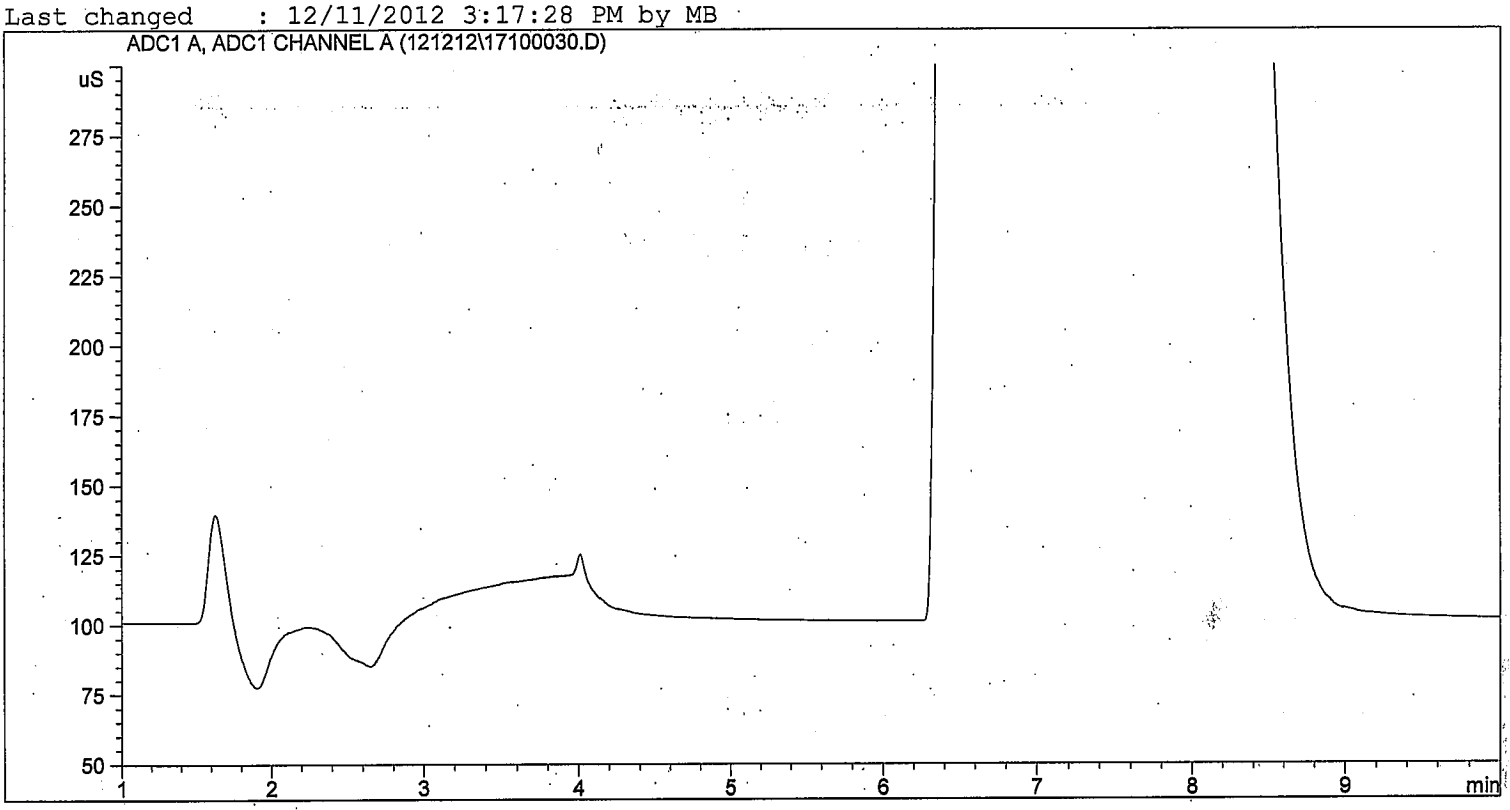
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A RGB C06 vol=448mL

```
Injection Date   : 12/12/2012 1:12:13 PM
Sample Name      : RGB C06 H2SO4                Location :   -
Acq. Operator    : MB
Acq. Instrument  : Instrument 2
Method           : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed     : 12/11/2012 3:17:28 PM by MB
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 3:17:20 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

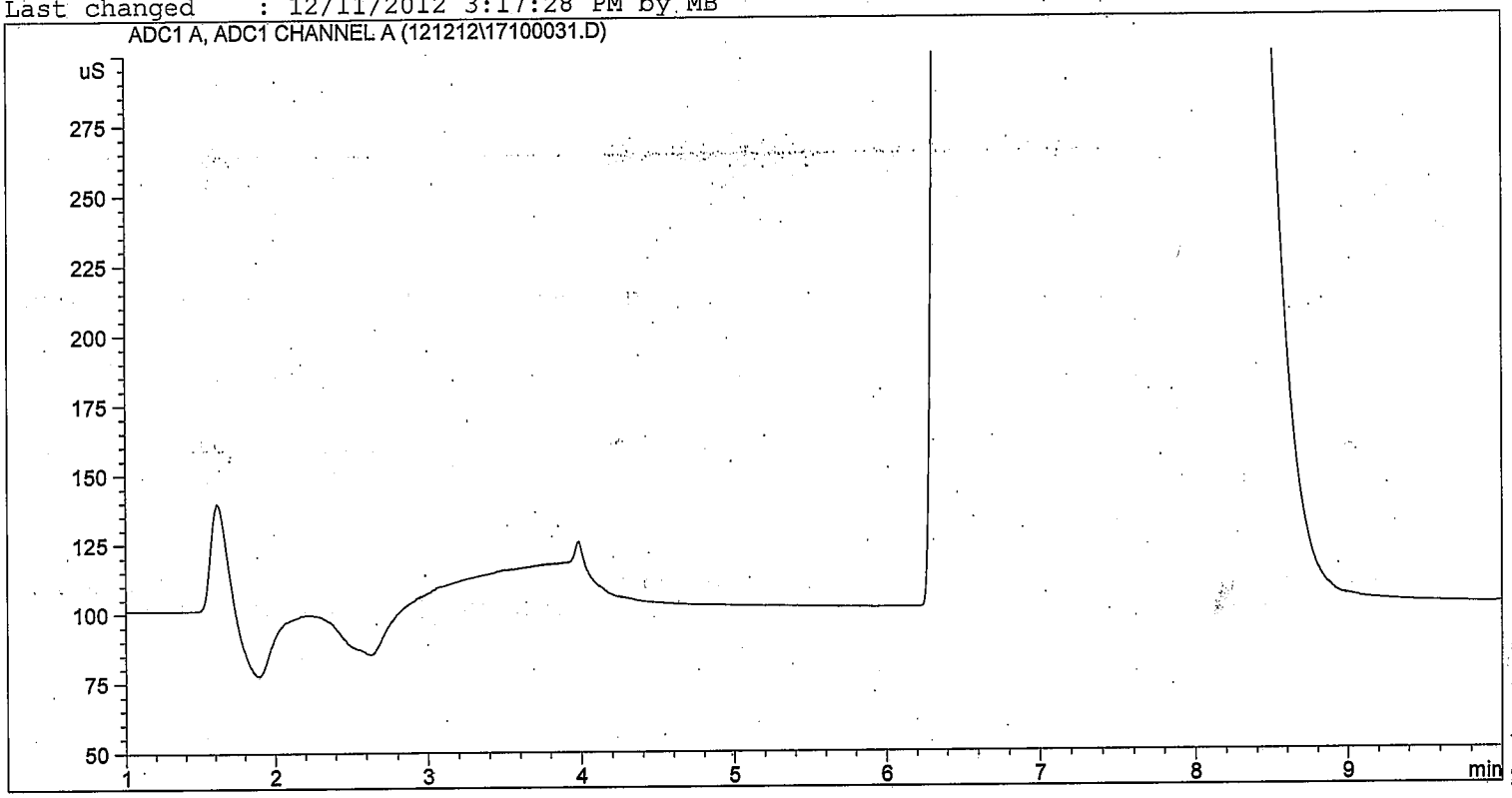
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A RGB C06 vol=448mL

Injection Date : 12/12/2012 1:24:27 PM
Sample Name : RGB C06 H2SO4 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

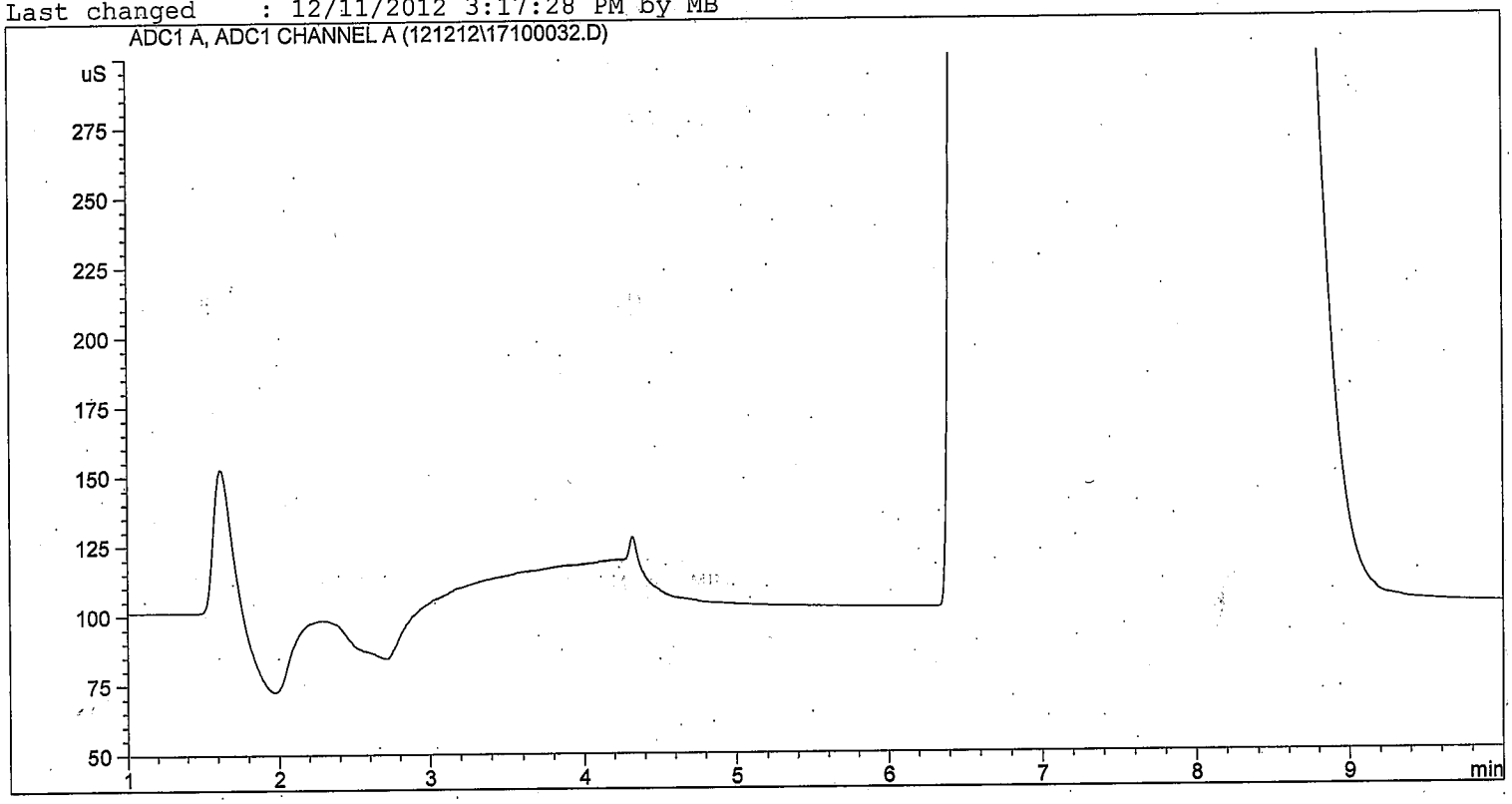
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A FB C03 vol=345mL

Injection Date : 12/12/2012 1:39:50 PM
Sample Name : FB C03 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

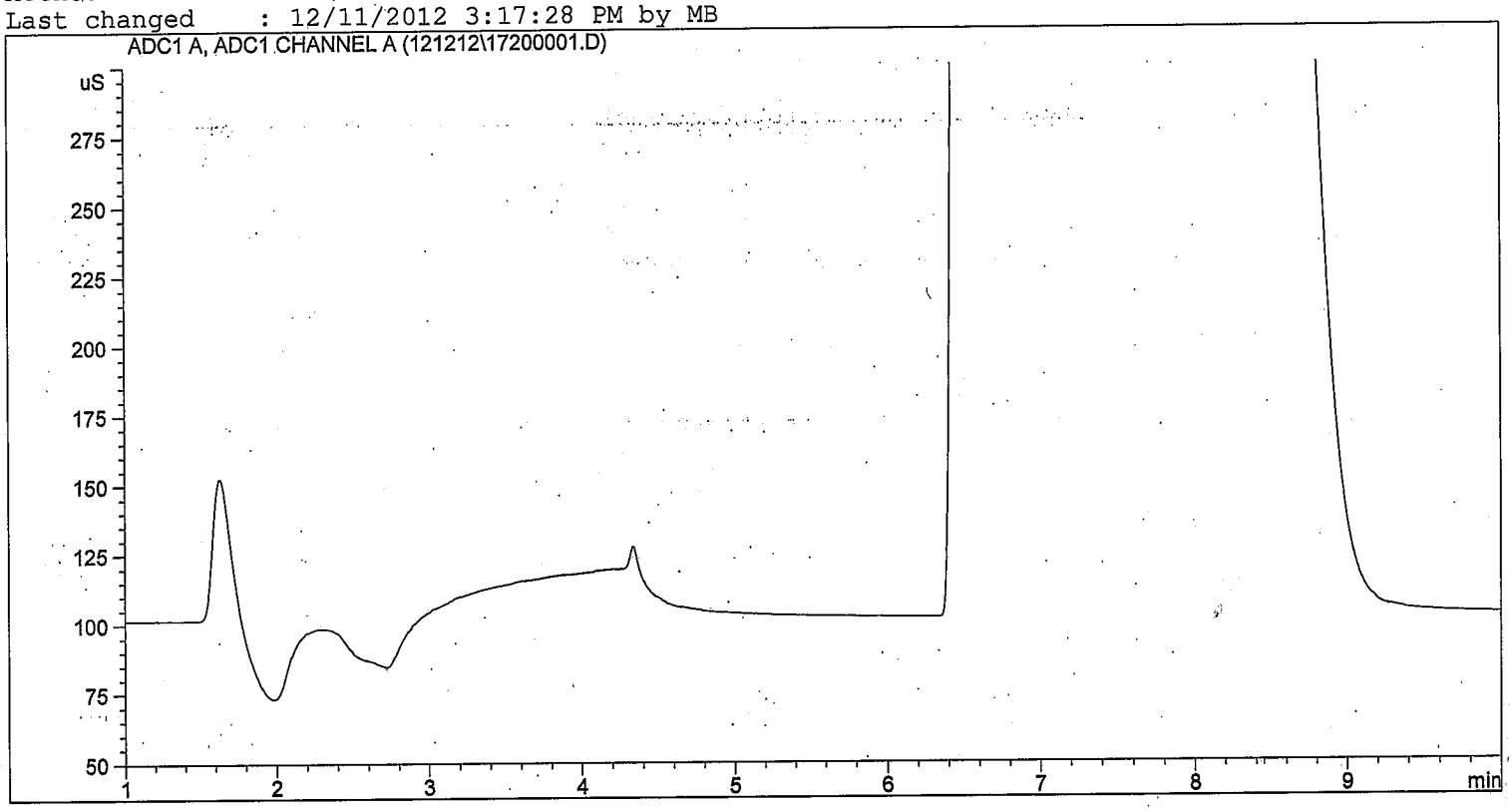
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A FB C03 vol=345mL

Injection Date : 12/12/2012 1:56:18 PM
Sample Name : FB C03 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

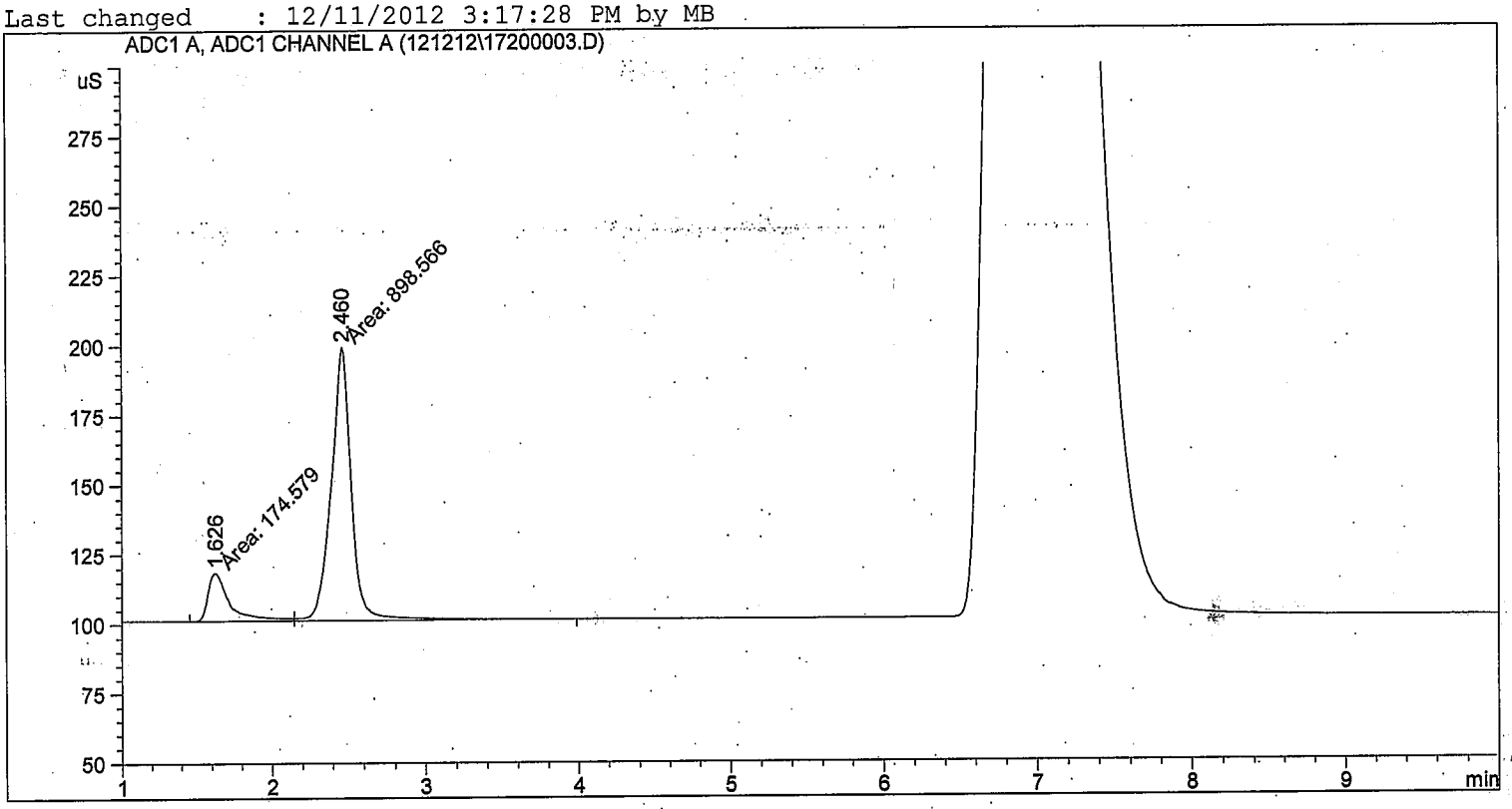
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

4.99 NIST CK STD

```
Injection Date  : 12/12/2012 2:55:13 PM
Sample Name     : NIST CK STD                    Location :
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 3:17:28 PM by MB
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 3:17:20 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

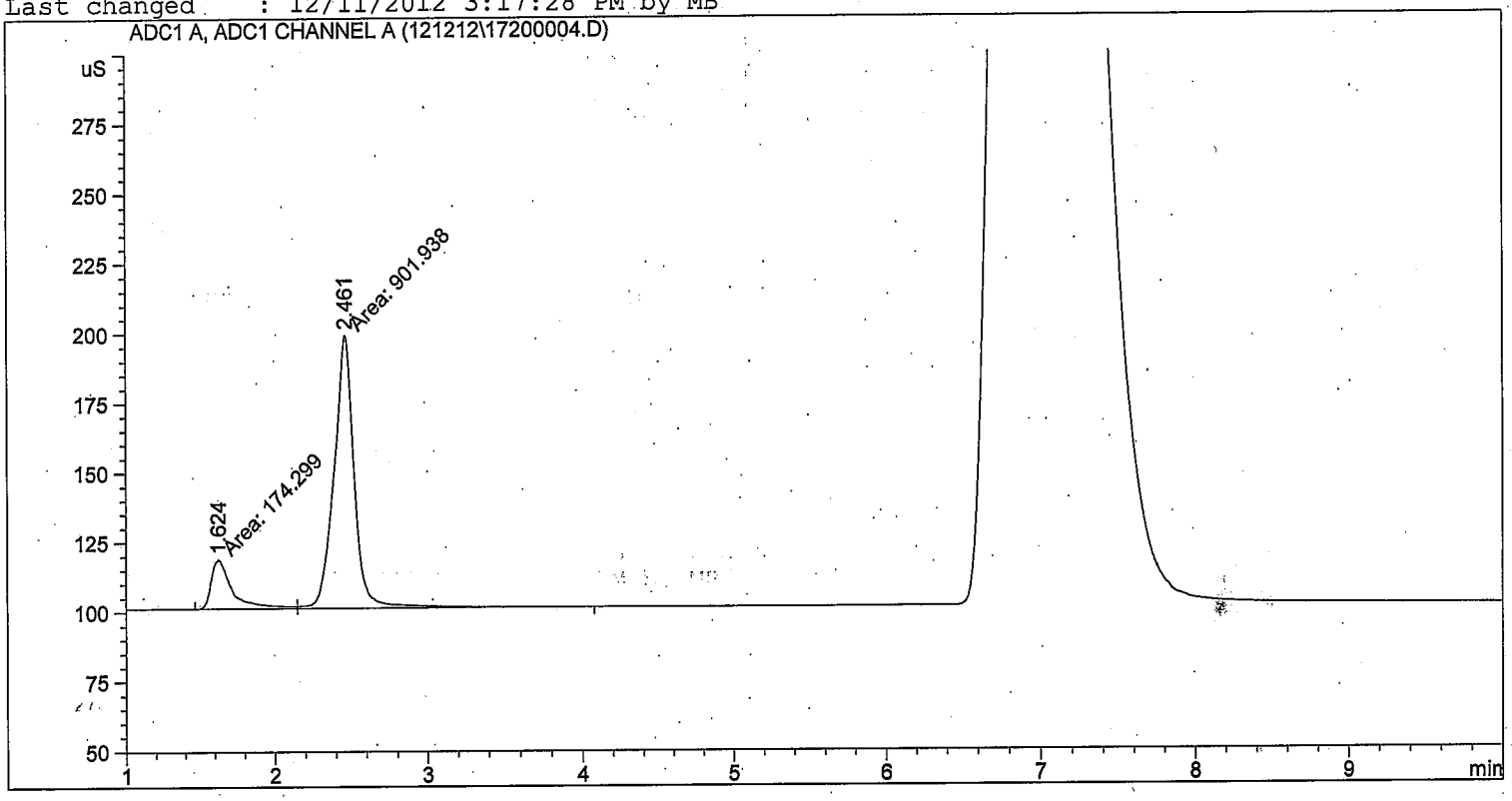
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.626	MF	174.57898	0.00000	0.00000		?
2.460	FM	898.56580	5.46970e-3	4.91488		Chloride
Totals :				4.91488		

Results obtained with enhanced integrator!

*** End of Report ***

4.99 NIST CK STD

```
Injection Date  : 12/12/2012 3:09:41 PM
Sample Name     : NIST CK STD                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 3:17:28 PM by MB
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 3:17:20 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.624	MF	174.29898	0.00000	0.00000		?
2.461	FM	901.93848	5.47181e-3	4.93524		Chloride
2.655	Rsho	0.00000	0.00000	0.00000		?

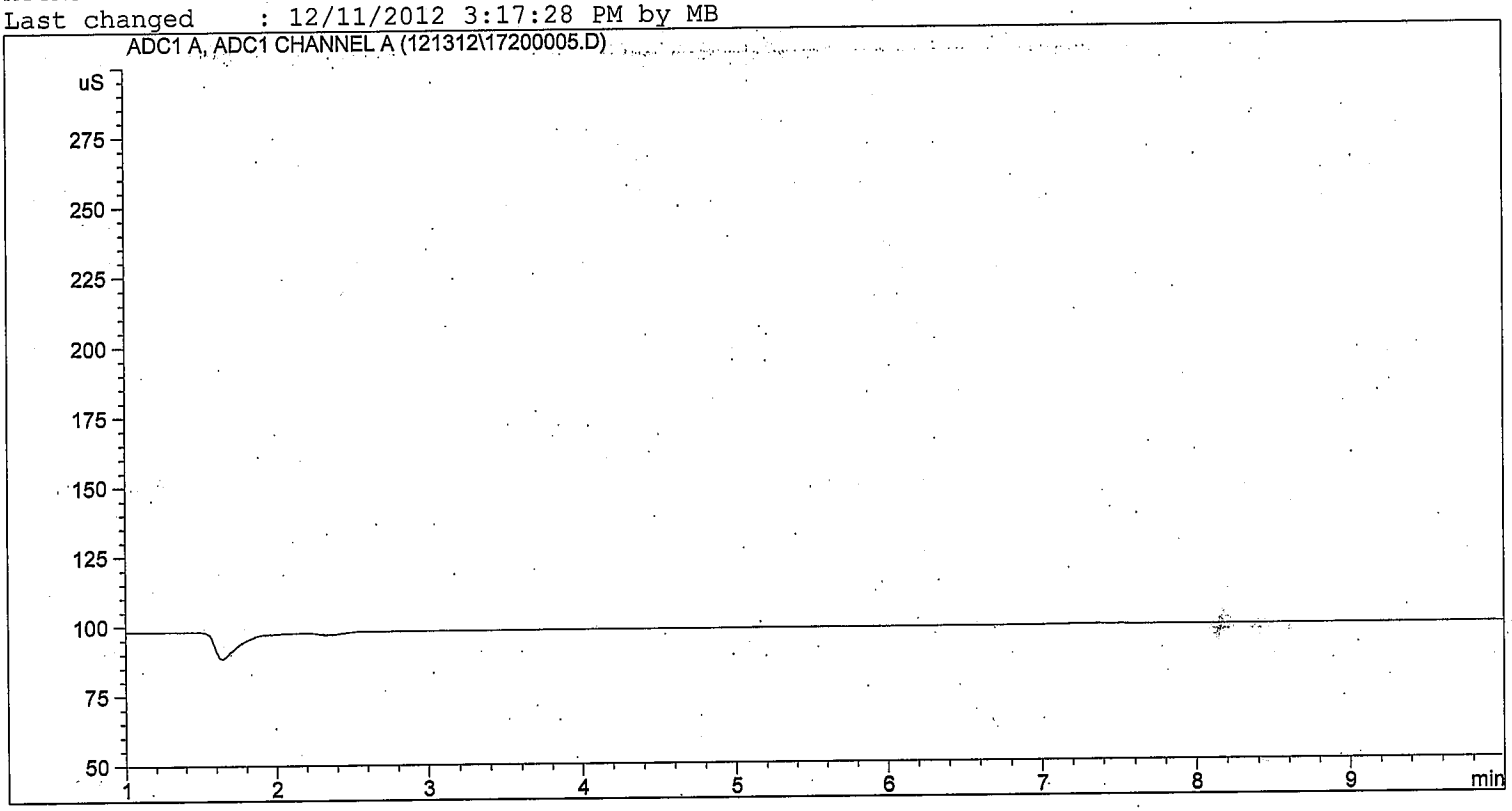
Totals : 4.93524

Results obtained with enhanced integrator!

*** End of Report ***

water

Injection Date : 12/13/2012 8:26:02 AM
Sample Name : H2O Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

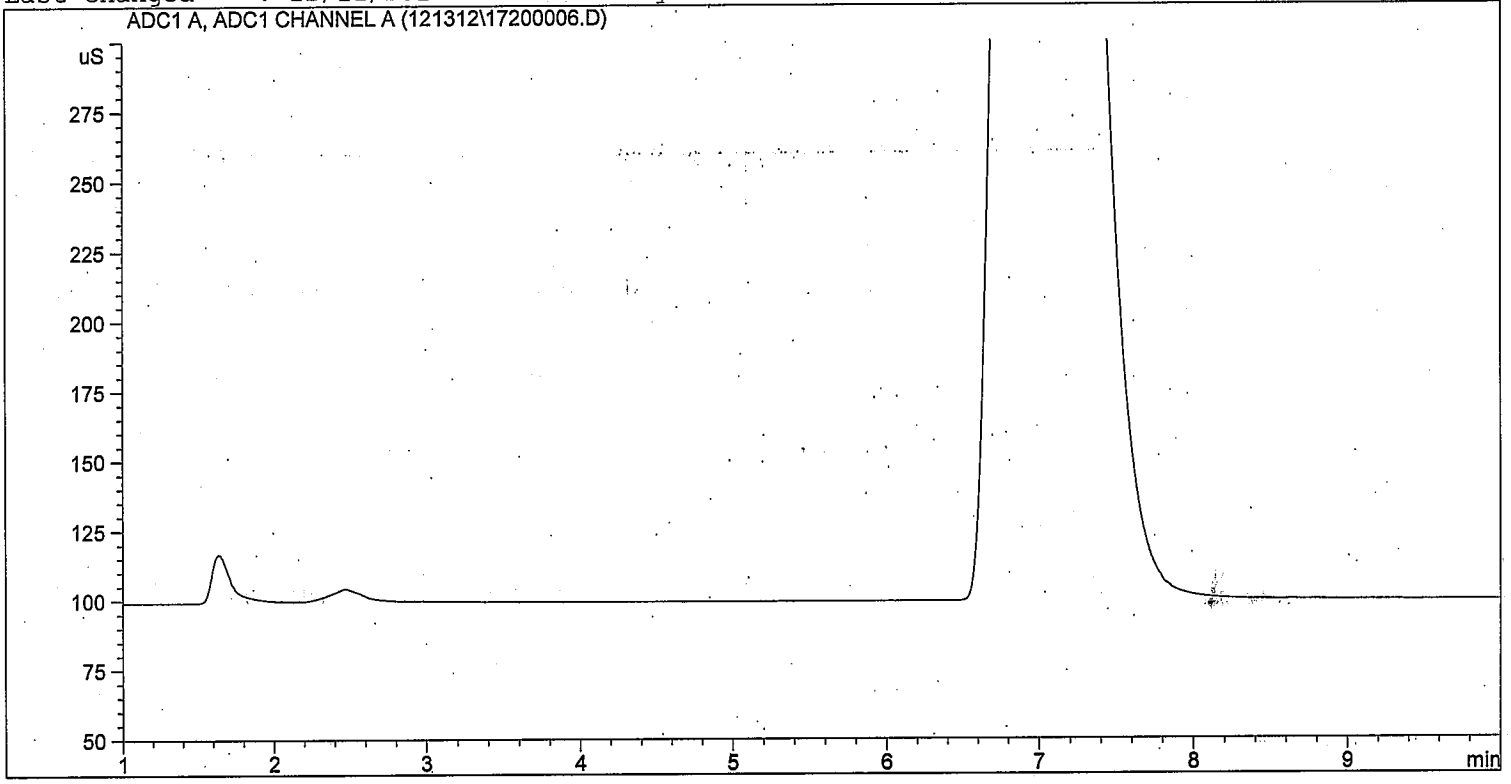
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

Lab Reagent Blank

```
Injection Date  : 12/13/2012 8:46:41 AM
Sample Name     : ReagentBlank                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 3:17:28 PM by MB
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 3:17:20 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

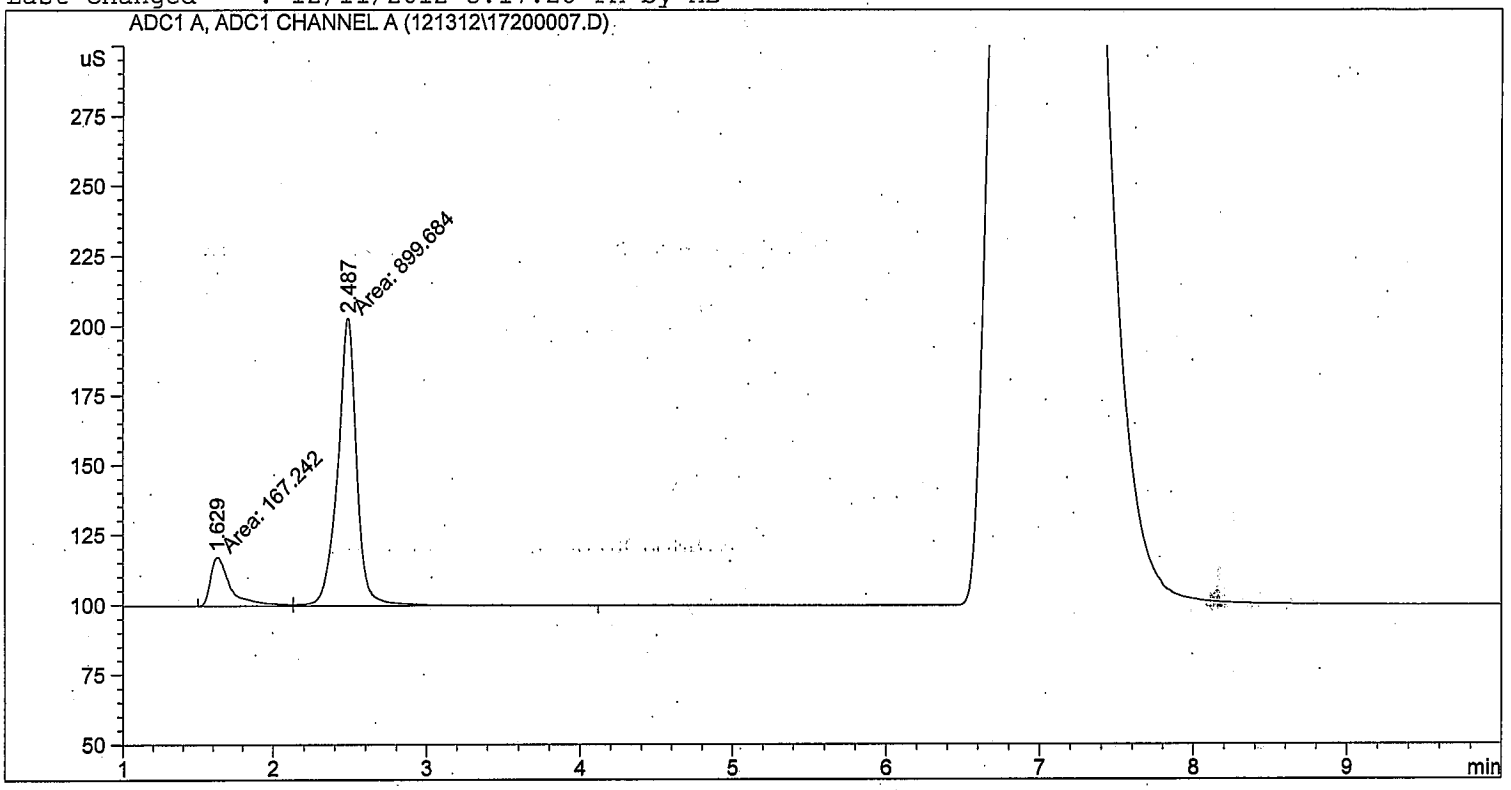
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

4.99 NIST CK STD

```
Injection Date  : 12/13/2012 9:06:01 AM
Sample Name     : NIST CK STD                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 3:17:28 PM by MB
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 3:17:20 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

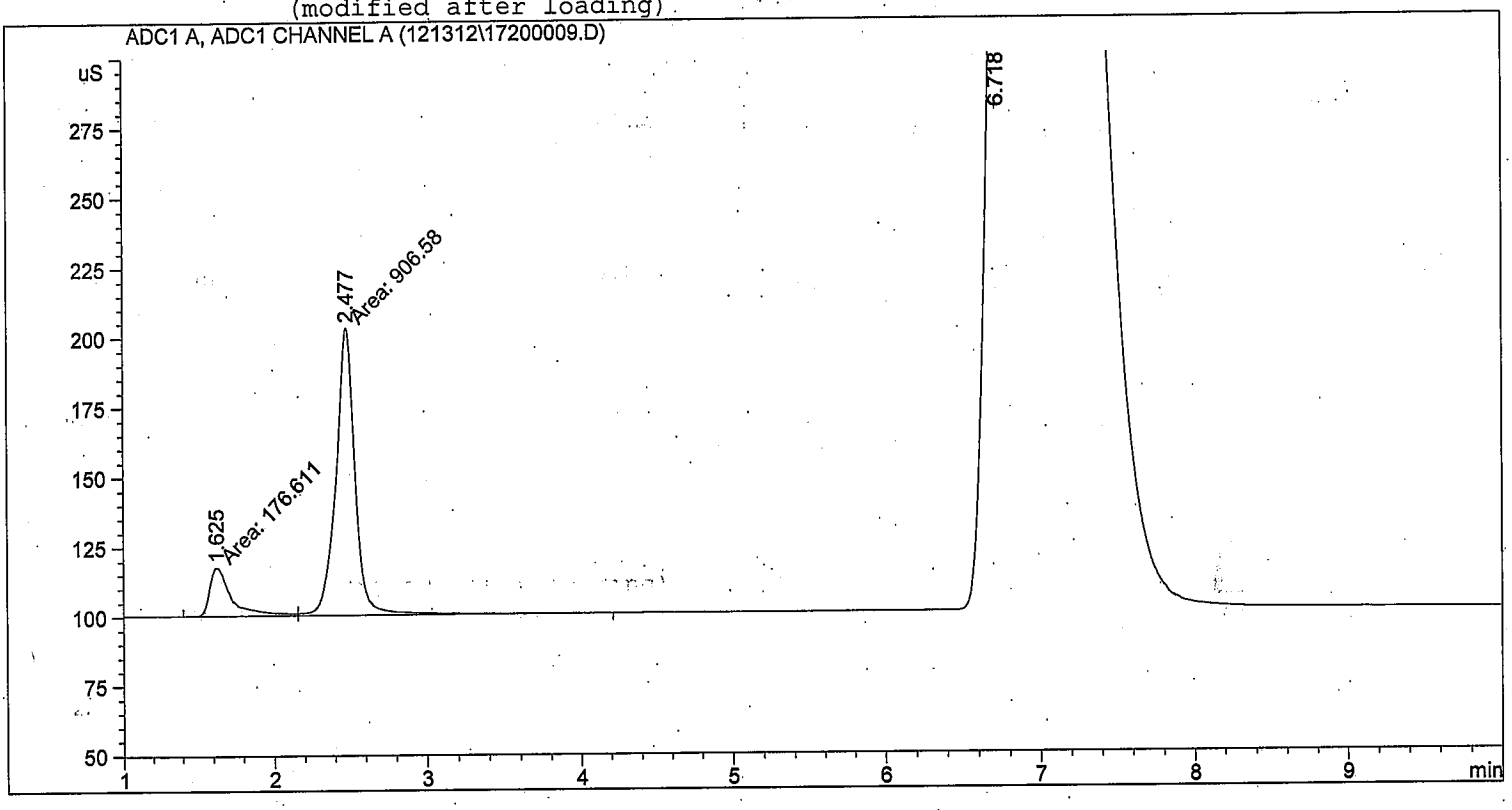
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.629	MF	167.24185	0.00000	0.00000		?
1.958	Rsho	0.00000	0.00000	0.00000		?
2.487	FM	899.68414	5.47040e-3	4.92163		Chloride
2.543	Rsho	0.00000	0.00000	0.00000		?
Totals :				4.92163		

```
 Results obtained with enhanced integrator!
```

*** End of Report ***

4.99 NIST CK STD

Injection Date : 12/13/2012 9:58:27 AM
Sample Name : NIST CK STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/13/2012 9:55:19 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/13/2012 9:55:19 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.625	MF	176.61061	0.00000	0.00000		?
2.477	FM	906.58038	5.47469e-3	4.96325		Chloride
2.829	Rsho	0.00000	0.00000	0.00000		?
6.718	VV f	49.46574	0.00000	0.00000		?

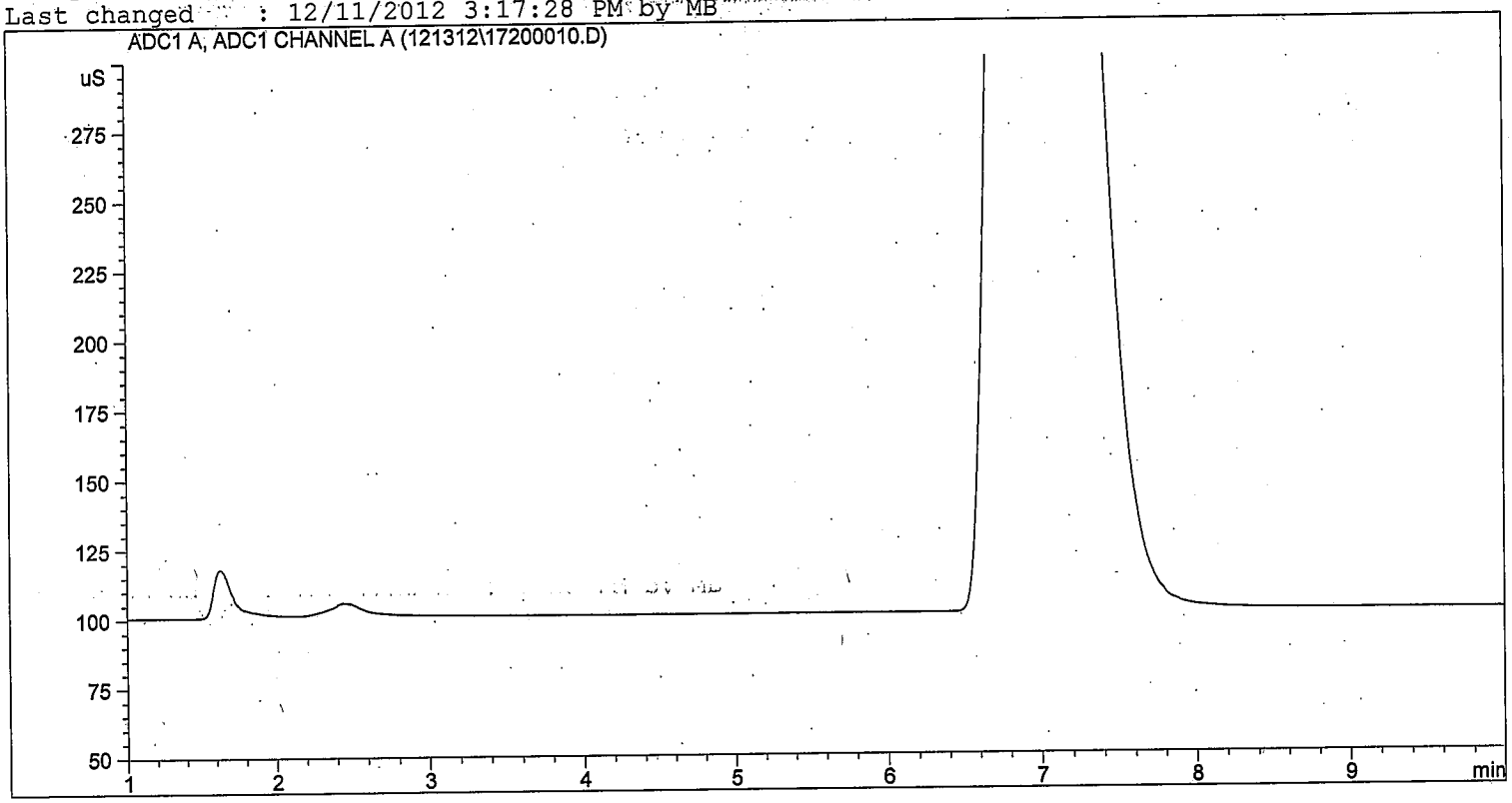
Totals : 4.96325

Results obtained with enhanced integrator!

*** End of Report ***

Lab Reagent Blank

Injection Date : 12/13/2012 10:13:11 AM
Sample Name : ReagentBlank Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Acq. Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/13/2012 9:55:19 AM by MB
(modified after loading)
Analysis Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

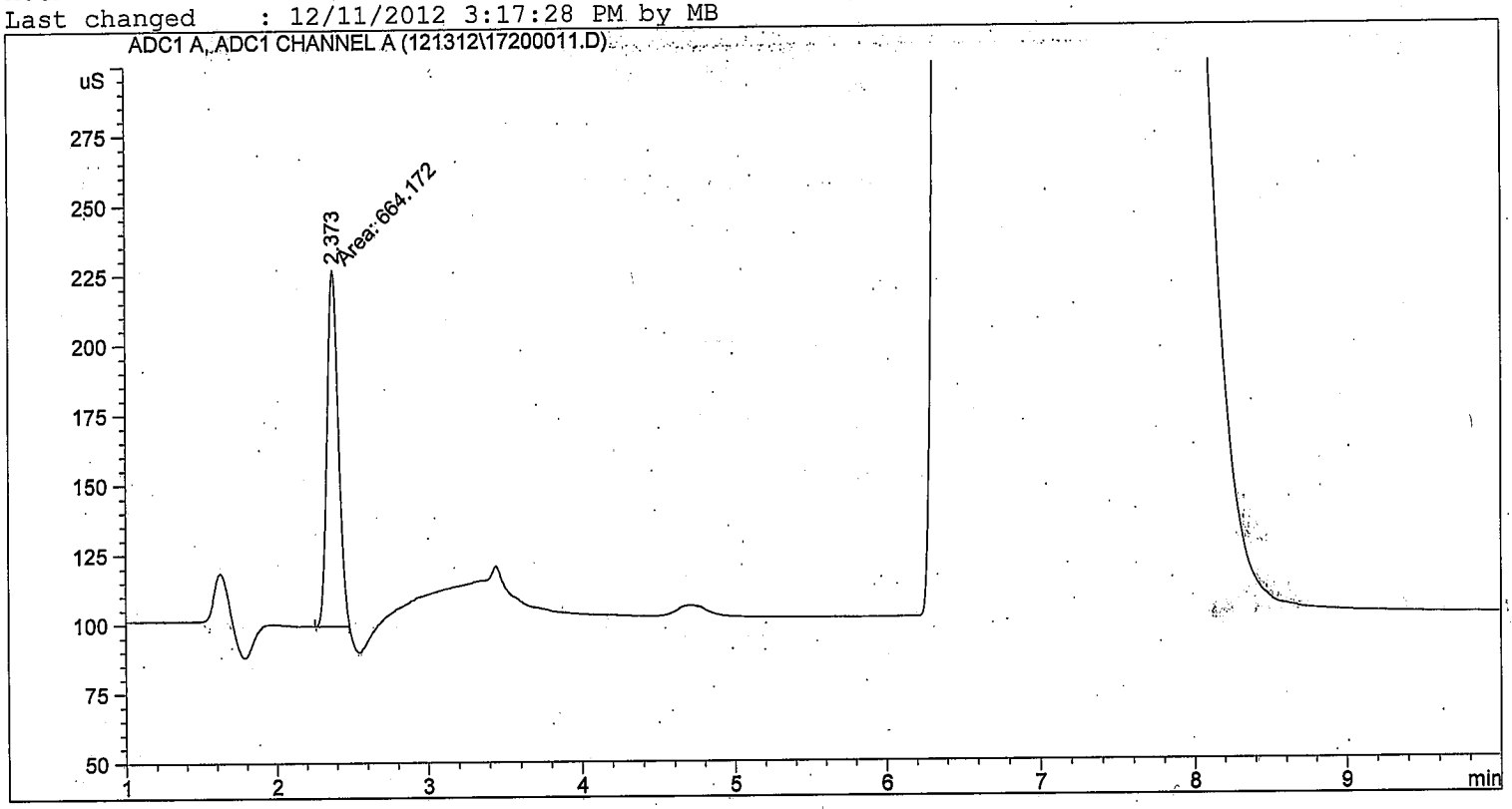
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A R01 C03 vol=750mL

```
Injection Date  : 12/13/2012 10:44:17 AM
Sample Name     : Run 1 C03                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 3:17:28 PM by MB
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 3:17:20 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

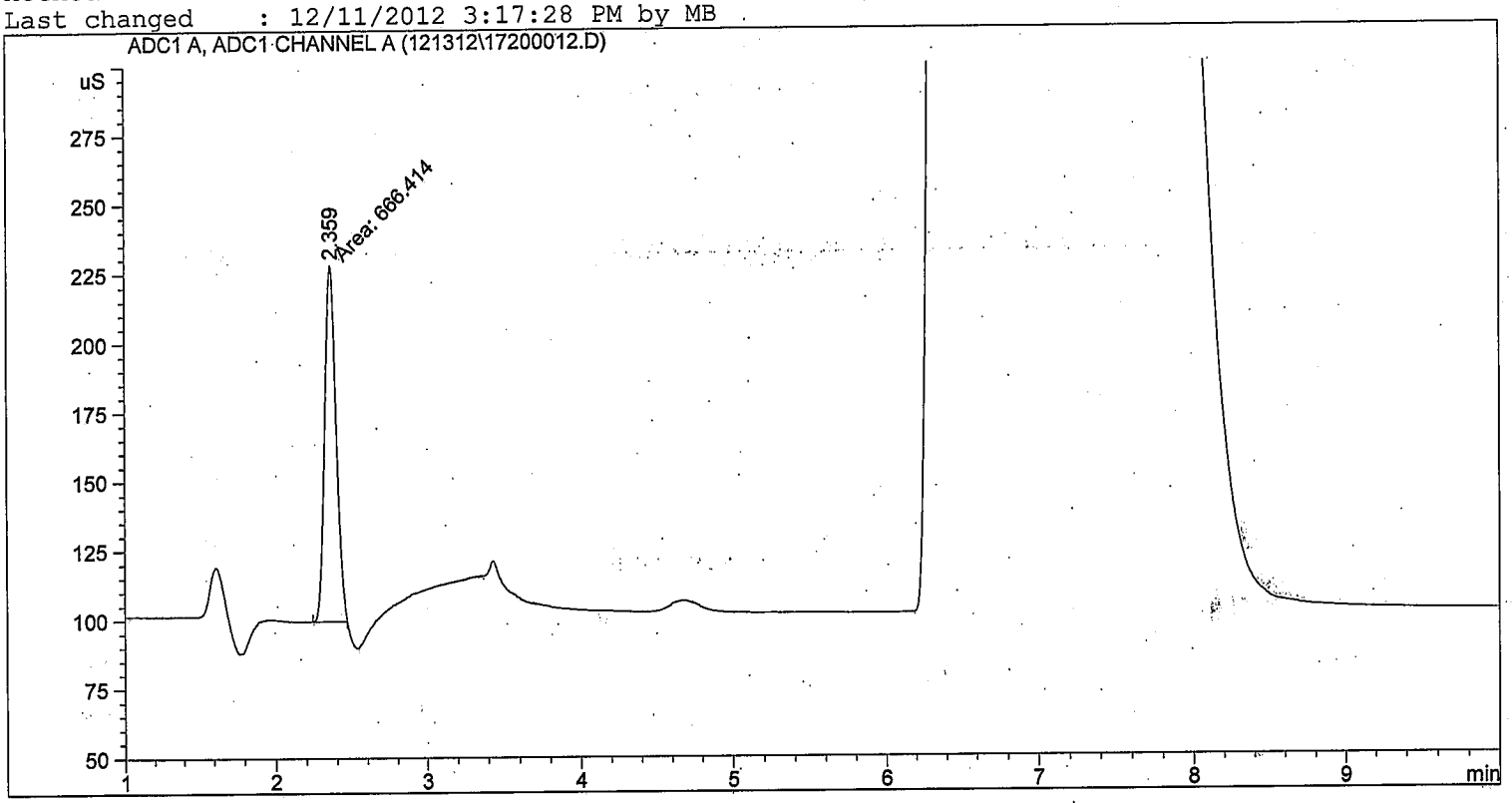
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.307	Fsho	0.00000	0.00000	0.00000		?
2.373	MM	664.17200	5.27031e-3	3.50039		Chloride
Totals :				3.50039		

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R01 C03 vol=750mL

Injection Date : 12/13/2012 11:00:16 AM
Sample Name : Run 1 C03 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

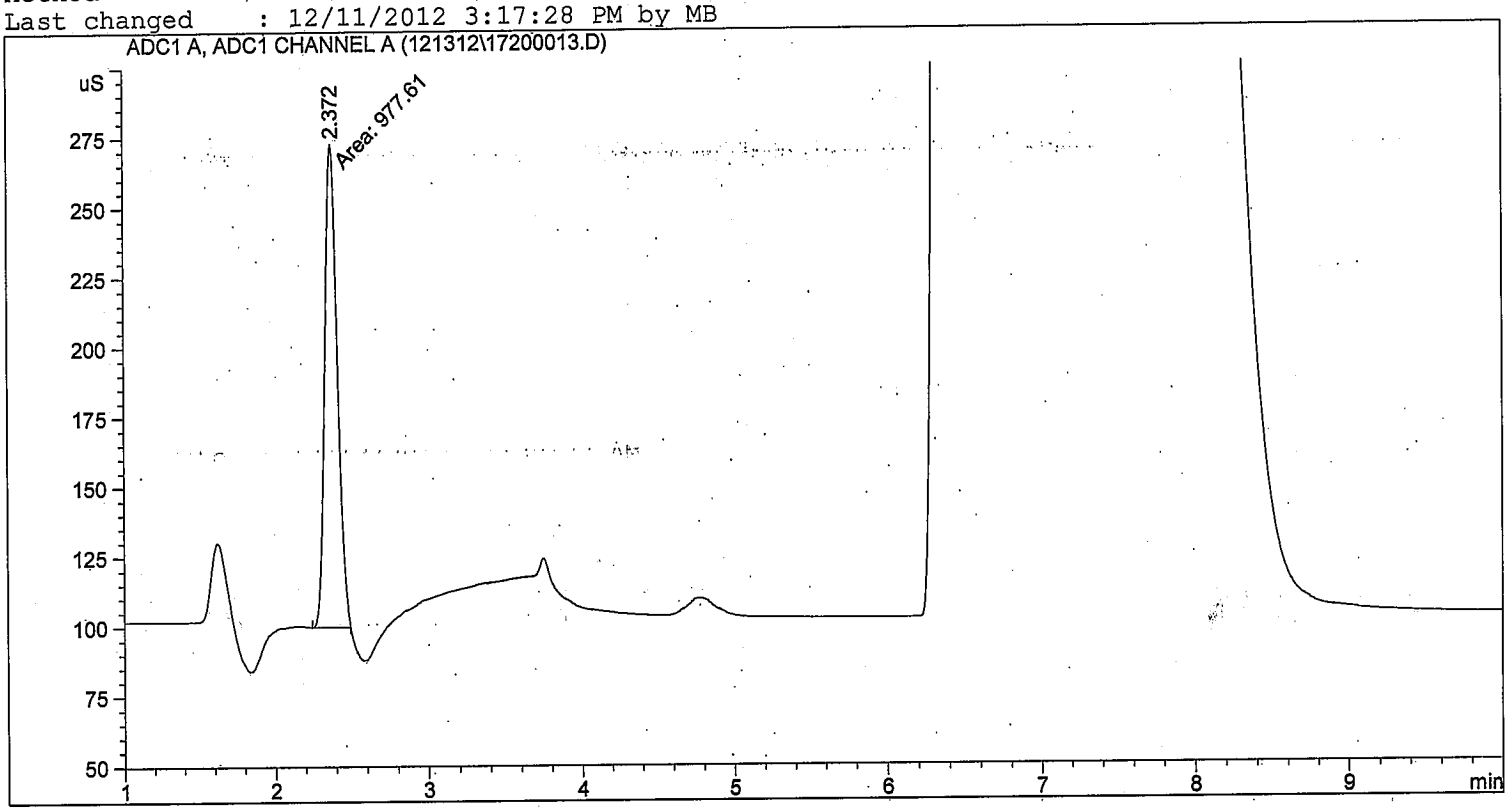
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.328	Fsho	0.00000	0.00000	0.00000	?	
2.359	MM	666.41418	5.27288e-3	3.51392		Chloride
Totals :				3.51392		

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R02 C03 vol=560mL

Injection Date : 12/13/2012 11:39:28 AM
Sample Name : Run 2 C03 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

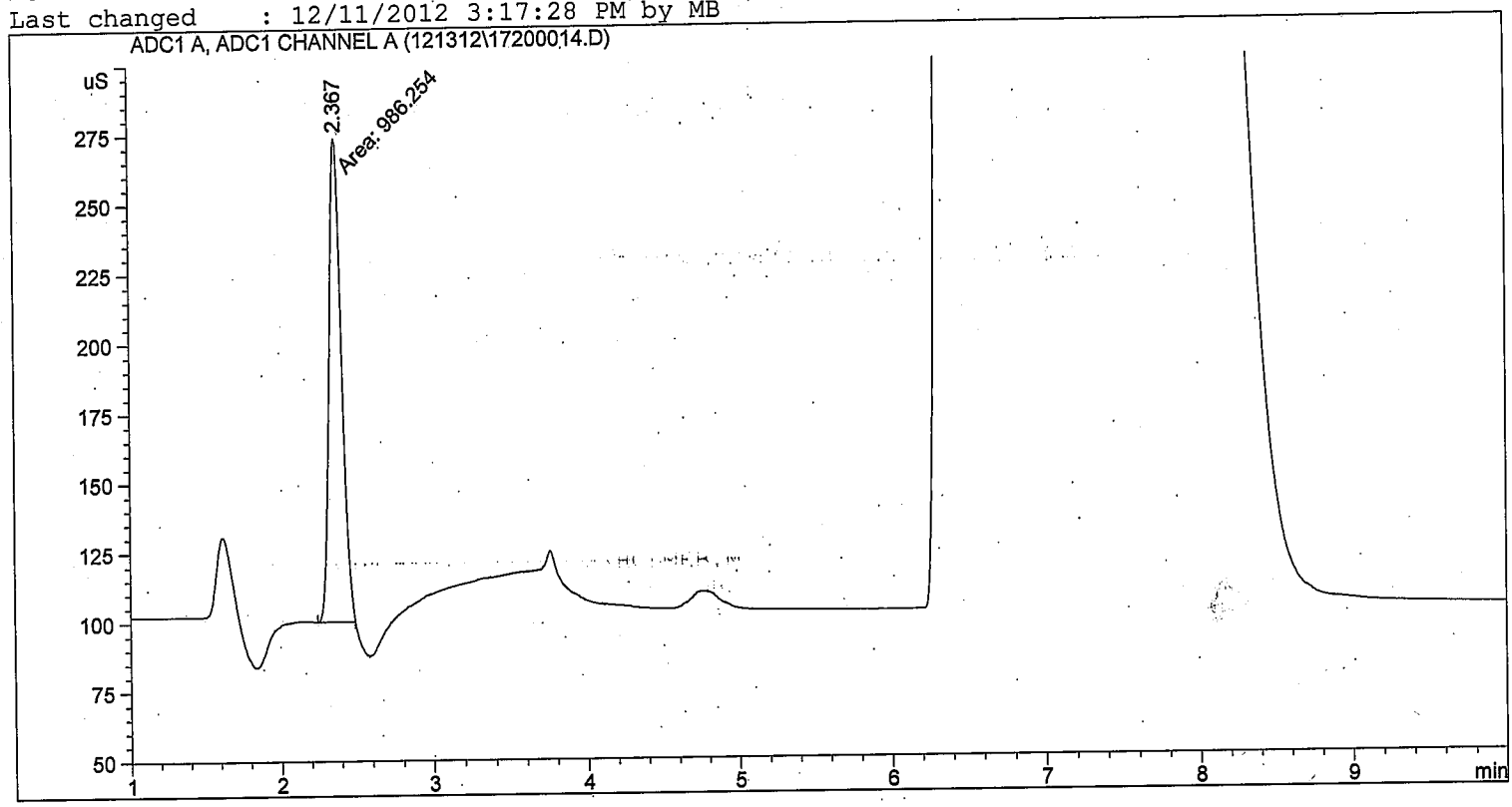
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.372	MM	977.61023	5.51538e-3	5.39189		Chloride
Totals :				5.39189		

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R02 C03 vol=560mL

Injection Date : 12/13/2012 12:05:17 PM
Sample Name : Run 2 C03 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.345	Fsho	0.00000	0.00000	0.00000		?
2.367	MM	986.25403	5.51993e-3	5.44406		Chloride
2.443	Rsho	0.00000	0.00000	0.00000		?

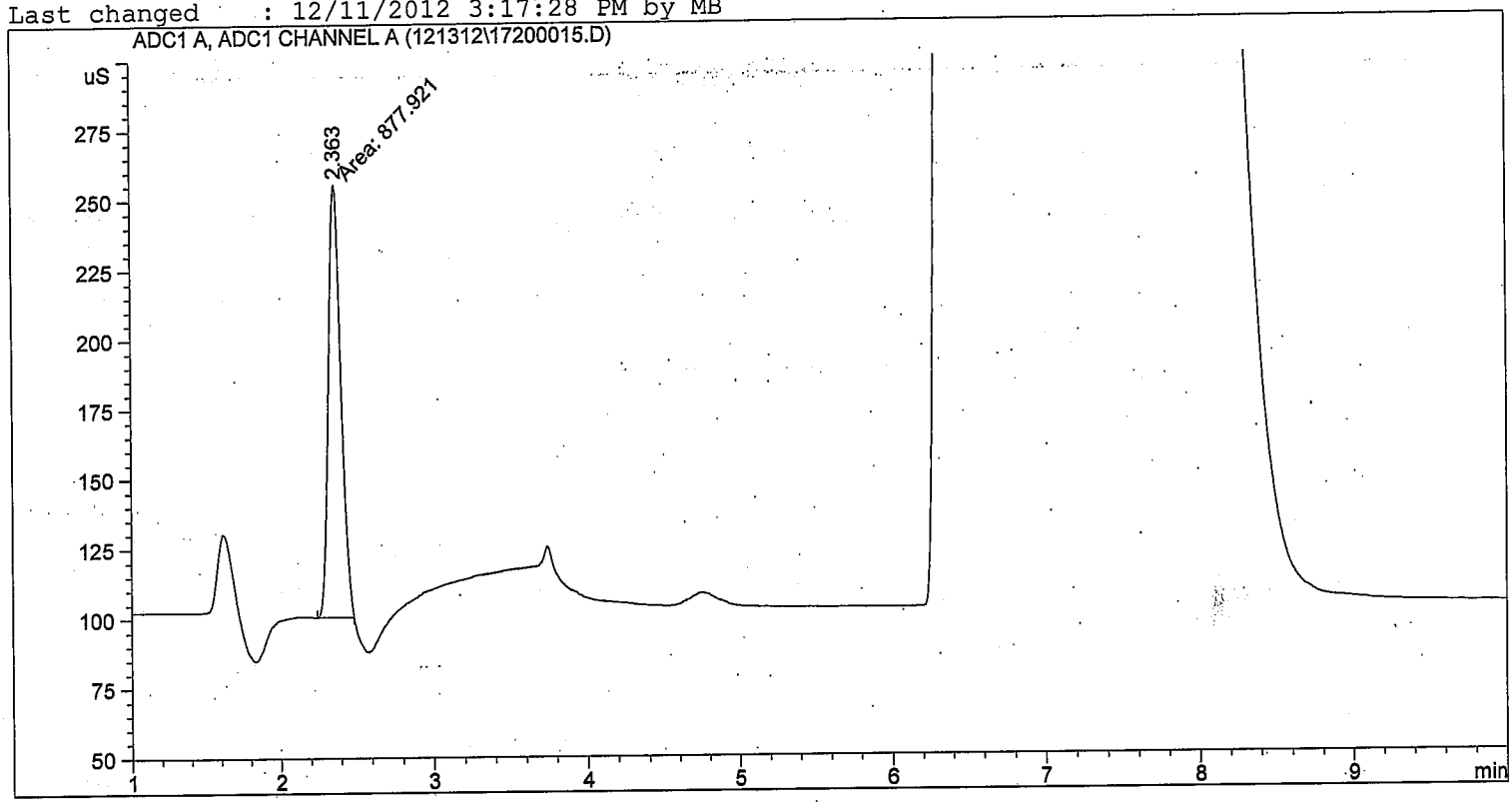
Totals : 5.44406

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R04 C03 vol=570mL

Injection Date : 12/13/2012 12:19:16 PM
Sample Name : Run 4 C03 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

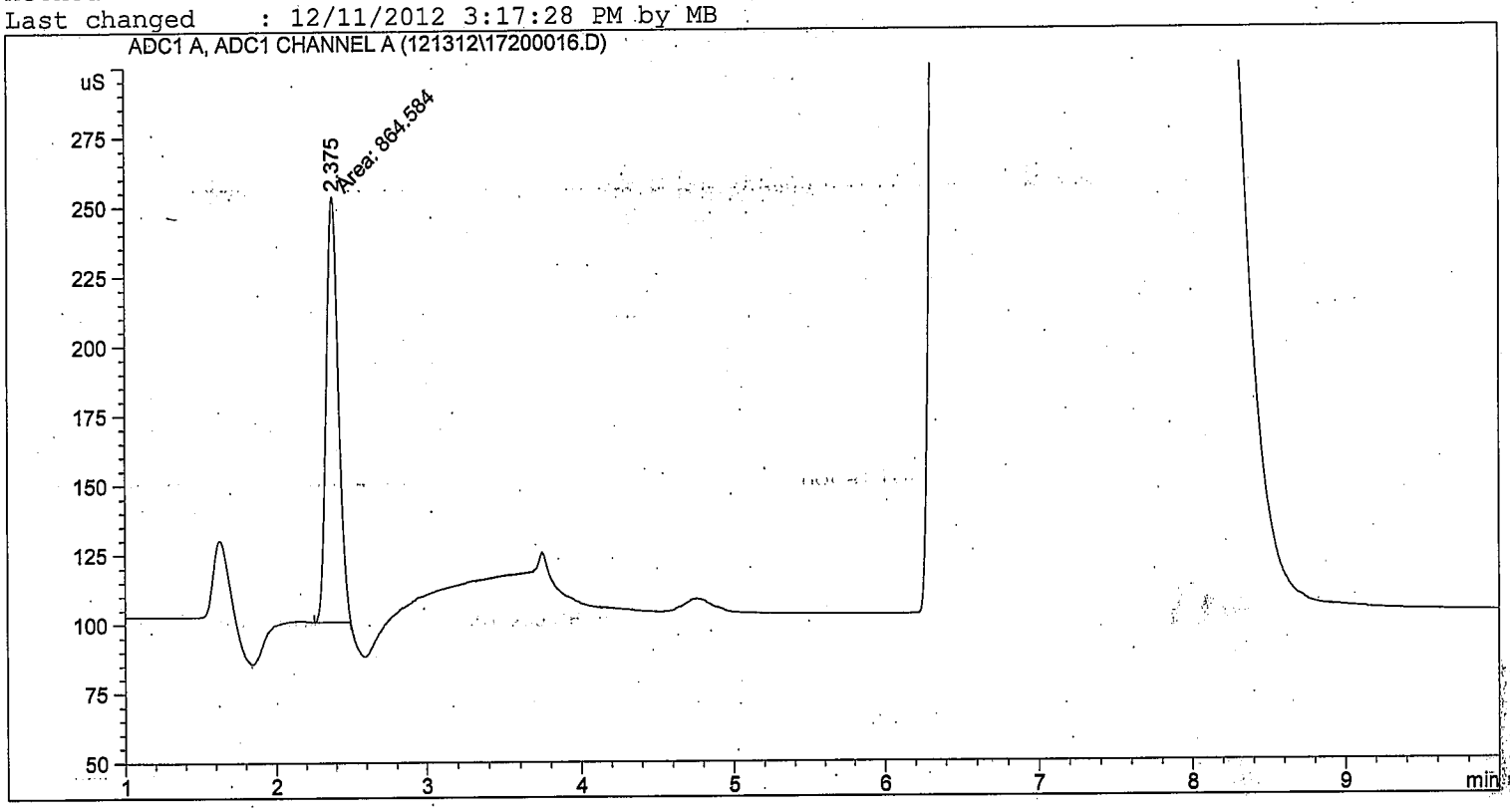
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.363	MM	877.92120	5.45641e-3	4.79030		Chloride
Totals :				4.79030		

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R04 C03 vol=570mL

Injection Date : 12/13/2012 12:32:26 PM
Sample Name : Run 4 C03 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 3:17:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.375	MM	864.58405	5.44749e-3	4.70982		Chloride
2.462	Rsho	0.00000	0.00000	0.00000		?

Totals : 4.70982

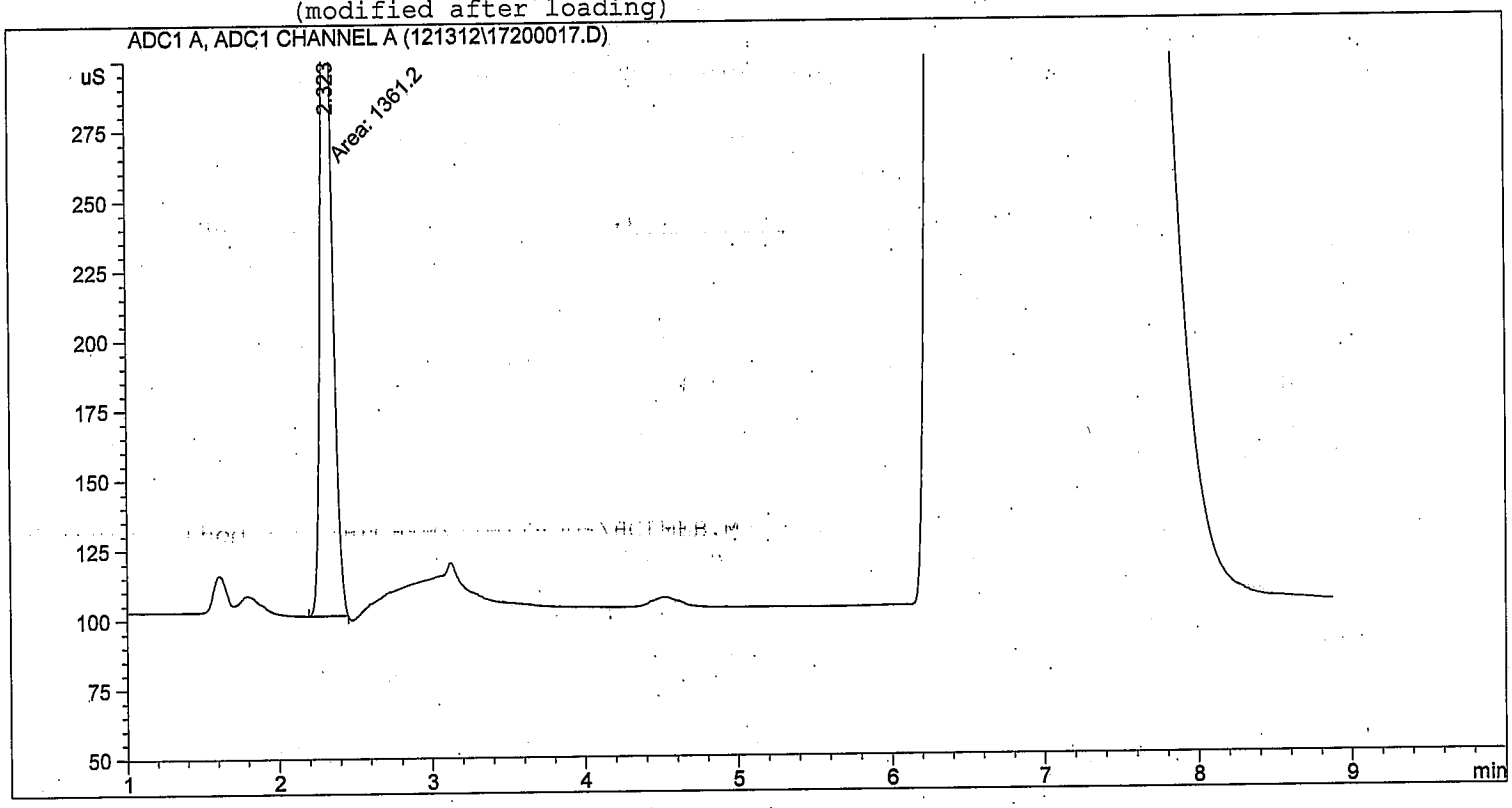
Results obtained with enhanced integrator!

*** End of Report ***

Data File C:\HPCHEM\2\DATA\121312\17200017.D Sample Name: Run 2 C03 spk

12-0311 M26A ~~R04~~ C03 dil 1:2 + 4.98 ppm spk
R02 MB 12-13-12

Injection Date : 12/13/2012 1:09:51 PM
Sample Name : Run 2 C03 spk Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Acq. Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 3:17:28 PM by MB
Analysis Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/13/2012 1:20:20 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/13/2012 1:20:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

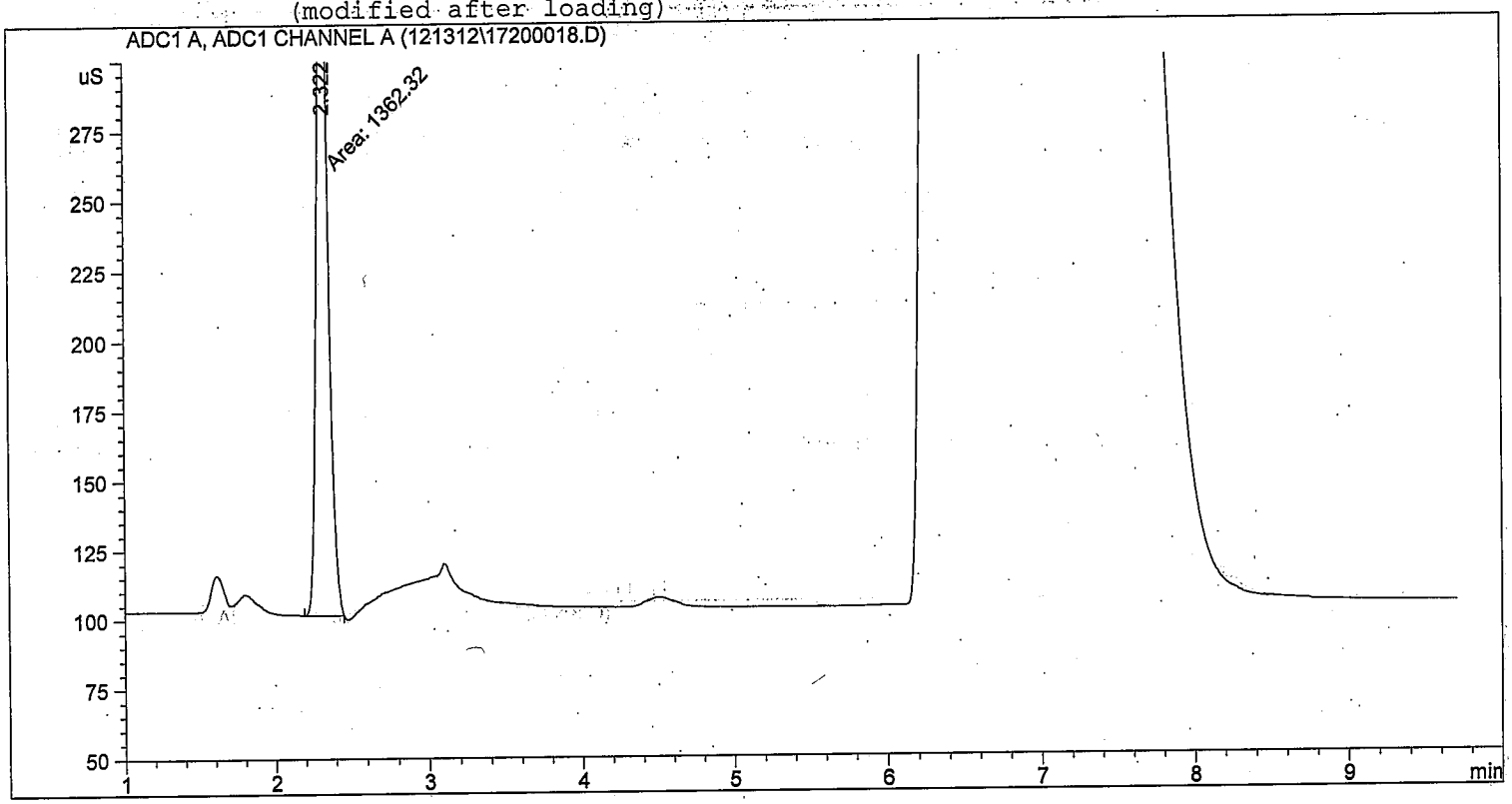
Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.243	Fsho	0.00000	0.00000	0.00000		?
2.307	Fsho	0.00000	0.00000	0.00000		?
2.323	MM	1361.20264	5.66172e-3	7.70675		Chloride
2.376	Rsho	0.00000	0.00000	0.00000		?
2.404	Rsho	0.00000	0.00000	0.00000		?
Totals :				7.70675		

Results obtained with enhanced integrator!

12-0311 M26A ~~R04~~ R02 MB 12-13-12 C03 dil 1:2 + 4.98 ppm spk

Injection Date : 12/13/2012 1:22:11 PM
Sample Name : Run 2 C03 spk Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/13/2012 1:20:20 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/13/2012 1:20:20 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.292	Fsho	0.00000	0.00000	0.00000		?
2.322	MM	1362.31665	5.66203e-3	7.71348		Chloride
2.373	Rsho	0.00000	0.00000	0.00000		?

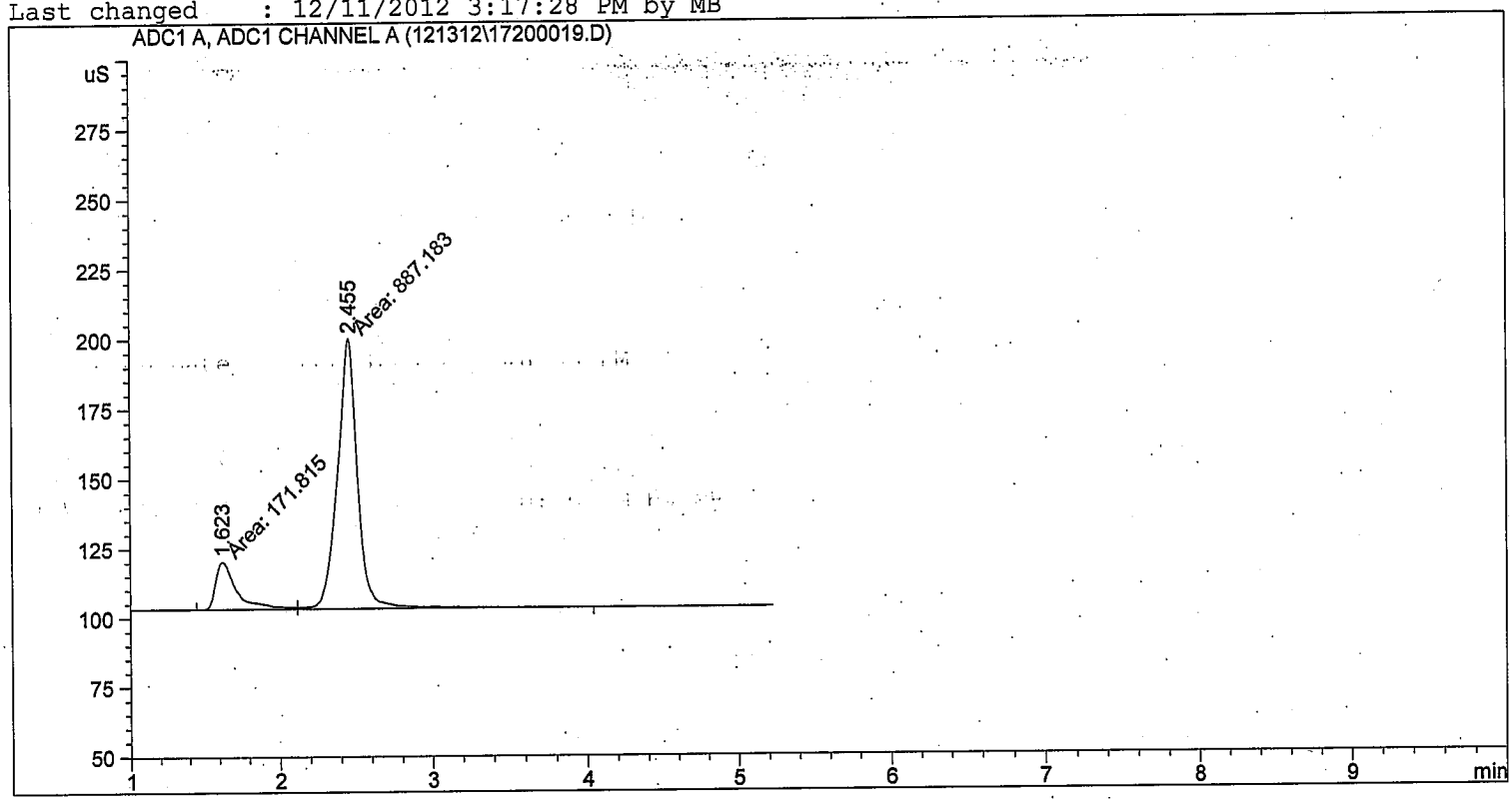
Totals : 7.71348

Results obtained with enhanced integrator!

*** End of Report ***

4.99 NIST CK STD

```
Injection Date  : 12/13/2012 1:46:33 PM
Sample Name     : NIST CK STD                    Location :   -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Acq. Method     : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/13/2012 1:20:20 PM by MB
                  (modified after loading)
Analysis Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 3:17:28 PM by MB
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 3:17:20 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

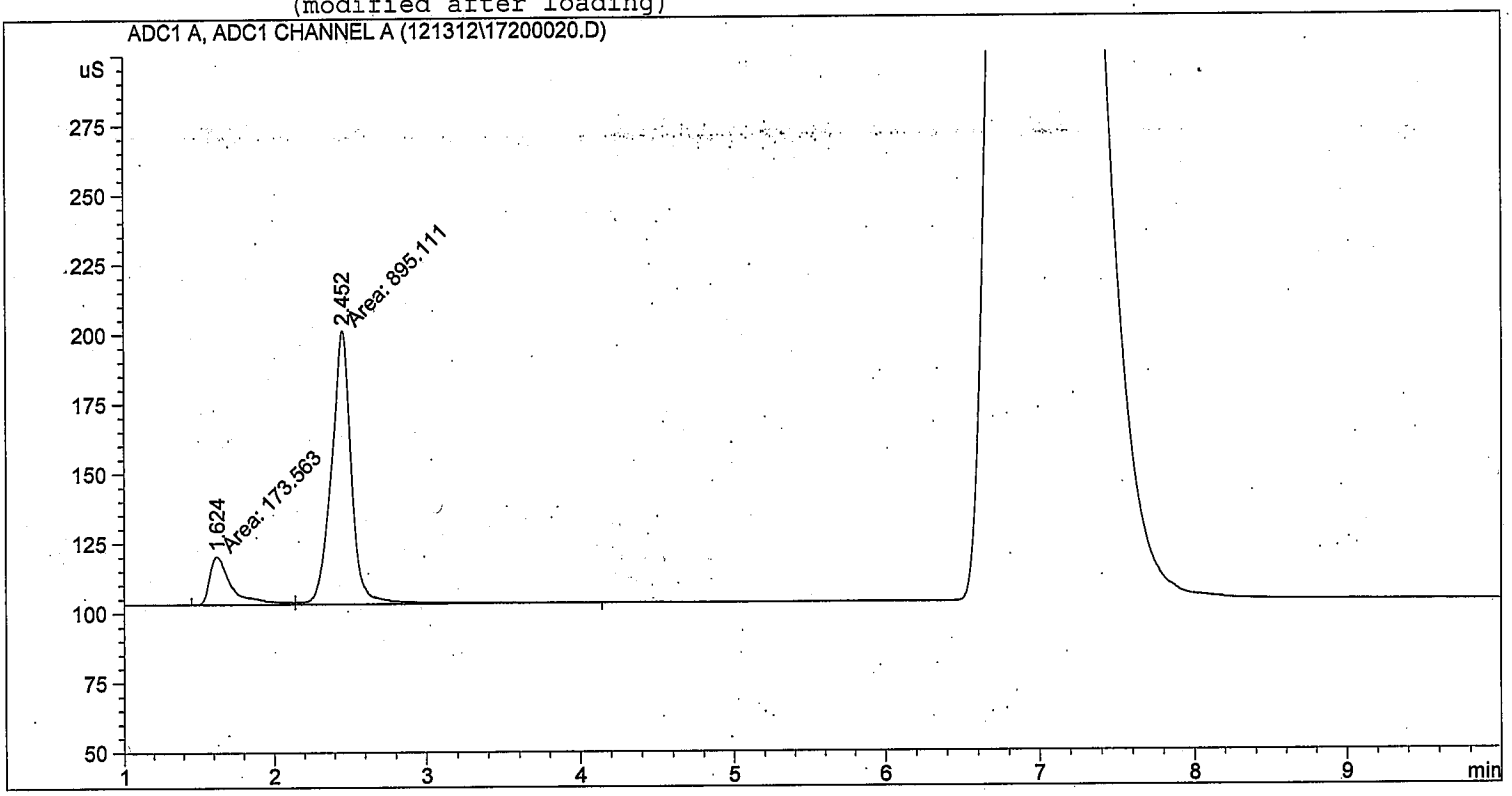
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.623	MF	171.81485	0.00000	0.00000		?
2.455	FM	887.18335	5.46245e-3	4.84620		Chloride
Totals :				4.84620		

Results obtained with enhanced integrator!

*** End of Report ***

4.99 NIST CK STD

```
Injection Date  : 12/13/2012 2:10:09 PM
Sample Name     : NIST CK STD                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Acq. Method     : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 3:17:28 PM by MB
Analysis Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/13/2012 2:35:37 PM by MB
                  (modified after loading)
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/13/2012 2:39:02 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.624	MF	173.56270	0.00000	0.00000		?
2.452	FM	895.11121	5.46752e-3	4.89404		Chloride
Totals :				4.89404		

Results obtained with enhanced integrator!

*** End of Report ***

Calibration Table

Calib. Data Modified : 12/11/2012 2:34:36 PM

Calculate : External Standard
Based on : Peak Area

Rel. Reference Window : 5.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 5.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : compound name not specified
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Ignored
Weight : Equal

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Lvl Sig		Amount [ng/ul]	Area	Amt/Area	Ref	Grp	Name
2.395	1	1	4.99000e-1	172.67438	2.88983e-3			Chloride
		2	9.99600e-1	260.87723	3.83169e-3			
		3	1.99920	421.13046	4.74722e-3			
		4	4.99820	872.09344	5.73127e-3			
		5	9.99640	1758.20923	5.68556e-3			

MB 12/12/12

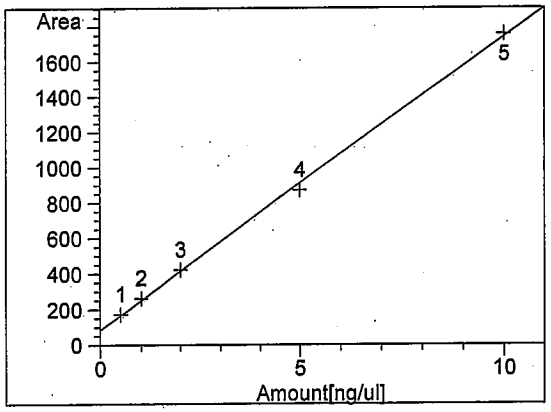
More compound-specific settings:

Compound: Chloride
Time Window : From 2.337 min To 2.553 min

Peak Sum Table

No Entries in table

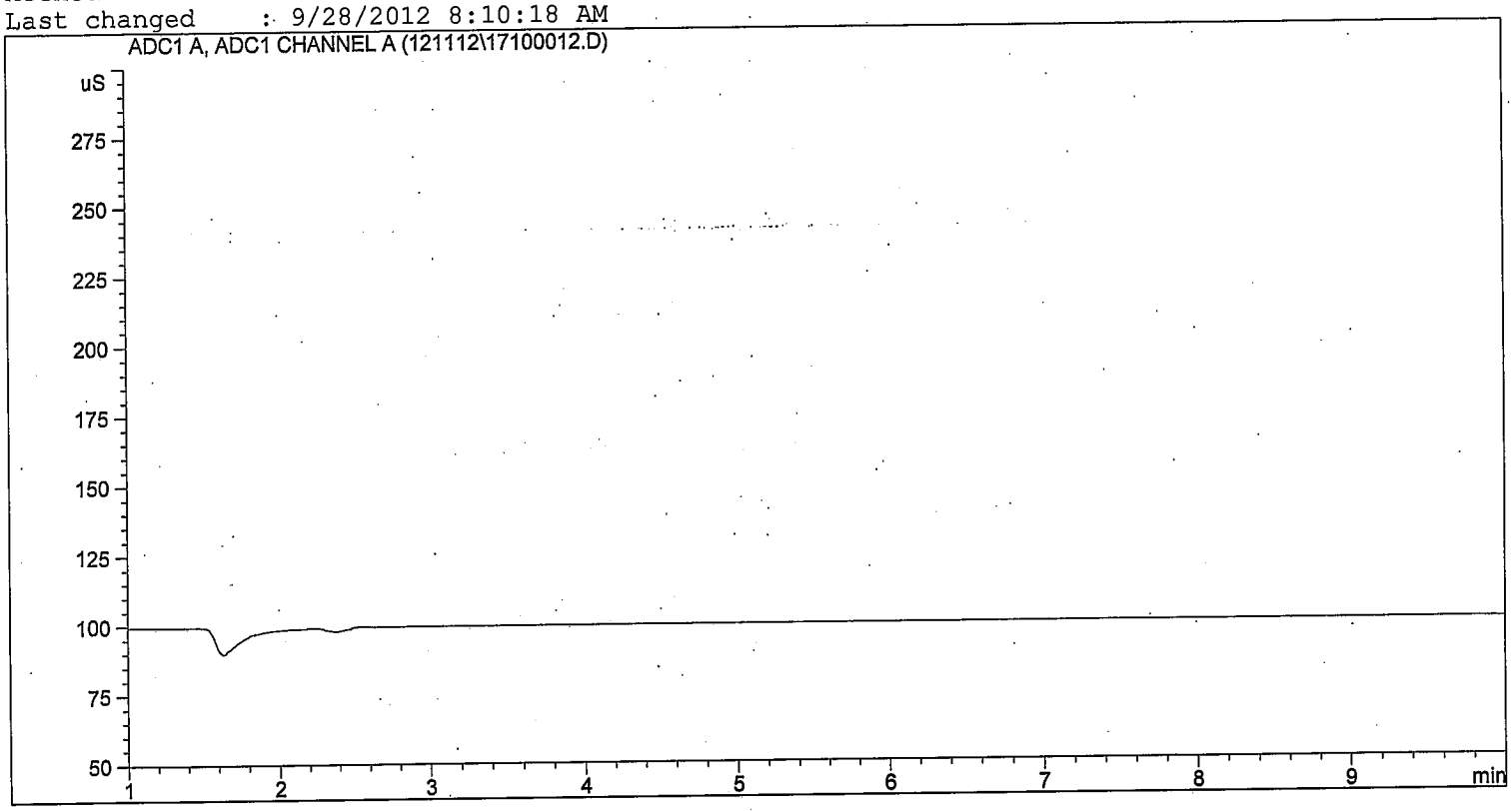
Calibration Curves



Chloride at exp. RT: 2.395
ADC1 A, ADC1 CHANNEL A
Correlation: 0.99937
Residual Std. Dev.: 26.59738
Formula: y = mx + b
m: 165.70869
b: 84.12667
x: Amount[ng/ul]
y: Area

water

Injection Date : 12/11/2012 10:32:56 AM
Sample Name : H2O Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 9/28/2012 8:10:18 AM



External Standard Report

Sorted By : Signal
Calib. Data Modified : 9/28/2012 8:06:02 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.395		-	-	-		Chloride

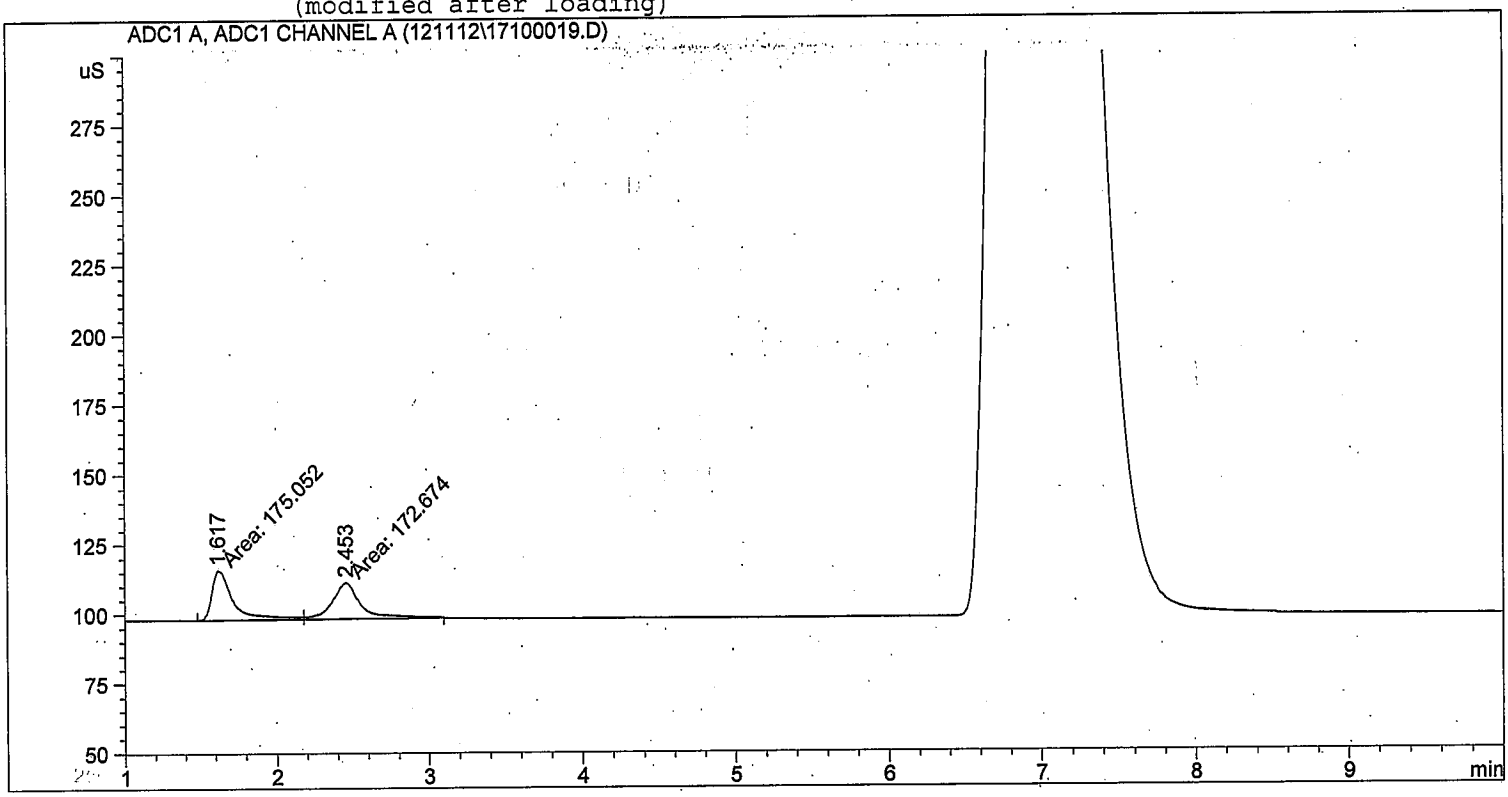
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

0.499ppm Chloride Calibration STD

```
Injection Date  : 12/11/2012 2:14:52 PM
Sample Name     : 0.499ppm Cal STD              Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Acq. Method     : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 1:17:23 PM by MB
                  (modified after loading)
Analysis Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 2:29:28 PM by MB
                  (modified after loading)
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 2:29:25 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.617	MF	175.05238	0.00000	0.00000		?
2.453	FM	172.67438	4.49267e-3	7.75769e-1		Chloride

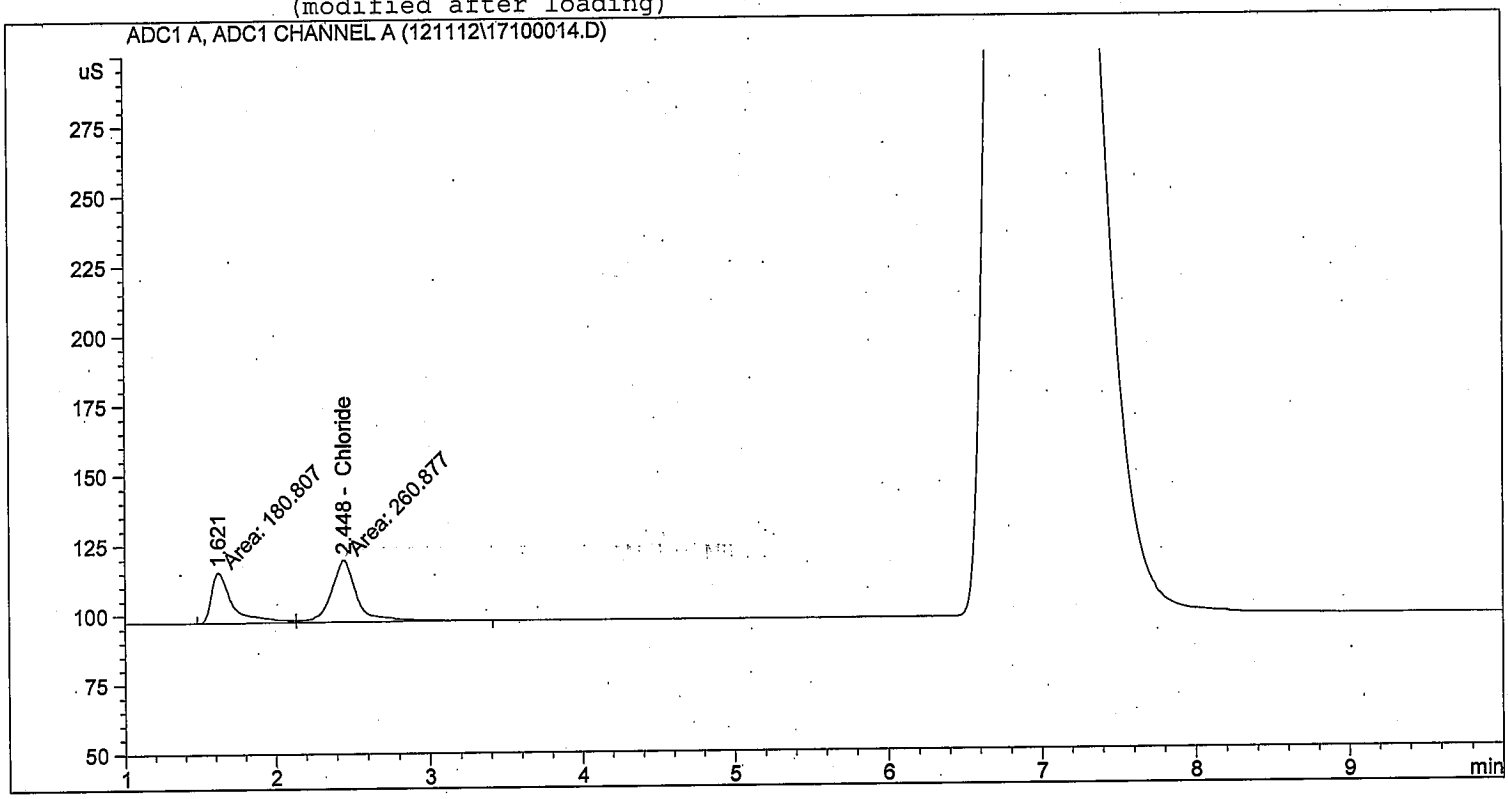
Totals : 7.75769e-1

Results obtained with enhanced integrator!

*** End of Report ***

0.99ppm Chloride Calibration STD

Injection Date : 12/11/2012 11:11:08 AM
Sample Name : 0.99ppm Cal STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed : 12/11/2012 11:06:51 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/11/2012 11:04:25 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks : compound name not specified

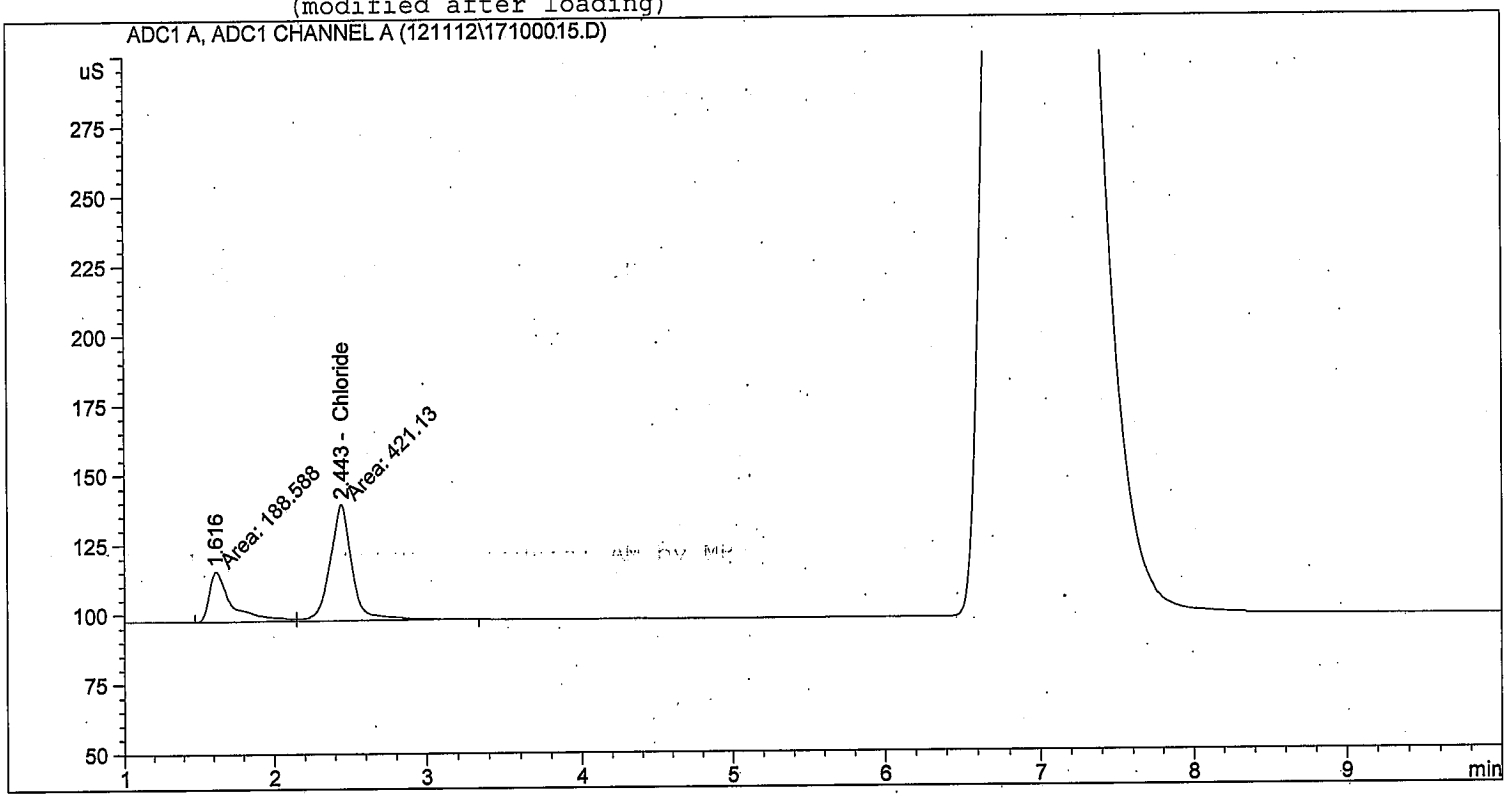
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.621	MF	180.80676	0.00000	0.00000		?
1.886	Rsho	0.00000	0.00000	0.00000		?
2.448	FM	260.87723	4.16107e-3	1.08553		Chloride
2.691	Rsho	0.00000	0.00000	0.00000		?
Totals :				1.08553		

Results obtained with enhanced integrator!

*** End of Report ***

1.99ppm Chloride Calibration STD

```
Injection Date  : 12/11/2012 11:46:52 AM
Sample Name     : 1.99ppm Cal STD                Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 11:06:51 AM by MB
                  (modified after loading)
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 11:04:25 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

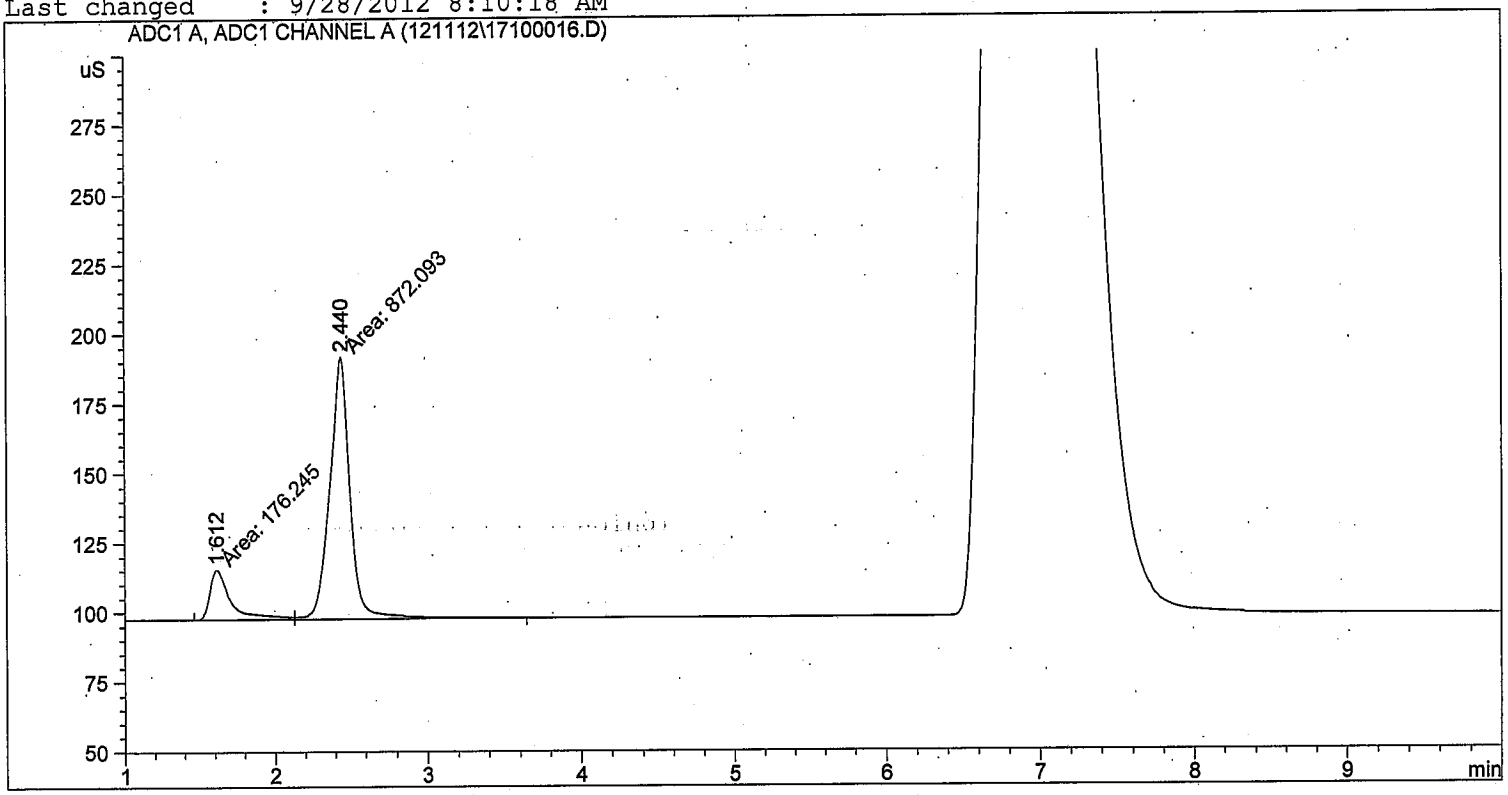
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.616	MF	188.58849	0.00000	0.00000		?
1.830	Rsho	0.00000	0.00000	0.00000		?
2.443	FM	421.13046	4.89273e-3	2.06048		Chloride
Totals :				2.06048		

Results obtained with enhanced integrator!

*** End of Report ***

4.99ppm Chloride Calibration STD

```
Injection Date  : 12/11/2012 12:05:14 PM
Sample Name     : 4.99ppm Cal STD                Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Acq. Method     : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 11:06:51 AM by MB
                  (modified after loading)
Analysis Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 9/28/2012 8:10:18 AM
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      9/28/2012 8:06:02 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.612	MF	176.24512	0.00000	0.00000		?
2.440	FM	872.09344	5.50865e-3	4.80406		Chloride
2.536	Rsho	0.00000	0.00000	0.00000		?

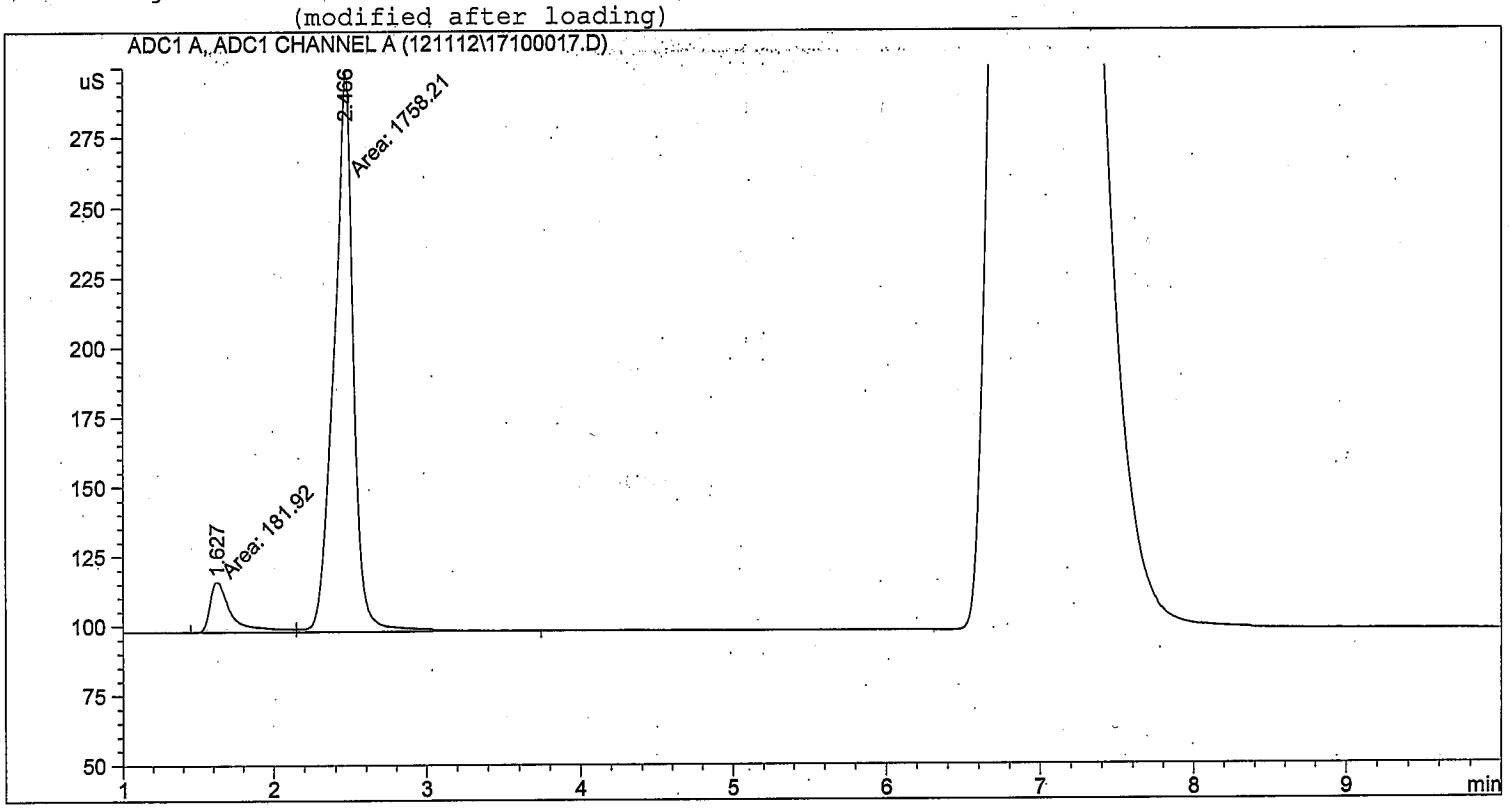
Totals : 4.80406

Results obtained with enhanced integrator!

*** End of Report ***

9.99ppm Chloride Calibration STD

```
Injection Date  : 12/11/2012 12:28:34 PM
Sample Name     : 9.99ppm Cal STD              Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Acq. Method     : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 9/28/2012 8:10:18 AM
Analysis Method : C:\HPCHEM\2\METHODS\HCLMEB.M
Last changed    : 12/11/2012 12:42:16 PM by MB
                  (modified after loading)
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/11/2012 12:41:57 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
Uncalibrated Peaks    :      compound name not specified
```

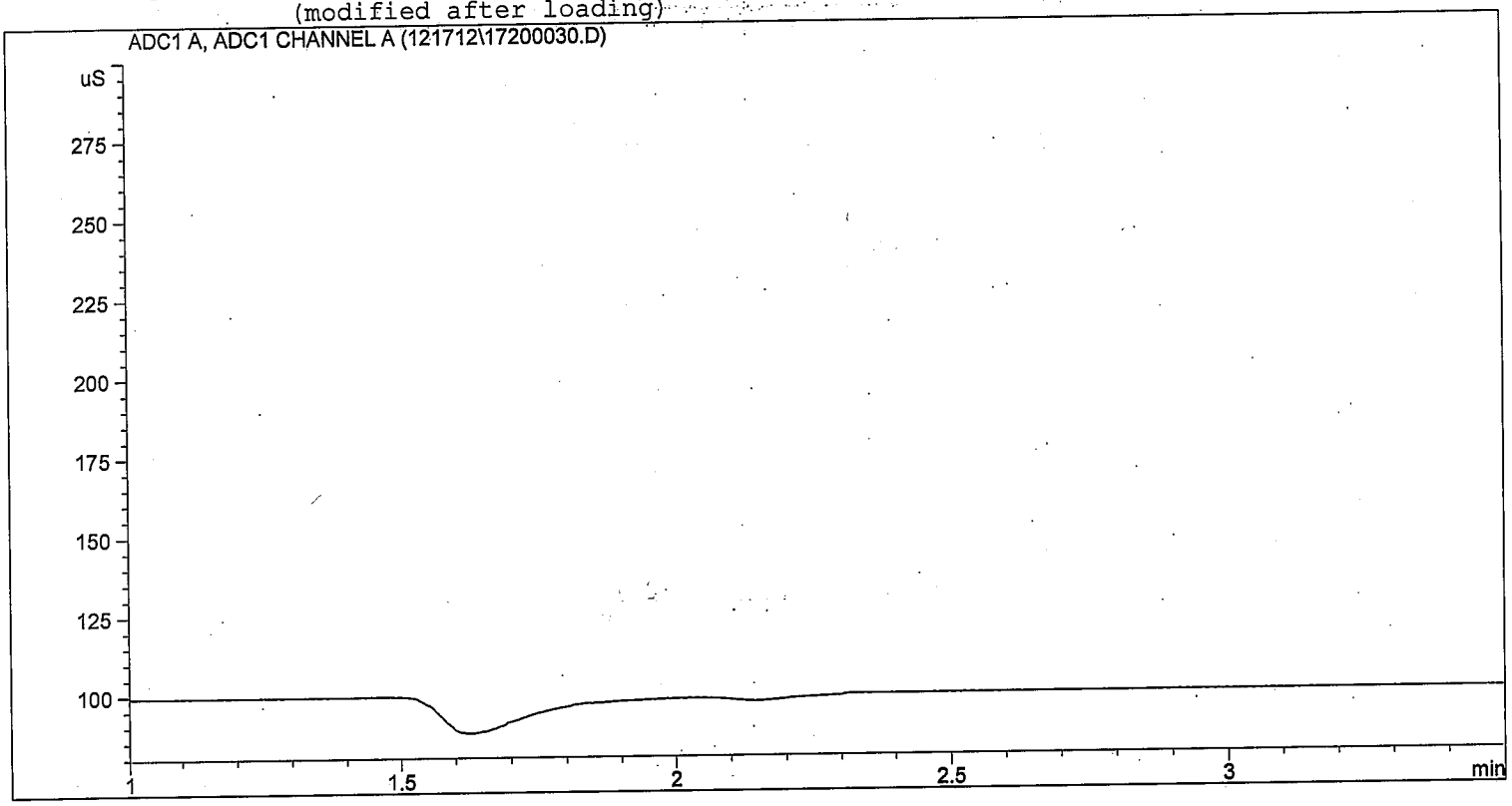
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
1.627	MF	181.92029	0.00000	0.00000		?
2.466	FM	1758.20923	5.79853e-3	10.19502		Chloride
Totals :				10.19502		

Results obtained with enhanced integrator!

*** End of Report ***

water

Injection Date : 12/17/2012 12:17:46 PM
Sample Name : H2O Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.164		-	-	-		Chloride

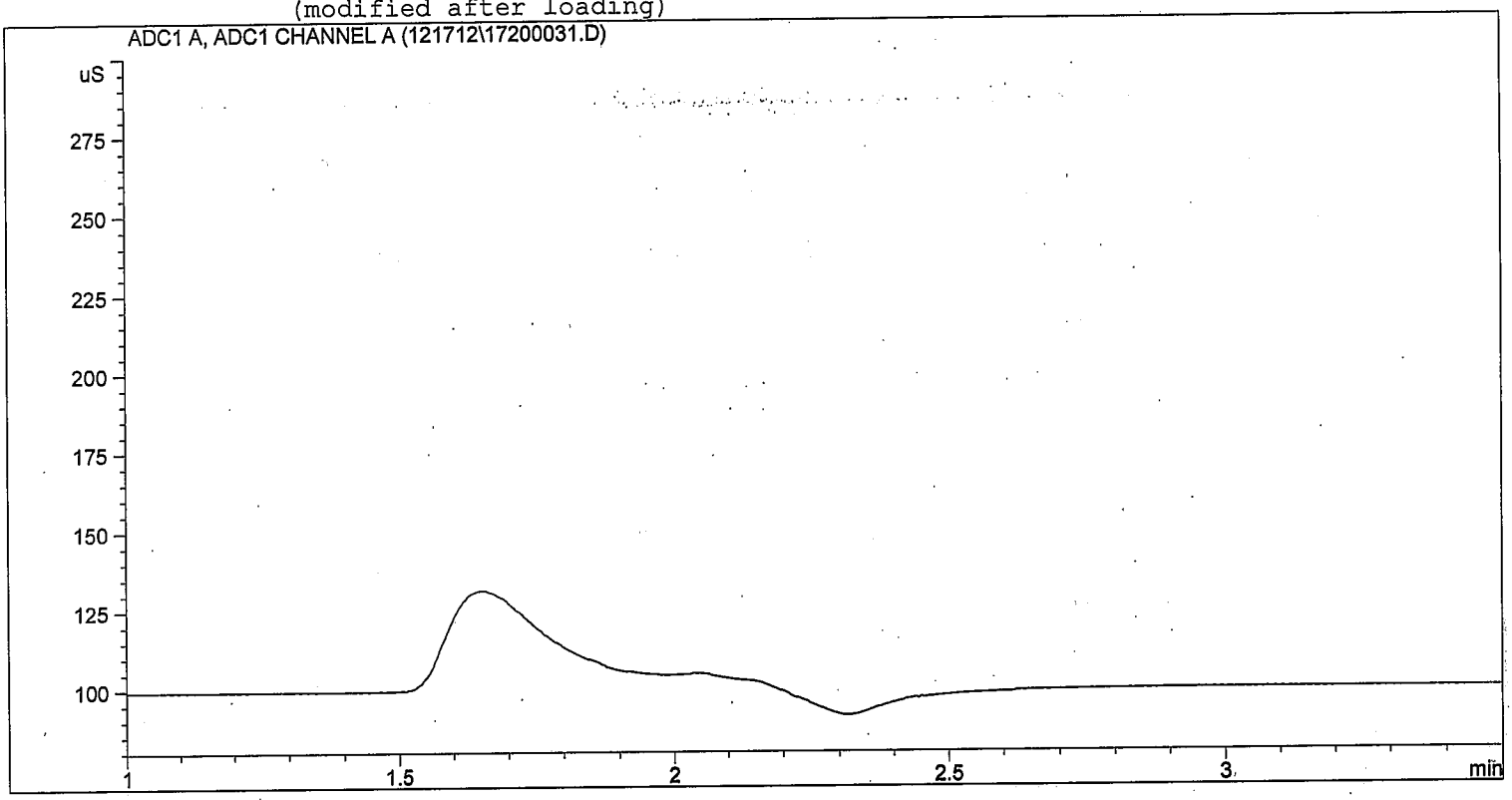
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

Lab Reagent Blank

Injection Date : 12/17/2012 12:27:55 PM
Sample Name : ReagentBlank Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.164		-	-	-		Chloride

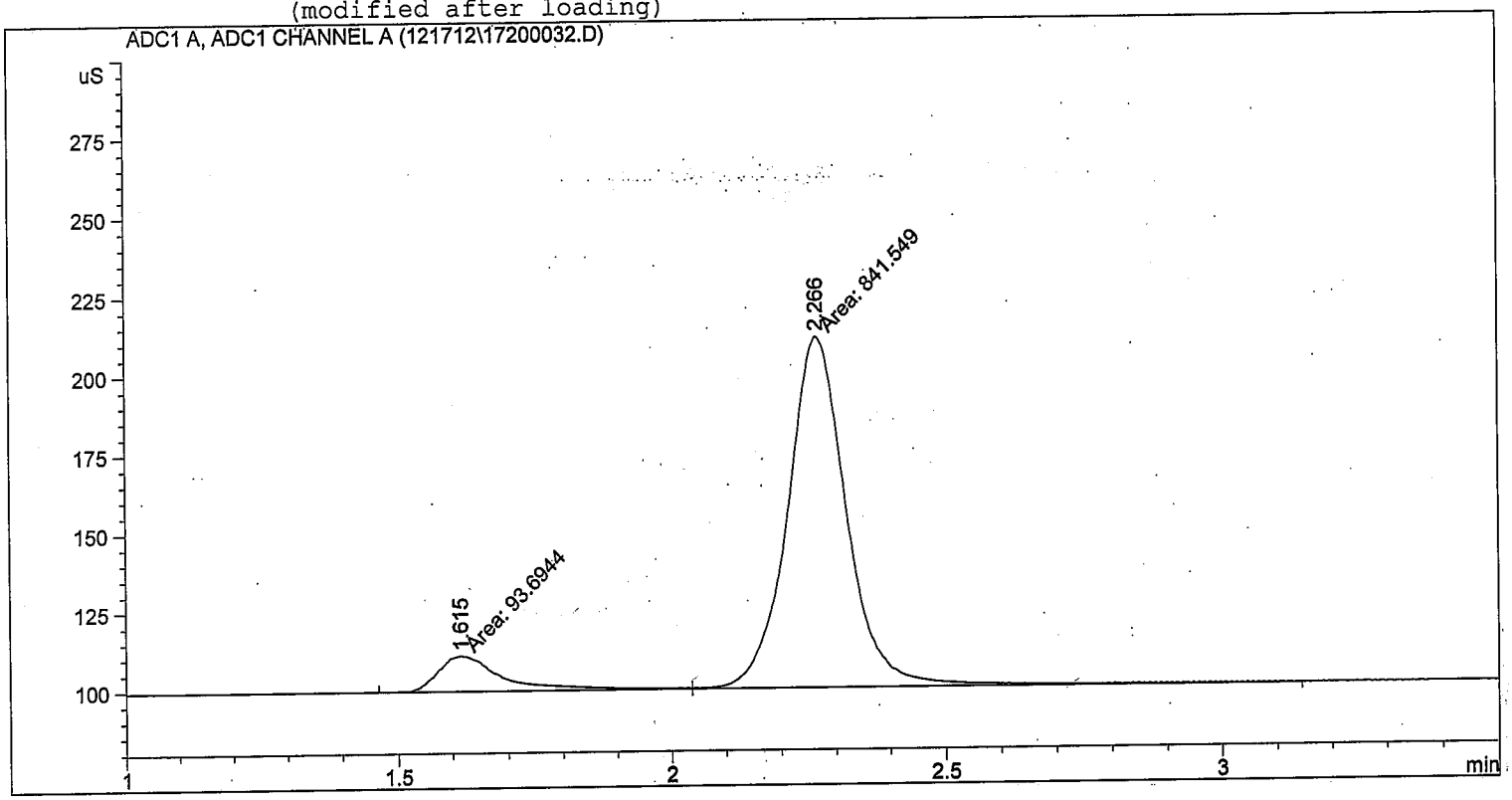
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

4.99ppm Chloride NIST CK STD

```
Injection Date  : 12/17/2012 12:38:50 PM
Sample Name     : NIST CK STD                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed    : 12/17/2012 12:16:28 PM by MB
                  (modified after loading)
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/17/2012 12:16:28 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
```

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.266	FM	841.54901	5.75111e-3	4.83984		Chloride

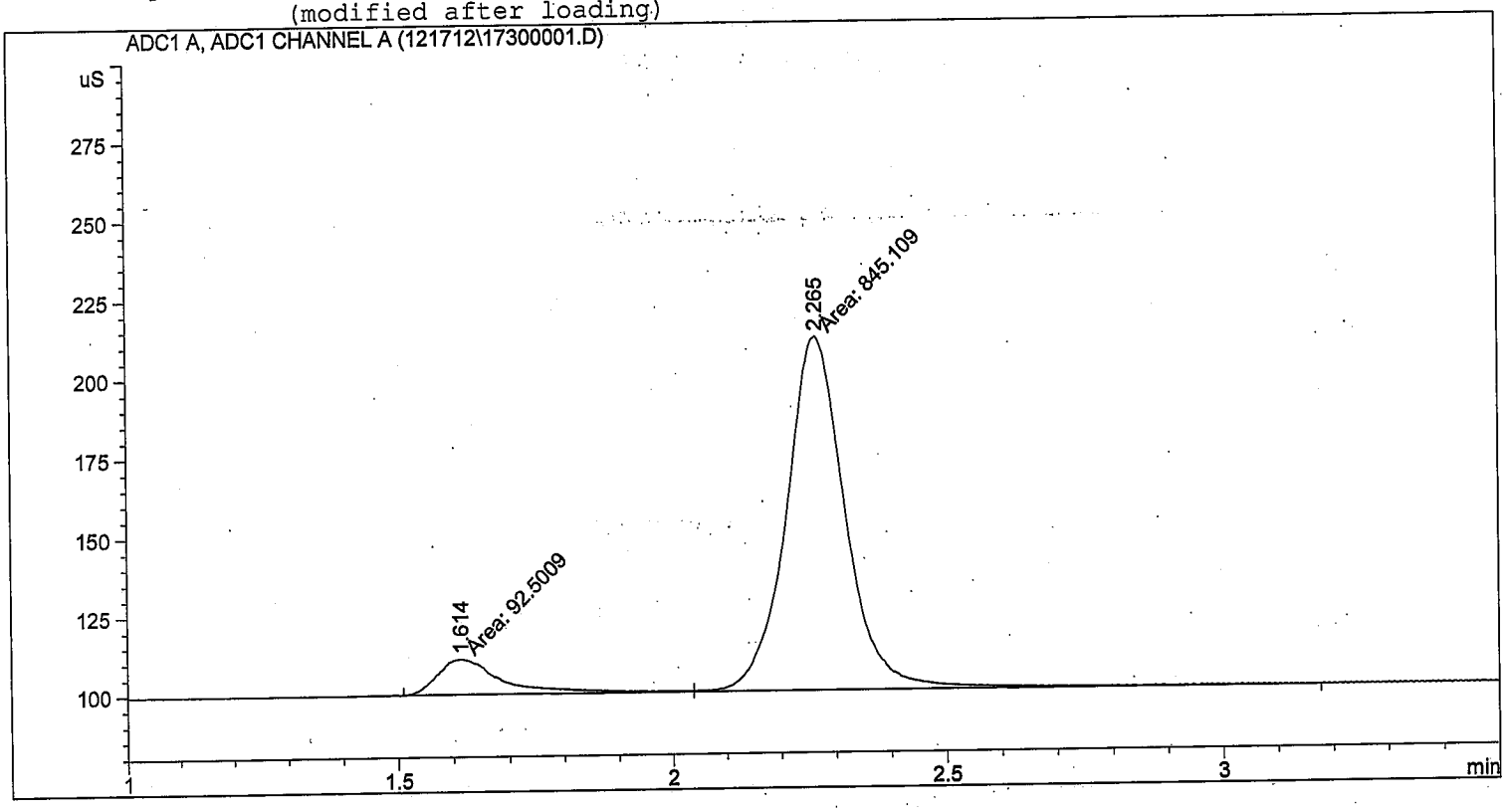
Totals : 4.83984

Results obtained with enhanced integrator!

*** End of Report ***

4.99ppm Chloride NIST CK STD

Injection Date : 12/17/2012 12:49:26 PM
Sample Name : NIST CK STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

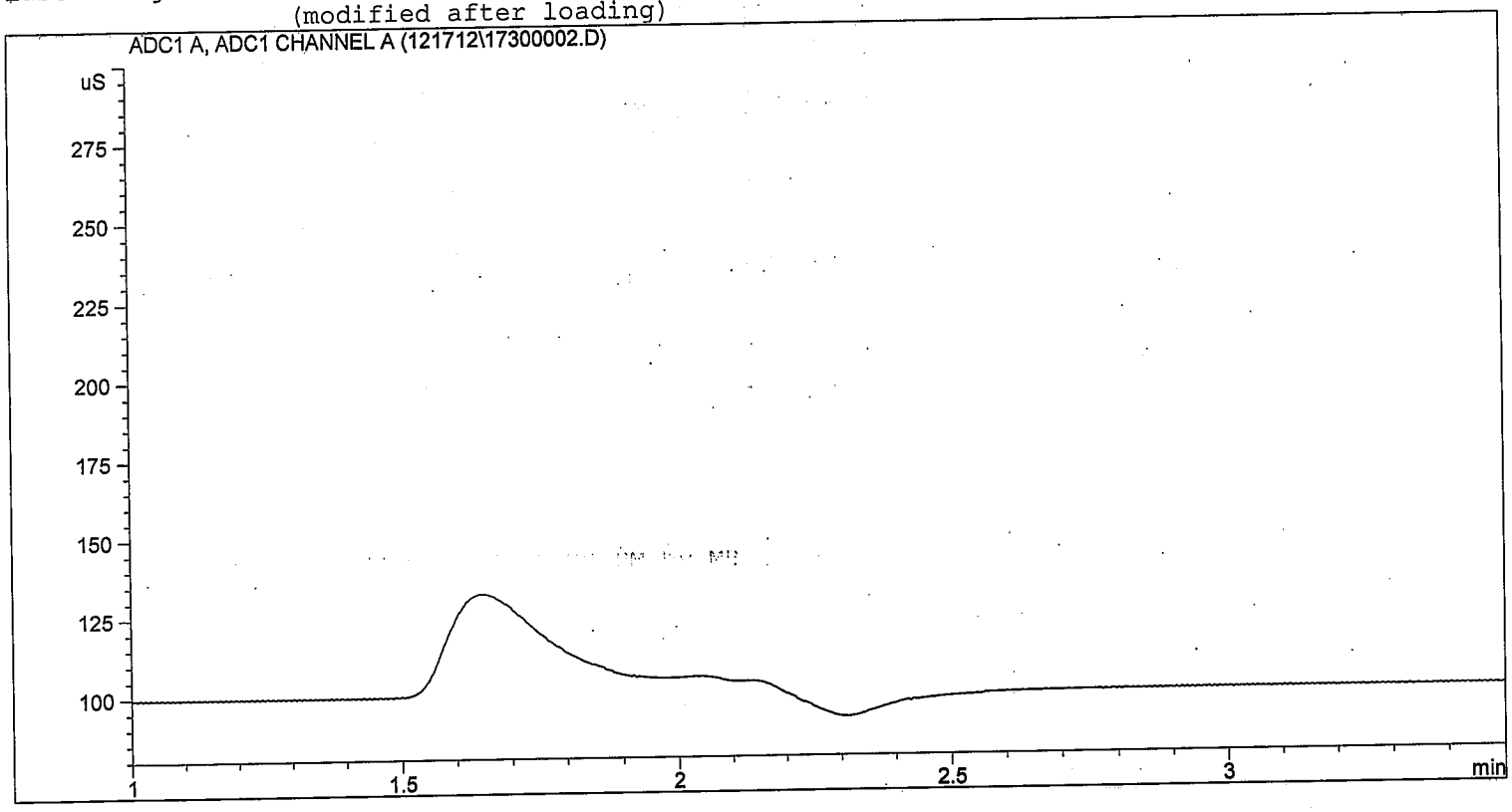
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.265	FM	845.10889	5.75263e-3	4.86160		Chloride
Totals :				4.86160		

Results obtained with enhanced integrator!

*** End of Report ***

Lab Reagent Blank

Injection Date : 12/17/2012 12:59:03 PM
Sample Name : ReagentBlank Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.164		-	-	-		Chloride

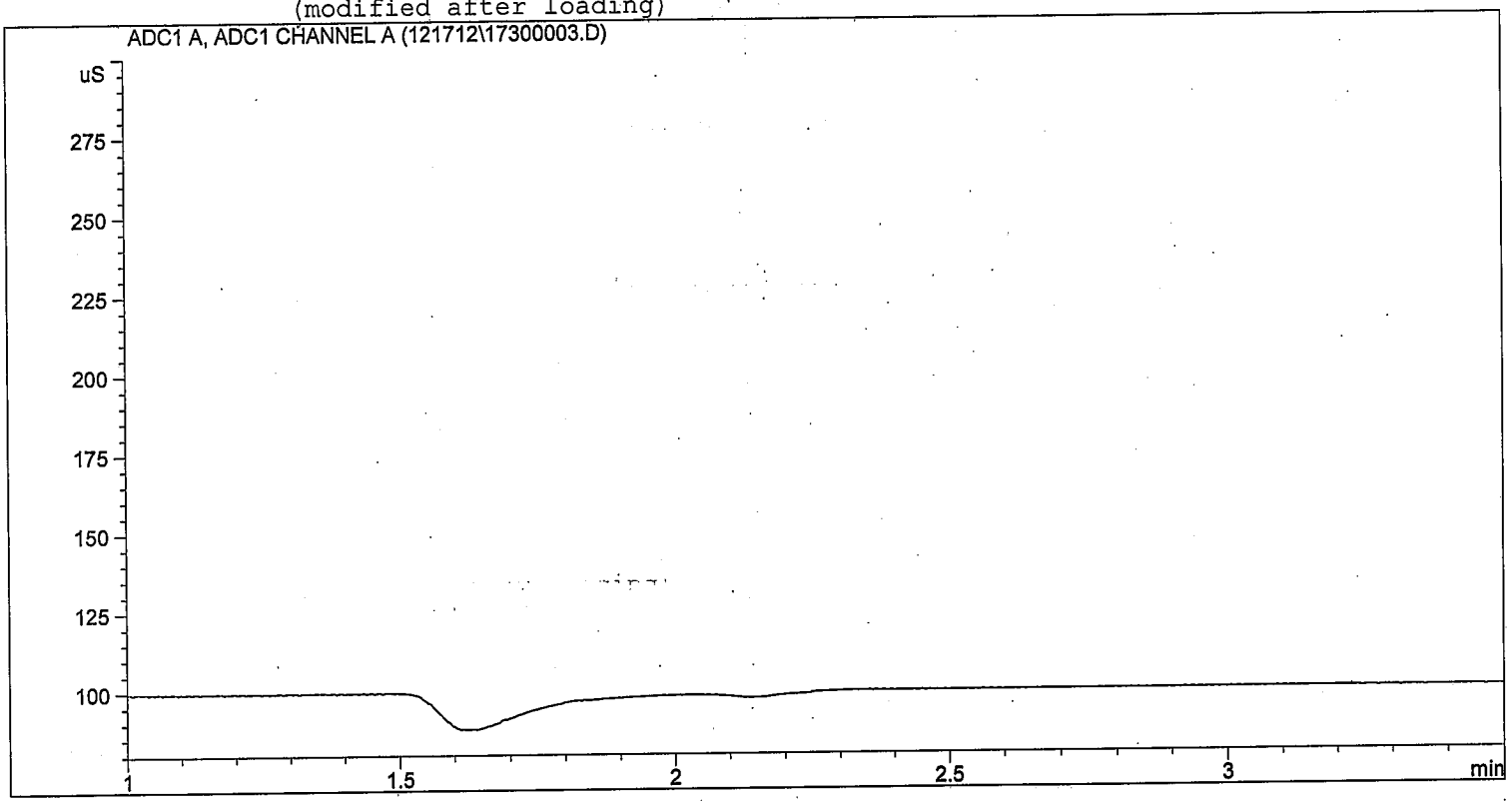
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A RGB C08 vol=199mL

Injection Date : 12/17/2012 1:09:58 PM
Sample Name : RGB C08 DI H20 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.164		-	-	-		Chloride

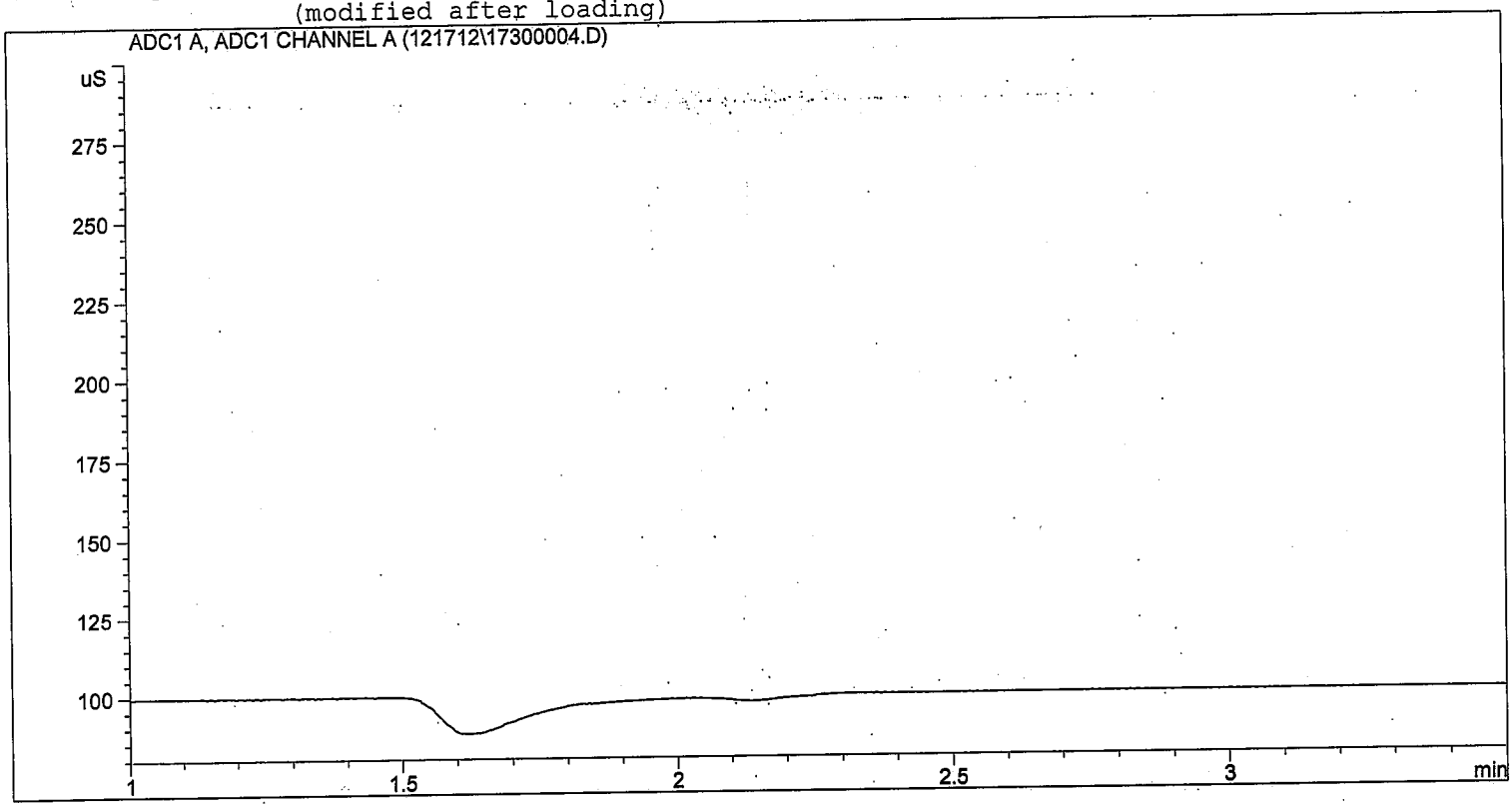
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A RGB C08 vol=199mL

Injection Date : 12/17/2012 1:20:51 PM
Sample Name : RGB C08 DI H20 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.164		-	-	-		Chloride

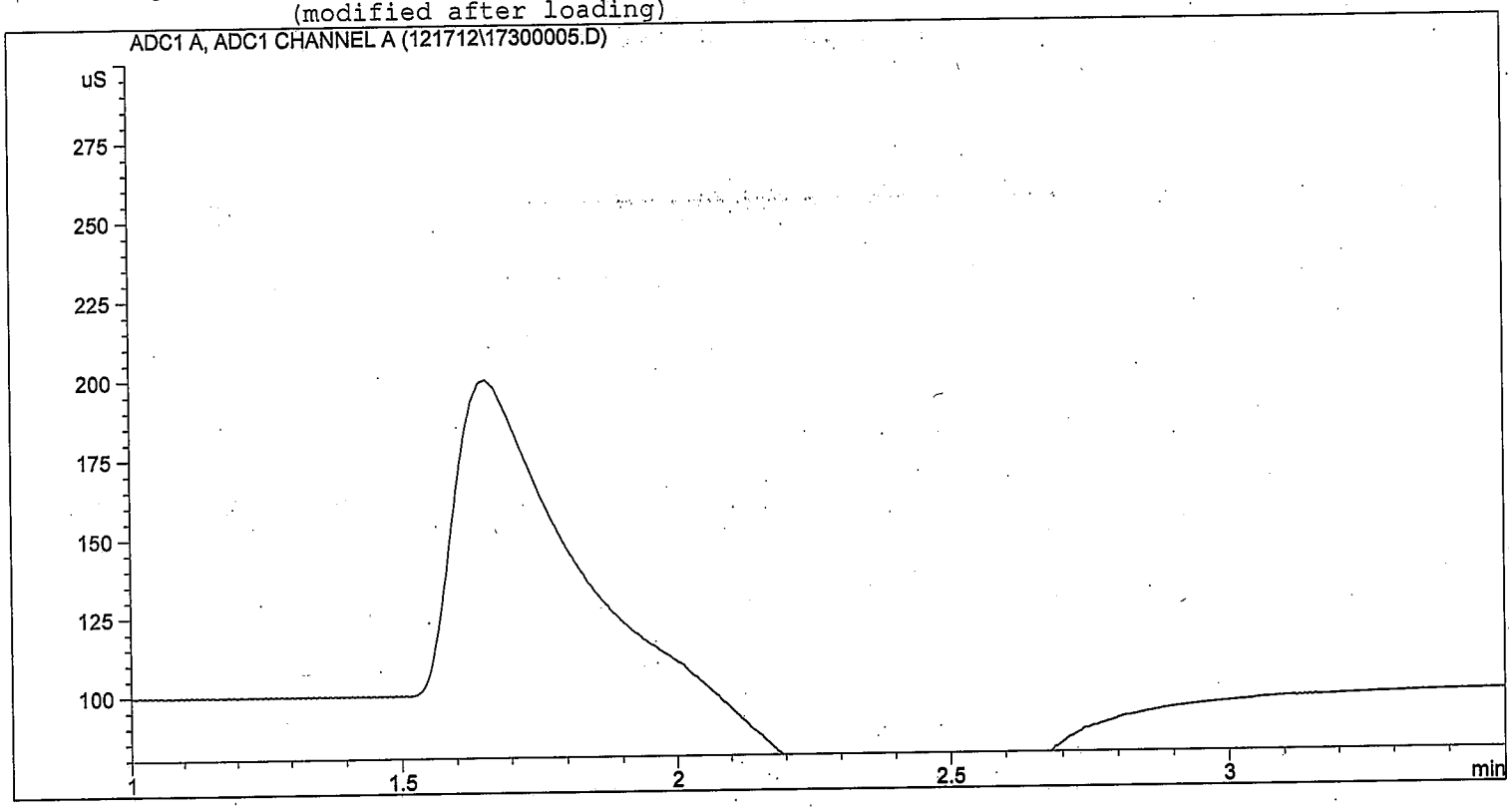
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A RGB C07 NaOH vol=199mL

Injection Date : 12/17/2012 1:34:44 PM
Sample Name : RGB C07 NaOH Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.164		-	-	-		Chloride

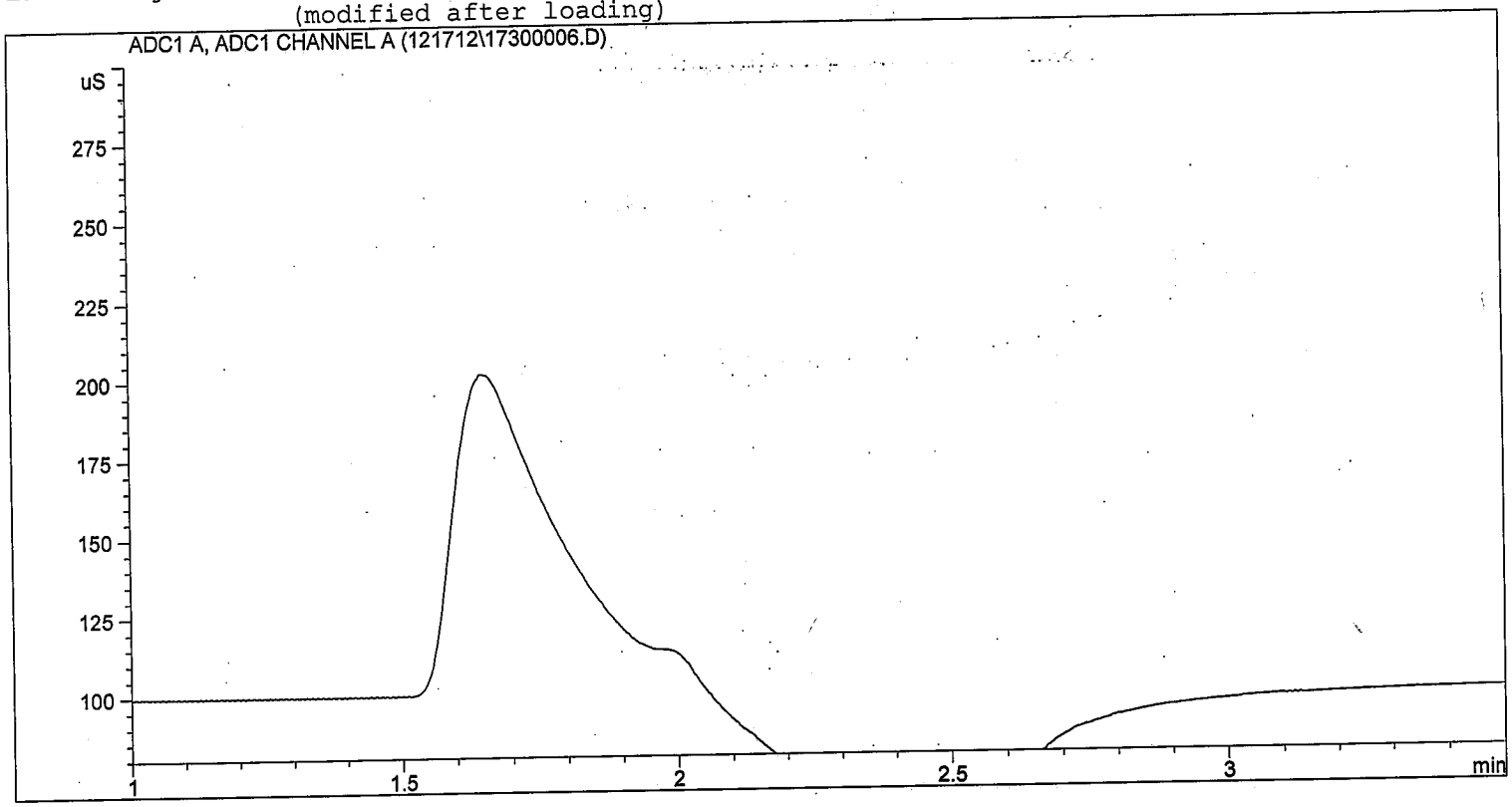
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A RGB C07 NaOH vol=199mL

Injection Date : 12/17/2012 2:31:55 PM
Sample Name : RGB C07 NaOH Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.164		-	-	-		Chloride

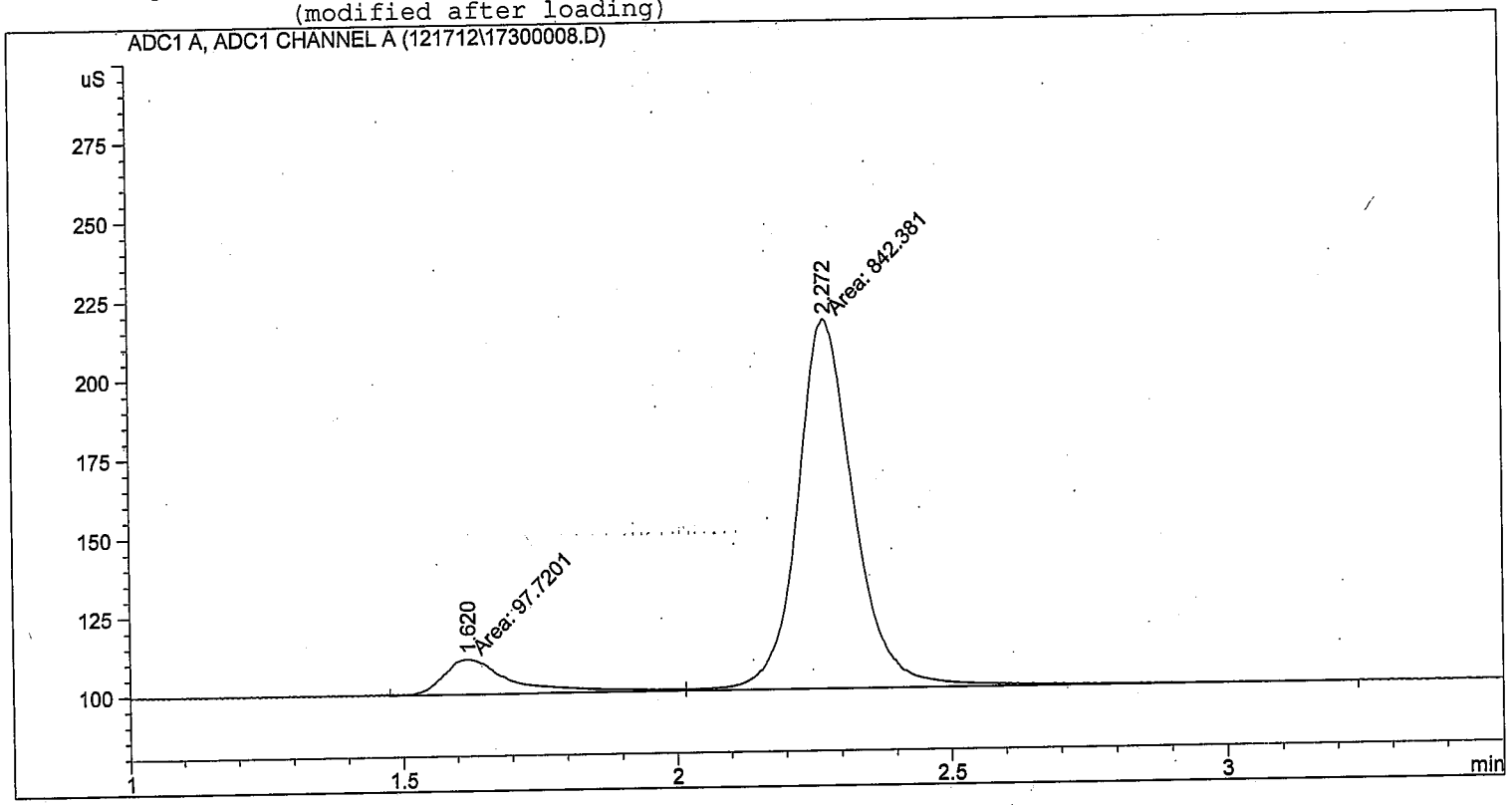
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

4.99ppm Chloride NIST CK STD

Injection Date : 12/17/2012 2:59:52 PM
Sample Name : NIST CK STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

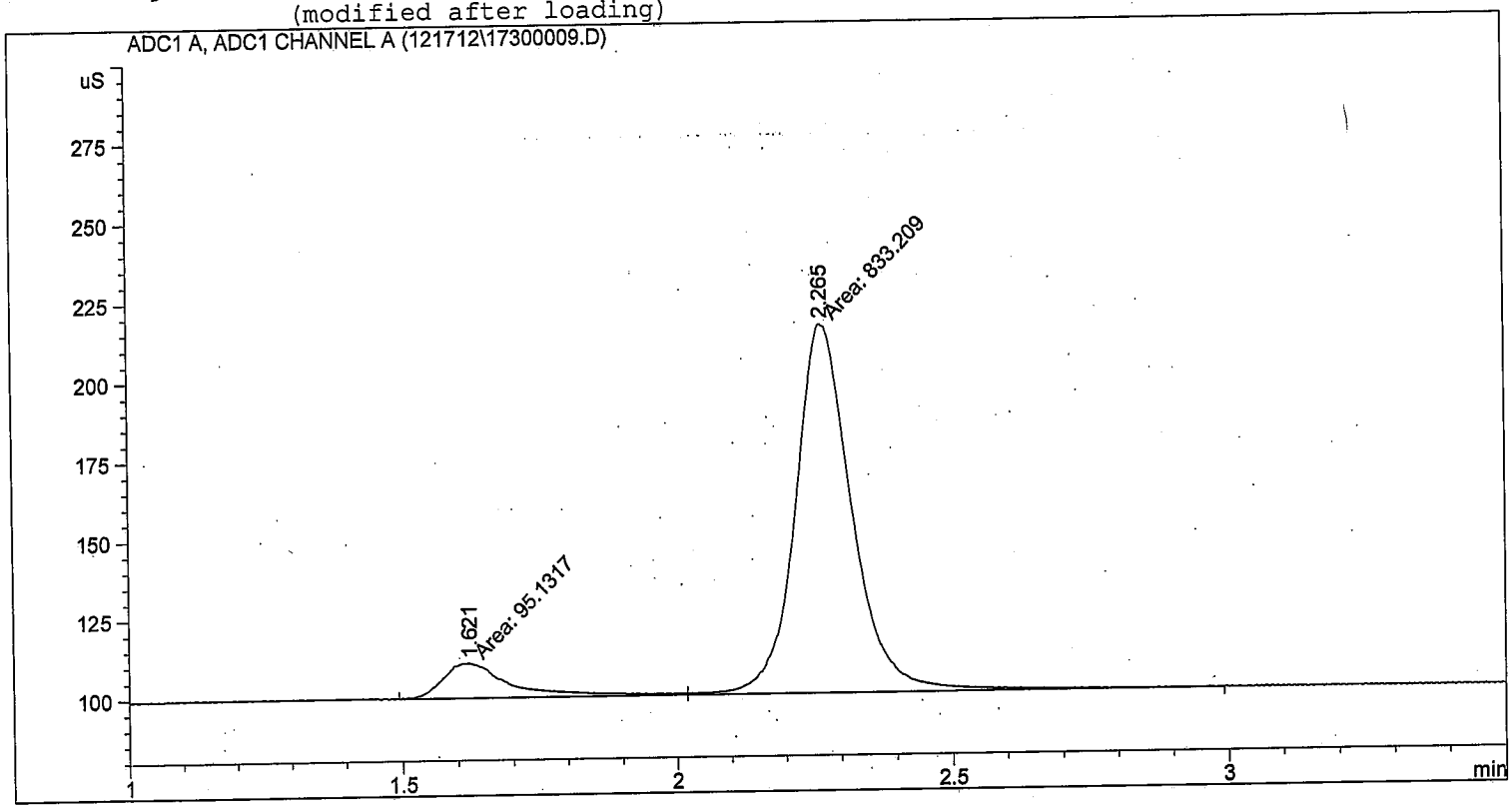
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.272	FM	842.38068	5.75146e-3	4.84492		Chloride
Totals :				4.84492		

Results obtained with enhanced integrator!

*** End of Report ***

4.99ppm Chloride NIST CK STD

Injection Date : 12/17/2012 3:09:27 PM
Sample Name : NIST CK STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

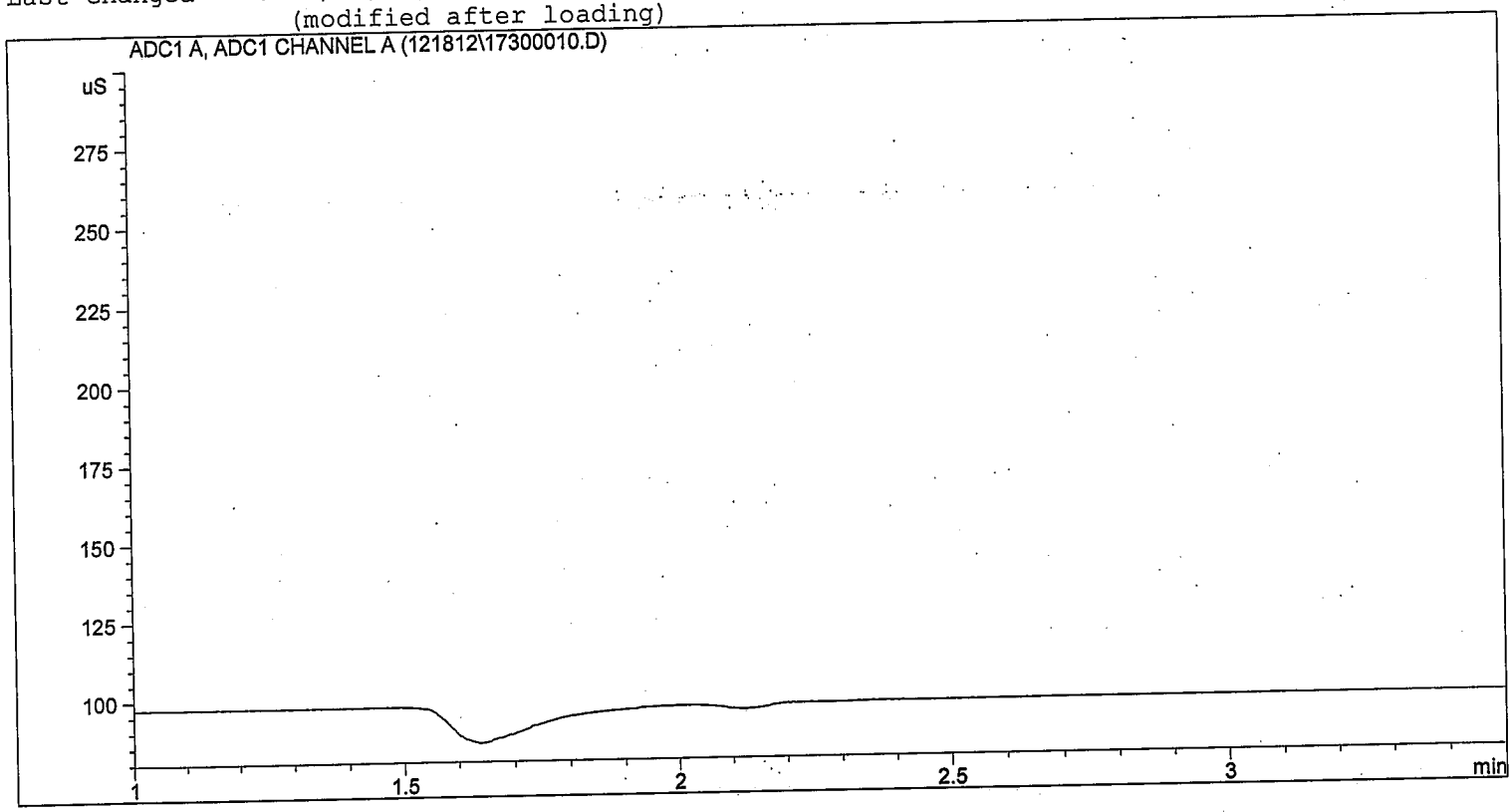
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.265	FM	833.20917	5.74749e-3	4.78886		Chloride
Totals :				4.78886		

Results obtained with enhanced integrator!

*** End of Report ***

water

Injection Date : 12/18/2012 8:10:20 AM
Sample Name : H2O Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.164		-	-	-		Chloride

Totals : 0.00000

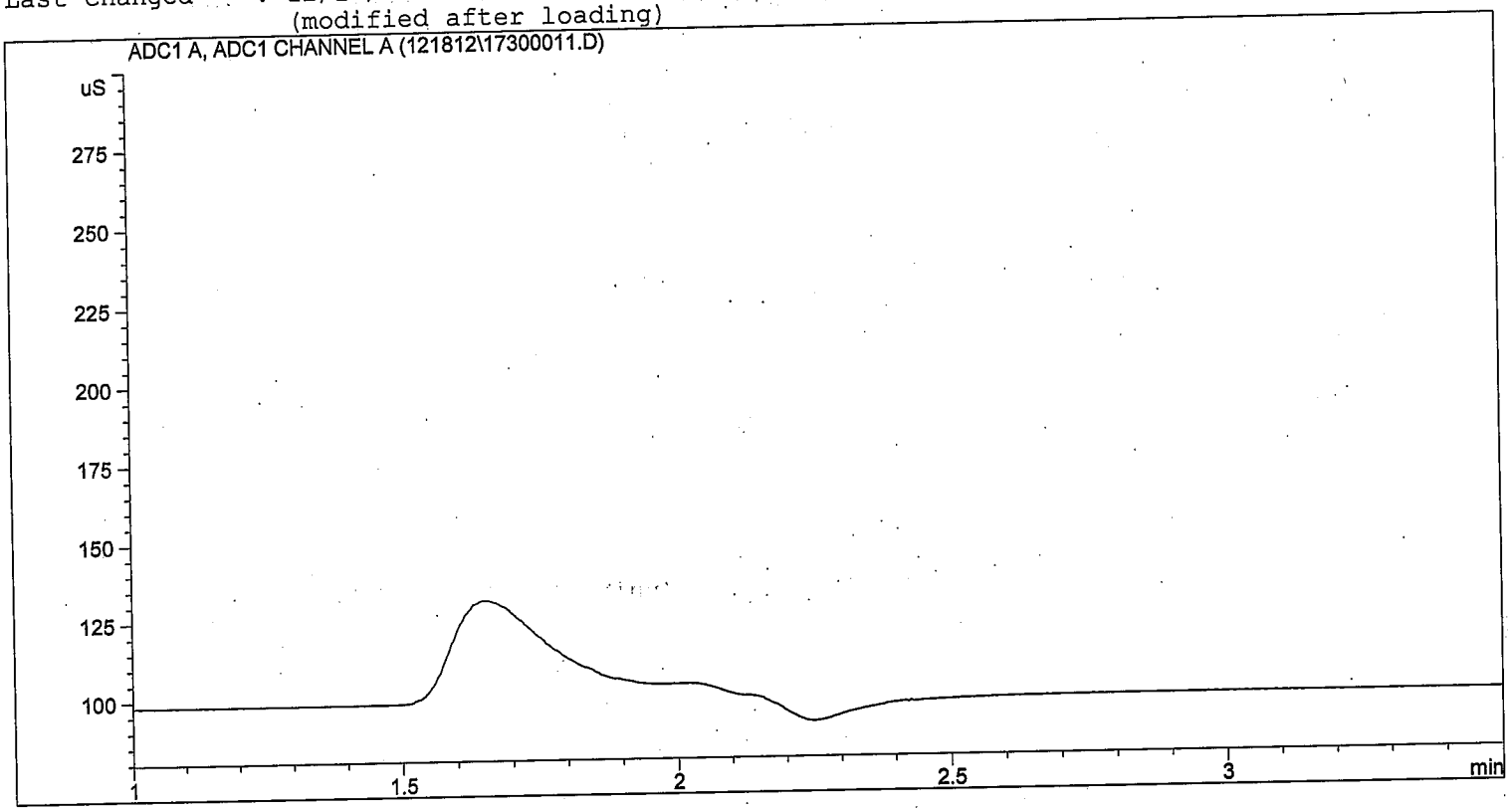
Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

Data File C:\HPCHEM\2\DATA\121812\17300011.D Sample Name: ReagentBuffer

Lab Reagent Blank

Injection Date : 12/18/2012 8:29:11 AM
Sample Name : ReagentBuffer Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:16:28 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:16:28 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.164		-	-	-		Chloride

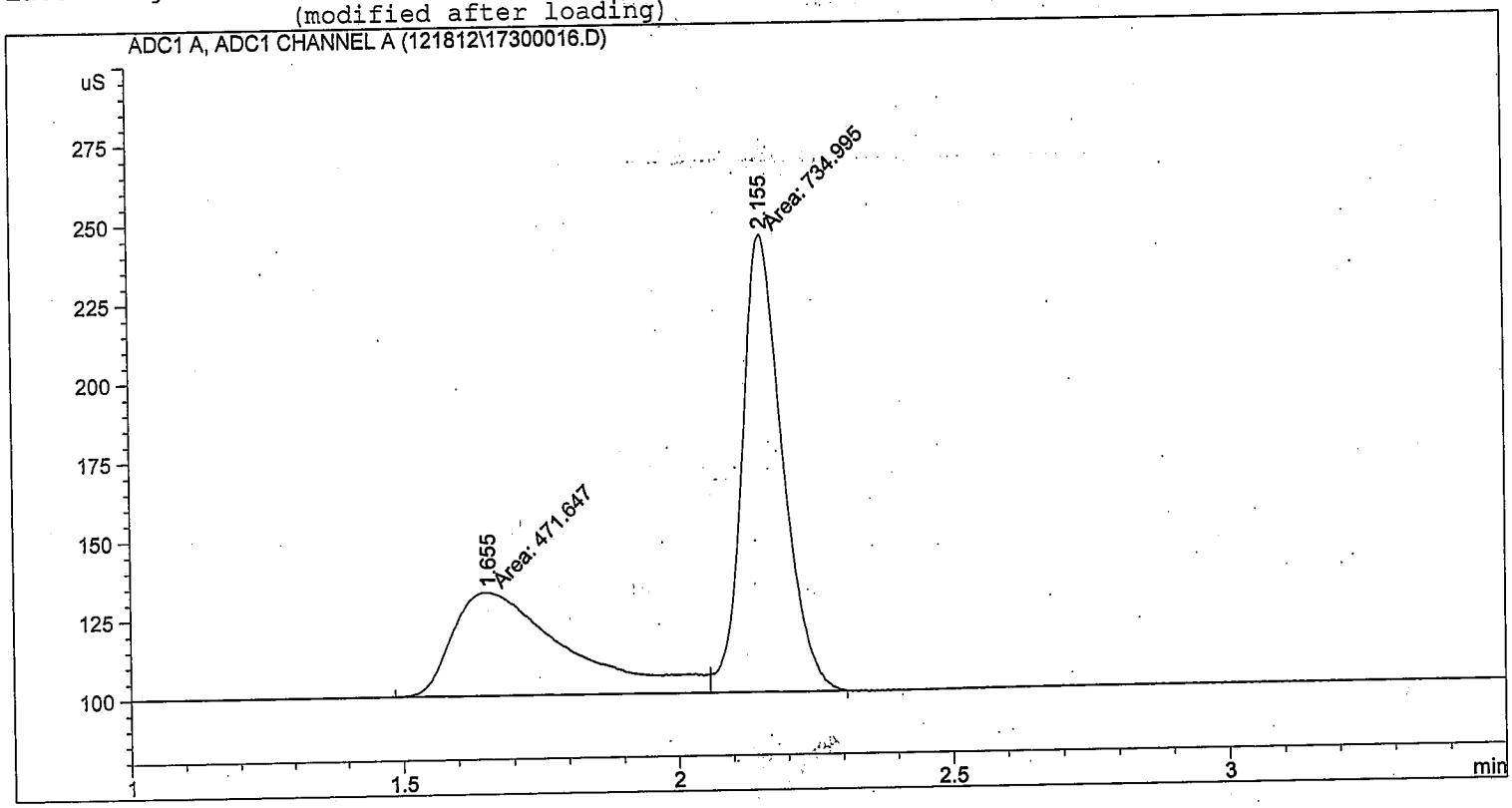
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

4.99ppm Chloride NIST CK STD

Injection Date : 12/18/2012 11:02:55 AM
Sample Name : NIST CK STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Acq. Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 11:47:45 AM by MB
Analysis Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.155	FM	734.99487	7.30825e-3	5.37152		Chloride
Totals :				5.37152		

Results obtained with enhanced integrator!

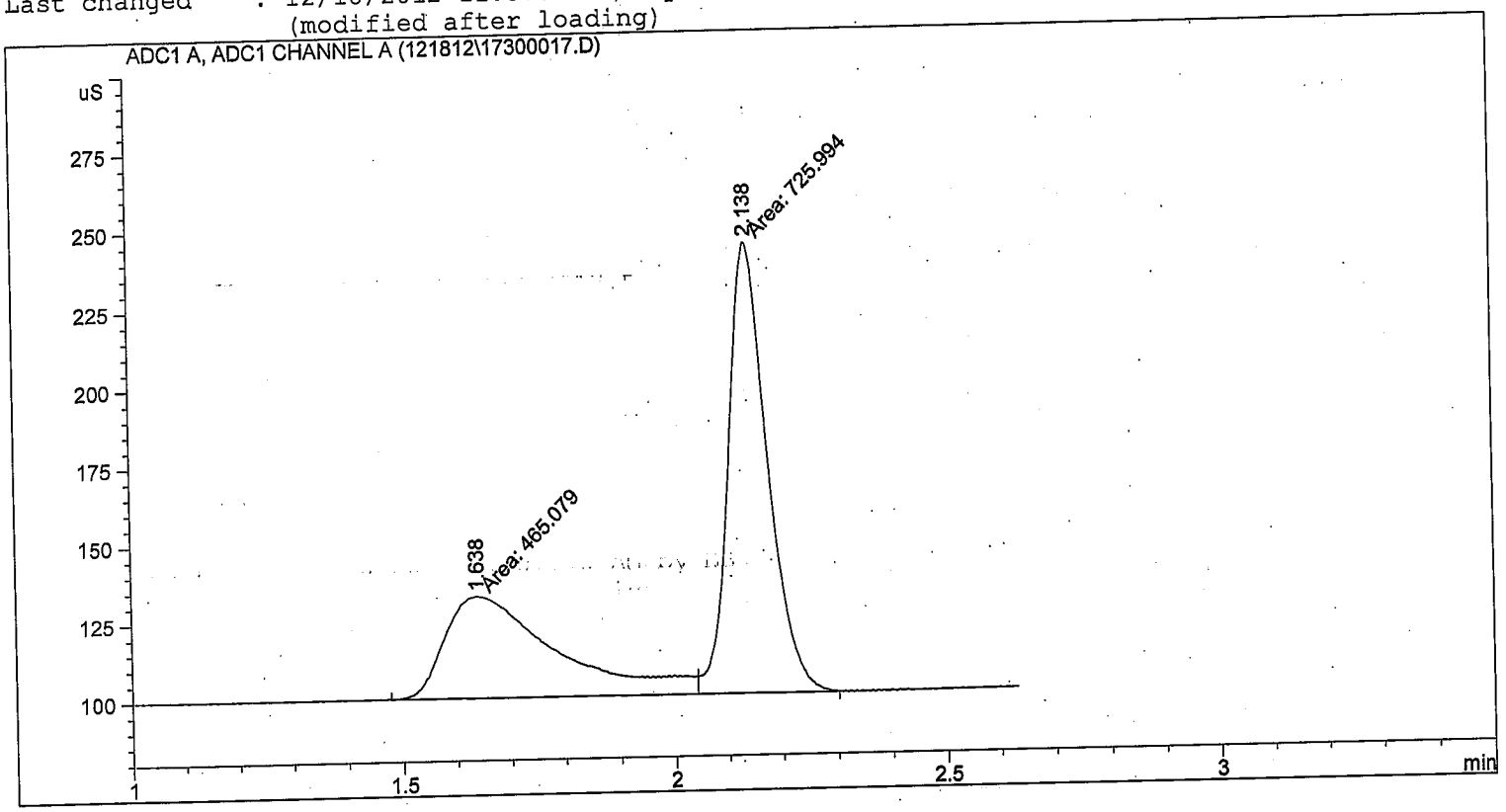
*** End of Report ***

Data File C:\HPCHEM\2\DATA\121812\17300017.D

Sample Name: NIST CK STD

4.99ppm Chloride NIST CK STD

Injection Date : 12/18/2012 11:11:55 AM
Sample Name : NIST CK STD
Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

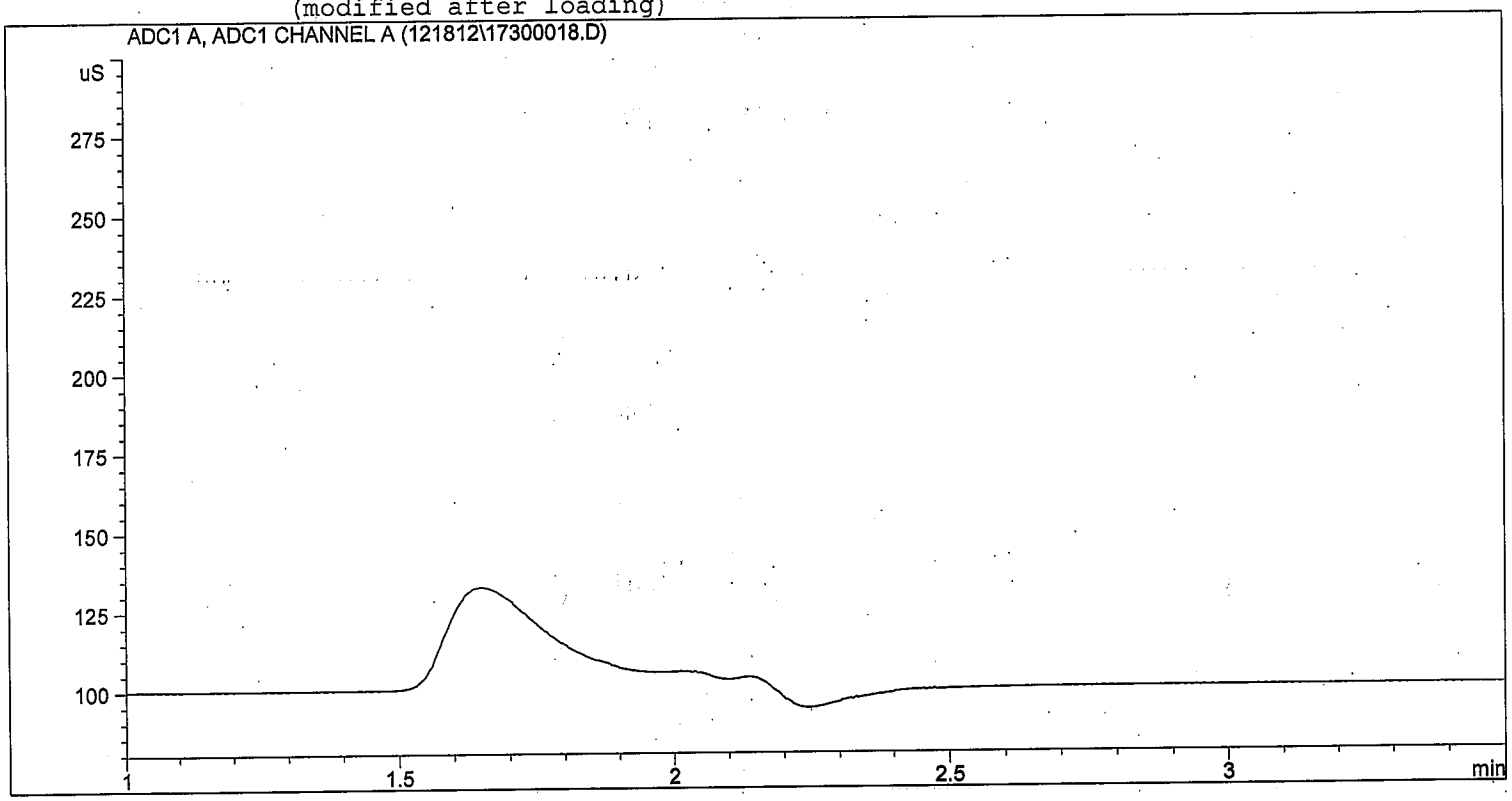
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.138	FM	725.99365	7.31696e-3	5.31207		Chloride
Totals :				5.31207		

Results obtained with enhanced integrator!

*** End of Report ***

Lab Reagent Blank

```
Injection Date  : 12/18/2012 11:19:14 AM
Sample Name     : ReagentBlank                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed    : 12/18/2012 11:07:40 AM by MB
                  (modified after loading)
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/18/2012 11:07:40 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.155		-	-	-		Chloride

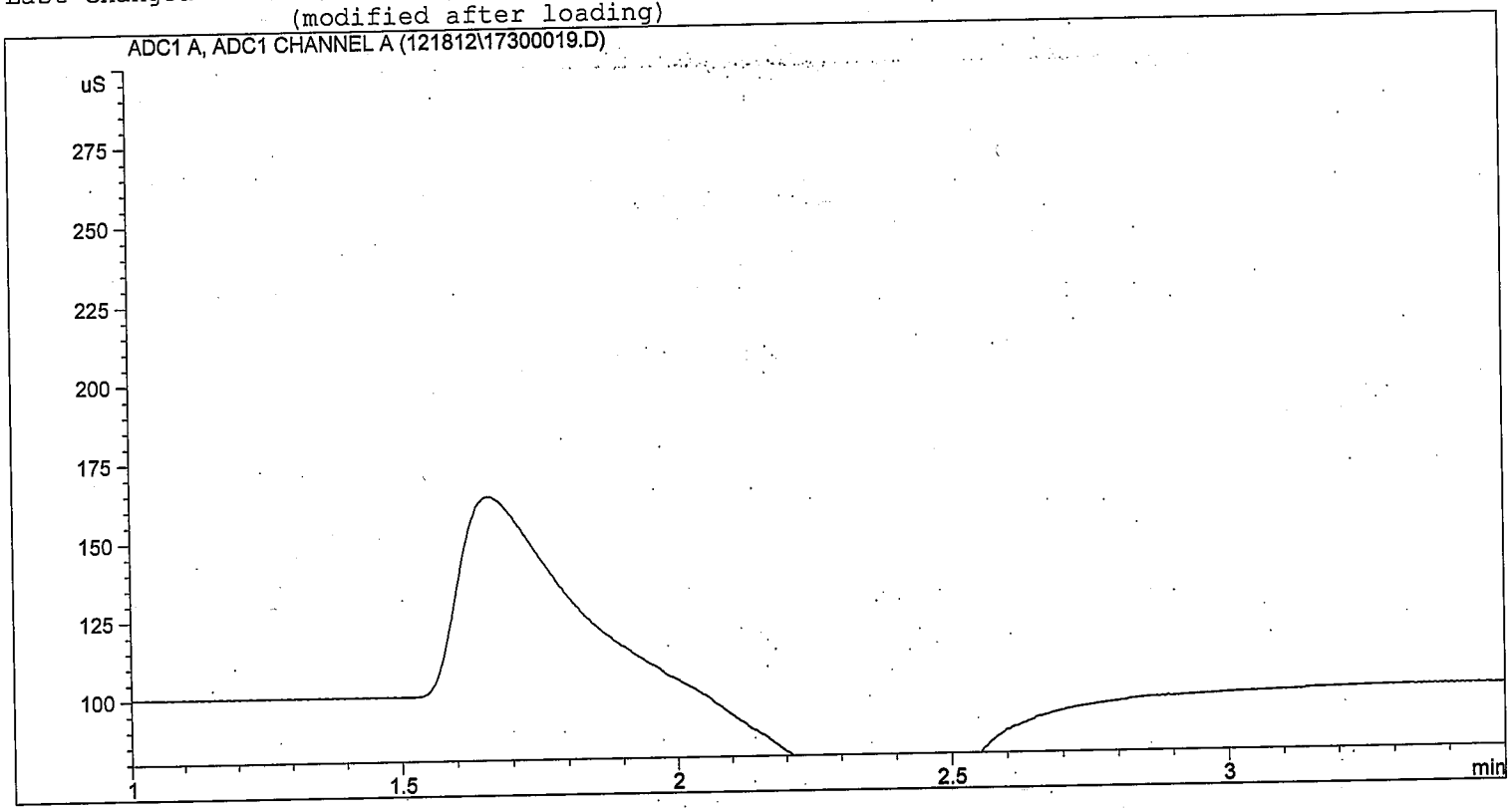
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A Field Blank C04 292 mL

Injection Date : 12/18/2012 11:26:49 AM
Sample Name : FLB C04 NaOH Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.155		-	-	-		Chloride

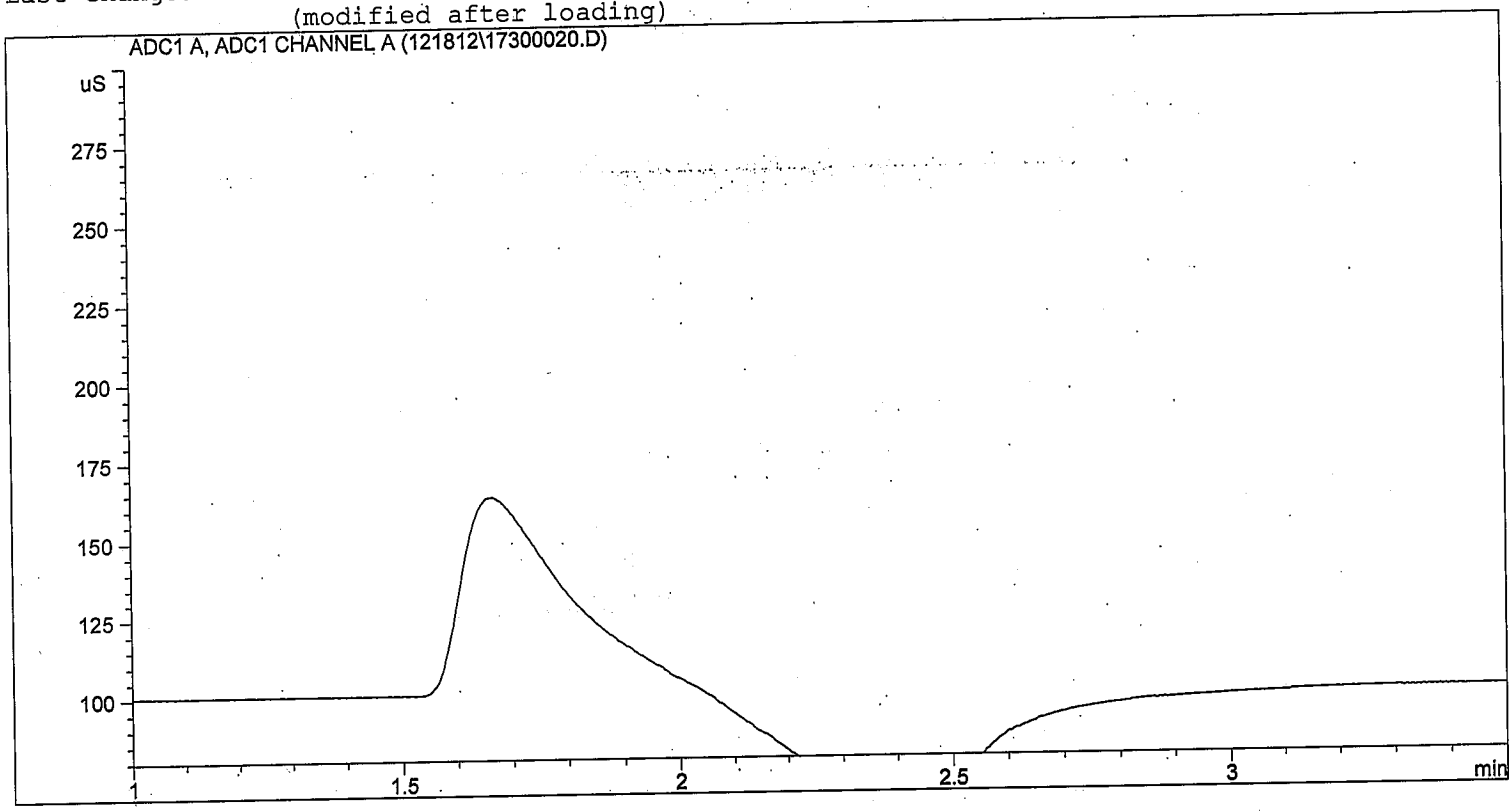
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A Field Blank C04 292 mL

Injection Date : 12/18/2012 11:42:54 AM
Sample Name : FLB C04 NaOH Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.155		-	-	-		Chloride

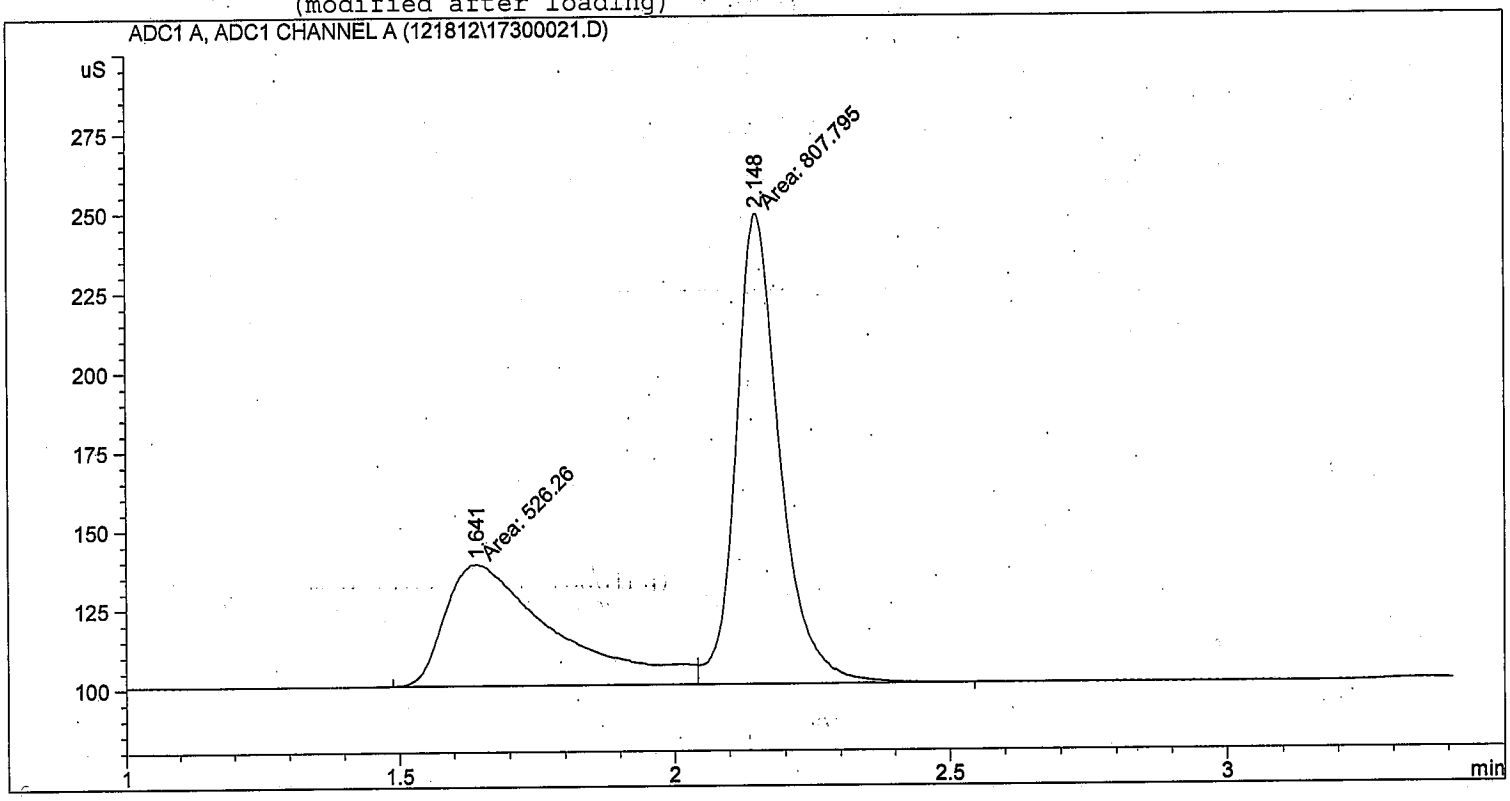
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

12-0311 M26A R01 C04 Run 1 Dil 1:20

Injection Date : 12/18/2012 12:47:11 PM
Sample Name : R01 Co4 Run 1 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

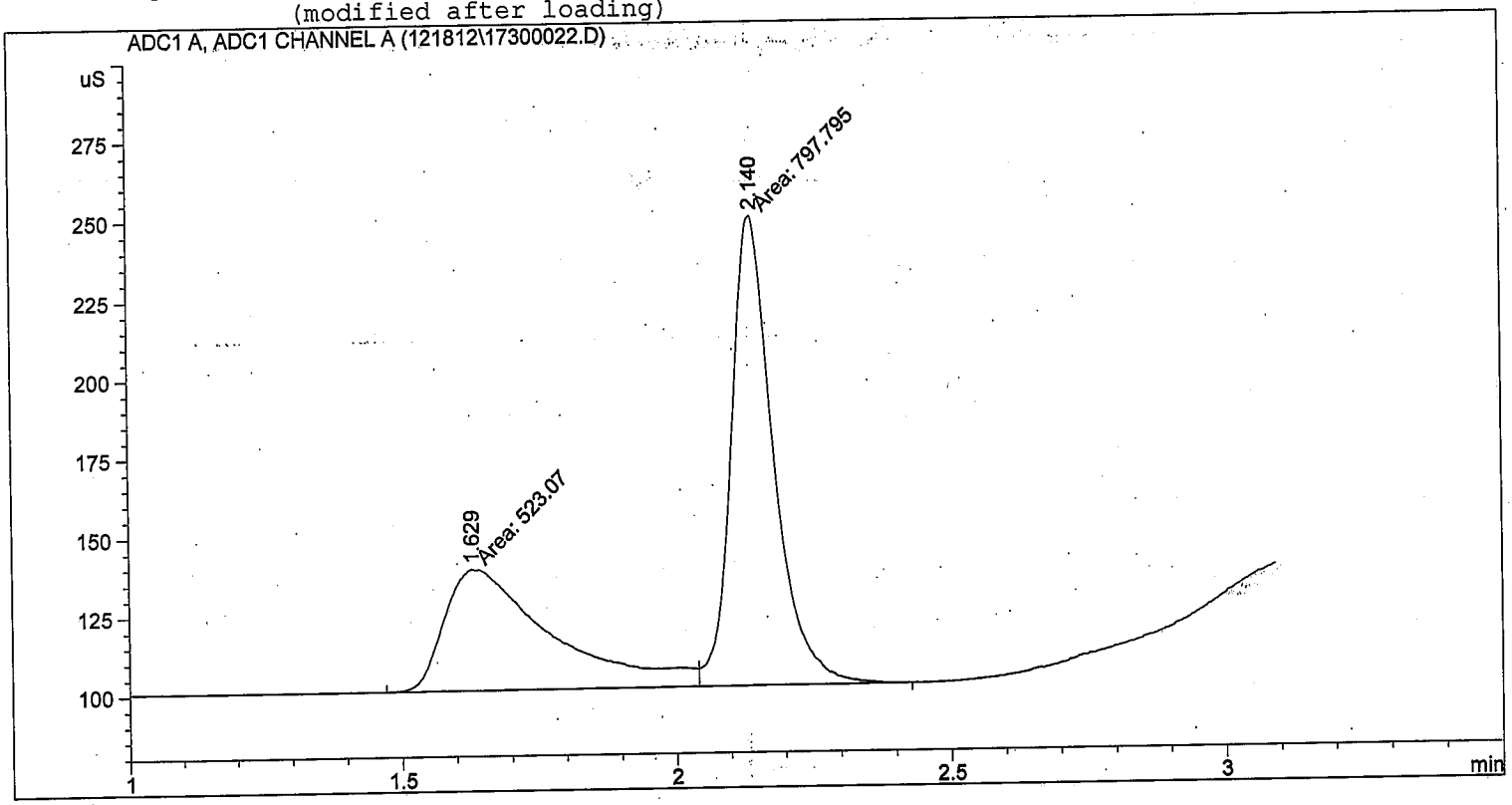
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.148	FM	807.79468	7.24493e-3	5.85242		Chloride
Totals :				5.85242		

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R01 C04 Run 1 Dil 1:20

Injection Date : 12/18/2012 12:56:38 PM
Sample Name : R01 Co4 Run 1 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

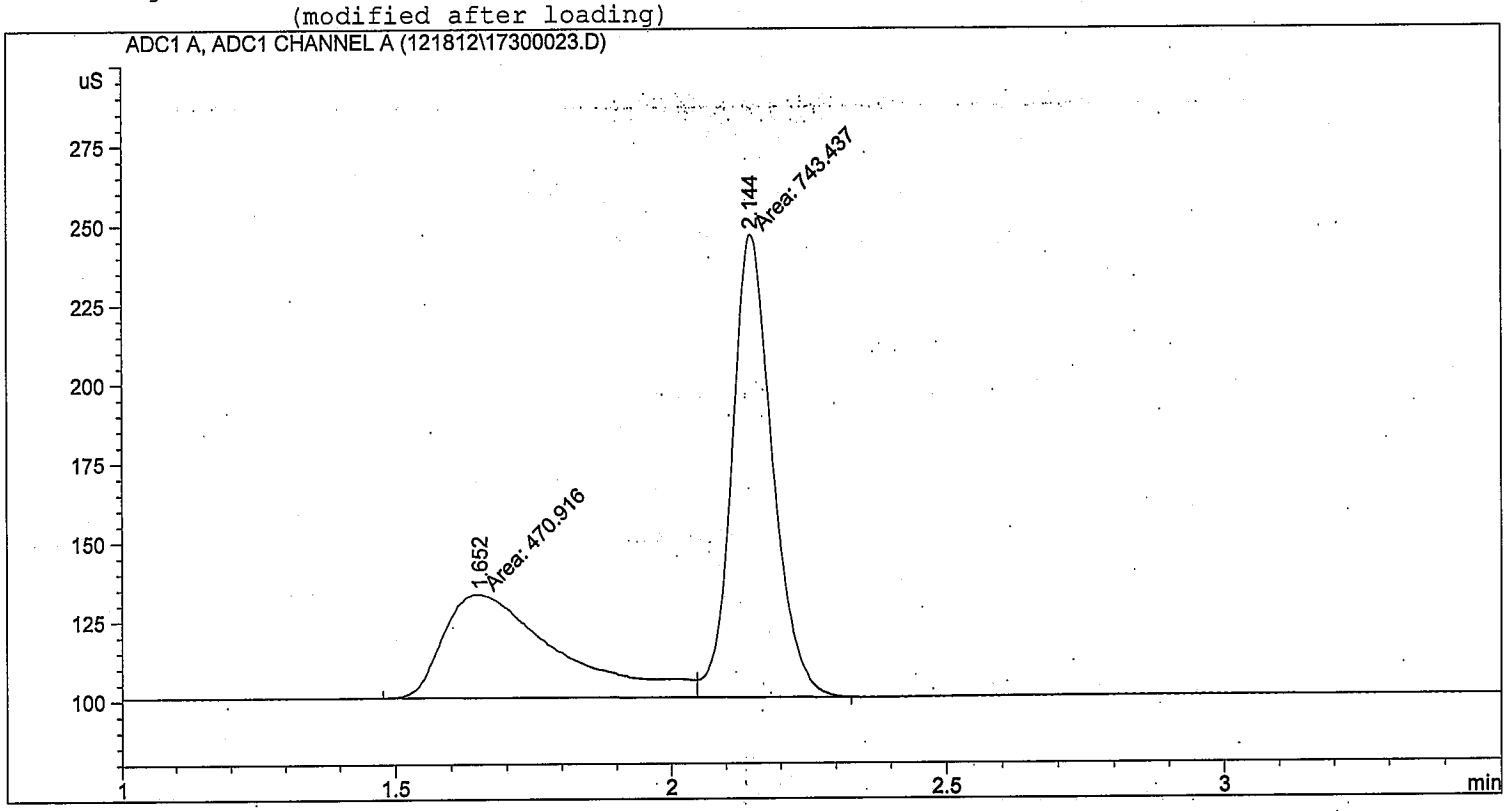
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.140	FM	797.79498	7.25294e-3	5.78636		Chloride
Totals :				5.78636		

Results obtained with enhanced integrator!

*** End of Report ***

4.99ppm Chloride NIST CK STD

```
Injection Date  : 12/18/2012 1:15:19 PM
Sample Name     : NIST CK STD                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed    : 12/18/2012 11:07:40 AM by MB
                  (modified after loading)
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/18/2012 11:07:40 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
```

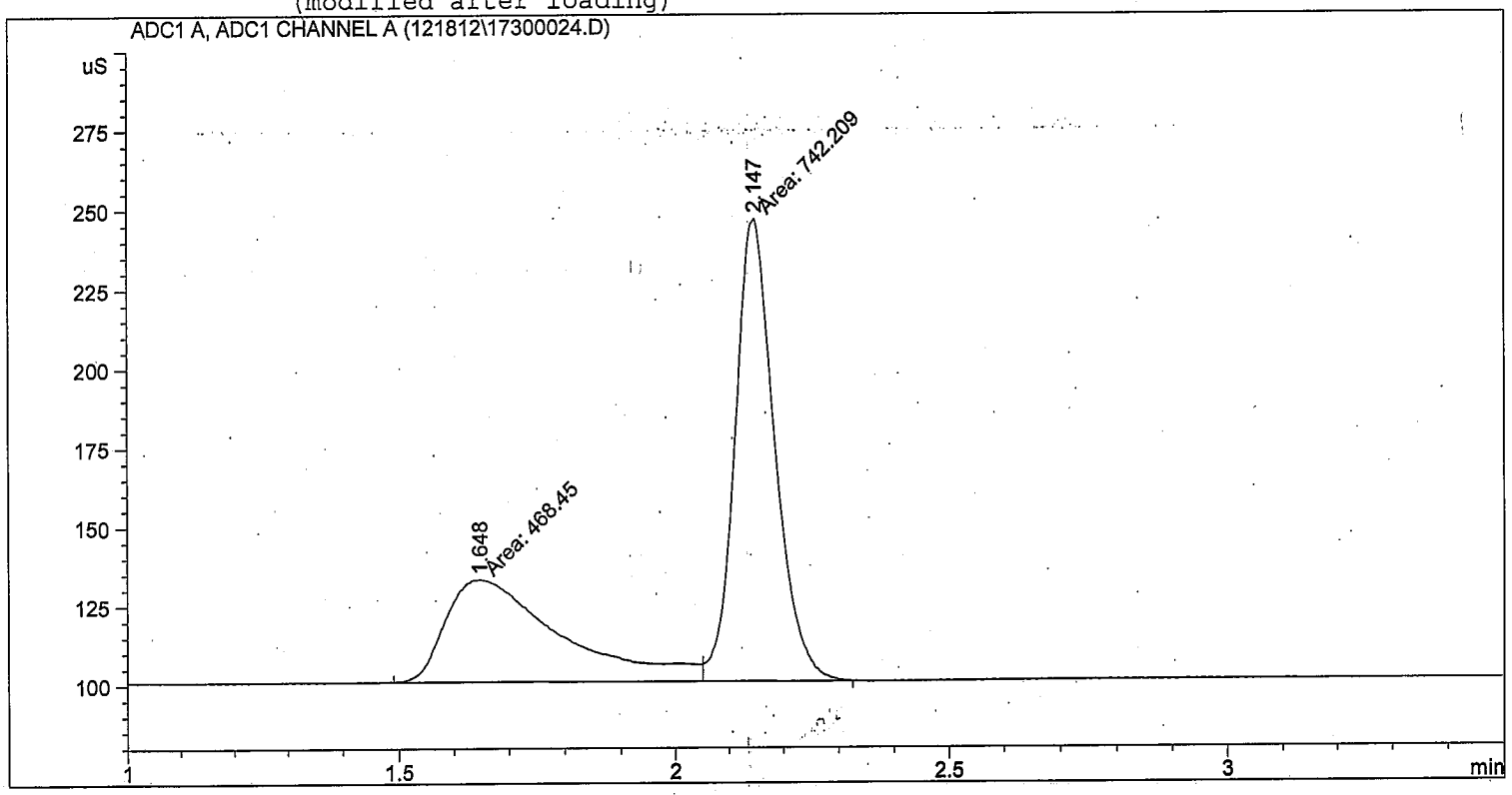
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.144	FM	743.43671	7.30027e-3	5.42729		Chloride
Totals :				5.42729		

```
Results obtained with enhanced integrator!
```

*** End of Report ***

4.99ppm Chloride NIST CK STD

```
Injection Date  : 12/18/2012 1:22:59 PM
Sample Name     : NIST CK STD                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Method          : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed    : 12/18/2012 11:07:40 AM by MB
                  (modified after loading)
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/18/2012 11:07:40 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
```

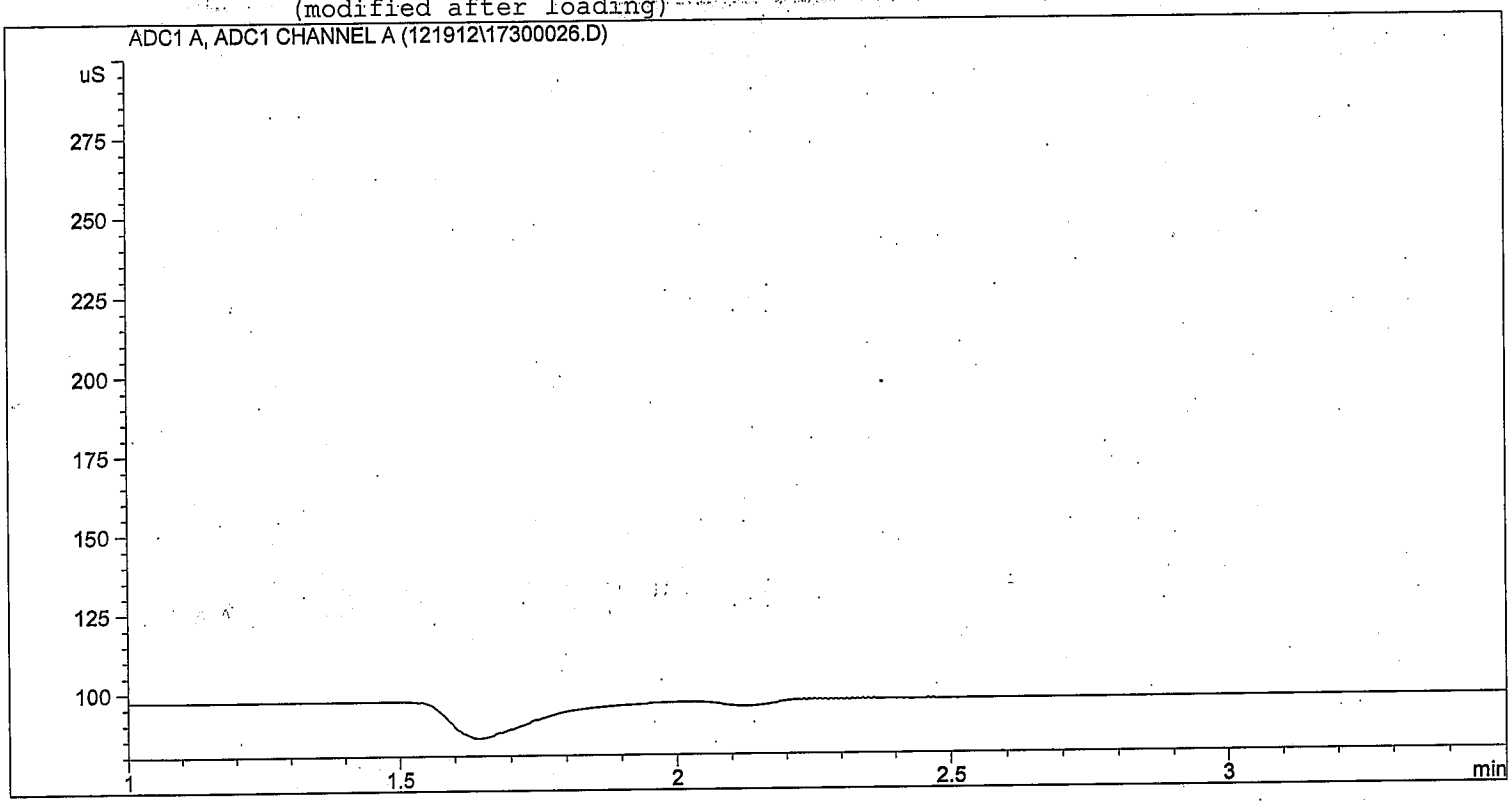
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.147	FM	742.20868	7.30142e-3	5.41918		Chloride
Totals :				5.41918		

```
 Results obtained with enhanced integrator!
```

*** End of Report ***

water

Injection Date : 12/19/2012 8:10:02 AM
Sample Name : H2O Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.155		-	-	-		Chloride

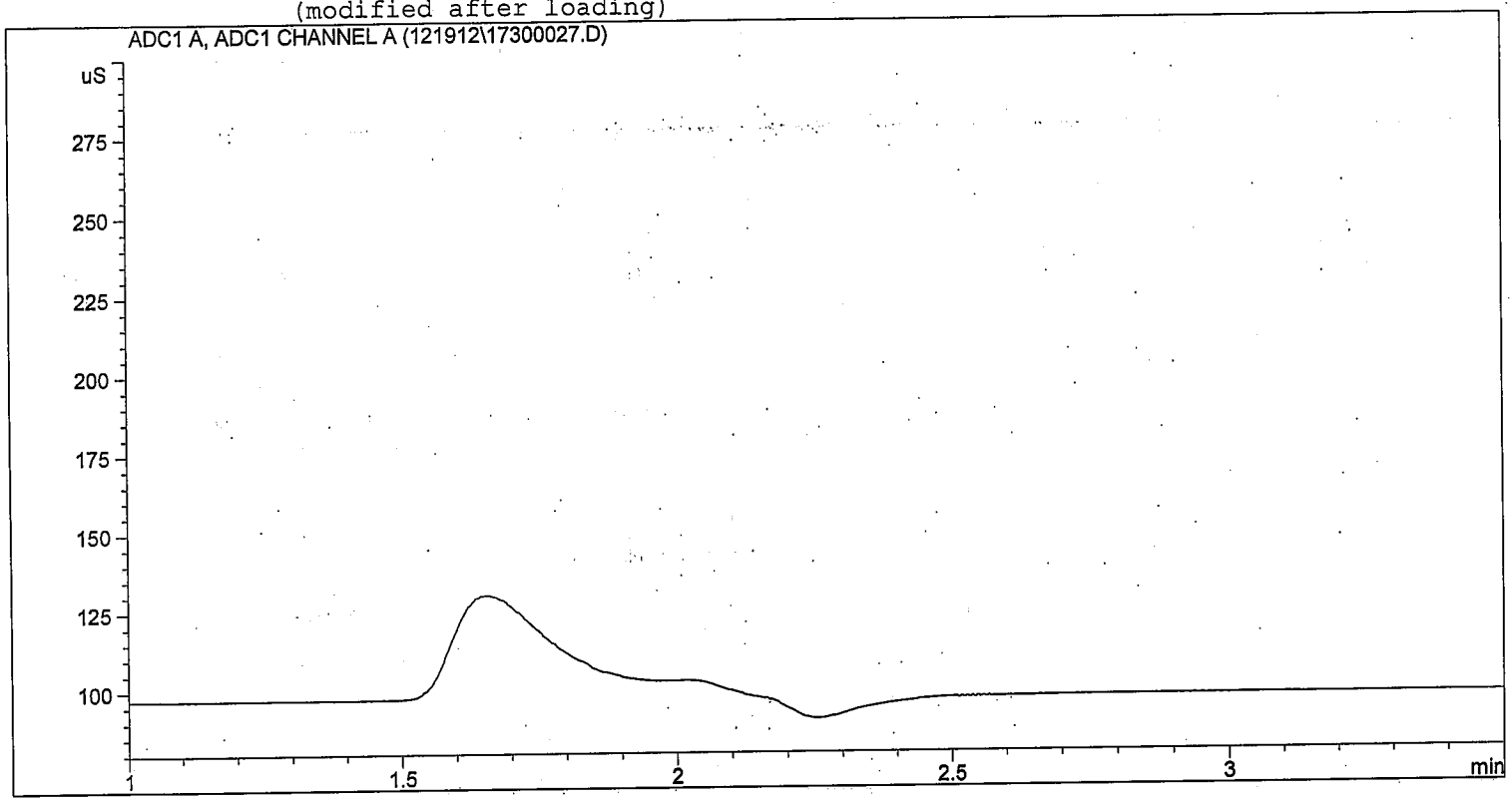
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

Lab Reagent Blank

Injection Date : 12/19/2012 8:19:45 AM
Sample Name : ReagentBlank Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.155		-	-	-		Chloride

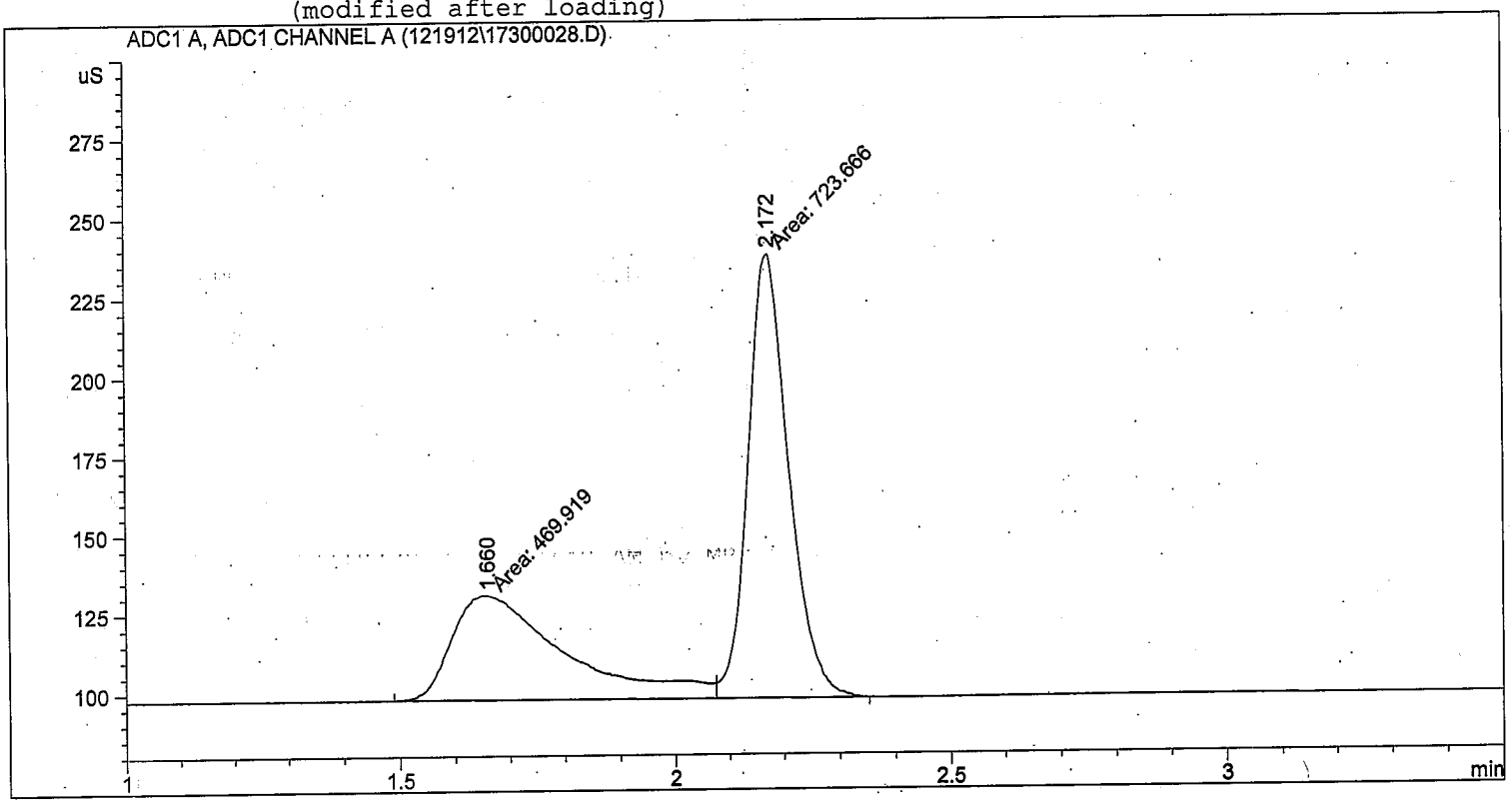
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

4.99ppm Chloride NIST CK STD

Injection Date : 12/19/2012 8:37:13 AM
Sample Name : NIST CK STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

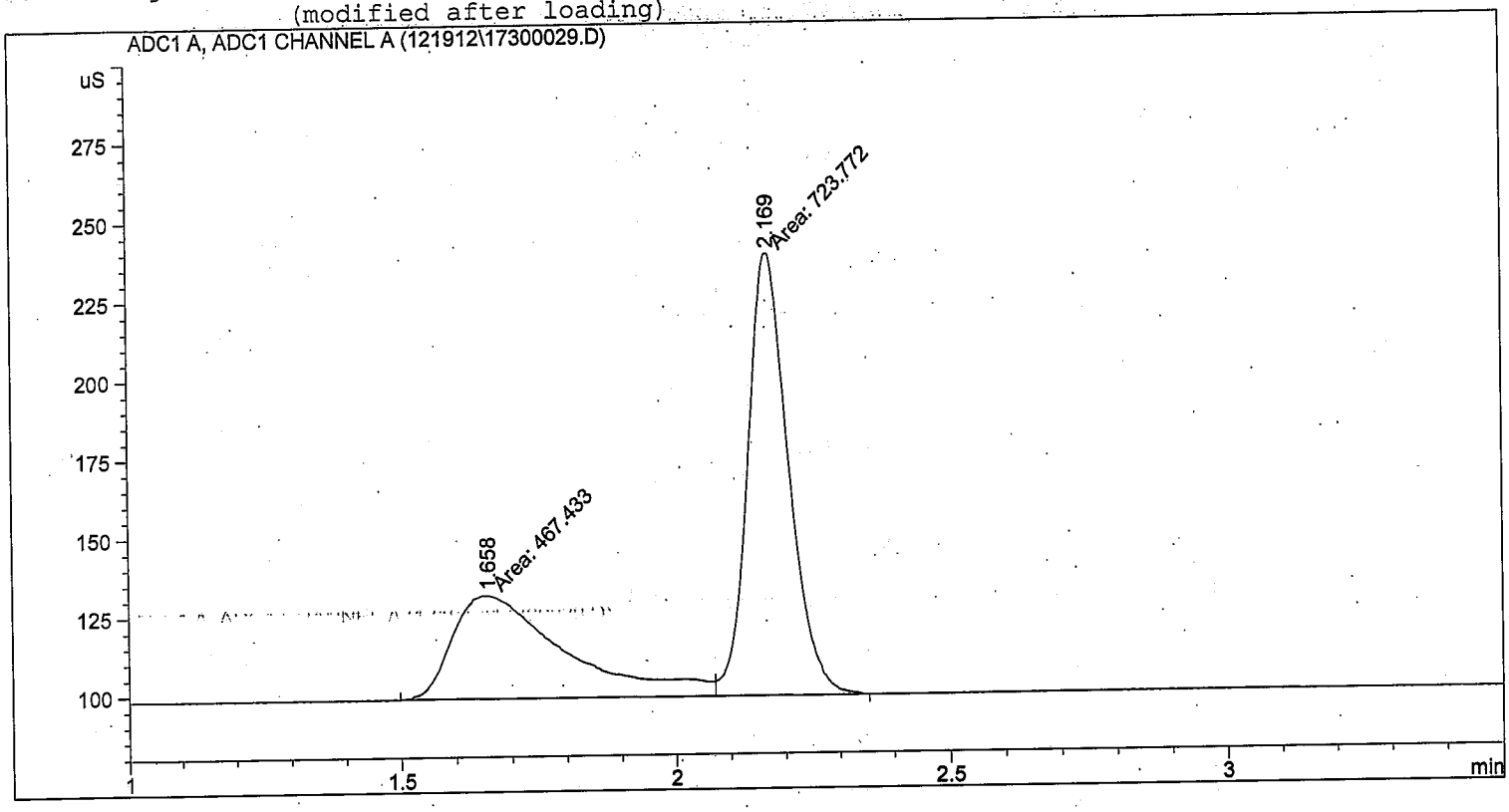
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.172	FM	723.66589	7.31925e-3	5.29669		Chloride
Totals :				5.29669		

Results obtained with enhanced integrator!

*** End of Report ***

4.99ppm Chloride NIST CK STD

Injection Date : 12/19/2012 8:55:05 AM
Sample Name : NIST CK STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

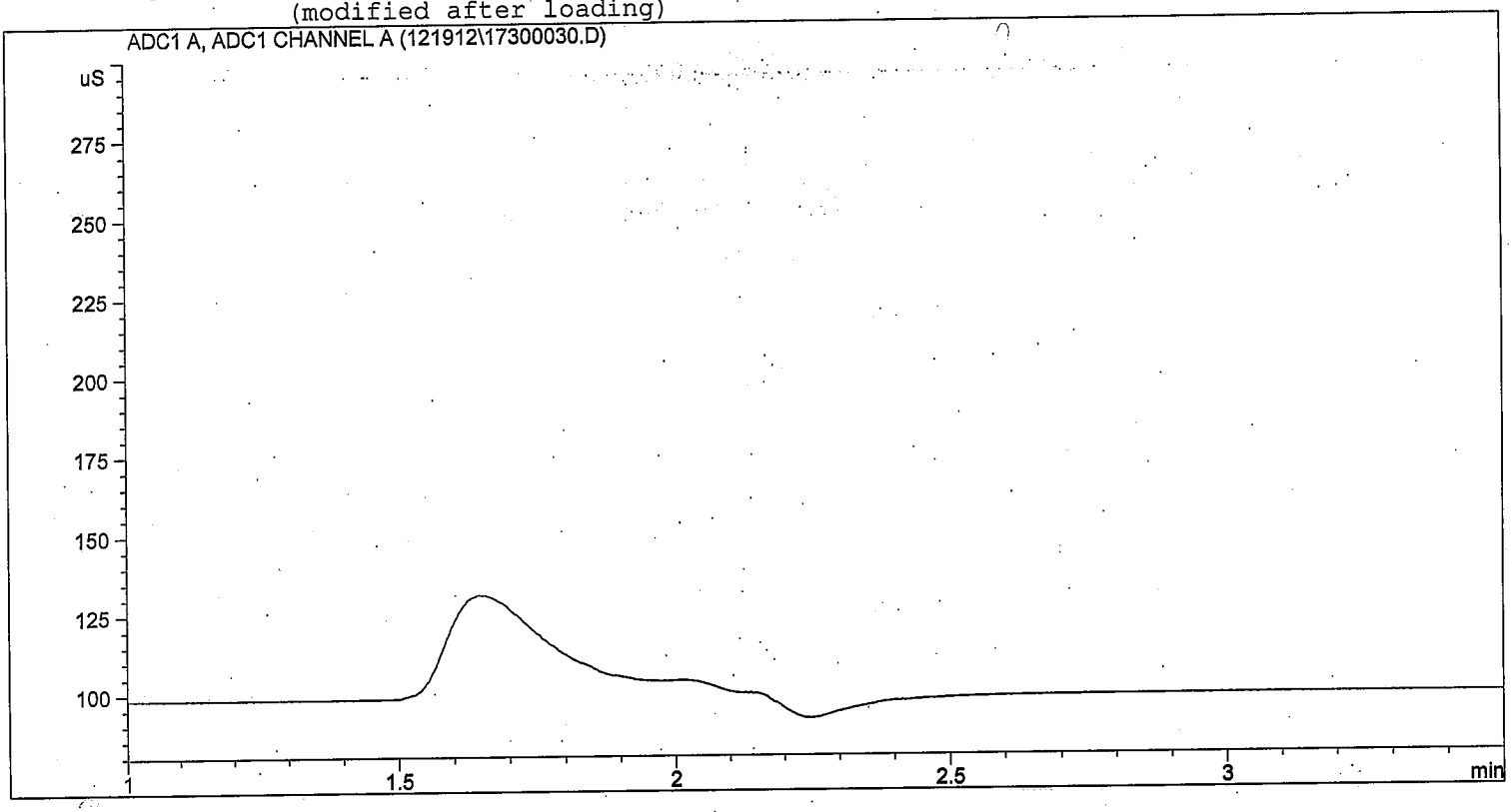
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.169	FM	723.77203	7.31914e-3	5.29739		Chloride
Totals :				5.29739		

Results obtained with enhanced integrator!

*** End of Report ***

Lab Reagent Blank

Injection Date : 12/19/2012 9:02:35 AM
Sample Name : ReagentBlank Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.155		-	-	-		Chloride

Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

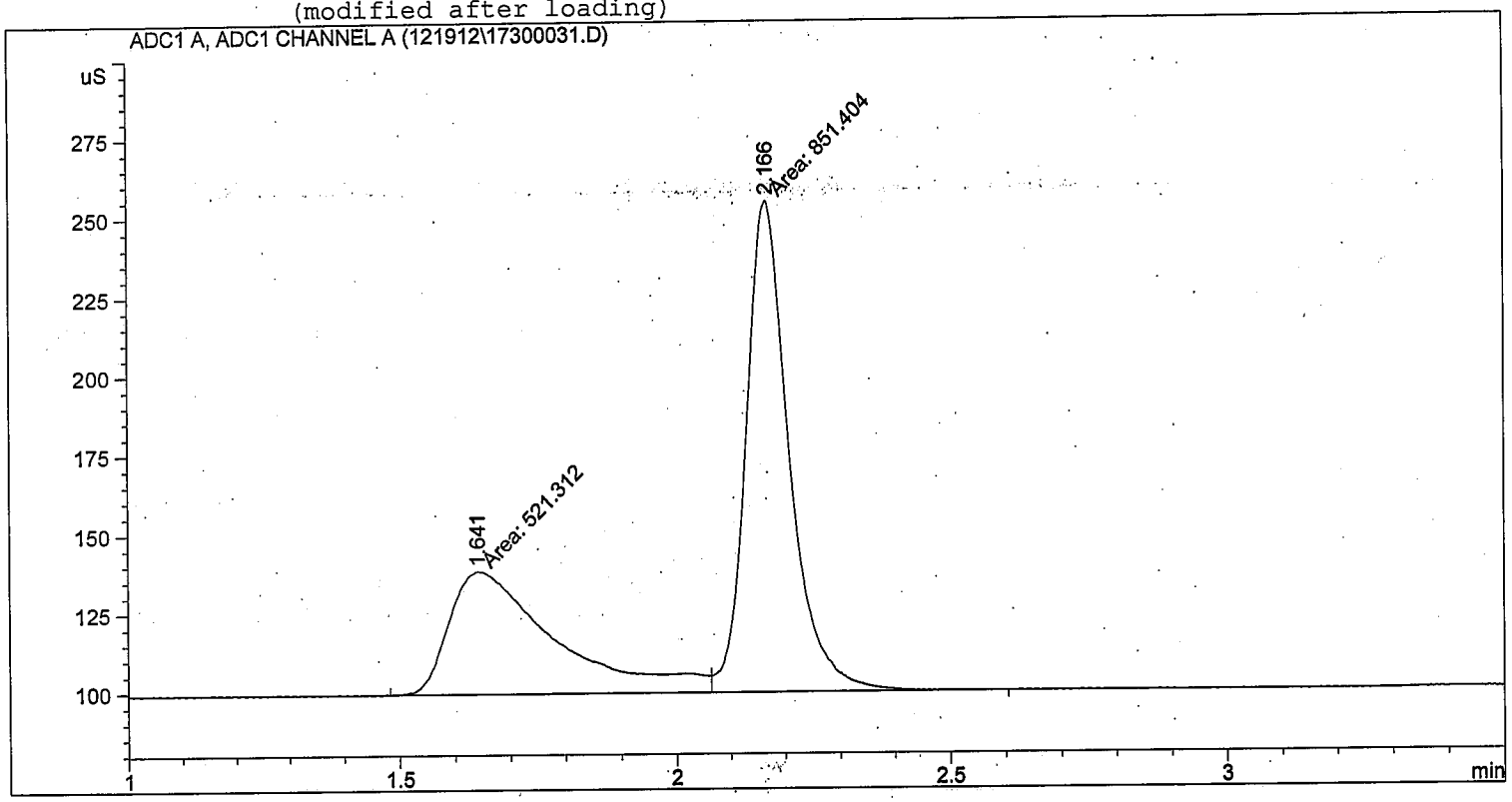
Warning : Calibrated compound(s) not found

Data File C:\HPCHEM\2\DATA\121912\17300031.D

Sample Name: ~~R01~~ C04 Run 2
R02
MB
12-19-12

12-0311 M26A R02 C04 Run 2 Dil 1:20

Injection Date : 12/19/2012 9:28:16 AM
Sample Name : R01 C04 Run 2 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.166	FM	851.40424	7.21219e-3	6.14049		Chloride
Totals :				6.14049		

Results obtained with enhanced integrator!

*** End of Report ***

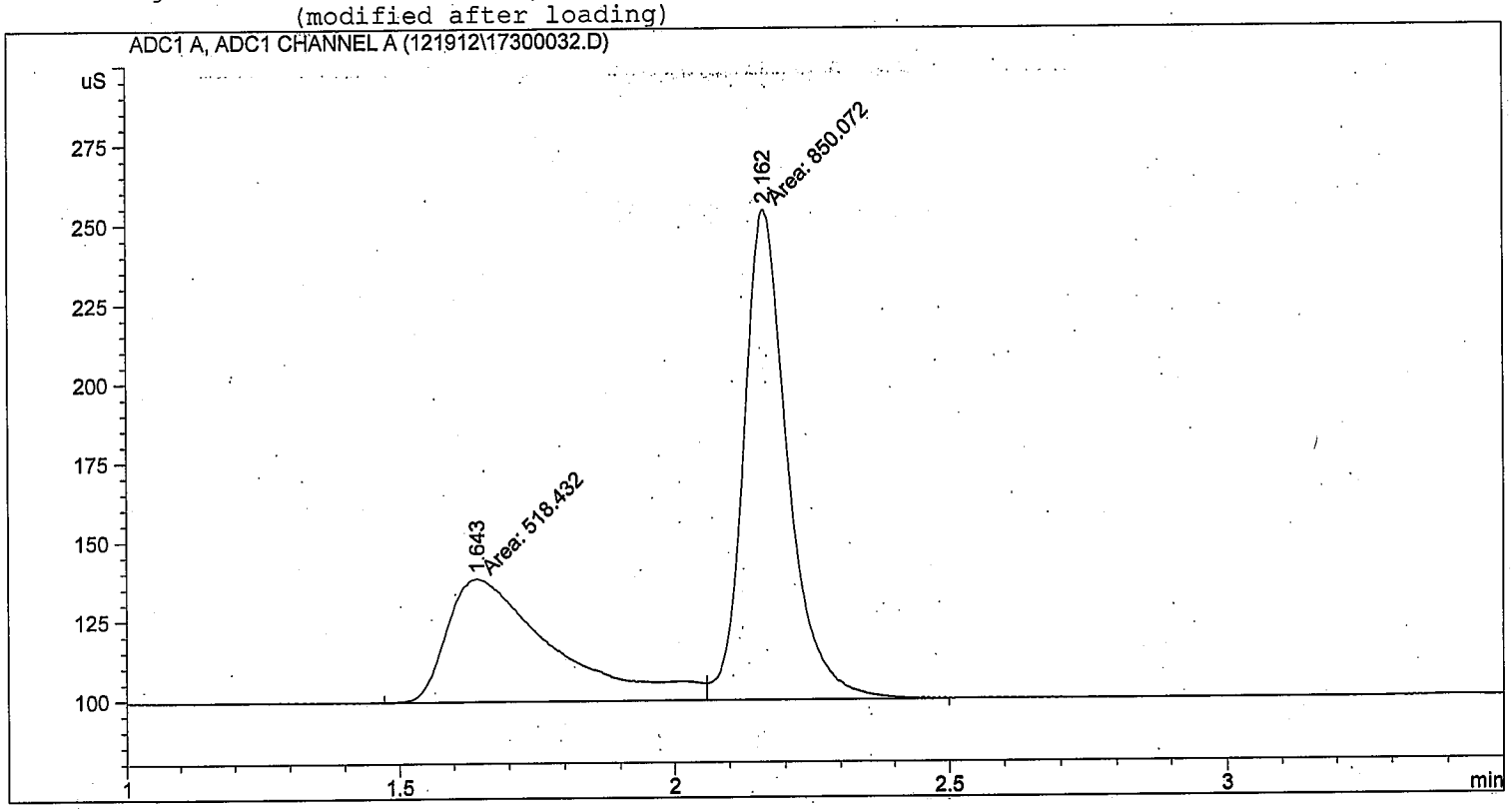
Data File C:\HPCHEM\2\DATA\121912\17300032.D

Sample Name: ~~R01~~ R02 C04 Run 2

12-0311 M26A R02 C04 Run 2 Dil 1:20

12-19-12

Injection Date : 12/19/2012 9:34:42 AM
Sample Name : R01 C04 Run 2 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.162	FM	850.07159	7.21314e-3	6.13168		Chloride

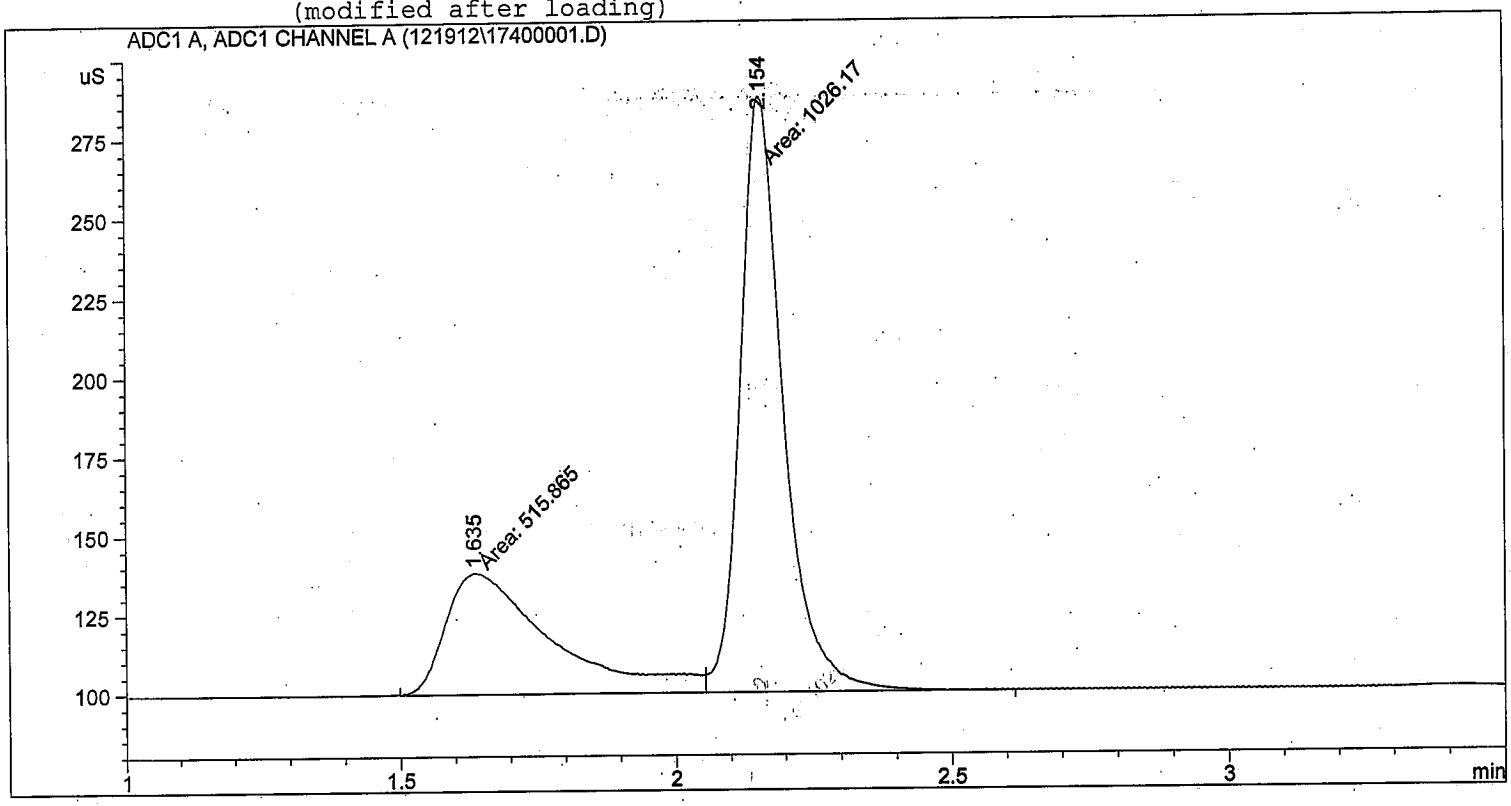
Totals : 6.13168

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R04 C04 Run 4 Dil 1:20 vol=305mL

Injection Date : 12/19/2012 9:56:28 AM
Sample Name : R04 C04 Run 4 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.154	FM	1026.16589	7.10889e-3	7.29490		Chloride

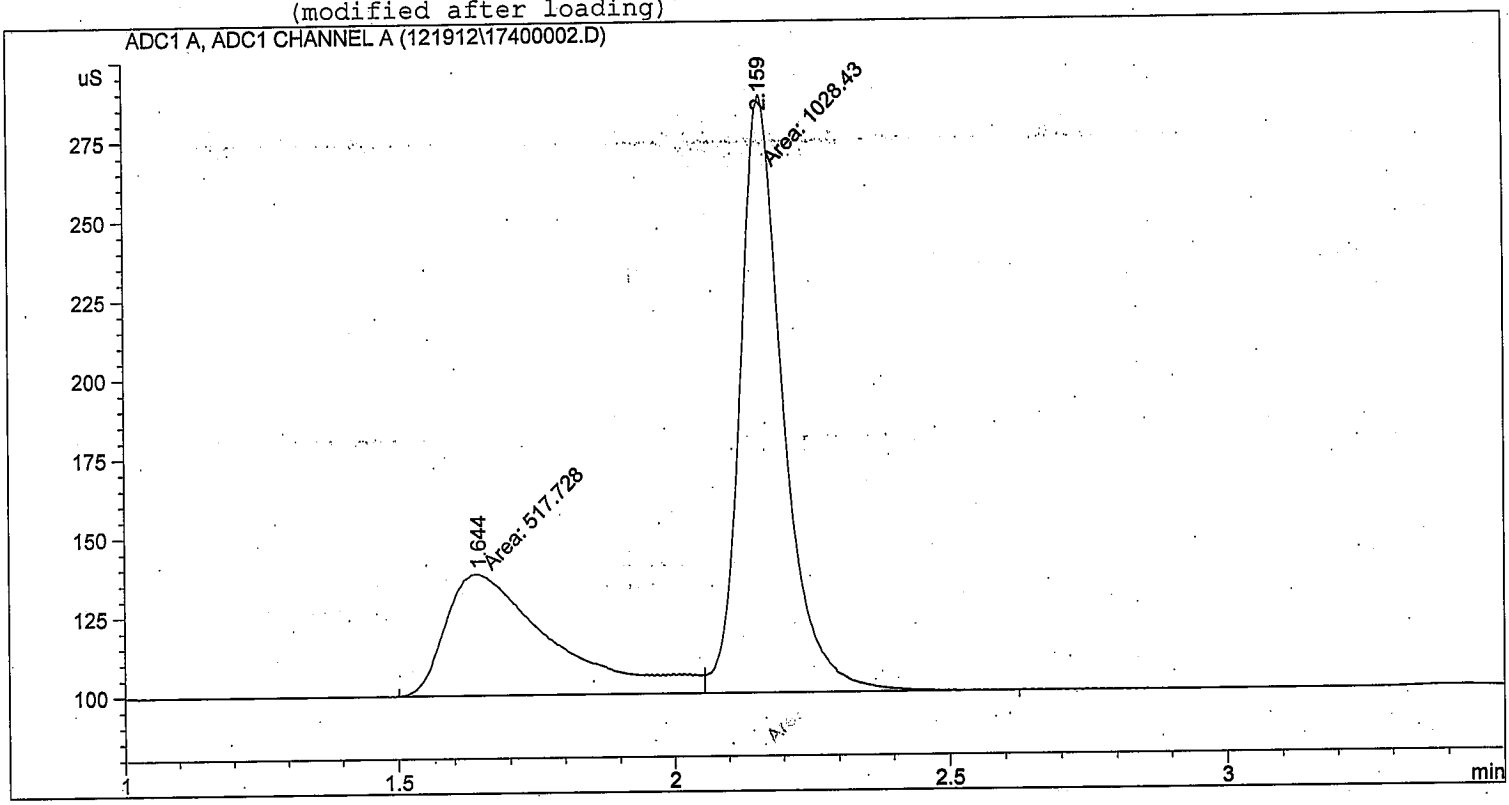
Totals : 7.29490

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R04 C04 Run 4 Dil 1:20 vol=305mL

Injection Date : 12/19/2012 10:02:40 AM
Sample Name : R04 C04 Run 4 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.159	FM	1028.42542	7.10778e-3	7.30983		Chloride

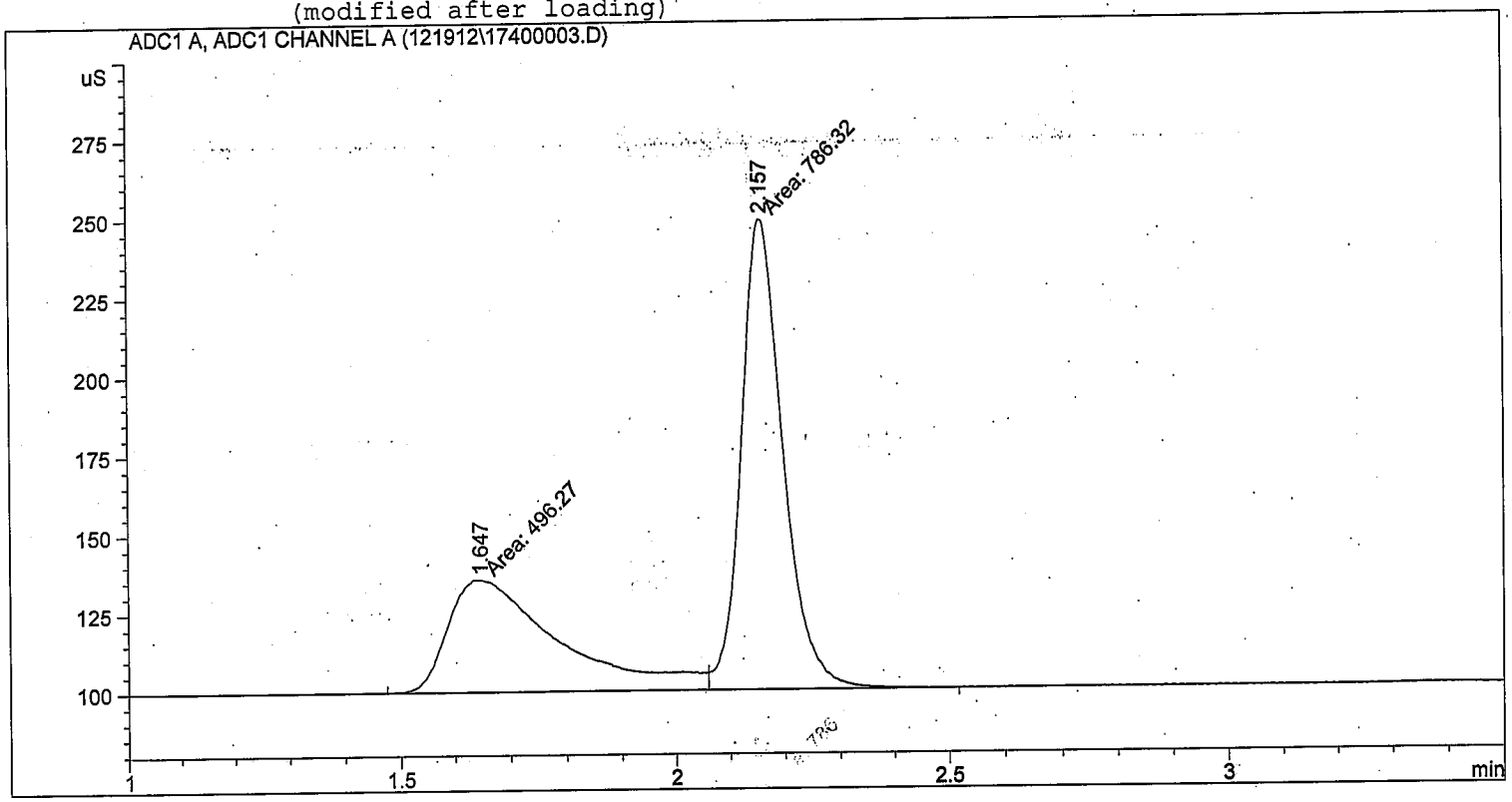
Totals : 7.30983

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R02 C04 already Dil 1:20. Dilute 1:2+4.99p
pm spk

Injection Date : 12/19/2012 10:49:27 AM
Sample Name : Run 2 C04 spk Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

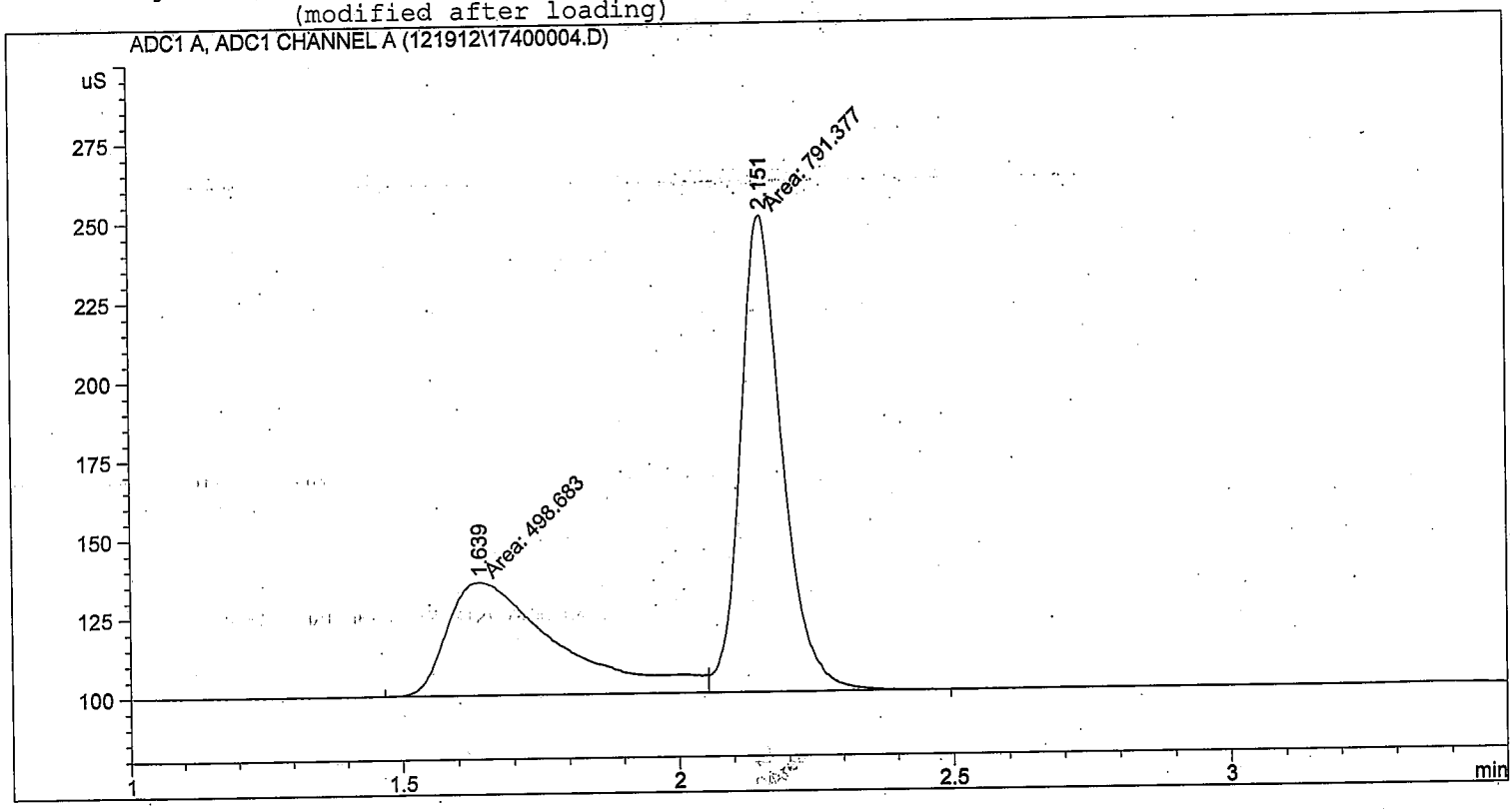
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.157	FM	786.31970	7.26239e-3	5.71056		Chloride
Totals :				5.71056		

Results obtained with enhanced integrator!

*** End of Report ***

12-0311 M26A R02 C04 already Dil 1:20. Dilute 1:2+4.99p pm spk

Injection Date : 12/19/2012 10:55:46 AM
Sample Name : Run 2 C04 spk Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

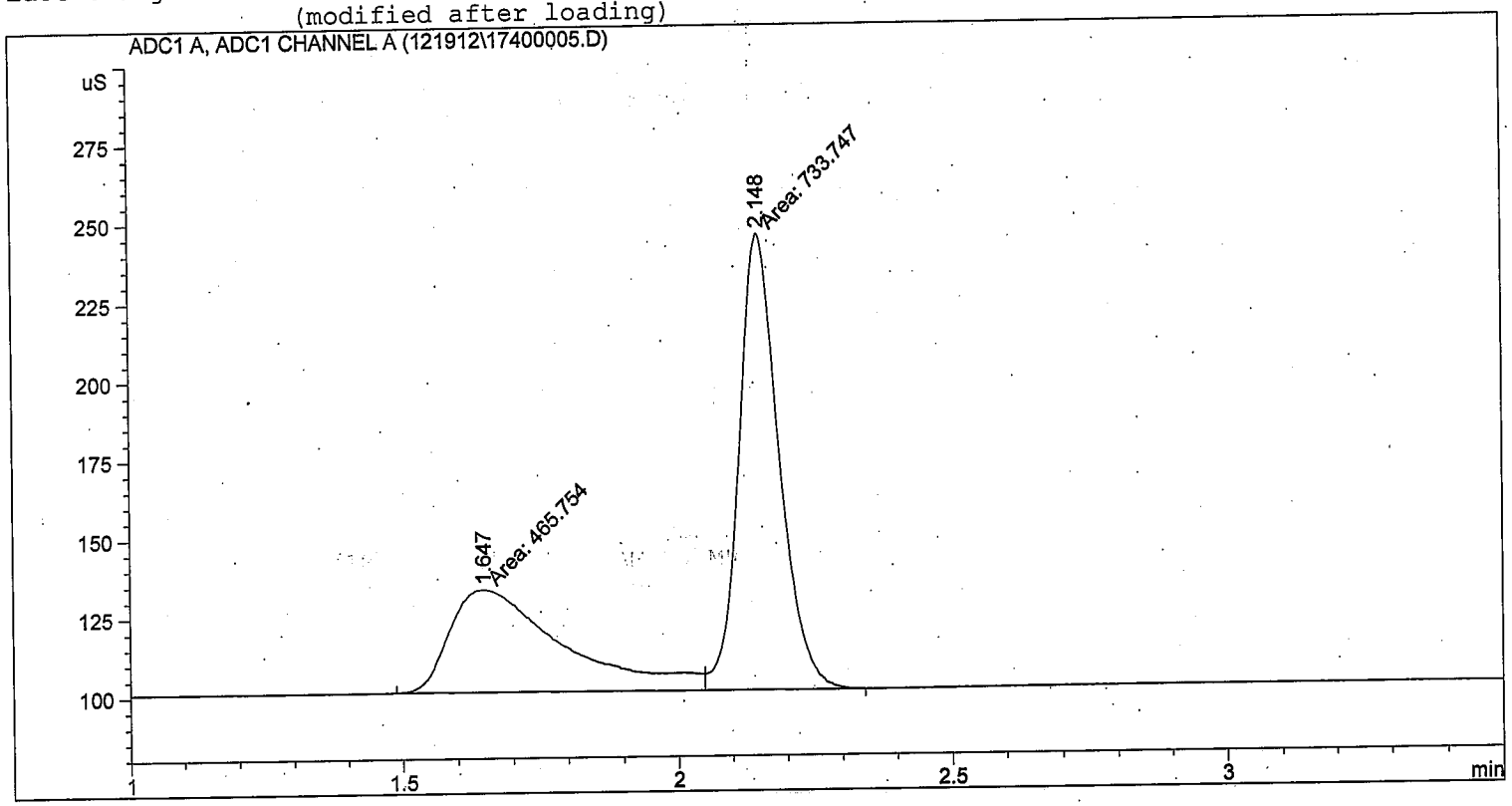
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.151	FM	791.37726	7.25819e-3	5.74397		Chloride
Totals :				5.74397		

Results obtained with enhanced integrator!

*** End of Report ***

4.99ppm Chloride NIST CK STD

```
Injection Date   : 12/19/2012 12:48:06 PM
Sample Name      : NIST CK STD                    Location :  -
Acq. Operator    : MB
Acq. Instrument  : Instrument 2
Method           : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed     : 12/18/2012 11:07:40 AM by MB
                   (modified after loading)
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      12/18/2012 11:07:40 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A
```

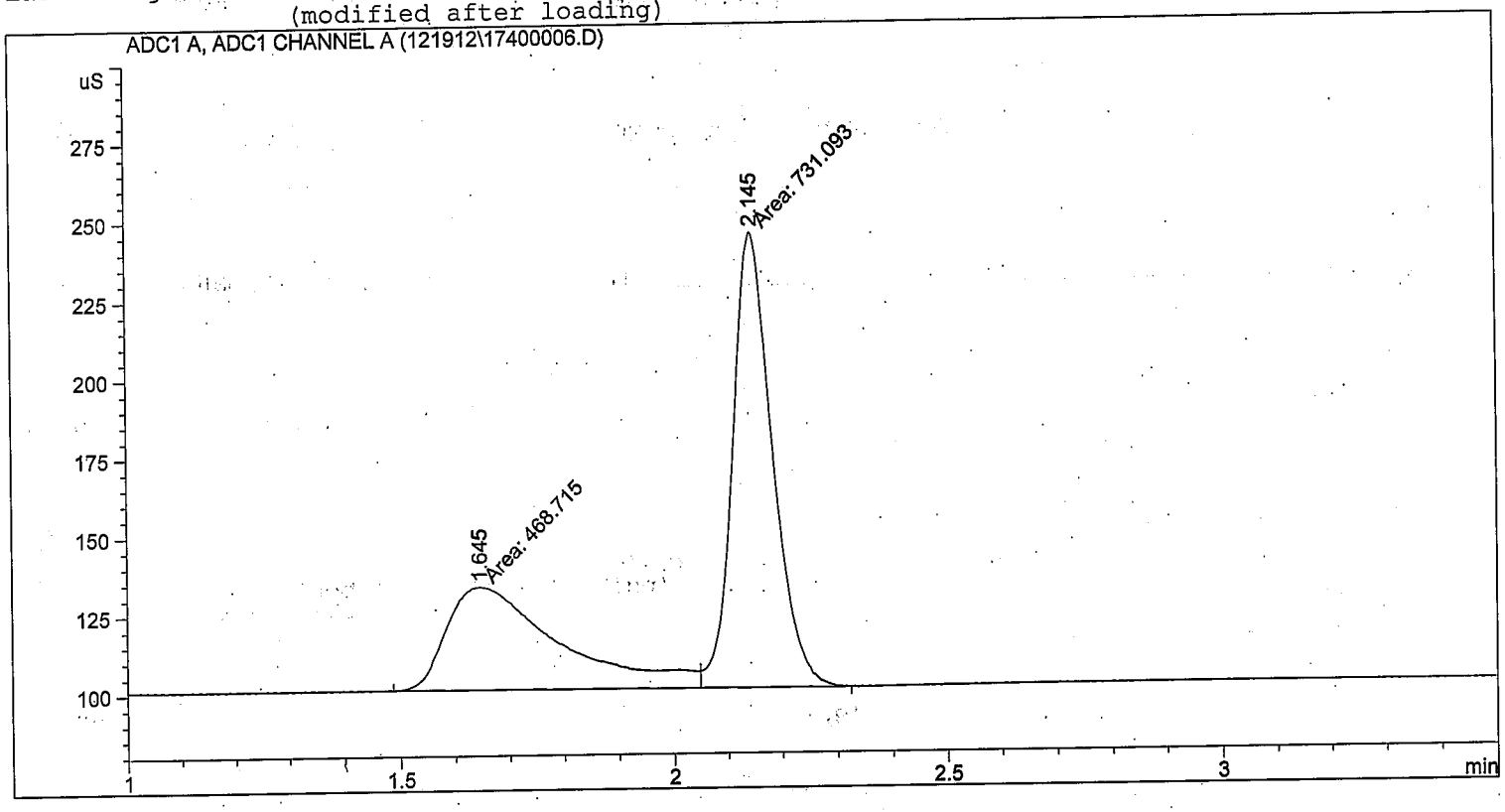
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.148	FM	733.74652	7.30944e-3	5.36328		Chloride
Totals :				5.36328		

Results obtained with enhanced integrator!

*** End of Report ***

4.99ppm Chloride NIST CK STD

Injection Date : 12/19/2012 1:24:06 PM
Sample Name : NIST CK STD Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/18/2012 11:07:40 AM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/18/2012 11:07:40 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.145	FM	731.09253	7.31200e-3	5.34575		Chloride

Totals : 5.34575

Results obtained with enhanced integrator!

*** End of Report ***

Calibration Table

Calib. Data Modified : 12/17/2012 12:09:45 PM

Calculate : External Standard
Based on : Peak Area

Rel. Reference Window : 5.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 5.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Ignored
Weight : Equal

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Sig	Lvl	Amount [ng/ul]	Area	Amt/Area	Ref	Grp	Name
2.164	1	1	4.99000e-1	149.13643	3.34593e-3			Chloride
		2	9.99000e-1	219.80972	4.54484e-3			
		3	1.99900	356.64130	5.60507e-3			
		4	4.99900	854.29077	5.85164e-3			
		5	9.99900	1694.69324	5.90018e-3			

More compound-specific settings:

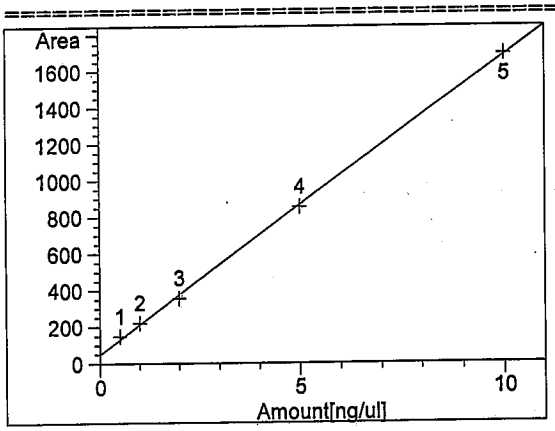
MB 12/21/12

Compound: Chloride
Time Window : From 2.000 min To 2.403 min

Peak Sum Table

No Entries in table

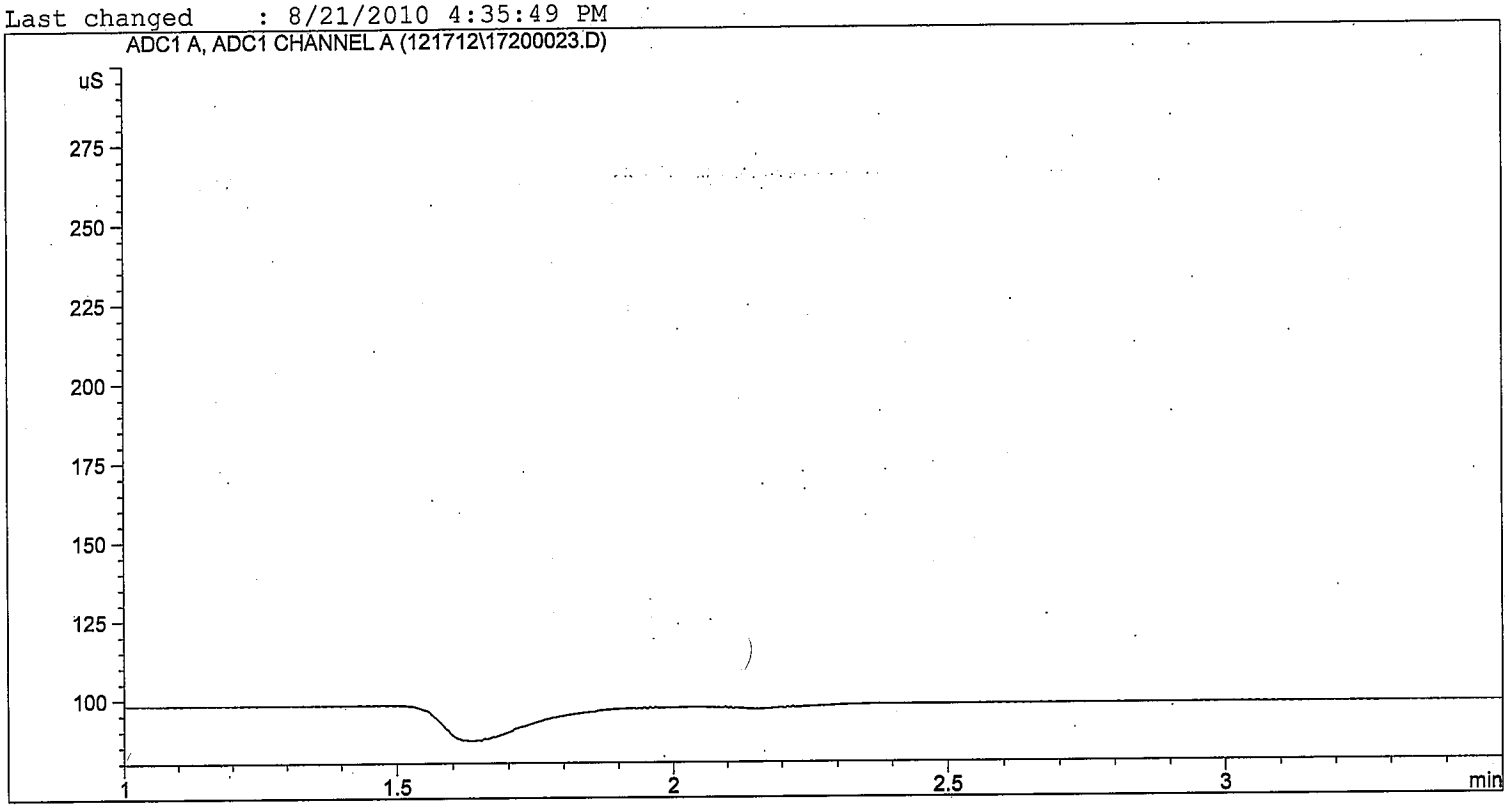
Calibration Curves



Chloride at exp. RT: 2.164
ADC1 A, ADC1 CHANNEL A
Correlation: 0.99969
Residual Std. Dev.: 18.47939
Formula: y = mx + b
m: 163.59438
b: 49.77870
x: Amount[ng/ul]
y: Area

water

Injection Date : 12/17/2012 10:38:14 AM
Sample Name : H20 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Method : C:\HPCHEM\2\METHODS\CL2B.M
Last changed : 8/21/2010 4:35:49 PM



External Standard Report

Sorted By : Signal
Calib. Data Modified : 8/20/2010 6:02:46 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.144		-	-	-		Chloride

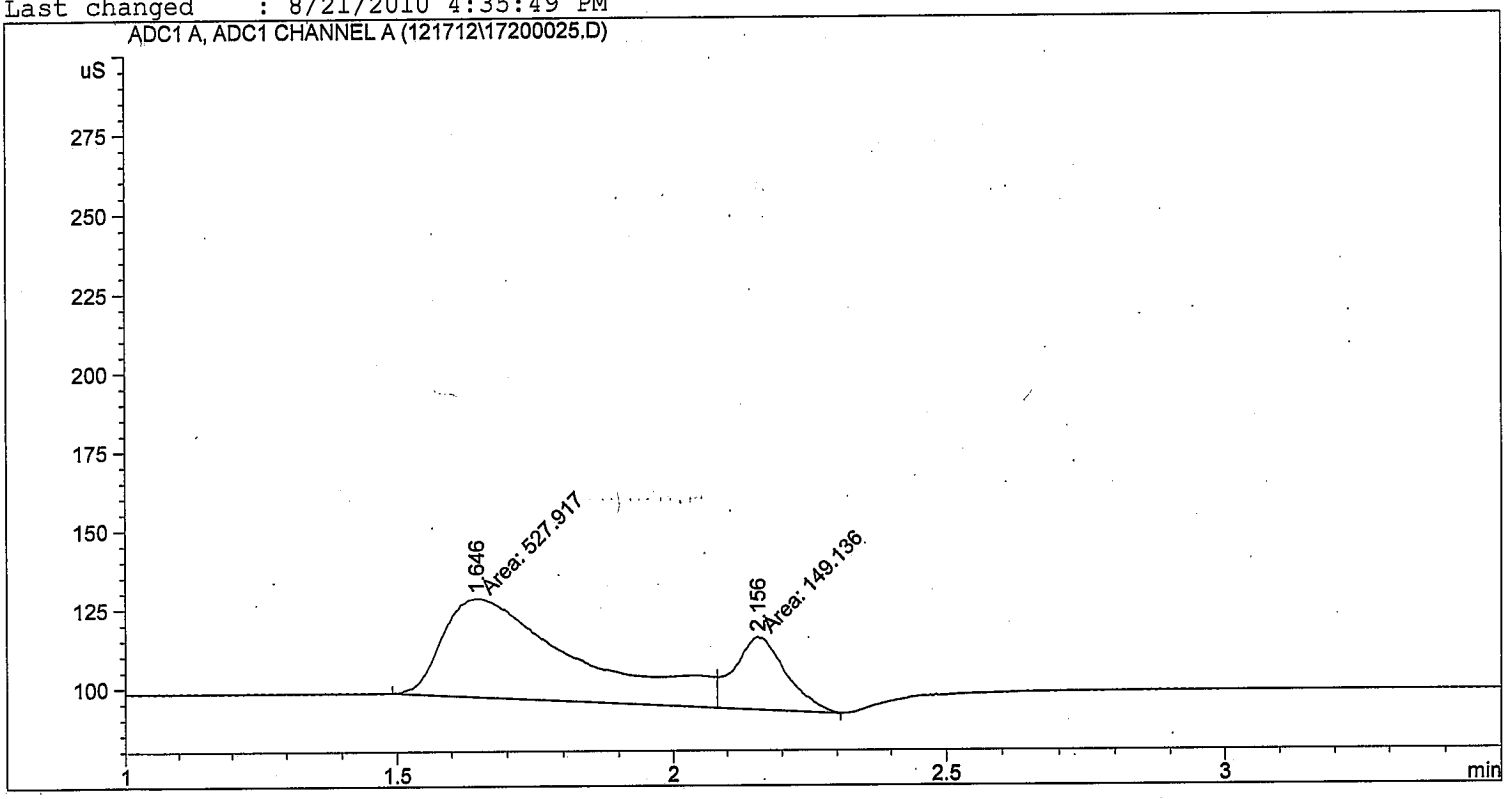
Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

.0.499ppm Chloride Calibration STD

```
Injection Date  : 12/17/2012 11:02:08 AM
Sample Name     : CalSTD 1                          Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Acq. Method     : C:\HPCHEM\2\METHODS\CL2B.M
Last changed    : 8/21/2010 4:35:49 PM
Analysis Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed    : 8/21/2010 4:35:49 PM
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      8/20/2010 6:02:46 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          [uS*s]                 [ng/ul]
-------|------|----------|----------|----------|--|------------------
  2.156 FM      149.13643 1.00683e-2    1.50155     Chloride

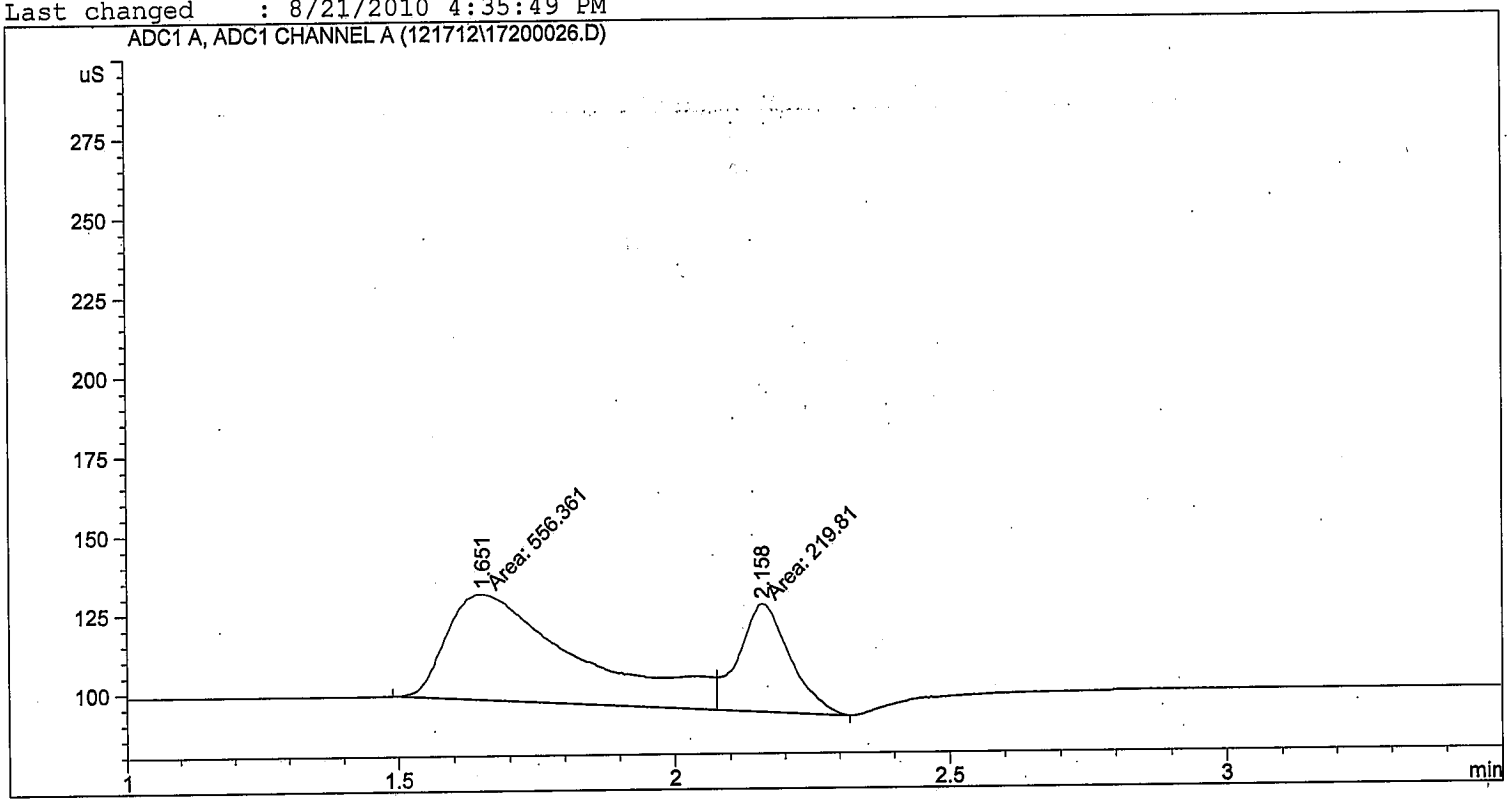
Totals :                                1.50155

 Results obtained with enhanced integrator!
```

*** End of Report ***

0.999ppm Chloride Calibration STD

```
Injection Date  : 12/17/2012 11:13:17 AM
Sample Name     : CalSTD 2                    Location :  -
Acq. Operator   : MB
Acq. Instrument : Instrument 2
Acq. Method     : C:\HPCHEM\2\METHODS\CL2B.M
Last changed    : 8/21/2010 4:35:49 PM
Analysis Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed    : 8/21/2010 4:35:49 PM
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      8/20/2010 6:02:46 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: ADC1 A, ADC1 CHANNEL A

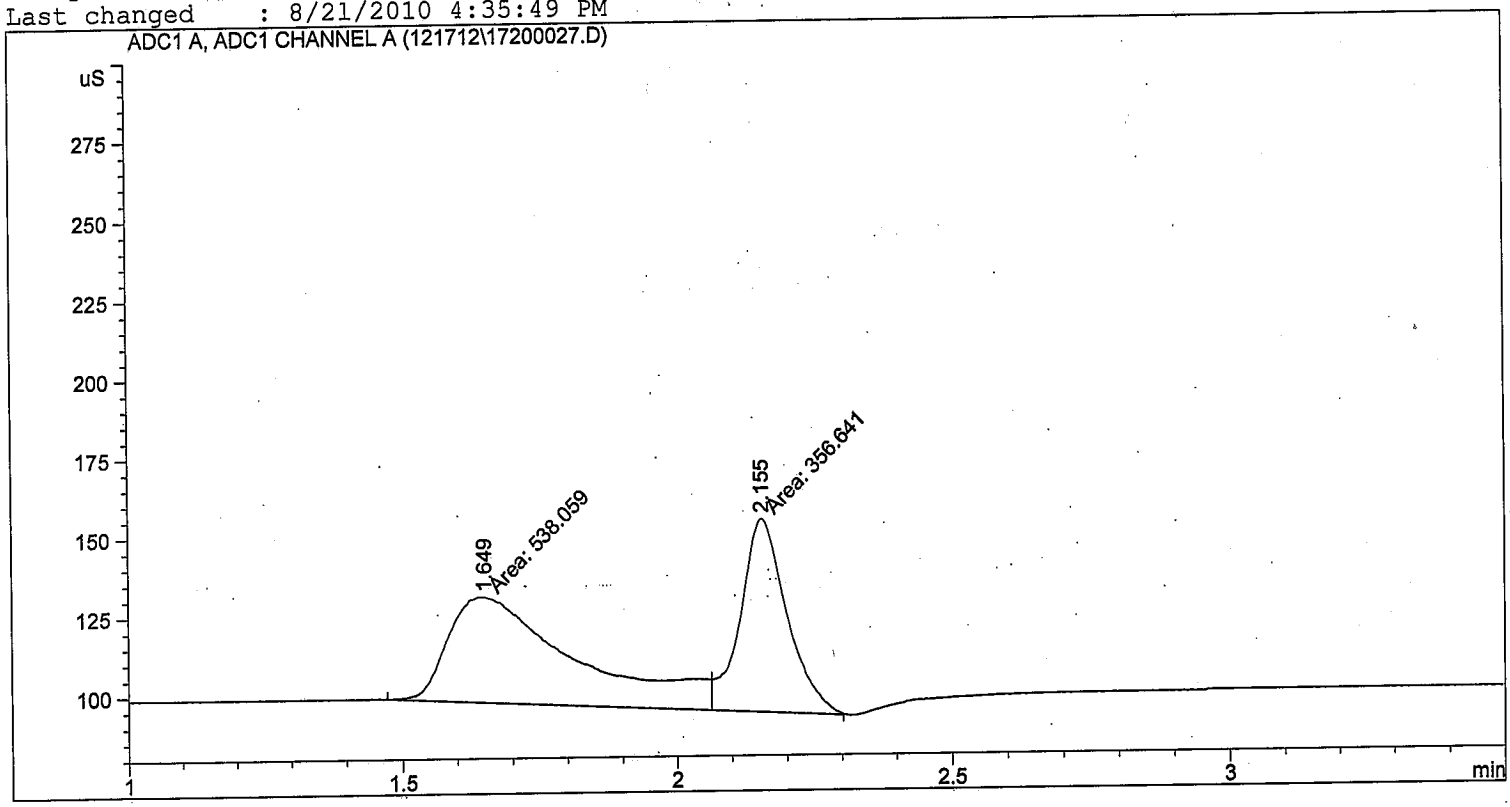
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.158	FM	219.80972	8.95497e-3	1.96839		Chloride
Totals :				1.96839		

Results obtained with enhanced integrator!

*** End of Report ***

1.999ppm Chloride Calibration STD

Injection Date : 12/17/2012 11:28:19 AM
Sample Name : CalSTD 3 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Acq. Method : C:\HPCHEM\2\METHODS\CL2B.M
Last changed : 8/21/2010 4:35:49 PM
Analysis Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 8/21/2010 4:35:49 PM



External Standard Report

Sorted By : Signal
Calib. Data Modified : 8/20/2010 6:02:46 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

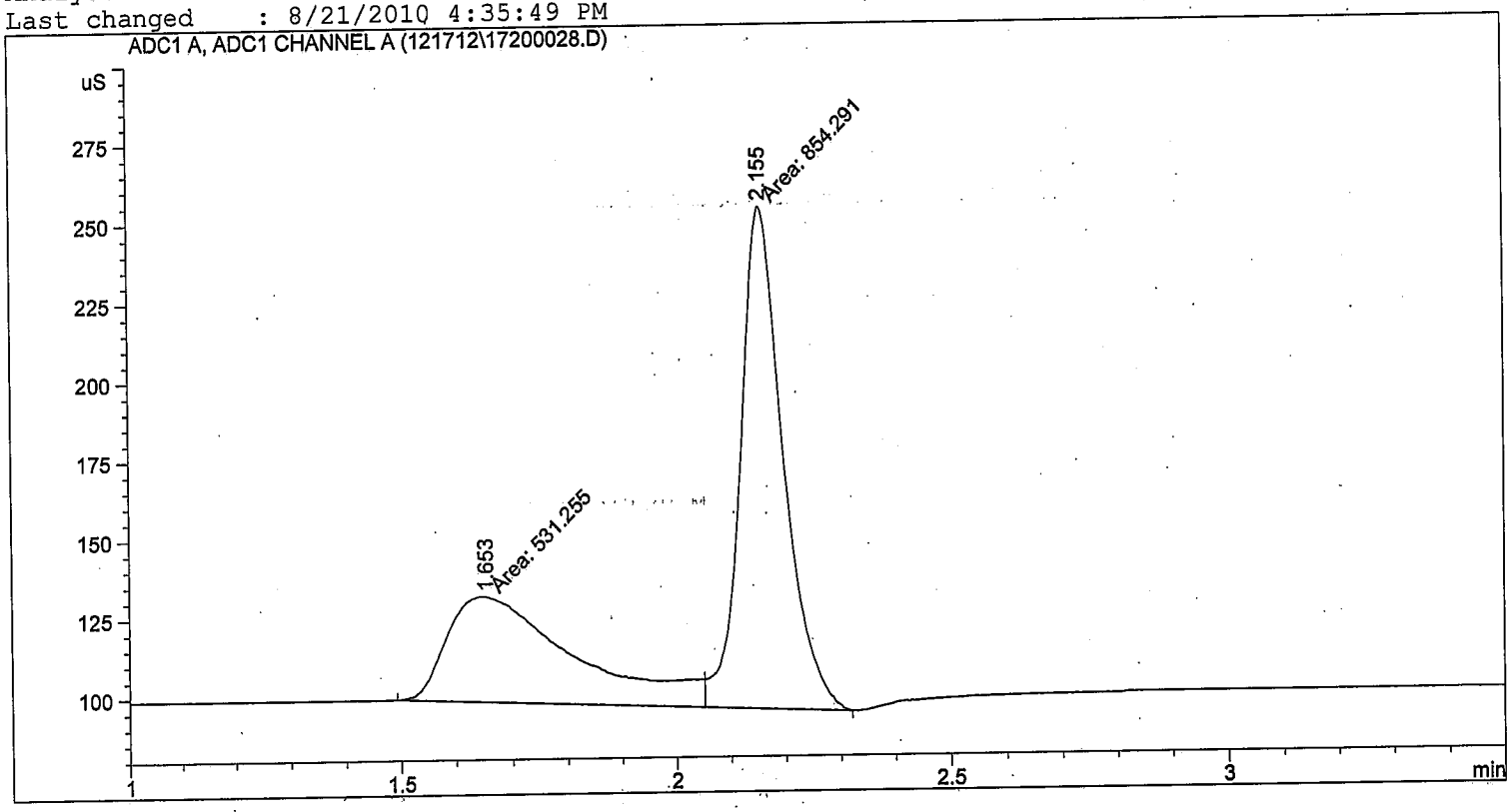
RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.155	FM	356.64130	8.05361e-3	2.87225		Chloride
Totals :				2.87225		

Results obtained with enhanced integrator!

*** End of Report ***

4.999ppm Chloride Calibration STD

Injection Date : 12/17/2012 11:34:53 AM
Sample Name : CalSTD 4 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Acq. Method : C:\HPCHEM\2\METHODS\CL2B.M
Last changed : 8/21/2010 4:35:49 PM
Analysis Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 8/21/2010 4:35:49 PM



External Standard Report

Sorted By : Signal
Calib. Data Modified : 8/20/2010 6:02:46 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.155	FM	854.29077	7.21014e-3	6.15955		Chloride

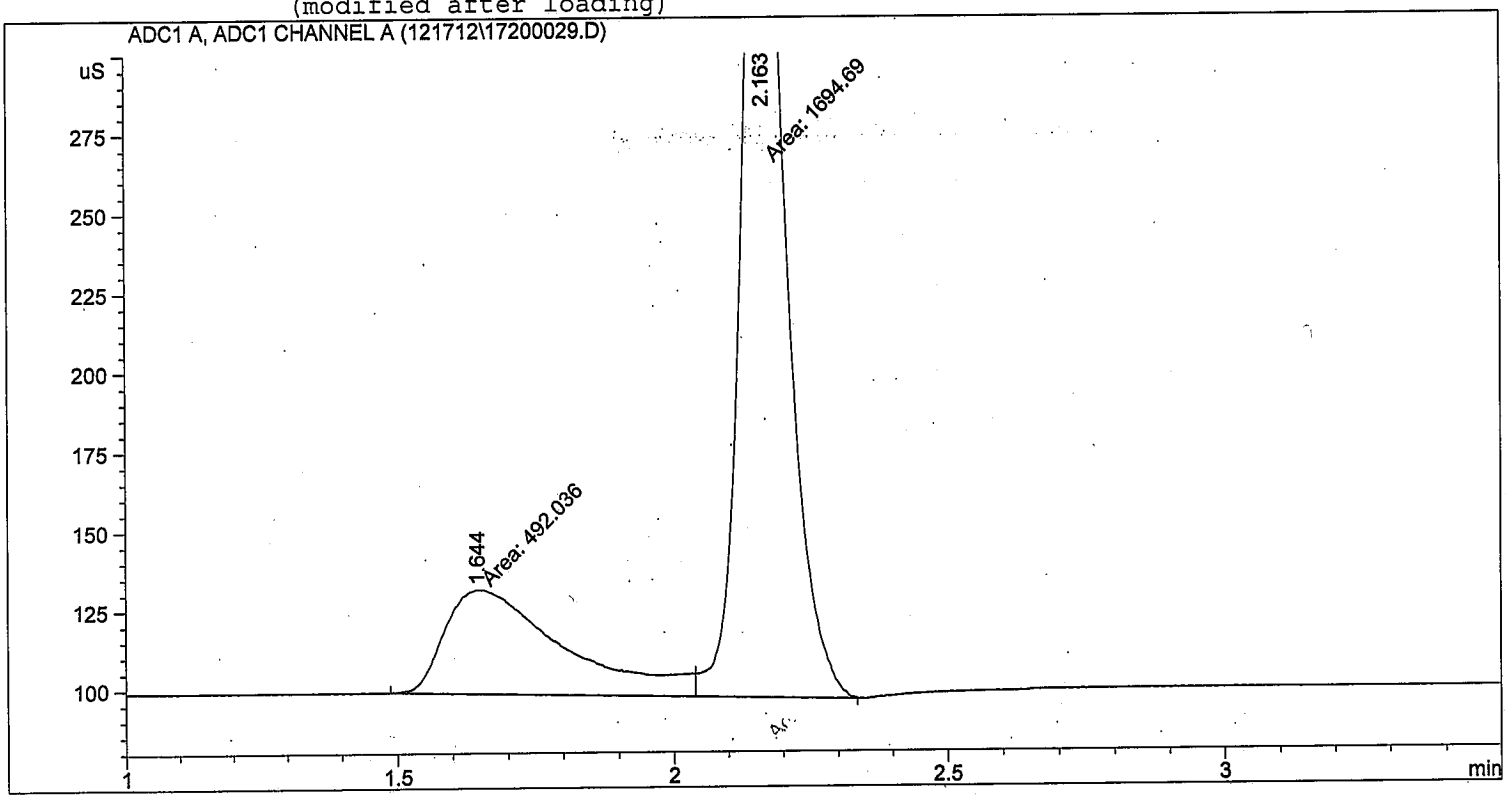
Totals : 6.15955

Results obtained with enhanced integrator!

*** End of Report ***

9.999ppm Chloride Calibration STD

Injection Date : 12/17/2012 11:43:35 AM
Sample Name : CalSTD 5 Location : -
Acq. Operator : MB
Acq. Instrument : Instrument 2
Acq. Method : C:\HPCHEM\2\METHODS\CL2B.M
Last changed : 8/21/2010 4:35:49 PM
Analysis Method : C:\HPCHEM\2\METHODS\CL2MEB.M
Last changed : 12/17/2012 12:06:01 PM by MB
(modified after loading)



External Standard Report

Sorted By : Signal
Calib. Data Modified : 12/17/2012 12:05:45 PM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uS*s]	Amt/Area	Amount [ng/ul]	Grp	Name
2.163	FM	1694.69324	6.91037e-3	11.71096		Chloride
Totals :				11.71096		

Results obtained with enhanced integrator!

*** End of Report ***

FIELD DATA (ISOKINETIC SAMPLING)

Project # 12-0311 Run ID 1

Date 12/11/12 Type Test HCl Cl2

Building Number 248-D Sampling Location LCD

Operators F.F

SOURCE INFORMATION

Assumed Stack Temp. 125 °F Assumed Moisture 13.5 %

Assumed Meter Temp. 65 °F Static Pressure -.26 in. H_2O

Barometric Pressure 28.56 in. Hg Stack Cross Section 9.62 ft^2

Ambient Temp. 42 °F Number of Points 12

Total Sample Time 120 Min.

Meter Box # 5221 Meter Delta H 1.8935 Meter Y Factor .9929

Probe and Pitot # P.4 ~~B~~ A F.F. Pitot Factor ✓ 0.84 ____ 0.99

Nozzle Diameter .250 in.

Thermocouples: TC 170172 12/11/12 FF TC ____ TC ____

TC 171173 12/11/12 F.F LI 6 HB 18

LAB DATA

PW P2

Sample Box Number HCl-1 Filter Number 13 Orsat Can Number N/A

Impinger Initial 450 mL Impinger Final 662 mL

Silica Gel Initial 400 g Silica Gel Final 415.8 g

Sampling train run by: F.F

Field data checked by: JLK

Data entered into spreadsheet by: F.F

Data entry checked by: JLK

Eastman Chemical Company

Environmental Services Laboratory

Field Data (Isokinetic Sampling)

Date 12/11/12 Project Id 12-0311 Operators F.F.

Port Change Time	Point	Time (min)	Gas volume (ft³) 4732.11	ΔP (In. H_2O)	ΔH (In. H_2O)	Stack Temp (°F)	Probe Temp (°F)	Oven Temp (°F)	Exit Temp (°F)	Meter Temp (°F)	Pump Vacuum (In. Hg)	Leak Check
12:10	1	10	480.53	.50	1.57	120	255	255	40	49	2	Pre Leak Check
	2	10	487.41	.55	1.72	121	255	255	41	50	3	@> 15 in. Hg = 0.00
	3	10	494.01	.52	1.63	124	257	255	42	51	3	Pitot Leak Check @ >5 – in H_2O
	4	10	500.80	.45	1.41	123	257	256	43	52	3	#2 = 0.00
	5	10	507.05	.44	1.38	121	258	255	44	53	2	#4 = 0.00
13:10	6	10	513.30	.42	1.32	124	258	256	44	53	2	#1 Post Ck DGM 513.30 cf
												#1 Lk Ck Post 0.00 @ 5 in. Hg
13:25	1	10	519.73	.46	1.44	123	255	255	43	52	2	#2 Lk Ck Pre 0.00 @ 5 in. Hg
13:45	2	10	526.09	.46	1.44	122	257	256	44	52	2	#2 Pre Ck DGM 513.375 cf
13:51	3	10	532.47	.47	1.47	122	255	257	46	51	2	1-2 Total Ck DGM .075 cf
	4	10	539.19	.49	1.53	123	255	257	46	51	3	#2 Post Ck DGM _____ cf
	5	10	546.18	.50	1.57	124	257	258	47	51	3	#2 Lk Ck Post _____ @ _____ in. Hg
14:31	6	10	552.50	.44	1.38	125	257	259	49	52	2	#3 Lk Ck Pre _____ @ _____ in. Hg
												#3 Pre Ck DGM _____ cf
												2-3 Total Ck DGM _____ cf
												#3 Post Ck DGM _____ cf
												#3 Lk Ck Post _____ @ _____ in. Hg
												#4 Lk Ck Pre _____ @ _____ in. Hg
												#4 Pre Ck DGM _____ cf
												3-4 Total Ck DGM _____ cf
												#4 Post Ck DGM _____ cf
												#4 Lk Ck Post _____ @ _____ in. Hg
												#5 Lk Ck Pre _____ @ _____ in. Hg
												#5 Pre Ck DGM _____ cf
												4-5 Total Ck DGM _____ cf
												Post Leak Check
												0.00 @ 7 in. Hg
												Pitot Leak Check @ >5 in. H_2O
												#2 = 0.00
												#4 = 0.00

FIELD DATA (ISOKINETIC SAMPLING)

Project # 12-0311 Run ID 2

Date 12/11/12 Type Test HCl Cl2

Building Number 248-D Sampling Location LCD

Operators F.F

SOURCE INFORMATION

Assumed Stack Temp. 125 °F Assumed Moisture 13.5 %

Assumed Meter Temp. 65 °F Static Pressure -.26 in. H_2O

Barometric Pressure 28.56 in. Hg Stack Cross Section 9.62 ft^2

Ambient Temp. 43 °F Number of Points 12

Total Sample Time 120 Min.

Meter Box # 5221 Meter Delta H 1.8935 Meter Y Factor .9929

Probe and Pitot # P-4-A Pitot Factor ✓ 0.84 ____ 0.99

Nozzle Diameter .250 in.

Thermocouples: TC 170 TC ____ TC ____

TC 171 LI 6 HB 18

LAB DATA

Sample Box Number HC12 Filter Number 12 Orsat Can Number N/A

Impinger Initial 450 mL Impinger Final 664 mL

Silica Gel Initial 400 g Silica Gel Final 413.2 g

Sampling train run by: FF
Field data checked by: JLK
Data entered into spreadsheet by: F.F
Data entry checked by: JLK

Eastman Chemical Company

Environmental Services Laboratory

Field Data (Isokinetic Sampling)

Date 12/11/12 Project Id 12-0311 Operators F.E

Port Change Time	Point	Time (min)	552.675 Gas volume (ft^3)	ΔP (In. H_2O)	ΔH (In. H_2O)	Stack Temp (°F)	Probe Temp (°F)	Oven Temp (°F)	Exit Temp (°F)	Meter Temp (°F)	Pump Vacuum (In. Hg)	Leak Check
16:12	1	10	558.91	.46	1.44	122	258	259	44	49	1	Pre Leak Check
	2	10	565.50	.47	1.47	124	258	259	44	50	2	@> 15 in. Hg = 0.00
	3	10	571.90	.45	1.41	124	259	259	43	51	2	Pitot Leak Check @ >5 – in H_2O
	4	10	578.59	.50	1.57	123	259	259	43	51	3	#2 = 0.00
	5	10	585.25	.49	1.53	124	258	259	43	52	3	#4 = 0.00
17:12	6	10	591.565	.43	1.35	123	259	259	43	52	3	#1 Post Ck DGM 591.585 cf
												#1 Lk Ck Post 0.00 @ 5 in. Hg
17:22	1	10	597.97	.47	1.47	120	258	259	41	51	2	#2 Lk Ck Pre 0.00 @ 4 in. Hg
	2	10	604.85	.54	1.69	120	257	258	41	51	3	#2 Pre Ck DGM 591.625 cf
	3	10	611.97	.53	1.66	125	257	258	41	53	3	1-2 Total Ck DGM .04 cf
	4	10	618.61	.47	1.47	125	258	259	42	54	3	#2 Post Ck DGM ____ cf
	5	10	625.15	.45	1.41	123	257	258	42	56	3	#2 Lk Ck Post ____ @ ____ in. Hg
18:22	6	10	631.32	.46	1.25	125	257	258	43	56	3	#3 Lk Ck Pre ____ @ ____ in. Hg
												#3 Pre Ck DGM ____ cf
												2-3 Total Ck DGM ____ cf
												#3 Post Ck DGM ____ cf
												#3 Lk Ck Post ____ @ ____ in. Hg
												#4 Lk Ck Pre ____ @ ____ in. Hg
												#4 Pre Ck DGM ____ cf
												3-4 Total Ck DGM ____ cf
												#4 Post Ck DGM ____ cf
												#4 Lk Ck Post ____ @ ____ in. Hg
												#5 Lk Ck Pre ____ @ ____ in. Hg
												#5 Pre Ck DGM ____ cf
												4-5 Total Ck DGM ____ cf
												Post Leak Check
												0.00 @ 7 in. Hg
												Pitot Leak Check @ >5 in. H_2O
												#2 = 0.00
												#4 = 0.00

FIELD DATA (ISOKINETIC SAMPLING)

Project # 120311 Run ID 3

Date 12/11/12 Type Test HCl CL2

Building Number 248-D Sampling Location LCD

Operators F.F.

SOURCE INFORMATION

Assumed Stack Temp. 125 °F Assumed Moisture 13.5 %

Assumed Meter Temp. 65 °F Static Pressure -.26 in. H_2O

Barometric Pressure 28.56 in. Hg Stack Cross Section 9.62 ft^2

Ambient Temp. 35 °F Number of Points 12

Total Sample Time 120 Min.

Meter Box # 5221 Meter Delta H 1.8935 Meter Y Factor .9929

Probe and Pitot # ~~P4D~~ P4B FF 12/11/12 Pitot Factor ✓ 0.84 ____ 0.99

Nozzle Diameter .250-1 in.

Thermocouples: TC ~~T7D~~ P4B FF 12/11/12 TC ____ TC ____

TC T7 FF 12/11/12 LI 6 HB 18

LAB DATA

Sample Box Number HC13 Filter Number 10 Orsat Can Number N/A

Impinger Initial 450 mL Impinger Final 678 mL

Silica Gel Initial 400 g Silica Gel Final 414.4 g

Sampling train run by: F.F.
Field data checked by: JLK
Data entered into spreadsheet by: F.F.
Data entry checked by: JLK

Eastman Chemical Company

Environmental Services Laboratory

Field Data (Isokinetic Sampling)

Date 12/11/19 Project Id 120311 Operators F. F.

Port Change Time	Point	Time (min)	634.255 Gas volume (ft^3)	ΔP (In. H_2O)	ΔH (In. H_2O)	Stack Temp (°F)	Probe Temp (°F)	Oven Temp (°F)	Exit Temp (°F)	Meter Temp (°F)	Pump Vacuum (In. Hg)
20:41	1	10	641.245	.57	1.79	125	255	257	40	45	3
20:58	2	10	648.52	.59	1.85	126	256	257	40	47	3
20:55	3	10	655.67	.57	1.79	126	257	257	48	48	3
	4	10	662.78	.56	1.75	125	257	257	45	50	3
	5	10	669.30	.47	1.47	125	258	258	44	52	2
21:45	6	10	675.621	.43	1.35	124	257	258	45	53	2
21:57	1	10	682.60	.50	1.57	123	257	258	43	53	3
	2	10	689.35	.49	1.53	125	257	258	43	54	3
	3	10	696.25	.50	1.57	125	258	258	43	55	3
	4	10	703.70	.55	1.72	10.6	259	259	43	56	3
	5	10	710.65	.53	1.66	126	259	259	44	57	2
22:57	6	10	717.125	.43	1.35	125	259	259	44	58	2

Leak Check

Pre Leak Check
@> 15 in. Hg = 0.00
Pitot Leak Check @ >5 – in H_2O
#2 = 0.00
#4 = 0.00

#1 Post Ck DGM 675.621 cf
#1 Lk Ck Post 0.00 @ 3 in. Hg
#2 Lk Ck Pre 0.00 @ 4 in. Hg
#2 Pre Ck DGM 675.645 cf
1-2 Total Ck DGM .024 cf

#2 Post Ck DGM ~~675.785~~ cf F.F.
#2 Lk Ck Post 12/11/19 @ _____ in. Hg
#3 Lk Ck Pre _____ @ _____ in. Hg
#3 Pre Ck DGM _____ cf
2-3 Total Ck DGM _____ cf

#3 Post Ck DGM _____ cf
#3 Lk Ck Post _____ @ _____ in. Hg
#4 Lk Ck Pre _____ @ _____ in. Hg
#4 Pre Ck DGM _____ cf
3-4 Total Ck DGM _____ cf

#4 Post Ck DGM _____ cf
#4 Lk Ck Post _____ @ _____ in. Hg
#5 Lk Ck Pre _____ @ _____ in. Hg
#5 Pre Ck DGM _____ cf
4-5 Total Ck DGM _____ cf

Post Leak Check
0.00 @ 7 in. Hg
Pitot Leak Check @ >5 in. H_2O
#2 = 0.00
#4 = 0.00

FIELD DATA (ISOKINETIC SAMPLING)

Project # 12-0311 Run ID 4

Date 12/12/12 Type Test HCl Cl2

Building Number 248D Sampling Location LCD

Operators F.F

SOURCE INFORMATION

Assumed Stack Temp. 125 °F Assumed Moisture 13.5 %

Assumed Meter Temp. 60 °F Static Pressure -.28 in. H_2O

Barometric Pressure 28.80 in. Hg Stack Cross Section 9.62 ft^2

Ambient Temp. 44 °F Number of Points 12

Total Sample Time 120 Min.

Meter Box # 5221 Meter Delta H 1.8935 Meter Y Factor .9929

Probe and Pitot # P4B Pitot Factor ✓ 0.84 ____ 0.99

Nozzle Diameter .250 in.

Thermocouples: TC 171 TC ____ TC ____

TC 170 LI 22 HB 18

LAB DATA

Sample Box Number HC2 Filter Number 11 Orsat Can Number 6

Impinger Initial 450 mL Impinger Final 680 mL

Silica Gel Initial 400 g Silica Gel Final 414.3 g

Sampling train run by: F.F.
Field data checked by: JLK
Data entered into spreadsheet by: F.F.
Data entry checked by: JLK

Eastman Chemical Company

Environmental Services Laboratory

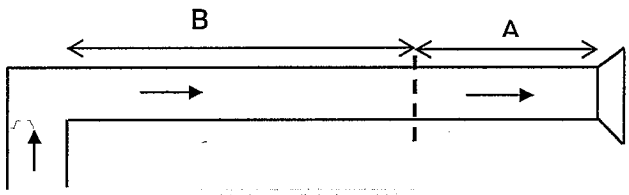
Field Data (Isokinetic Sampling)

Date 12/12/12 Project Id 12-0311 Operators F.F.

Port Change Time	Point	Time (min)	736.615 Gas volume (ft^3)	ΔP (In. H_2O)	ΔH (In. H_2O)	Stack Temp (°F)	Probe Temp (°F)	Oven Temp (°F)	Exit Temp (°F)	Meter Temp (°F)	Pump Vacuum (In. Hg)	Leak Check
15:00	1	10	742.63	.42	1.30	125	256	257	40	53	2	Pre Leak Check
15:26	2	10	748.83	.43	1.33	125	256	257	40	53	2	@> 15 in. Hg = 0.000
15:29	3	10	755.26	.45	1.40	125	257	257	41	54	2	Pitot Leak Check @ >5 – in H_2O
	4	10	762.00	.52	1.61	125	257	257	41	54	2	#2 = 0.00
	5	10	768.92	.53	1.64	126	257	258	41	56	3	#4 = 0.00
16:04	6	10	775.76	.49	1.52	126	258	258	40	57	3	#1 Post Ck DGM 775.76 cf
												#1 Lk Ck Post 0.000 @ 5 in. Hg
16:09	1	10	782.58	.49	1.52	125	258	259	41	58	3	#2 Lk Ck Pre 0.000 @ 7 in. Hg
	2	10	789.27	.50	1.55	125	258	259	40	59	3	#2 Pre Ck DGM 775.895 cf
	3	10	795.67	.47	1.46	125	258	259	40	59	3	1-2 Total Ck DGM .135 cf
	4	10	802.90	.47	1.46	124	258	259	39	60	3	#2 Post Ck DGM ~~775.895~~ FF cf
	5	10	809.51	.45	1.40	125	257	258	41	61	3	#2 Lk Ck Post 12/12/12 in. Hg
17:09	6	10	815.700	.41	1.27	126	257	257	42	61	3	#3 Lk Ck Pre _____ @ _____ in. Hg
												#3 Pre Ck DGM _____ cf
												2-3 Total Ck DGM _____ cf
												#3 Post Ck DGM _____ cf
												#3 Lk Ck Post _____ @ _____ in. Hg
												#4 Lk Ck Pre _____ @ _____ in. Hg
												#4 Pre Ck DGM _____ cf
												3-4 Total Ck DGM _____ cf
												#4 Post Ck DGM _____ cf
												#4 Lk Ck Post _____ @ _____ in. Hg
												#5 Lk Ck Pre _____ @ _____ in. Hg
												#5 Pre Ck DGM _____ cf
												4-5 Total Ck DGM _____ cf
												Post Leak Check
												0.00 @ 7 in. Hg
												Pitot Leak Check @ >5 in. H_2O
												#2 = 0.00
												#4 = 0.00

METHOD 1 AND 1A SAMPLE TRAVERSE POINTS

Project Number:	12-0311		
Plant/Company Name	Eastman Chemical Company		
Sampling Location	B-248 Destructor		
Number of ports	2		
Duct Diameter (in.):	42	Duct Area (ft^2):	9.62
Distance from outside of port to inside of duct (in.):	3.5		



A = Distance Upstream (in.):	135	Diameters Upstream:	3.21
B = Distance Downstream (in.):	338	Diameters Downstream:	8.05

	Velocity	Particulate
Min. Number of Traverse Points	12	12
Indicate the traverse needed (X)	x	
Minimum Number of Points:	12	

Point Number	Distance to be marked on probe inches
1	5.375
2	9.625
3	15.875
4	33.125
5	39.375
6	43.625
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Filled out by: TW Date: 12-10-12

Checked by: RZJ Date: 01/22/13

Cyclonic Flow and Velocity Profile Spreadsheet

Project Number	12-0311
Plant/Company Name	Eastman
Sampling Location	LCD
Number of ports	2
Pitot Used	P-4-E

Port Designation	1 (east side)		2 (north side)											
(for velocity profiles, a separate drawing of port orientation will be needed)														
Point	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC
1	0	0	5	0.04										
2	0	0	12	0.1										
3	2	0.02	10	0.07										
4	0	0	5	0.03										
5	2	0.02	7	0.05										
6	0	0	4	0.03										
7														
8														
9														
10														
11														
12														
13														
14														
15														

Number of points 12
Sum of ABS values 47
Yaw angle avg 3.9 Cyclonic flow check passed

Filled out by: Tim Hensley Date: 12/10/2012
Checked by: R. L. Zimmerman Date: 1/11/2013

Drawing of Port and Point Orientation at Sampling Location
Only needed for velocity profiles and at request of customer or project coordinator

Drawn by: _____

Eastman Chemical Company

Environmental Services Laboratory

Sample Chain-of-Custody Form

Project #/ID 12-0311 HCL/CL2/PM RZ 01/22/13

Plant Eastman Chemical Company

Source LCD

Run # 1

Date Sampled 12-11-12

Sample Description Box He-1 PW 2 Fltr 13

Place Label Here (if available)

SAMPLE CASE/CAN HANDLING	Signature	Date
Case Assembled by:	L. C	12-10-12
Sample Train Set-Up by:	Frank Tillery	12/11/12
Case Disassembled by:	L. C	12-11-12

For liquid samples, confirm that liquid level is at mark on sample container and check (✓) ↓

Relinquished By	Time	Date	Received By	Time	Date	(✓)
Frank Tillery	F.F. 12-11-12 ~~12:45~~ 14:50	12/11/12	L. C	DA-12-11-12 ~~13:05~~ 14:50	12/11/12	

Eastman Chemical Company

Environmental Services Laboratory

Sample Chain-of-Custody Form

Project #/ID 12-0311 HCL/CL2/PM 01/22/13

Plant Eastman Chemical Company

Source LCD

Run # 2

Date Sampled 12/11/12

Sample Description Box 9 PW 9 Fltr 12

Place Label Here (if available)

SAMPLE CASE/CAN HANDLING	Signature	Date
Case Assembled by:	D L. C	12-10-12
Sample Train Set-Up by:	Frank Fillers	12/11/12
Case Disassembled by:	D L. C	12-11-12

For liquid samples, confirm that liquid level is at mark on sample container and check (✓) ↓

Relinquished By	Time	Date	Received By	Time	Date	(✓)
Frank Fillers	18:40	12/11/12	D L. C	18:40	12-11-12	

Eastman Chemical Company

Environmental Services Laboratory

Sample Chain-of-Custody Form

Project #/ID 12-0311 HCL/CL2/PM RLB 01/22/13

Plant Eastman Chemical Company

Source LCD

Run # 3

Date Sampled 12/11/12

Sample Description Box 3 PW 1 Fltr 10

Place Label Here (if available)

SAMPLE CASE/CAN HANDLING	Signature	Date
Case Assembled by:	D. L. Cole	12-10-12
Sample Train Set-Up by:	Frank Fillers	12/11/12
Case Disassembled by:	D. L. Cole	12-11-12

Relinquished By	Time	Date	Received By	Time	Date	For liquid samples, confirm that liquid level is at mark on sample container and check (✓) ↓ (✓)
Frank Fillers	11:20	12-11-12	D. L. Cole	11:20	12-11-12	

Eastman Chemical Company

Environmental Services Laboratory

Sample Chain-of-Custody Form

Project #/ID 12-0311 HCL/CL2

Plant Eastman Chemical Company

Source LCD

Run # 4

Date Sampled 12-12-12

Sample Description Box HCL PW 2 Fltr F12

Place Label Here (if available)

SAMPLE CASE/CAN HANDLING

	Signature	Date
Case Assembled by:	[signature]	12-12-12
Sample Train Set-Up by:	Frank Tillery	12-12-12 EF 1/28/13 RZ 3.
Case Disassembled by:	[signature]	12-12-12

Relinquished By	Time	Date	Received By	Time	Date	For liquid samples, confirm that liquid level is at mark on sample container and check (✓) ↓ (✓)
Frank Tillery	1720	12/12/12	[signature]	1720	12/12/12	

Eastman Chemical Company

Environmental Services Laboratory

Sample Chain-of-Custody Form

Project #/ID 12-0311 HCL/CL2

Plant Eastman Chemical Company

Source LCD

Run # Field Blank

Date Sampled 12-11-12

Sample Description Box ~~1-6~~ PW 2 DA 12-11-12 Fltr 13 DA 12-11-12

Place Label Here (if available)

SAMPLE CASE/CAN HANDLING

	Signature	Date
Case Assembled by:	D. L. C	12-10-12
Sample Train Set-Up by:	Frank Fillers	12/11/12
Case Disassembled by:	D. L. C	12-11-12

Relinquished By	Time	Date	Received By	Time	Date	For liquid samples, confirm that liquid level is at mark on sample container and check (✓) ↓ (✓)
Frank Fillers	FF 12-11-12 ~~14:45~~ 9:30	12/11/12	D. L. C	DA 12-11-12 ~~13:05~~ 9:30	12-11-12	

(CHAIN_SMP_SEL_3RECD)

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

LIMS Job ID: ESL_12_2724 LCD CPT 12-0311 M26A Job created on 26-SEP-2012 10:13 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M26A_R1_092612_C01 770142 12-0311M26AR01C03	32 oz. poly	sign: D. L. Cal date: time: 12-11-12 13:20	sign: David Johnson date: time: 12.12.12 10:15	sign: Matt Brock date: time: 12-12-12 10:55	sign: date: time:
M26A_R1_092612_C02 770143 12-0311M26AR01C04	16oz poly W/Na2S2O3	sign: D. L. Cal date: time: 12-11-12 13:50	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

LIMS Job ID: ESL_12_2724 LCD CPT 12-0311 M26A Job created on 26-SEP-2012 10:13 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M26A_R2_092612_C01 770144 12-0311M26AR02C03	32 oz. poly	sign: D L Cal date: time: 12-11-12 8:30	sign: date: time: 12.12.12 10:15	sign: Matt Burk date: time: 12-12-12 10:55	sign: date: time:
M26A_R2_092612_C02 770145 12-0311M26AR02C04	16oz poly W/Na2S2O3	sign: D L Cal date: time: 12.11.12 8:45	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

(CHAIN_SMP_SEL_3RECD)

C H A I N - O F - C U S T O D Y (***CONTRACT***)

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Tennessee Eastman Division
P.O. Box 511
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Phone: (423) 229-2123 Fax: (423) 229-3677

LIMS Job ID: ESL_12_2724 LCD CPT 12-0311 M26A Job created on 26-SEP-2012 10:13 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M26A_R4_092612_C01 770148 12-0311M26AR04C03	32 oz. poly	sign: D. L. Cole date: time: 12-12-12 17:20	sign: Dennis Johnson date: time: 12-13-12 08:05	sign: Matt Buchanan date: time: 12-13-12 0825	sign: date: time:
M26A_R4_092612_C02 770149 12-0311M26AR04C04	16oz poly W/Na2S2O3	sign: D. L. Cole date: time: 12-12-12 17:45	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

(CHAIN_SMP_SEL_3RECD)

C H A I N - O F - C U S T O D Y (***CONTRACT***)

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Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

LIMS Job ID: ESL_12_2724 LCD CPT 12-0311 M26A Job created on 26-SEP-2012 10:13 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M26A_RGB_092612_C01 770152 12-0311M26ARGBC06	16oz poly	sign: D L. C date: 12-11-12 time: 10:40	sign: David Johnson date: 12-12-12 time: 10:15	sign: Matt Burk date: 12-12-12 time: 10:55	sign: date: time:
M26A_RGB_092612_C02 770153 12-0311M26ARGBC07	16oz poly W/Na2S2O3	sign: D L. C date: 12-11-12 time: 10:40	sign: date: time:	sign: date: time:	sign: date: time:
M26A_RGB_092612_C03 770154 12-0311M26ARGBC08	16oz poly	sign: D L. C date: 12-11-12 time: 10:40	sign: date: time:	sign: date: time:	sign: date: time:
M26A_FLB_092612_C01 770155 12-0311M26AFBC03	32 oz. poly	sign: D L. C date: 12-11-12 time: 10:05	sign: date: time:	sign: date: time:	sign: date: time:
M26A_FLB_092612_C02 770156 12-0311M26AFBC04	16oz poly W/Na2S2O3	sign: D L. C date: 12-11-12 time: 10:20	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

Pre-Test Meterbox Calibration Data and Results

Box Number:	5221	Ambient Temperature	70
Date:	6-Nov-12	Barometric Pressure	28.91

Thermometers: 359A-TI-WB-2

Leak Check: 0

	Gas Volume		Temperature		Time(θ)						
Orifice Manometer Setting ΔH in H_2O	Wet Test Meter (Vw) ft^3	Dry Gas Meter (V_d) ft^3	Wet Test Meter (tw) °F	Dry Gas Meter Outlet (tdo) °F	minutes	seconds	gamma (Γ)	Absolute Difference from Average	gamma (Γ) Status	ΔH	ΔH Status
0.5	5.00	5.029	70	72	13	8	0.9967	0.0038	ok	2.0098	ok
1	5.00	5.007	70	70	9	3	0.9961	0.0032	ok	1.9159	ok
1.5	10.00	10.225	70	77	14	40	0.9871	0.0058	ok	1.8624	ok
2	10.00	10.090	70	74	12	49	0.9935	0.0006	ok	1.9069	ok
3	10.00	10.133	70	75	10	14	0.9886	0.0043	ok	1.8201	ok
4	10.00	10.020	70	74	8	55	0.9954	0.0025	ok	1.8459	ok
							Average=	0.9929		Average=	1.8935

For a calibration run to be acceptable, the individual gamma vlaues must be within 0.02 of the 6 run average.

For a calibration run to be acceptable, the individual ΔH must be within 0.20 of the 6 run average.

Calibrated by: _____ Date: 6-Nov-12

Reviewed by: _____ Date: 6-Nov-12

Post-Test Meterbox Calibration Data and Results

Box Number:	5221	Ambient Temperature	71
Date:	13-Dec-12	Barometric Pressure	29.29

Thermometers: 359A-TI-WB-2

Leak Check: 0

	Gas Volume		Temperature			
Orifice Manometer Setting ΔH in H_2O	Wet Test Meter (Vw) ft^3	Dry Gas Meter (V_d) ft^3	Wet Test Meter (tw) °F	Dry Gas Meter Outlet (tdo) °F	gamma (Γ)	Pass/Fail
1.473	5.00	5.159	70	74	0.9729	
1.473	5.00	5.163	70	75	0.9740	
1.473	5.00	5.168	70	76	0.9748	
				Average=	0.9739	
				Pre-Test to Post-Test % Difference=	1.92%	Pass

For a Post-Test calibration to be acceptable the Post-Test Γ average must be within 5% of the Pre-Test Γ average.

Calibrated by: _____ **Date:** 12-13-12

Reviewed by: _____ **Date:** 12-13-12

Thermocouple Calibration Check

Project # 12-0311 LCD HCL/CL2

Reference Thermometer	Calibration Date	Calibration Due Date
359A-TI-DIG-31	01/03/2012	01/03/2013

Nomenclature Thermocouples were checked at ambient temperature and the limits were ± 2 F.

CB-I = Control Box Inlet Thermocouple
CB-O = Control Box Outlet Thermocouple
HB = Heater Box Thermocouple
LI = Last Impinger Thermocouple
TC = Removable Thermocouple

Thermocouple ID	Reading	Reference Thermometer ID	Reading
1 CB-5221	71	359A-TI-DIG-31	70.9
2 HB-18	72	359A-TI-DIG-31	72
3 LI-22	72	359A-TI-DIG-31	72.1
4 LI-6	72	359A-TI-DIG-31	72
5 TC-171	72	359A-TI-DIG-31	71.8
6 TC-170	70	359A-TI-DIG-31	71
7 TC-172	71	359A-TI-DIG-31	70.7
8 TC-173	70	359A-TI-DIG-31	70.5
9			
10			

Checked By: D. L. C. Date: 12-13-12

Reviewed By: Timothy C. Hensley Date: 12-13-12

NOZZLE CALIBRATION SHEET

Nozzle Number .250 - 1

Date 10-1-12

Measurement No. 1 .250 in.

2 .250 in.

3 .250 in.

Avg .250 in.

Acceptable if the difference between the maximum measurement and the minimum measurement is not greater than 0.004 inches.

Accept ✓

Reject _____

Conducted By [signature] Date 10-1-12

Reviewed By [signature] Date 10-1-12

PITOT DIMENSIONAL CALIBRATION FORM
S-Type Pitot Tube

Pitot Number: P-4-A

Pitot tube assembly level? ☑ Yes ☐ No

Pitot tube openings damaged? ☐ Yes ☑ No

If Yes, explain: _____

α_1 = 1 ° (<10°) α_2 = 2 ° (<10°)

β_1 = 3 ° (<5°) β_2 = 4 ° (<5°)

γ = 3 ° θ = 1.5 ° A = 2.7 cm

Z = A sin γ = 0.14 cm (<0.32 cm)

W = A sin θ = 0.07 cm (<0.08. cm)

$P = P_A = P_b = A/2$ 1.35 $P = P_A = P_b$ = 1.35 cm

D_t = 0.95 cm (Standard diameters: 3/8 inch pitots - 0.95 cm; ¼ inch pitots – 0.64 cm)

P / D_t = 1.42 (≥1.05 and ≤1.50)

Wind tunnel calibration required? ☐ Yes ☑ No

C_P = 0.84 (0.84 if no wind tunnel calibration is required)

Configuration (Check one):

Pitot only ☐ Pitot/thermocouple ☐ Probe/pitot assembly ☑

For pitot/thermocouple and probe/pitot assemblies:
Temperature sensor placement OK? ☑ Yes ☐ No

For probe/pitot assemblies:
Sampling nozzle placement OK? ☑ Yes ☐ No
Sample probe separation OK? ☑ Yes ☐ No

Comments: _____

Date: 10-2-06 Conducted by: [signature]

PITOT DIMENSIONAL CALIBRATION FORM
S-Type Pitot Tube

Pitot Number: D-4-B

Pitot tube assembly level? ☑ Yes ☐ No

Pitot tube openings damaged? ☐ Yes ☑ No

If Yes, explain: _____

α_1 = 0 ° (<10°) α_2 = 1.5 ° (<10°)

β_1 = 0.5 ° (<5°) β_2 = 2.0 ° (<5°)

γ = 1.0 ° θ = 1.0 ° A = 2.5 cm

Z = A sin γ = 0.04 cm (<0.32 cm)

W = A sin θ = 0.04 cm (<0.08. cm)

P = P_A = P_b = A/2 1.25 P = P_A = P_b = 1.25 cm

D_t = 0.95 cm (Standard diameters: 3/8 inch pitots - 0.95 cm; ¼ inch pitots – 0.64 cm)

P / D_t = 1.32 (≥1.05 and ≤1.50)

Wind tunnel calibration required? ☐ Yes ☑ No

Cp = 0.84 (0.84 if no wind tunnel calibration is required)

Configuration (Check one):

Pitot only ☐ Pitot/thermocouple ☐ Probe/pitot assembly ☑

For pitot/thermocouple and probe/pitot assemblies:
Temperature sensor placement OK? ☑ Yes ☐ No

For probe/pitot assemblies:
Sampling nozzle placement OK? ☑ Yes ☐ No
Sample probe separation OK? ☑ Yes ☐ No

Comments: _____

Date: 10-2-06 Conducted by: _____

1	Project		12-0311			A							B
2	Location		B-248 Destructor										
3	Date		12-11-12										
4		*	Added 0.35 g thiosulfate to containers #4 and RBLK #7										
5													
6	Run 1		IMP	Solution		INITIAL		FINAL			682 mL		
7	Box	HC1	1	.1N H_2SO_4		50 mL		120	mL				
8	PW	2	2	↓		100 mL		216	mL		162		
9	Filter	13	3	↓		100 mL		126	mL				
10	Petri	P-10	4	.1N NaOH		100 mL		104	mL				
11	BK	BK-28	5	↓		100 mL		96	mL		200		
12			6	S/G		400g		415.8g					
13	Added 202 mLs DI H_2O to RBLK #6 and FLB #3												
14	Added 0 mLs DI H_2O to RBLK #7 and FLB #4												
15													
16	Run 2		IMP	Solution		INITIAL		FINAL		12-13-12	664 mL		
17	Box	HC2	1	.1N H_2SO_4	C	50 mL		118	mL		174 mL		
18	PW	9	2	↓		100 mL		220	mL		466		
19	Filter	12	3	↓		100 mL		128	mL				
20	Petri	P5	4	.1N NaOH		100 mL		102	mL		198		
21	BK	19	5	↓		100 mL		96	mL				
22			6	S/G		400g		413.2g					
23													
24	Run 3		IMP	Solution		INITIAL		FINAL					
25	Box	HC3	1	.1N H_2SO_4		50 mL		140	mL				
26	PW	1	2	↓		100 mL		220	mL		594 mL		
27	Filter	10	3	↓		100 mL		234	mL				
28			4	.1N NaOH		100 mL		54	mL				
29			5	↓		100 mL		30	mL		84 mL		
30			6	S/G		400g		414.4g					
31											678 mL		
32													

Databook

Cont. HCl/Cl2/Part

Page № 111

	A					B	
Project	12-0311						1
Location	B-248 Destructor						2
Date	12-11-12						3
							4
FBLK	IMP SOLUTION	INITIAL	ZONAL				5
Box FB	1 .1N H2SO4	50 mL	50 mL				6
Filter WA	2	100 mL	100 mL				7
PW WA	3	100 mL	100 mL		450 mL		8
	4 .1N NaOH	100 mL	100 mL				9
	5	100 mL	100 mL				10
	6 S/G	400g	400g				11
							12
							13
Project	12-0311						14
Location	B-248 Destructor						15
DATE	12-12-12						16
	C					D	17
Run 4	IMP Solution	INITIAL	ZONAL				18
Box HC2	1 .1N H2SO4	50 mL	124 mL			680 mL	19
PW 2	2	100 mL	220 mL		474		20
Filt. F12	3	100 mL	130 mL				21
Pstc. P13	4 .1N NaOH	100 mL	106 mL		206 mL		22
BK 31	5	100 mL	100 mL				23
	6 S/G	400g	414.3g				24
							25
							26
							27
							28
							29
							30
							31
							32

TED 12604-2 (9-94)

13.3	% O2 Run 1 average

12-0311 LCD CPT CEMS %O2	Run 1		12-0311 LCD CPT CEMS %O2	Run 1		12-0311 LCD CPT CEMS %O2	Run 1	
Date & Time	%O2	Comment	Date & Time	%O2	Comment	Date & Time	%O2	Comment
11-Dec-12 12:11:00	13.42	Start Port 1 sampling	11-Dec-12 13:16:00	13.27		11-Dec-12 14:21:00	13.38	
11-Dec-12 12:12:00	13.42		11-Dec-12 13:17:00	13.26		11-Dec-12 14:22:00	13.39	
11-Dec-12 12:13:00	13.42		11-Dec-12 13:18:00	13.26		11-Dec-12 14:23:00	13.40	
11-Dec-12 12:14:00	13.42		11-Dec-12 13:19:00	13.25		11-Dec-12 14:24:00	13.41	
11-Dec-12 12:15:00	13.42		11-Dec-12 13:20:00	13.24		11-Dec-12 14:25:00	13.39	
11-Dec-12 12:16:00	13.41		11-Dec-12 13:21:00	13.24		11-Dec-12 14:26:00	13.35	
11-Dec-12 12:17:00	13.41		11-Dec-12 13:22:00	13.23		11-Dec-12 14:27:00	13.32	
11-Dec-12 12:18:00	13.37		11-Dec-12 13:23:00	13.23		11-Dec-12 14:28:00	13.28	
11-Dec-12 12:19:00	13.33		11-Dec-12 13:24:00	13.22		11-Dec-12 14:29:00	13.25	
11-Dec-12 12:20:00	13.28		11-Dec-12 13:25:00	13.21		11-Dec-12 14:30:00	13.24	
11-Dec-12 12:21:00	13.26		11-Dec-12 13:26:00	13.21		11-Dec-12 14:31:00	13.23	
11-Dec-12 12:22:00	13.29		11-Dec-12 13:27:00	13.20		11-Dec-12 14:32:00	13.23	
11-Dec-12 12:23:00	13.31		11-Dec-12 13:28:00	13.20		11-Dec-12 14:33:00	13.22	
11-Dec-12 12:24:00	13.34		11-Dec-12 13:29:00	13.19		11-Dec-12 14:34:00	13.22	
11-Dec-12 12:25:00	13.36		11-Dec-12 13:30:00	13.18		11-Dec-12 14:35:00	13.22	
11-Dec-12 12:26:00	13.39		11-Dec-12 13:31:00	13.19	Pause Port 1 sampling	11-Dec-12 14:36:00	13.22	
11-Dec-12 12:27:00	13.40		11-Dec-12 13:32:00	13.20		11-Dec-12 14:37:00	13.22	
11-Dec-12 12:28:00	13.40		11-Dec-12 13:33:00	13.21		11-Dec-12 14:38:00	13.21	
11-Dec-12 12:29:00	13.39		11-Dec-12 13:34:00	13.22		11-Dec-12 14:39:00	13.21	
11-Dec-12 12:30:00	13.39		11-Dec-12 13:35:00	13.23		11-Dec-12 14:40:00	13.21	
11-Dec-12 12:31:00	13.38		11-Dec-12 13:36:00	13.23		11-Dec-12 14:41:00	13.21	
11-Dec-12 12:32:00	13.38		11-Dec-12 13:37:00	13.24	Resume Port 1 sampling	11-Dec-12 14:42:00	13.20	
11-Dec-12 12:33:00	13.37		11-Dec-12 13:38:00	13.23		11-Dec-12 14:43:00	13.18	
11-Dec-12 12:34:00	13.37		11-Dec-12 13:39:00	13.23		11-Dec-12 14:44:00	13.17	
11-Dec-12 12:35:00	13.36		11-Dec-12 13:40:00	13.22		11-Dec-12 14:45:00	13.20	
11-Dec-12 12:36:00	13.36		11-Dec-12 13:41:00	13.21		11-Dec-12 14:46:00	13.24	
11-Dec-12 12:37:00	13.35		11-Dec-12 13:42:00	13.20		11-Dec-12 14:47:00	13.25	
11-Dec-12 12:38:00	13.34		11-Dec-12 13:43:00	13.19		11-Dec-12 14:48:00	13.25	
11-Dec-12 12:39:00	13.34		11-Dec-12 13:44:00	13.19		11-Dec-12 14:49:00	13.26	
11-Dec-12 12:40:00	13.33		11-Dec-12 13:45:00	13.18	End Port 1 sampling	11-Dec-12 14:50:00	13.26	
11-Dec-12 12:41:00	13.32		11-Dec-12 13:46:00	13.17		11-Dec-12 14:51:00	13.25	
11-Dec-12 12:42:00	13.32		11-Dec-12 13:47:00	13.16		11-Dec-12 14:52:00	13.24	
11-Dec-12 12:43:00	13.31		11-Dec-12 13:48:00	13.15		11-Dec-12 14:53:00	13.23	
11-Dec-12 12:44:00	13.31		11-Dec-12 13:49:00	13.14		11-Dec-12 14:54:00	13.22	
11-Dec-12 12:45:00	13.31		11-Dec-12 13:50:00	13.14		11-Dec-12 14:55:00	13.21	
11-Dec-12 12:46:00	13.31		11-Dec-12 13:51:00	13.13		11-Dec-12 14:56:00	13.20	
11-Dec-12 12:47:00	13.32		11-Dec-12 13:52:00	13.12		11-Dec-12 14:57:00	13.19	
11-Dec-12 12:48:00	13.32		11-Dec-12 13:53:00	13.12		11-Dec-12 14:58:00	13.17	
11-Dec-12 12:49:00	13.33		11-Dec-12 13:54:00	13.16	Start Port 2 sampling	11-Dec-12 14:59:00	13.15	
11-Dec-12 12:50:00	13.33		11-Dec-12 13:55:00	13.18		11-Dec-12 15:00:00	13.13	
11-Dec-12 12:51:00	13.34		11-Dec-12 13:56:00	13.18		11-Dec-12 15:01:00	13.12	
11-Dec-12 12:52:00	13.34		11-Dec-12 13:57:00	13.18		11-Dec-12 15:02:00	13.12	
11-Dec-12 12:53:00	13.35		11-Dec-12 13:58:00	13.18		11-Dec-12 15:03:00	13.12	
11-Dec-12 12:54:00	13.35		11-Dec-12 13:59:00	13.19		11-Dec-12 15:04:00	13.11	
11-Dec-12 12:55:00	13.34		11-Dec-12 14:00:00	13.19		11-Dec-12 15:05:00	13.11	
11-Dec-12 12:56:00	13.34		11-Dec-12 14:01:00	13.20		11-Dec-12 15:06:00	13.11	
11-Dec-12 12:57:00	13.33		11-Dec-12 14:02:00	13.19		11-Dec-12 15:07:00	13.11	
11-Dec-12 12:58:00	13.33		11-Dec-12 14:03:00	13.19		11-Dec-12 15:08:00	13.12	
11-Dec-12 12:59:00	13.32		11-Dec-12 14:04:00	13.19		11-Dec-12 15:09:00	13.14	
11-Dec-12 13:00:00	13.32		11-Dec-12 14:05:00	13.18		11-Dec-12 15:10:00	13.16	
11-Dec-12 13:01:00	13.32		11-Dec-12 14:06:00	13.18		11-Dec-12 15:11:00	13.18	
11-Dec-12 13:02:00	13.31		11-Dec-12 14:07:00	13.18		11-Dec-12 15:12:00	13.19	
11-Dec-12 13:03:00	13.31		11-Dec-12 14:08:00	13.17		11-Dec-12 15:13:00	13.20	
11-Dec-12 13:04:00	13.30		11-Dec-12 14:09:00	13.17		11-Dec-12 15:14:00	13.20	
11-Dec-12 13:05:00	13.30		11-Dec-12 14:10:00	13.17		11-Dec-12 15:15:00	13.20	
11-Dec-12 13:06:00	13.30		11-Dec-12 14:11:00	13.14		11-Dec-12 15:16:00	13.21	
11-Dec-12 13:07:00	13.29		11-Dec-12 14:12:00	13.11		11-Dec-12 15:17:00	13.22	
11-Dec-12 13:08:00	13.29		11-Dec-12 14:13:00	13.14		11-Dec-12 15:18:00	13.22	
11-Dec-12 13:09:00	13.30		11-Dec-12 14:14:00	13.27		11-Dec-12 15:19:00	13.23	
11-Dec-12 13:10:00	13.30		11-Dec-12 14:15:00	13.34		11-Dec-12 15:20:00	13.23	
11-Dec-12 13:11:00	13.30		11-Dec-12 14:16:00	13.42		11-Dec-12 15:21:00	13.22	
11-Dec-12 13:12:00	13.29		11-Dec-12 14:17:00	13.43		11-Dec-12 15:22:00	13.22	
11-Dec-12 13:13:00	13.29		11-Dec-12 14:18:00	13.42		11-Dec-12 15:23:00	13.22	End Port 2 Sampling
11-Dec-12 13:14:00	13.28		11-Dec-12 14:19:00	13.40				
11-Dec-12 13:15:00	13.27		11-Dec-12 14:20:00	13.39				

13.1	% O2 Run 2 average

12-0311 LCD CPT CEMS %O2	Run 2		12-0311 LCD CPT CEMS %O2	Run 2		12-0311 LCD CPT CEMS %O2	Run 2	
Date & Time	%O2	Comment	Date & Time	%O2	Comment	Date & Time	%O2	Comment
11-Dec-12 16:13:00	13.25	Start Port 1 sampling	11-Dec-12 17:26:00	13.16		11-Dec-12 18:39:00	13.04	
11-Dec-12 16:14:00	13.17		11-Dec-12 17:27:00	13.15		11-Dec-12 18:40:00	13.04	
11-Dec-12 16:15:00	13.18		11-Dec-12 17:28:00	13.15		11-Dec-12 18:41:00	13.03	
11-Dec-12 16:16:00	13.25		11-Dec-12 17:29:00	13.15		11-Dec-12 18:42:00	13.03	
11-Dec-12 16:17:00	13.25		11-Dec-12 17:30:00	13.17		11-Dec-12 18:43:00	13.03	
11-Dec-12 16:18:00	13.25		11-Dec-12 17:31:00	13.20		11-Dec-12 18:44:00	13.03	
11-Dec-12 16:19:00	13.24		11-Dec-12 17:32:00	13.22		11-Dec-12 18:45:00	13.03	
11-Dec-12 16:20:00	13.24		11-Dec-12 17:33:00	13.25		11-Dec-12 18:46:00	13.03	
11-Dec-12 16:21:00	13.24		11-Dec-12 17:34:00	13.27		11-Dec-12 18:47:00	13.03	
11-Dec-12 16:22:00	13.24		11-Dec-12 17:35:00	13.30		11-Dec-12 18:48:00	13.03	
11-Dec-12 16:23:00	13.24		11-Dec-12 17:36:00	13.28		11-Dec-12 18:49:00	13.03	
11-Dec-12 16:24:00	13.22		11-Dec-12 17:37:00	13.24		11-Dec-12 18:50:00	13.03	
11-Dec-12 16:25:00	13.21		11-Dec-12 17:38:00	13.20		11-Dec-12 18:51:00	13.03	
11-Dec-12 16:26:00	13.20		11-Dec-12 17:39:00	13.18		11-Dec-12 18:52:00	13.03	
11-Dec-12 16:27:00	13.19		11-Dec-12 17:40:00	13.18		11-Dec-12 18:53:00	13.04	
11-Dec-12 16:28:00	13.18		11-Dec-12 17:41:00	13.19		11-Dec-12 18:54:00	13.06	
11-Dec-12 16:29:00	13.16		11-Dec-12 17:42:00	13.19	End Port 1 sampling	11-Dec-12 18:55:00	13.08	
11-Dec-12 16:30:00	13.15		11-Dec-12 17:43:00	13.20		11-Dec-12 18:56:00	13.09	
11-Dec-12 16:31:00	13.14		11-Dec-12 17:44:00	13.21		11-Dec-12 18:57:00	13.10	
11-Dec-12 16:32:00	13.13		11-Dec-12 17:45:00	13.21		11-Dec-12 18:58:00	13.10	
11-Dec-12 16:33:00	13.12		11-Dec-12 17:46:00	13.22		11-Dec-12 18:59:00	13.10	
11-Dec-12 16:34:00	13.11		11-Dec-12 17:47:00	13.23		11-Dec-12 19:00:00	13.11	
11-Dec-12 16:35:00	13.11		11-Dec-12 17:48:00	13.24		11-Dec-12 19:01:00	13.11	
11-Dec-12 16:36:00	13.10		11-Dec-12 17:49:00	13.25		11-Dec-12 19:02:00	13.11	
11-Dec-12 16:37:00	13.10		11-Dec-12 17:50:00	13.26		11-Dec-12 19:03:00	13.12	
11-Dec-12 16:38:00	13.10		11-Dec-12 17:51:00	13.27		11-Dec-12 19:04:00	13.12	
11-Dec-12 16:39:00	13.09		11-Dec-12 17:52:00	13.27		11-Dec-12 19:05:00	13.15	
11-Dec-12 16:40:00	13.12		11-Dec-12 17:53:00	13.27		11-Dec-12 19:06:00	13.21	
11-Dec-12 16:41:00	13.14		11-Dec-12 17:54:00	13.27		11-Dec-12 19:07:00	13.21	
11-Dec-12 16:42:00	13.17		11-Dec-12 17:55:00	13.27		11-Dec-12 19:08:00	13.20	
11-Dec-12 16:43:00	13.20		11-Dec-12 17:56:00	13.27		11-Dec-12 19:09:00	13.19	
11-Dec-12 16:44:00	13.22		11-Dec-12 17:57:00	13.26		11-Dec-12 19:10:00	13.18	
11-Dec-12 16:45:00	13.22		11-Dec-12 17:58:00	13.26		11-Dec-12 19:11:00	13.17	
11-Dec-12 16:46:00	13.22		11-Dec-12 17:59:00	13.26		11-Dec-12 19:12:00	13.17	
11-Dec-12 16:47:00	13.21		11-Dec-12 18:00:00	13.26		11-Dec-12 19:13:00	13.17	
11-Dec-12 16:48:00	13.21		11-Dec-12 18:01:00	13.28		11-Dec-12 19:14:00	13.18	
11-Dec-12 16:49:00	13.21		11-Dec-12 18:02:00	13.27		11-Dec-12 19:15:00	13.18	
11-Dec-12 16:50:00	13.20		11-Dec-12 18:03:00	13.25		11-Dec-12 19:16:00	13.18	
11-Dec-12 16:51:00	13.20		11-Dec-12 18:04:00	13.23		11-Dec-12 19:17:00	13.18	
11-Dec-12 16:52:00	13.18		11-Dec-12 18:05:00	13.22		11-Dec-12 19:18:00	13.17	
11-Dec-12 16:53:00	13.17		11-Dec-12 18:06:00	13.20		11-Dec-12 19:19:00	13.16	
11-Dec-12 16:54:00	13.15		11-Dec-12 18:07:00	13.18		11-Dec-12 19:20:00	13.15	
11-Dec-12 16:55:00	13.14		11-Dec-12 18:08:00	13.17		11-Dec-12 19:21:00	13.14	
11-Dec-12 16:56:00	13.14		11-Dec-12 18:09:00	13.15		11-Dec-12 19:22:00	13.13	
11-Dec-12 16:57:00	13.14		11-Dec-12 18:10:00	13.14		11-Dec-12 19:23:00	13.11	
11-Dec-12 16:58:00	13.13		11-Dec-12 18:11:00	13.13		11-Dec-12 19:24:00	13.09	
11-Dec-12 16:59:00	13.13		11-Dec-12 18:12:00	13.12		11-Dec-12 19:25:00	13.11	
11-Dec-12 17:00:00	13.13		11-Dec-12 18:13:00	13.12		11-Dec-12 19:26:00	13.14	
11-Dec-12 17:01:00	13.13		11-Dec-12 18:14:00	13.12		11-Dec-12 19:27:00	13.17	
11-Dec-12 17:02:00	13.13		11-Dec-12 18:15:00	13.12		11-Dec-12 19:28:00	13.19	
11-Dec-12 17:03:00	13.14		11-Dec-12 18:16:00	13.12		11-Dec-12 19:29:00	13.22	
11-Dec-12 17:04:00	13.14		11-Dec-12 18:17:00	13.13		11-Dec-12 19:30:00	13.23	
11-Dec-12 17:05:00	13.14		11-Dec-12 18:18:00	13.13		11-Dec-12 19:31:00	13.22	
11-Dec-12 17:06:00	13.14		11-Dec-12 18:19:00	13.13		11-Dec-12 19:32:00	13.20	
11-Dec-12 17:07:00	13.14		11-Dec-12 18:20:00	13.13		11-Dec-12 19:33:00	13.19	
11-Dec-12 17:08:00	13.14		11-Dec-12 18:21:00	13.13	Start Port 2 sampling	11-Dec-12 19:34:00	13.18	
11-Dec-12 17:09:00	13.15		11-Dec-12 18:22:00	13.15		11-Dec-12 19:35:00	13.17	
11-Dec-12 17:10:00	13.15		11-Dec-12 18:23:00	13.16		11-Dec-12 19:36:00	13.16	
11-Dec-12 17:11:00	13.15		11-Dec-12 18:24:00	13.17		11-Dec-12 19:37:00	13.15	
11-Dec-12 17:12:00	13.15		11-Dec-12 18:25:00	13.18		11-Dec-12 19:38:00	13.13	
11-Dec-12 17:13:00	13.15		11-Dec-12 18:26:00	13.20		11-Dec-12 19:39:00	13.13	
11-Dec-12 17:14:00	13.15		11-Dec-12 18:27:00	13.19		11-Dec-12 19:40:00	13.12	
11-Dec-12 17:15:00	13.15		11-Dec-12 18:28:00	13.12		11-Dec-12 19:41:00	13.12	
11-Dec-12 17:16:00	13.15		11-Dec-12 18:29:00	13.05		11-Dec-12 19:42:00	13.11	
11-Dec-12 17:17:00	13.15		11-Dec-12 18:30:00	12.99		11-Dec-12 19:43:00	13.11	
11-Dec-12 17:18:00	13.16		11-Dec-12 18:31:00	12.92		11-Dec-12 19:44:00	13.11	
11-Dec-12 17:19:00	13.16		11-Dec-12 18:32:00	12.94		11-Dec-12 19:45:00	13.11	
11-Dec-12 17:20:00	13.16		11-Dec-12 18:33:00	12.97		11-Dec-12 19:46:00	13.11	
11-Dec-12 17:21:00	13.16		11-Dec-12 18:34:00	13.02		11-Dec-12 19:47:00	13.12	
11-Dec-12 17:22:00	13.16		11-Dec-12 18:35:00	13.06		11-Dec-12 19:48:00	13.12	
11-Dec-12 17:23:00	13.16		11-Dec-12 18:36:00	13.06		11-Dec-12 19:49:00	13.12	
11-Dec-12 17:24:00	13.17		11-Dec-12 18:37:00	13.06		11-Dec-12 19:50:00	13.10	End Port 2 Sampling
11-Dec-12 17:25:00	13.17		11-Dec-12 18:38:00	13.05				

13.0	% O2 Run 3 average

12-0311 LCD CPT CEMS %O2	Run 3		12-0311 LCD CPT CEMS %O2	Run 3		12-0311 LCD CPT CEMS %O2	Run 3	
Date & Time	%O2	Comment	Date & Time	%O2	Comment	Date & Time	%O2	Comment
11-Dec-12 20:42:00	13.01	Start Port 1 sampling	11-Dec-12 21:45:00	13.04		11-Dec-12 22:48:00	13.01	
11-Dec-12 20:43:00	13.03		11-Dec-12 21:46:00	13.11		11-Dec-12 22:49:00	13.02	
11-Dec-12 20:44:00	13.04		11-Dec-12 21:47:00	13.10		11-Dec-12 22:50:00	13.01	
11-Dec-12 20:45:00	13.08		11-Dec-12 21:48:00	13.10		11-Dec-12 22:51:00	13.01	
11-Dec-12 20:46:00	13.20		11-Dec-12 21:49:00	13.09		11-Dec-12 22:52:00	13.00	
11-Dec-12 20:47:00	13.13		11-Dec-12 21:50:00	13.09		11-Dec-12 22:53:00	12.99	
11-Dec-12 20:48:00	13.06		11-Dec-12 21:51:00	13.09		11-Dec-12 22:54:00	13.01	
11-Dec-12 20:49:00	13.00		11-Dec-12 21:52:00	13.08		11-Dec-12 22:55:00	13.03	
11-Dec-12 20:50:00	12.99		11-Dec-12 21:53:00	13.08		11-Dec-12 22:56:00	13.05	
11-Dec-12 20:51:00	12.97		11-Dec-12 21:54:00	13.07		11-Dec-12 22:57:00	13.05	
11-Dec-12 20:52:00	12.96		11-Dec-12 21:55:00	13.07		11-Dec-12 22:58:00	13.04	
11-Dec-12 20:53:00	12.99		11-Dec-12 21:56:00	13.06		11-Dec-12 22:59:00	13.02	
11-Dec-12 20:54:00	13.01		11-Dec-12 21:57:00	13.05		11-Dec-12 23:00:00	13.01	
11-Dec-12 20:55:00	13.01		11-Dec-12 21:58:00	13.03		11-Dec-12 23:01:00	13.00	
11-Dec-12 20:56:00	13.01		11-Dec-12 21:59:00	13.02		11-Dec-12 23:02:00	13.00	
11-Dec-12 20:57:00	13.01		11-Dec-12 22:00:00	13.01		11-Dec-12 23:03:00	13.01	
11-Dec-12 20:58:00	13.00		11-Dec-12 22:01:00	13.02		11-Dec-12 23:04:00	13.01	
11-Dec-12 20:59:00	13.00		11-Dec-12 22:02:00	13.03		11-Dec-12 23:05:00	13.01	
11-Dec-12 21:00:00	13.00		11-Dec-12 22:03:00	13.05		11-Dec-12 23:06:00	13.02	
11-Dec-12 21:01:00	12.99		11-Dec-12 22:04:00	13.06		11-Dec-12 23:07:00	13.02	
11-Dec-12 21:02:00	12.99		11-Dec-12 22:05:00	13.08		11-Dec-12 23:08:00	13.03	
11-Dec-12 21:03:00	12.97		11-Dec-12 22:06:00	13.03		11-Dec-12 23:09:00	13.03	
11-Dec-12 21:04:00	12.94		11-Dec-12 22:07:00	12.96		11-Dec-12 23:10:00	13.02	
11-Dec-12 21:05:00	12.96		11-Dec-12 22:08:00	12.97		11-Dec-12 23:11:00	13.01	
11-Dec-12 21:06:00	12.98		11-Dec-12 22:09:00	12.97		11-Dec-12 23:12:00	13.02	
11-Dec-12 21:07:00	12.99		11-Dec-12 22:10:00	12.96		11-Dec-12 23:13:00	13.04	
11-Dec-12 21:08:00	12.99		11-Dec-12 22:11:00	12.96	End Port 1 sampling	11-Dec-12 23:14:00	13.05	
11-Dec-12 21:09:00	12.99		11-Dec-12 22:12:00	12.95		11-Dec-12 23:15:00	13.07	
11-Dec-12 21:10:00	12.98		11-Dec-12 22:13:00	12.95		11-Dec-12 23:16:00	13.07	
11-Dec-12 21:11:00	12.98		11-Dec-12 22:14:00	12.95		11-Dec-12 23:17:00	13.07	
11-Dec-12 21:12:00	12.97		11-Dec-12 22:15:00	12.95		11-Dec-12 23:18:00	13.07	
11-Dec-12 21:13:00	12.97		11-Dec-12 22:16:00	12.95		11-Dec-12 23:19:00	13.07	
11-Dec-12 21:14:00	12.96		11-Dec-12 22:17:00	12.94		11-Dec-12 23:20:00	13.07	
11-Dec-12 21:15:00	12.95		11-Dec-12 22:18:00	12.94		11-Dec-12 23:21:00	13.06	
11-Dec-12 21:16:00	12.95		11-Dec-12 22:19:00	12.94		11-Dec-12 23:22:00	13.06	
11-Dec-12 21:17:00	12.95		11-Dec-12 22:20:00	12.95		11-Dec-12 23:23:00	13.05	
11-Dec-12 21:18:00	12.94		11-Dec-12 22:21:00	12.95	Start Port 2 sampling	11-Dec-12 23:24:00	13.05	
11-Dec-12 21:19:00	12.94		11-Dec-12 22:22:00	12.95		11-Dec-12 23:25:00	13.04	
11-Dec-12 21:20:00	12.93		11-Dec-12 22:23:00	12.95		11-Dec-12 23:26:00	13.04	
11-Dec-12 21:21:00	12.93		11-Dec-12 22:24:00	12.95		11-Dec-12 23:27:00	13.04	
11-Dec-12 21:22:00	12.92		11-Dec-12 22:25:00	12.95		11-Dec-12 23:28:00	13.03	
11-Dec-12 21:23:00	12.93		11-Dec-12 22:26:00	12.94		11-Dec-12 23:29:00	13.03	
11-Dec-12 21:24:00	12.94		11-Dec-12 22:27:00	12.94		11-Dec-12 23:30:00	13.02	
11-Dec-12 21:25:00	12.95		11-Dec-12 22:28:00	12.94		11-Dec-12 23:31:00	13.00	
11-Dec-12 21:26:00	12.96		11-Dec-12 22:29:00	12.91		11-Dec-12 23:32:00	13.01	
11-Dec-12 21:27:00	12.98		11-Dec-12 22:30:00	12.91		11-Dec-12 23:33:00	13.01	
11-Dec-12 21:28:00	12.98		11-Dec-12 22:31:00	12.93		11-Dec-12 23:34:00	13.02	
11-Dec-12 21:29:00	12.98		11-Dec-12 22:32:00	12.96		11-Dec-12 23:35:00	13.03	
11-Dec-12 21:30:00	12.97		11-Dec-12 22:33:00	12.98		11-Dec-12 23:36:00	13.02	
11-Dec-12 21:31:00	12.95		11-Dec-12 22:34:00	13.05		11-Dec-12 23:37:00	13.01	
11-Dec-12 21:32:00	13.07		11-Dec-12 22:35:00	13.14		11-Dec-12 23:38:00	13.00	
11-Dec-12 21:33:00	13.14		11-Dec-12 22:36:00	13.14		11-Dec-12 23:39:00	12.99	
11-Dec-12 21:34:00	13.13		11-Dec-12 22:37:00	13.14		11-Dec-12 23:40:00	13.03	
11-Dec-12 21:35:00	13.11		11-Dec-12 22:38:00	13.14		11-Dec-12 23:41:00	13.06	
11-Dec-12 21:36:00	13.09		11-Dec-12 22:39:00	13.14		11-Dec-12 23:42:00	13.07	
11-Dec-12 21:37:00	13.07		11-Dec-12 22:40:00	13.14		11-Dec-12 23:43:00	13.08	
11-Dec-12 21:38:00	13.08		11-Dec-12 22:41:00	13.13		11-Dec-12 23:44:00	13.10	
11-Dec-12 21:39:00	13.09		11-Dec-12 22:42:00	13.13		11-Dec-12 23:45:00	13.10	
11-Dec-12 21:40:00	12.97		11-Dec-12 22:43:00	13.13		11-Dec-12 23:46:00	13.10	
11-Dec-12 21:41:00	12.91		11-Dec-12 22:44:00	13.13		11-Dec-12 23:47:00	13.09	
11-Dec-12 21:42:00	12.92		11-Dec-12 22:45:00	13.12		11-Dec-12 23:48:00	13.09	
11-Dec-12 21:43:00	12.92		11-Dec-12 22:46:00	13.00		11-Dec-12 23:49:00	13.09	
11-Dec-12 21:44:00	12.98		11-Dec-12 22:47:00	12.99		11-Dec-12 23:50:00	13.09	End Port 2 Sampling

13.2	% O2 Run 4 average

12-0311 LCD CPT CEMS %O2	Run 4		12-0311 LCD CPT CEMS %O2	Run 4	
Date & Time	%O2	Comment	Date & Time	%O2	Comment
12-Dec-12 15:01:00	13.28	Start Port 1 sampling	12-Dec-12 16:06:00	13.16	
12-Dec-12 15:02:00	13.28		12-Dec-12 16:07:00	13.16	
12-Dec-12 15:03:00	13.28		12-Dec-12 16:08:00	13.15	
12-Dec-12 15:04:00	13.28		12-Dec-12 16:09:00	13.15	
12-Dec-12 15:05:00	13.28		12-Dec-12 16:10:00	13.16	Start Port 2 sampling
12-Dec-12 15:06:00	13.28		12-Dec-12 16:11:00	13.17	
12-Dec-12 15:07:00	13.28		12-Dec-12 16:12:00	13.18	
12-Dec-12 15:08:00	13.28		12-Dec-12 16:13:00	13.19	
12-Dec-12 15:09:00	13.28		12-Dec-12 16:14:00	13.20	
12-Dec-12 15:10:00	13.28		12-Dec-12 16:15:00	13.21	
12-Dec-12 15:11:00	13.28		12-Dec-12 16:16:00	13.22	
12-Dec-12 15:12:00	13.28		12-Dec-12 16:17:00	13.23	
12-Dec-12 15:13:00	13.28		12-Dec-12 16:18:00	13.24	
12-Dec-12 15:14:00	13.27		12-Dec-12 16:19:00	13.24	
12-Dec-12 15:15:00	13.27		12-Dec-12 16:20:00	13.23	
12-Dec-12 15:16:00	13.27		12-Dec-12 16:21:00	13.22	
12-Dec-12 15:17:00	13.27		12-Dec-12 16:22:00	13.20	
12-Dec-12 15:18:00	13.32		12-Dec-12 16:23:00	13.19	
12-Dec-12 15:19:00	13.39		12-Dec-12 16:24:00	13.18	
12-Dec-12 15:20:00	12.89		12-Dec-12 16:25:00	13.17	
12-Dec-12 15:21:00	12.79		12-Dec-12 16:26:00	13.16	
12-Dec-12 15:22:00	13.26		12-Dec-12 16:27:00	13.15	
12-Dec-12 15:23:00	13.47		12-Dec-12 16:28:00	13.14	
12-Dec-12 15:24:00	13.34		12-Dec-12 16:29:00	13.14	
12-Dec-12 15:25:00	12.97		12-Dec-12 16:30:00	13.14	
12-Dec-12 15:26:00	13.02	Pause Port 1 sampling	12-Dec-12 16:31:00	13.14	
12-Dec-12 15:27:00	13.13		12-Dec-12 16:32:00	13.14	
12-Dec-12 15:28:00	13.13		12-Dec-12 16:33:00	13.14	
12-Dec-12 15:29:00	13.12		12-Dec-12 16:34:00	13.17	
12-Dec-12 15:30:00	13.15		12-Dec-12 16:35:00	13.20	
12-Dec-12 15:31:00	13.18	Resume Port 1 sampling	12-Dec-12 16:36:00	13.21	
12-Dec-12 15:32:00	13.21		12-Dec-12 16:37:00	13.21	
12-Dec-12 15:33:00	13.23		12-Dec-12 16:38:00	13.20	
12-Dec-12 15:34:00	13.22		12-Dec-12 16:39:00	13.20	
12-Dec-12 15:35:00	13.22		12-Dec-12 16:40:00	13.20	
12-Dec-12 15:36:00	13.22		12-Dec-12 16:41:00	13.20	
12-Dec-12 15:37:00	13.22		12-Dec-12 16:42:00	13.19	
12-Dec-12 15:38:00	13.23		12-Dec-12 16:43:00	13.19	
12-Dec-12 15:39:00	13.23		12-Dec-12 16:44:00	13.19	
12-Dec-12 15:40:00	13.23		12-Dec-12 16:45:00	13.18	
12-Dec-12 15:41:00	13.20		12-Dec-12 16:46:00	13.18	
12-Dec-12 15:42:00	13.18		12-Dec-12 16:47:00	13.18	
12-Dec-12 15:43:00	13.18		12-Dec-12 16:48:00	13.17	
12-Dec-12 15:44:00	13.18		12-Dec-12 16:49:00	13.17	
12-Dec-12 15:45:00	13.19		12-Dec-12 16:50:00	13.16	
12-Dec-12 15:46:00	13.19		12-Dec-12 16:51:00	13.16	
12-Dec-12 15:47:00	13.19		12-Dec-12 16:52:00	13.16	
12-Dec-12 15:48:00	13.19		12-Dec-12 16:53:00	13.15	
12-Dec-12 15:49:00	13.17		12-Dec-12 16:54:00	13.16	
12-Dec-12 15:50:00	13.16		12-Dec-12 16:55:00	13.16	
12-Dec-12 15:51:00	13.17		12-Dec-12 16:56:00	13.17	
12-Dec-12 15:52:00	13.17		12-Dec-12 16:57:00	13.18	
12-Dec-12 15:53:00	13.18		12-Dec-12 16:58:00	13.18	
12-Dec-12 15:54:00	13.19		12-Dec-12 16:59:00	13.19	
12-Dec-12 15:55:00	13.20		12-Dec-12 17:00:00	13.21	
12-Dec-12 15:56:00	13.21		12-Dec-12 17:01:00	13.22	
12-Dec-12 15:57:00	13.23		12-Dec-12 17:02:00	13.24	
12-Dec-12 15:58:00	13.23		12-Dec-12 17:03:00	13.25	
12-Dec-12 15:59:00	13.23		12-Dec-12 17:04:00	13.27	
12-Dec-12 16:00:00	13.22		12-Dec-12 17:05:00	13.28	
12-Dec-12 16:01:00	13.21		12-Dec-12 17:06:00	13.27	
12-Dec-12 16:02:00	13.20		12-Dec-12 17:07:00	13.27	
12-Dec-12 16:03:00	13.19		12-Dec-12 17:08:00	13.26	
12-Dec-12 16:04:00	13.18	End Port 1 sampling	12-Dec-12 17:09:00	13.25	End Port 2 Sampling
12-Dec-12 16:05:00	13.17				

INTEGRATED BAG SAMPLING

Project Number: 12-0311	Can ID: 6	
Date: 12/12/12	Run Number: 4	Bag Material: ☒ Tedlar ☐ Other (specify):
Sampling Location: LCD		
Sample Collected by: Frank Fillers	Pre-test Leak Check @ 15 inches Hg	
Analysis Required: (check all that apply) ☐ O_2 ☑ CO_2 ☐ CO ☐ Other (specify):		

Time		Rotameter Setting during run	Remarks
Run Start	Run Stop		
15:00	17:09	250 cc min	

Sample Can/Bag Chain-of-Custody

(not necessary if a Sample Chain-of-Custody Form, EMS-5011, is completed for the Can/Bag)

Relinquished By	Date	Time	Received By	Date	Time
Frank Fillers	12/12/12	1720	[signature]	12/12/12	1720

Eastman Chemical Company | Environmental Services Laboratory

US EPA Methods 3A and 10 Analysis for Integrated Bag Sample

Project ID: 12-0311 | Date: 12-12-2012

Instrument Data

	O_2	CO_2	CO
Calibration Span		18	
Units (ppm or %)	%	%	PPM

Calibration

	Pre-Test			Post-Test		
	O_2, %	CO_2, %	CO, ppmdv	O_2, %	CO_2, %	CO, ppmdv
Low:						
Gas Value	0.0	0.0	0.0	0.0	0.0	0.0
Instrument Reading		0.0				
Error (% of cal span)		0.19				
Span:						
Gas Value		18.2			18.2	
Instrument Reading		18.1				
Error (% of cal span)		-0.17				
Mid:						
Gas Value		8.1			8.1	
Instrument Reading		8.1				
Error (% of cal span)		0.06				

Sampling System Bias Check

		Pre-Test			Post-Test		
Select Mid or Span gas	Mid		x				
by entering "x"	Span						
Gas selected			Mid			Mid	
Gas Value			8.1			8.1	
Pretest Calibration Value			8.1			8.1	
Instrument Reading			8.2			8.2	
Sampling System Cal Error			0.56			0.45	
Sampling System Bias			0.51			0.40	
Calibration Drift						-0.11	
Zero:							
Gas Value							
Instrument Reading			0.0			0.1	
Sampling System Cal Error			0.20			0.77	
Sampling System Bias			0.02			0.58	
Calibration Drift						0.57	

US EPA Methods 3A and 10 Analysis for Integrated Bag Sample

Project ID: 12-0311

Date: 12-12-2012

Analysis Results

Enter "OR" if instrument reading is OVER RANGE.

Run ID: 4 Sample ID: Can 6

Dilution Gas: Air [ ] N2 [ ] (Specify by entering "x".)

Dilution	Time	O_2, %	CO_2, %	CO, ppmdv
0	18:00		6.1	
1				
2				

Results: Specify Dilution Gas

CO_2 = 6.1 %

O_2 = %

CO = %

Enter "OR" if instrument reading is OVER RANGE.

Run ID: Sample ID:

Dilution Gas: Air [ ] N2 [ ] (Specify by entering "x".)

Dilution	Time	O_2, %	CO_2, %	CO, ppmdv
0				
1				
2				

Results: Specify Dilution Gas

CO_2 = %

O_2 = %

CO = %

Enter "OR" if instrument reading is OVER RANGE.

Run ID: Sample ID:

Dilution Gas: Air [ ] N2 [ ] (Specify by entering "x".)

Dilution	Time	O_2, %	CO_2, %	CO, ppmdv
0				
1				
2				

Results: Specify Dilution Gas

CO_2 = %

O_2 = %

CO = %

Enter "OR" if instrument reading is OVER RANGE.

Run ID: Sample ID:

Dilution Gas: Air [ ] N2 [ ] (Specify by entering "x".)

Dilution	Time	O_2, %	CO_2, %	CO, ppmdv
0				
1				
2				

Results: Specify Dilution Gas

CO_2 = %

O_2 = %

CO = %

Enter "OR" if instrument reading is OVER RANGE.

Run ID: Sample ID:

Dilution Gas: Air [ ] N2 [ ] (Specify by entering "x".)

Dilution	Time	O_2, %	CO_2, %	CO, ppmdv
0				
1				
2				

Results: Specify Dilution Gas

CO_2 = %

O_2 = %

CO = %

Analyst: ____________ Reviewed by: ____________

Eastman Chemical Company

Environmental Services Laboratory

Balance Calibration Check Form

Balance Identification Number: 359A-WB-P-736

Balance Manufacturer and Model Number: Mettler/Toledo AG204

X□ Analytical Balance (4 place) □ Top-Loading Balance (1 place)

		Check weights		Check weight identifications			
Date	Analyst	10.0000g	100.0000g	359A-WM-7-0188			
11-19-12	CA	10.0001	100.0001	✓			
11-20-12	CA	10.0000	100.0000	✓			
11-29-12	CA	10.0000	100.0000	✓			
11-30-12	RZ.J.	10.0000	99.9992	✓	Balance internal cal not done before check wts.		RZJ. 12/3/12
12-3-12	CA	10.0001	100.0001	✓			
12-4-12	CA	10.0001	100.0001	✓			
12-5-12	CA	10.0001	100.0001	✓			
12-12-12	CA	10.0001	100.0001	✓			
12-13-12	CA	10.0000	100.0001	✓			
12-17-12	CA	10.0001	100.0001	✓			

Standard Balance Checks

Balance Type	Check weights used*	Corrective Action Level
Analytical Balance	10 g, 100 g	0.4 mg (0.0004 g)
Top-loading Balance	100 g, 500 g	0.2 g

Balance Calibration Check Form

Balance Identification Number: 359A-WB-P-662

Balance Manufacturer and Model Number: Mettler/Toledo Pb-1501-S

□ Analytical Balance (4 place) X□ Top-Loading Balance (1 place)

		Check weights		Check weight identifications			
Date	Analyst	100.0g	500.0g	359A-M-7-0188	359A-WM-1-0401		
12/3/12	CA	100.0	500.0	✓	✓		
12-4-12	CA	100.0	500.0	✓	✓		
12-5-12	CA	100.0	500.0	✓	✓		
12-10-12	CA	100.0	500.0	✓	✓		
12-11-12	CA	100.0	500.0	✓	✓		
12-17-12	CA	100.0	500.0	✓	✓		

Standard Balance Checks

Balance Type	Check weights used*	Corrective Action Level
Analytical Balance	10 g, 100 g	0.4 mg (0.0004 g)
Top-loading Balance	100 g, 500 g	0.2 g

B-248 LCD CPT run 3 sampling train for Particulate and HCl/Cl_2

During the pre-run leak check of the sampling train for Particulate and HCl/Cl_2 for run 3 on 12/11/2012, an irregular sample vacuum was interpreted as evidence of a leak in the sampling train. After all potential leak points were examined, a proper stable vacuum was achieved and the train passed its pre-run leak check. After the leak check, a visual inspection of the impingers in the impinger box confirmed the expected presence of liquid in each of the first five impingers: moisture knockout trap (#1), acid impingers (#2 and #3), and alkaline impingers (#4 and #5). Consequently, the train was considered ready for sampling, but the precise volumes of absorbing solutions in each impinger were not verified after the pre-run leak check.

Shortly after run 3 emission sampling was initiated, the sample pump for the Particulate and HCl/Cl_2 sampling train again began to produce an irregular sample vacuum, and unusually frequent adjustments were needed to maintain an isokinetic sampling rate. Therefore, sampling for Particulate and HCl/Cl_2 was interrupted after ten minutes of emissions sampling for run 3, and the sample pump for the Particulate and HCl/Cl_2 train was replaced. Sampling for Particulate and HCl/Cl_2 was resumed after a 4-minute hiatus. The Multiple Metals sampling train was unaffected, but sampling for Multiple Metals was paused for the same time interval to maintain coordination between both sampling trains on the upper sampling platform. The remaining 110 minutes of emissions sampling for both trains for run 3 was completed uneventfully, and post-run leak checks for both trains were passed. Run 3 sampling for Polychlorinated dibenzo (p) dioxins and furans at the lower sampling platform proceeded without interruption.

During sample recovery of the Particulate and HCl/Cl_2 sampling train for run 3, it was discovered that more than half of the contents of the alkaline impingers (#4 and #5) had backed up into the second acid impinger (#3). It is believed that the irregular vacuum noted during the pre-run leak check of this train resulted from an intermittent problem with the sample pump instead of a leak in the train, and that the fluctuating vacuum caused impingers #4 and #5 to back up into impinger #3 during the pre-run leak check. Consequently, Method 26A HCl/Cl_2 sampling for run 3 was not executed properly, so no samples for HCl or Cl_2 from run 3 were analyzed. However, Method 5 Particulate sampling for run 3 was executed properly, so Particulate samples recovered from this train for run 3 were desiccated and analyzed gravimetrically in a manner identical to Particulate samples for runs 1 and 2. Additionally, the volume and mass of the impingers for run 3 were measured to determine stack gas moisture content during this run, which was found to be within 0.1% of the average moisture content for runs 1, 2 and 3.

On 12/12/2012, another sampling train only for HCl/Cl_2 was prepared and leak-checked, and another 2-hour sampling run, run 4, was conducted only for HCl/Cl_2. Samples for HCl and Cl_2 from run 4 were analyzed in a manner identical to HCl and Cl_2 samples for runs 1 and 2.

APPENDIX I-B

DIOXIN/FURAN DATA PACKAGE

Compliance Test Report

Test Date(s) December 11, 2012

Test Location Eastman Chemical Company
Tennessee Operations
Eastman Road
Kingsport, TN 37660

Source(s) Tested Liquid Chemical Destructor (LCD)

Project Number 2012-0209

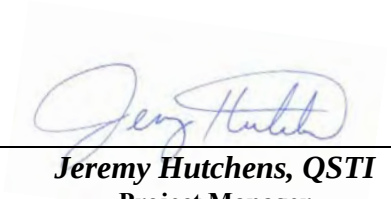
Report Prepared by Alliance Source Testing, LLC
214 Central Circle SW
Decatur, Alabama 35603

Report Submittal Date February 21, 2013

Certification Statement

Alliance Source Testing, LLC (AST) of Decatur, AL has completed the source testing as described in this report. Results apply only to the source(s) tested and operating condition(s) for the specific test date(s) and time(s) identified within this report. All results are intended to be considered in their entirety, and AST is not responsible for use of less than the complete test report without written consent. This report shall not be reproduced in full or in part without written approval from the customer.

To the best of my knowledge and abilities, all information, facts and test data are correct. Data presented in this report has been checked for completeness and is accurate, error-free and legible. Onsite testing was conducted in accordance with approved internal Standard Operating Procedures. Any deviations or problems are detailed in the relevant sections on the test report.



Jeremy Hutchens, QSTI
Project Manager
Alliance Source Testing, LLC

2/21/13
Date

This document was prepared in portable document format (.pdf) and contains pages as identified in the bottom footer of this document.

Questions or comments regarding this report should be directed to the persons identified below.

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Introduction

1.0 Introduction

Alliance Source Testing, LLC (AST) was retained by Eastman Chemical Company, Tennessee Operations (Eastman) to conduct compliance emission testing at the Kingsport, Tennessee facility. Eastman owns and operates a Resource Conservation and Recovery Act (RCRA) hazardous waste incineration facility consisting of two (2) rotary kiln incinerators and a liquid chemical destructor (LCD). Testing was conducted as part of a Comprehensive Performance Test (CPT) at the LCD which is used for incineration of hazardous liquid wastes. AST was contracted to perform the polychlorinated dibenzo (p) dioxins and furans (D/F) portion of the emission testing.

1.1 Source and Control System Descriptions

The RCRA-hazardous waste incineration facility consists of two (2) rotary kiln incinerators and a LCD. This report only addresses testing of the LCD and not the rotary kiln incinerators. The LCD's air pollution control system consists of a quench chamber to cool the flue gas, a multi-rod scrubber to remove acid gas and coarse particulate, and two (2) wet electrostatic precipitators (WESPs) in series for fine particulate removal. The cleaned, cooled flue gas exits the second WESP and is drawn through a variable speed ID fan that directs the gas to a stack which exhausts the cleaned gas to the atmosphere.

1.2 Project Team

Personnel involved in this project are identified in the following table.

Table 1-1
Project Team

AST Personnel	Eastman Personnel
Jeremy Hutchens – Project Manager & Test Team Leader Brandy Hughes – Report Coordinator Drew Sloan – Technician	Rick Zimmerman – Stack Sampling Coordinator
	Regulatory Personnel
	John Webb – TDEC Observer

Summary of Results

2.0 Summary of Results

AST conducted compliance demonstration testing at the Eastman facility in Kingsport, TN. Testing was conducted on December 11, 2012 and consisted of determining DF emissions from the LCD.

Table 2-1 provides a summary of the emission testing results with a comparison to the applicable limit. Any difference between the summary results listed in the following table and the detailed results contained in Appendix B is due to rounding for presentation.

Table 2-1
Summary of Testing Results

Run Number	Run 1	Run 2	Run 3	Average
Date	**12/11/12**	**12/11/12**	**12/11/12**	**--**
Dioxin/Furan Congener Data[a]				
2,3,7,8-TCDD Concentration, ng/dscm @ 7% O_2	1.1E-03[b]	8.8E-04[b]	1.7E-03	1.2E-03
1,2,3,7,8 PeCDD Concentration, ng/dscm @ 7% O_2	2.5E-03	4.1E-03	2.9E-03	3.2E-03
1,2,3,4,7,8 HxCDD Concentration, ng/dscm @ 7% O_2	3.2E-03	3.0E-03	2.3E-03	2.8E-03
1,2,3,6,7,8 HxCDD Concentration, ng/dscm @ 7% O_2	6.3E-03	5.1E-03	3.6E-03[c]	5.0E-03
1,2,3,7,8,9 HxCDD Concentration, ng/dscm @ 7% O_2	4.0E-03	3.9E-03[c]	3.9E-03	3.9E-03
1,2,3,4,6,7,8 HpCDD Concentration, ng/dscm @ 7% O_2	1.7E-02	2.4E-02	2.1E-02	2.1E-02
OCDD Concentration, ng/dscm @ 7% O_2	2.1E-02	3.4E-02	2.5E-02	2.7E-02
2,3,7,8-TCDF Concentration, ng/dscm @ 7% O_2	1.5E-02	1.4E-02	1.5E-02	1.4E-02
1,2,3,7,8 PeCDF Concentration, ng/dscm @ 7% O_2	1.7E-02	2.0E-02	2.4E-02	2.0E-02
2,3,4,7,8 PeCDF Concentration, ng/dscm @ 7% O_2	2.6E-02	3.0E-02	3.3E-02	3.0E-02
1,2,3,4,7,8 HxCD Concentration, ng/dscm @ 7% O_2	2.9E-02	3.8E-02	4.1E-02	3.6E-02
1,2,3,6,7,8 HxCDF Concentration, ng/dscm @ 7% O_2	2.1E-02	3.1E-02	3.2E-02	2.8E-02
2,3,4,6,7,8 HxCDF Concentration, ng/dscm @ 7% O_2	1.9E-02	2.8E-02	2.8E-02	2.5E-02
1,2,3,7,8,9 HxCDF Concentration, ng/dscm @ 7% O_2	1.5E-03[b]	2.0E-03[b]	1.9E-03[b]	1.8E-03
1,2,3,4,6,7,8 HpCDF Concentration, ng/dscm @ 7% O_2	5.1E-02[d]	7.9E-02	8.7E-02	7.2E-02
1,2,3,4,7,8,9 HpCDF Concentration, ng/dscm @ 7% O_2	1.0E-02	1.5E-02	1.7E-02	1.4E-02
OCDF Concentration, ng/dscm @ 7% O_2	2.1E-01[d]	1.7E-01[d]	1.6E-01[d]	1.8E-01
Total D/F Concentration, ng TEQ/dscm @ 7% O_2	0.03	0.03	0.04	0.03
D/F Limit, ng TEQ/dscm @ 7% O_2	--	--	--	0.4
Percent of Limit, %	--	--	--	8

[a] D/F TEQ values were calculated using 1989 NATO TEFs.

[b] Reported as Non-Detect (ND) by the laboratory.

[c] Reported as Estimated Maximum Potential Concentration (EMPC) by the laboratory.

[d] Found in the method blank at a concentration at least 10% of the concentration in the sample.

Testing Methodology

3.0 Testing Methodology

The emission testing program was conducted in accordance with the U.S. EPA Reference Test Methods listed in Table 3-1. Method descriptions are provided below while quality assurance/quality control data is provided in Appendix D.

Table 3-1
Source Testing Methodology

Parameter	U.S. EPA Reference Test Methods	Notes/Remarks
Volumetric Flow Rate (VFR)	1 & 2	Full Velocity Traverses
Carbon Dioxide (CO_2)	3/3A	Integrated Bag/Instrumental Analysis
Moisture Content (BWS)	4	Volumetric / Gravimetric Analysis
Dioxin/Furan (D/F)	23/ALT-052	Isokinetic Sampling

3.1 U.S. EPA Reference Test Methods 1 & 2 – Volumetric Flow Rate

The sampling location and number of traverse (sampling) points were selected in accordance with U.S. EPA Reference Test Method 1. A full velocity traverse was conducted in accordance with U.S. EPA Reference Test Method 2 to determine the average stack gas velocity pressure, static pressure and temperature. The velocity and static pressure measurement system consisted of an S-type pitot tube and inclined manometer while the stack gas temperature was measured with a K-type thermocouple and pyrometer.

3.2 U.S. EPA Reference Method 3/3A – Carbon Dioxide

The carbon dioxide concentrations were determined in accordance with U.S. EPA Reference Method 3/3A. One (1) integrated bag sample was collected during each test run. Each bag sample was analyzed with a California Analytical Instruments Model 200P O_2/CO_2 analyzer. The oxygen concentrations were provided by the facility continuous emission monitoring system (CEMS). The remaining stack gas constituent was assumed to be nitrogen for the stack gas molecular weight determination.

3.3 U.S. EPA Reference Test Method 4 – Moisture Content

The stack gas moisture content was determined in accordance with U.S. EPA Reference Test Method 4. The gas conditioning train consisted of a series of chilled impingers. The impinger contents were pre and post-measured to determine the amount of moisture condensed during each test run.

3.4 U.S. EPA Reference Test Method 23/Alternative Method 052 – Dioxin/Furan

The dioxin and furan concentrations were determined in accordance with EPA Reference Method 23 with guidance from Alternative Method 052. All glassware leading to the XAD adsorbing resin was cleaned at AST's laboratory before mobilizing to the site. Glassware cleaning consisted of washing with warm soapy water and rinsing with distilled water and acetone. Once the glassware was dry, the open ends were sealed with Teflon tape. SGS in Wilmington, North Carolina provided the pre-cleaned filters and pre-cleaned, packed and spiked XAD resin traps.

The impinger train was assembled in the sample recovery area. The first impinger (shortened stem) was empty and used for a knockout impinger. The next two (2) impingers contained 100 mL of deionized water. The fourth impinger was initially empty while the fifth impinger was charged with approximately 200-300 grams of indicating silica gel. Impinger 3 was a Greenburg-Smith impinger with standard tip while impingers 2, 4 and 5 had modified tips. The pre-cleaned glass fiber filter was placed in a glass filter holder with a Teflon-coated filter support and connected to the condenser coil. All open ends of the sampling train were sealed with Teflon tape prior to complete assembly at the sampling location.

The complete sampling system consisted of a glass nozzle, heated glass-lined probe, glass filter holder with pre-cleaned glass-fiber filter, condenser coil, XAD resin trap, gas conditioning train, pump and calibrated dry gas meter. The probe and filter box temperatures were maintained at approximately 250°F. The sorbent module resin and impinger temperatures were maintained at or below 68^{o}F throughout the testing.

Following the completion of each test run, the sampling train was leak checked at a vacuum pressure greater than or equal to the highest vacuum pressure observed during the run. The filter was removed from the filter holder and placed in sample Container 1. The XAD sorbent module was sealed on both ends and placed on ice. The nozzle, probe liner, filter holder, condenser and all connecting glassware were triple-rinsed with acetone, and these rinses were recovered in sample Container 2. All glassware cleaned for sample Container 2, except the condenser, was also triple-rinsed with toluene. Three (3) 5-minute soaks with toluene were conducted on the condenser. The toluene rinses were recovered in sample Container 3.

A field blank was collected prior to initiating testing. A complete sampling system was placed at the sampling location and multiple leak checks were performed on the system similar to an actual testing scenario. The sample train was then moved to the mobile laboratory for recovery. A full set of regent blanks including a filter and a trap were also submitted for analysis.

All samples were sealed, labeled, stored on ice for transport to AST's laboratory in Decatur, AL and then refrigerated and stored under lock and key. The samples were then transported to SGS Analytical Perspectives by an AST courier on December 17, 2012. The sample analysis was performed by high resolution gas chromatography and high resolution mass spectrometry.

3.5 Quality Assurance/Quality Control – U.S. EPA Reference Test Method 3/3A

EPA Protocol 1 Calibration Gases – Cylinder calibration gases were supplied by NexAir which meet EPA Protocol 1 (+/- 2%) standards

Calibration – The instrument was calibrated directly with zero nitrogen, mid-level and high-level (span) gases prior to analyzing each bag sample.

Data Collection – Data was recorded directly from the instrument display and entered into the Method 5 field data sheet.

Appendix A

Meter Pressure (Pm), in. Hg

$$Pm = Pb + \frac{\Delta H}{13.6}$$

where,

Pb	28.56	= barometric pressure, in. Hg
ΔH	1.750	= pressure differential of orifice, in H_2O
Pm	28.69	= in. Hg

Absolute Stack Gas Pressure (Ps), in. Hg

$$Ps = Pb + \frac{Pg}{13.6}$$

where,

Pb	28.56	= barometric pressure, in. Hg
Pg	-0.27	= static pressure, in. H_2O
Ps	28.54	= in. Hg

Standard Meter Volume (Vmstd), dscf

$$Vmstd = \frac{17.647 \times Y \times Vm \times Pm}{Tm}$$

where,

Y	1.004	= meter correction factor
Vm	121.893	= meter volume, cf
Pm	28.69	= absolute meter pressure, in. Hg
Tm	534.8	= absolute meter temperature, °R
Vmstd	115.863	= dscf

Standard Wet Volume (Vwstd), scf

$$Vwstd = 0.04707 \times Vlc$$

where,

Vlc	345.6	= volume of H_2O collected, ml
Vwstd	16.267	= scf

Moisture Fraction (BWSsat), dimensionless (theoretical at saturated conditions)

$$BWSsat = \frac{10^{6.37 - \left(\frac{2,827}{Ts + 365}\right)}}{Ps}$$

where,

Ts	126.3	= stack temperature, °F
Ps	28.54	= absolute stack gas pressure, in. Hg
BWSsat	0.144	= dimensionless

Moisture Fraction (BWSmsd), dimensionless (measured)

$$BWS = \frac{Vwstd}{(Vwstd + Vmstd)}$$

where,

Vwstd	16.267	= standard wet volume, scf
Vmstd	115.863	= standard meter volume, dscf
BWS	0.123	= dimensionless

Moisture Fraction (BWS), dimensionless

$$BWS = BWSmsd \text{ unless } BWSsat < BWSmsd$$

where,

BWSsat	0.144	= moisture fraction (theoretical at saturated conditions)
BWSmsd	0.123	= moisture fraction (measured)
BWS	0.123	

Molecular Weight (DRY) (Md), lb/lb-mole

$$Md = (0.44 \times \%\ CO_2) + (0.32 \times \%\ O_2) + (0.28\ (100 - \%\ CO_2 - \%\ O_2))$$

where,

CO_2	6.3	= carbon dioxide concentration, %
O_2	13.3	= oxygen concentration, %
Md	29.54	= lb/lb mol

Molecular Weight (WET) (Ms), lb/lb-mole

$$Ms = Md\ (1 - BWS) + 18\ (BWS)$$

where,

Md	29.54	= molecular weight (DRY), lb/lb mol
BWS	0.123	= moisture fraction, dimensionless
Ms	28.12	= lb/lb mol

Average Velocity (Vs), ft/sec

$$Vs = 85.49 \times Cp \times (\Delta P^{1/2})\,avg \times \sqrt{\frac{Ts}{Ps\ x\ Ms}}$$

where,

Cp	0.84	= pitot tube coefficient
$\Delta P^{1/2}$	0.693	= velocity head of stack gas, $(\text{in. } H_2O)^{1/2}$
Ts	586.3	= absolute stack temperature, °R
Ps	28.54	= absolute stack gas pressure, in. Hg
Ms	28.12	= molecular weight of stack gas, lb/lb mol
Vs	42.5	= ft/sec

Average Stack Gas Flow at Stack Conditions (Qa), acfm

$$Qa = 60 \times Vs \times As$$

where,

Vs	42.5	= stack gas velocity, ft/sec
As	9.62	= cross-sectional area of stack, ft^2
Qa	24,560	= acfm

Average Stack Gas Flow at Standard Conditions (Qs), dscfm

$$Qs = 17.647 \times Qa \times (1 - BWS) \times \frac{Ps}{Ts}$$

where,

Qa	24,560	= average stack gas flow at stack conditions, acfm
BWS	0.123	= moisture fraction, dimensionless
Ps	28.54	= absolute stack gas pressure, in. Hg
Ts	586.3	= absolute stack temperature, °R
Qs	18,502	= dscfm

D/F TEQ Concentration ($C_{D/F}$), ng TEQ/dscm

$$C_{D/F} = \frac{M_{D/F} \times 35.313}{Vmstd \times 1.0E+03}$$

where,

$M_{D/F}$	49.1	= D/F TEQ mass, pg
Vmstd	115.863	= standard meter volume, dscf
$C_{D/F}$	0.01	= ng TEQ/dscm

D/F TEQ Concentration (corrected) ($C_{D/Fc-7}$), ng TEQ/dscm @ 7% O_2

$$C_{D/Fc-7} = \frac{M_{D/F} \times 35.313}{Vmstd \times 1.0E+03} \times \frac{20.9-7}{20.9-O_2}$$

where,

$M_{D/F}$	49.1	= D/F TEQ mass, pg
Vmstd	115.863	= standard meter volume, dscf
$C_{D/Fc-7}$	0.03	= ng TEQ/dscm @ 7% O_2

Appendix B

Alliance
SOURCE TESTING

Emission Calculations

Location: Eastman - Kingsport

Source: LCD

Project No.: 12-0209

Run Number		Run 1	Run 2	Run 3	Average
Date		12/11/12	12/11/12	12/11/12	--
Start Time		12:10 PM	4:12 PM	8:41 PM	--
Stop Time		3:23 PM	7:50 PM	11:50 PM	--
Run Time, min	(θ)	180.0	180.0	180.0	180.0
INPUT DATA					
Barometric Pressure, in. Hg	(Pb)	28.56	28.56	28.56	28.56
Meter Correction Factor	(Y)	1.004	1.004	1.004	1.004
Orifice Calibration Value	(ΔH @)	2.085	2.085	2.085	2.085
Meter Volume, ft^3	(Vm)	121.893	123.898	126.122	123.971
Meter Temperature, °F	(Tm)	74.8	75.1	77.2	75.7
Meter Temperature, °R	(Tm)	534.8	535.1	537.2	535.7
Meter Orifice Pressure, in. WC	(ΔH)	1.750	1.791	1.822	1.788
Volume H_2O Collected, mL	(Vlc)	345.6	346.4	369.5	353.8
Nozzle Diameter, in	(Dn)	0.252	0.256	0.252	0.253
Area of Nozzle, ft^2	(An)	0.00035	0.00036	0.00035	0.00035
D/F TEQ Mass, pg	($M_{D/F}$)	49.1	61.8	67.2	59.4
2,3,7,8-TCDD Mass, pg		*2*	*1.66*	3.2	2.29
1,2,3,7,8 PeCDD Mass, pg		4.58	7.8	5.54	5.97
1,2,3,4,7,8 HxCDD Mass, pg		5.79	5.63	4.35	5.26
1,2,3,6,7,8 HxCDD Mass, pg		11.3	9.5	*6.96*	9.25
1,2,3,7,8,9 HxCDD Mass, pg		7.27	*7.26*	7.45	7.33
1,2,3,4,6,7,8 HpCDD Mass, pg		30.2	46	39.9	38.70
OCDD Mass, pg		38.2	64.1	47.6	49.97
2,3,7,8-TCDF Mass, pg		27.2	25.4	28.6	27.07
1,2,3,7,8 PeCDF Mass, pg		30	37.3	45.5	37.60
2,3,4,7,8 PeCDF Mass, pg		47.3	57	63	55.77
1,2,3,4,7,8 HxCDF Mass, pg		51.5	71.3	79.2	67.33
1,2,3,6,7,8 HxCDF Mass, pg		37.2	57.7	62.4	52.43
2,3,4,6,7,8 HxCDF Mass, pg		35.1	52.3	54.3	47.23
1,2,3,7,8,9 HxCDF Mass, pg		*2.71*	*3.8*	*3.6*	3.37
1,2,3,4,6,7,8 HpCDF Mass, pg		91.7	148	168	135.90
1,2,3,4,7,8,9 HpCDF Mass, pg		18.5	28.9	32.7	26.70
OCDF Mass, pg		377	319	302	332.67
ISOKINETIC DATA					
Standard Meter Volume, ft^3	(Vmstd)	115.863	117.712	119.360	117.645
Standard Water Volume, ft^3	(Vwstd)	16.267	16.305	17.392	16.655
Moisture Fraction Measured	(BWSmsd)	0.123	0.122	0.127	0.124
Moisture Fraction @ Saturation	(BWSsat)	0.144	0.140	0.135	0.140
Moisture Fraction	(BWS)	0.123	0.122	0.127	0.124
Meter Pressure, in Hg	(Pm)	28.69	28.69	28.69	28.69
Volume at Nozzle, ft^3	(Vn)	153.812	155.718	158.592	156.041
Isokinetic Sampling Rate, (%)	(I)	96.6	95.6	99.1	97.1
DGM Calibration Check Value, (+/- 5%)	(Y_{qa})	-2.9	-2.4	-1.7	-2.3
EMISSION CALCULATIONS					
D/F TEQ Concentration (corrected), ng/dscm @ 7% O_2	(C_{DFc-7})	2.7E-02	3.3E-02	3.5E-02	3.2E-02
2,3,7,8-TCDD Concentration (corrected), ng/dscm @ 7% O_2		*1.1E-03*	*8.8E-04*	1.7E-03	1.2E-03
1,2,3,7,8 PeCDD Concentration (corrected), ng/dscm @ 7% O_2		2.5E-03	4.1E-03	2.9E-03	3.2E-03
1,2,3,4,7,8 HxCDD Concentration (corrected), ng/dscm @ 7% O_2		3.2E-03	3.0E-03	2.3E-03	2.8E-03
1,2,3,6,7,8 HxCDD Concentration (corrected), ng/dscm @ 7% O_2		6.3E-03	5.1E-03	*3.6E-03*	5.0E-03
1,2,3,7,8,9 HxCDD Concentration (corrected), ng/dscm @ 7% O_2		4.0E-03	*3.9E-03*	3.9E-03	3.9E-03
1,2,3,4,6,7,8 HpCDD Concentration (corrected), ng/dscm @ 7% O_2		1.7E-02	2.4E-02	2.1E-02	2.1E-02
OCDD Concentration (corrected), ng/dscm @ 7% O_2		2.1E-02	3.4E-02	2.5E-02	2.7E-02
2,3,7,8-TCDF Concentration (corrected), ng/dscm @ 7% O_2		1.5E-02	1.4E-02	1.5E-02	1.4E-02
1,2,3,7,8 PeCDF Concentration (corrected), ng/dscm @ 7% O_2		1.7E-02	2.0E-02	2.4E-02	2.0E-02
2,3,4,7,8 PeCDF Concentration (corrected), ng/dscm @ 7% O_2		2.6E-02	3.0E-02	3.3E-02	3.0E-02
1,2,3,4,7,8 HxCDF Concentration (corrected), ng/dscm @ 7% O_2		2.9E-02	3.8E-02	4.1E-02	3.6E-02
1,2,3,6,7,8 HxCDF Concentration (corrected), ng/dscm @ 7% O_2		2.1E-02	3.1E-02	3.2E-02	2.8E-02
2,3,4,6,7,8 HxCDF Concentration (corrected), ng/dscm @ 7% O_2		1.9E-02	2.8E-02	2.8E-02	2.5E-02
1,2,3,7,8,9 HxCDF Concentration (corrected), ng/dscm @ 7% O_2		*1.5E-03*	*2.0E-03*	*1.9E-03*	1.8E-03
1,2,3,4,6,7,8 HpCDF Concentration (corrected), ng/dscm @ 7% O_2		5.1E-02	7.9E-02	8.7E-02	7.2E-02
1,2,3,4,7,8,9 HpCDF Concentration (corrected), ng/dscm @ 7% O_2		1.0E-02	1.5E-02	1.7E-02	1.4E-02
OCDF Concentration (corrected), ng/dscm @ 7% O_2		2.1E-01	1.7E-01	1.6E-01	1.8E-01

Alliance SOURCE TESTING

Volumetric Flow Rate Data

Location: Eastman - Kingsport

Source: LCD

Project No.: 12-0209

Run Number		Run 1	Run 2	Run 3	Average
Date		12/11/12	12/11/12	12/11/12	--
Start Time		12:10 PM	4:12 PM	8:41 PM	--
Stop Time		3:23 PM	7:50 PM	11:50 PM	--
Run Time, min		180.0	180.0	180.0	180.0
VELOCITY HEAD, in. WC					
Point 1		0.44	0.45	0.49	0.46
Point 2		0.48	0.48	0.49	0.48
Point 3		0.50	0.50	0.50	0.50
Point 4		0.49	0.48	0.48	0.48
Point 5		0.50	0.48	0.50	0.49
Point 6		0.49	0.50	0.52	0.50
Point 7		0.47	0.48	0.48	0.48
Point 8		0.43	0.46	0.44	0.44
Point 9		0.42	0.43	0.43	0.43
Point 10		0.48	0.44	0.45	0.46
Point 11		0.46	0.45	0.45	0.45
Point 12		0.46	0.45	0.47	0.46
Point 13		0.52	0.50	0.53	0.52
Point 14		0.56	0.53	0.56	0.55
Point 15		0.55	0.51	0.55	0.54
Point 16		0.45	0.41	0.46	0.44
CALCULATED DATA					
Square Root of ΔP, (in. WC)$^{1/2}$	(ΔP)	0.693	0.687	0.698	0.692
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84
Barometric Pressure, in. Hg	(Pb)	28.56	28.56	28.56	28.56
Static Pressure, in. WC	(Pg)	-0.27	-0.25	-0.25	-0.26
Stack Pressure, in. Hg	(Ps)	28.54	28.54	28.54	28.54
Stack Cross-sectional Area, ft^2	(As)	9.62	9.62	9.62	9.62
Temperature, °F	(Ts)	126.3	125.2	124.1	125.2
Temperature, °R	(Ts)	586.3	585.2	584.1	585.2
Moisture Fraction Measured	(BWSmsd)	0.123	0.122	0.127	0.124
Moisture Fraction @ Saturation	(BWSsat)	0.144	0.140	0.135	0.140
Moisture Fraction	(BWS)	0.123	0.122	0.127	0.124
CO_2 Concentration, %	(CO_2)	6.3	6.4	6.4	6.4
O_2 Concentration, %	(O_2)	13.3	13.1	13.0	13.1
Molecular Weight, lb/lb-mole (dry)	(Md)	29.54	29.55	29.54	29.54
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.12	28.14	28.08	28.11
Velocity, ft/sec	(Vs)	42.5	42.1	42.8	42.5
VOLUMETRIC FLOW RATE					
At Stack Conditions, acfm	(Qa)	24,560	24,292	24,693	24,515
At Standard Conditions, dscfm	(Qs)	18,502	18,365	18,586	18,484

Alliance SOURCE TESTING

Method 1 Data

Location: Eastman - Kingsport
Date: 10/01/12

Source: LCD
Project No.: 12-0209

Distance from far wall to outside of port: 48.50 in.
Nipple length: 6.50 in.
Depth of Duct (Ds): 42.00 in.
Cross Sectional Area of Duct (As): 9.62 ft²
No. of ports: 2

Distance A: 17.2 ft. 4.9 Duct Diameters
Distance B: 22.3 ft. 6.4 Duct Diameters

Number of traverse points total: 16

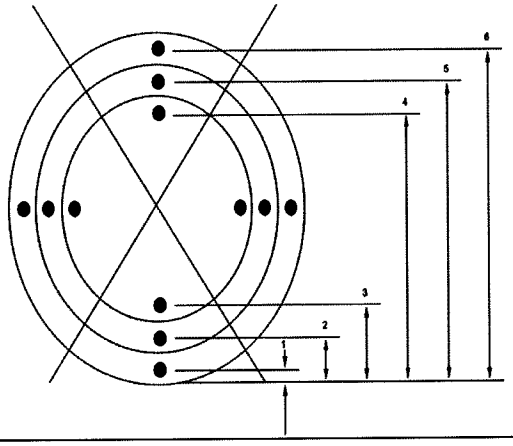
LOCATION OF TRAVERSE POINTS
CIRCULAR STACKS

Traverse point Number on a Diameter	Number of traverse ports on a diameter					
	2	4	6	8	10	12
1	14.6	6.7	4.4	3.2	2.6	2.1
2	85.4	25.0	14.6	10.5	8.2	6.7
3	--	75.0	29.6	19.4	14.6	11.8
4	--	93.3	70.4	32.3	22.6	17.7
5	--	--	85.4	67.7	34.2	25.0
6	--	--	95.6	80.6	65.8	35.6
7	--	--	--	89.5	77.4	64.4
8	--	--	--	96.8	85.4	75.0
9	--	--	--	--	91.8	82.3
10	--	--	--	--	97.4	88.2
11	--	--	--	--	--	93.3
12	--	--	--	--	--	97.9

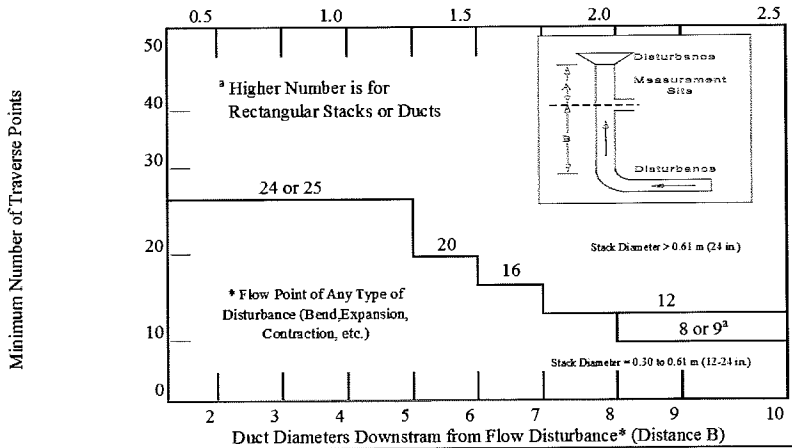
*Percent of stack diameter from inside wall to traverse point.

Traverse Point	Distance % of diameter
1	4.4
2	14.7
3	29.5
4	70.5
5	85.3
6	95.6

EXAMPLE CIRCULAR STACK CROSS SECTION DIVIDED INTO 12 EQUAL AREAS, WITH LOCATION OF TRAVERSE POINTS



Minimum number of traverse points for particulate traverses
Duct Diameters Upstream from Flow Disturbance* (Distance A)



Traverse Point	% of Diameter	Distance from inside wall	Distance from outside of port
1	3.2	1.34	7.84
2	10.5	4.41	10.91
3	19.4	8.15	14.65
4	32.3	13.57	20.07
5	67.7	28.43	34.93
6	80.6	33.85	40.35
7	89.5	37.59	44.09
8	96.8	40.66	47.16
9	--	--	--
10	--	--	--
11	--	--	--
12	--	--	--

NOTES

CSL
QA/QC Reviewer

DE: JDH
TL: JDH

Alliance SOURCE TESTING

Cyclonic Flow Check

Location: Eastman - Kingsport
Date: 12/10/12
Source: LCD
Project No.: 12-0209

Sample Point	ΔP @ 0° Ref	Angle (ΔP=0)
1	--	14
2	--	12
3	--	12
4	--	8
5	--	6
6	--	6
7	--	5
8	--	12
9	--	14
10	--	12
11	--	12
12	--	10
13	--	9
14	--	5
15	--	7
16	--	6
17		
18		
19		
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21		
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23		
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25		
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28		
29		
30		
31		
32		
Average	--	9.4

CSL
QA/QC Reviewer

DE: JDH
TL: JDH

Alliance SOURCE TESTING

Method 4 Data

Location: Eastman - Kingsport

Source: LCD

Project No. : 12-0209

Run 1	Date: 12/11/12							
	IMPINGER VOLUME, ml							
	1	2	3	4	5	6	7	8	Total
Contents	Empty	H2O	H2O	Empty	Silica	--	--	--	--
Initial	0.0	100.0	100.0	0.0	228.2				428.2
Final	316.0	100.0	100.0	2.0	255.8				773.8
Gain	316.0	0.0	0.0	2.0	27.6	--	--	--	345.6

Run 2	Date: 12/11/12							
	IMPINGER VOLUME, ml							
	1	2	3	4	5	6	7	8	Total
Contents	Empty	H2O	H2O	Empty	Silica	--	--	--	--
Initial	0.0	100.0	100.0	0.0	229.3				429.3
Final	318.0	100.0	100.0	2.0	255.7				775.7
Gain	318.0	0.0	0.0	2.0	26.4	--	--	--	346.4

Run 3	Date: 12/11/12							
	IMPINGER VOLUME, ml							
	1	2	3	4	5	6	7	8	Total
Contents	Empty	H2O	H2O	Empty	Silica	--	--	--	--
Initial	0.0	100.0	100.0	0.0	219.5				419.5
Final	350.0	98.0	98.0	0.0	243.0				789.0
Gain	350.0	-2.0	-2.0	0.0	23.5	--	--	--	369.5

CSL

QA/QC Reviewer

DE: JDH

TL: JDH

Alliance
SOURCE TESTING

Isokinetic Field Data

Location: Eastman - Kingsport | Start Time: 12:10 PM | Source: LCD
Date: 12/11/12 | Run 1 | VALID | End Time: 3:23 PM | Project No.: 12-0209

STACK DATA (EST)		
Moisture:	13.0	% est.
Barometric:	28.60	in. Hg
Static Press:	-0.28	in. WC
Stack Press:	28.58	in. Hg
CO_2:	6.5	%
O_2:	12.5	%
N_2/CO:	81.0	%
Md:	29.54	lb/lb-mole
Ms:	28.04	lb/lb-mole

EQUIPMENT	
METER BOX:	1600
Y:	1.004
ΔH @:	2.085 in. WC
PROBE ID:	PR-104-3
Cp:	0.84
NOZZLE ID:	G-406
Dn:	0.252 in
Stack Area:	9.62 ft^2

STACK DATA (EST)		
Est. Tm:	68	°F
Est. Ts:	124	°F
Est. ΔP:	0.50	in. WC
Est. Dn:	0.260	in.

FILTER NO.
D/F

STACK DATA (FINAL)		
Pb:	28.56	in. Hg
Pg:	-0.27	in. WC
CO_2:	6.3	%
O_2:	13.3	%

MOIST. DATA
Vlc (ml)
345.6
K-FACTOR
3.603

LEAK CHECKS

	Pre	Mid 1	Mid 2	Post
Leak Rate (cfm):	0.000	0.000	0.000	0.000
Vacuum (in Hg):	15	6	15	7
Pitot Tube:	Pass	--	--	Pass

Volume Corrections		
#1	0.179	cf
#2		cf
Total	0.179	cf

Sample Point	Sample Time (minutes) Begin	Sample Time (minutes) End	Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP (in. WC)	Gas Temperatures (°F) DGM Average (Amb. —)	Gas Temperatures (°F) Stack (Amb. 40)	Orifice Press. ΔH (in. WC) Ideal	Orifice Press. ΔH (in. WC) Actual	Pump Vac (in. Hg)	Gas Temps (°F) Probe (Amb. 41)	Gas Temps (°F) Filter (Amb. 40)	Gas Temps (°F) Imp. Exit (Amb. 40)	XAD	% ISO	Vs (fps)
A-1	0.00	11.25	29.882	0.44	65	125	1.57	1.55	4	256	262	37	38	95.6	40.70
2	11.25	22.50	36.925	0.48	67	127	1.72	1.70	5	255	265	38	39	97.0	42.58
3	22.50	33.75	44.400	0.50	69	127	1.80	1.80	5	254	261	40	39	96.8	43.46
4	33.75	45.00	52.040	0.49	72	126	1.77	1.75	5	258	266	40	39	97.4	42.99
5	45.00	56.25	59.700	0.50	74	126	1.82	1.80	6	255	264	40	39	97.8	43.42
6	56.25	67.50	67.500	0.49	76	126	1.79	1.80	6	254	262	41	40	96.9	42.99
7	67.50	78.75	75.175	0.47	77	126	1.72	1.70	6	255	265	42	40	98.1	42.10
8	78.75	90.00	82.800	0.43	77	125	1.57	1.60	5	254	262	41	40	99.3	40.23
B-1	90.00	101.25	90.196	0.42	75	124	1.53	1.55	5	255	259	38	39	97.5	39.73
2	101.25	112.50	97.350	0.48	76	126	1.75	1.75	6	256	265	43	41	96.3	42.55
3	112.50	123.75	104.900	0.46	76	128	1.67	1.70	6	256	267	50	42	98.6	41.72
4	123.75	135.00	112.455	0.46	77	127	1.68	1.70	6	255	267	55	44	97.9	41.68
5	135.00	146.25	119.980	0.52	78	126	1.90	1.90	7	256	267	59	45	98.3	44.28
6	146.25	157.50	128.030	0.56	79	128	2.04	2.05	7	255	264	60	46	96.2	46.03
7	157.50	168.75	136.200	0.55	79	127	2.01	2.00	7	256	266	59	43	98.2	45.58
8	168.75	180.00	144.480	0.45	79	126	1.65	1.65	6	255	265	47	42	97.9	41.19
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Final DGM: 151.954

Saturated

RESULTS

Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
180.0 min	121.893 ft^3	0.48 in. WC	74.8 °F	126.3 °F	7	1.750 in. WC	96.6	0.123	-2.9

NOTES

Conducted Field Blank Check prior to Run 1. A total of 0.5 cf of ambient air was pulled through the sample train.

CSL
QA/QC Reviewer

DE: JDH
TL: JDH

v2011.0

Alliance SOURCE TESTING

Isokinetic Field Data

Location: Eastman - Kingsport | **Start Time:** 4:12 PM | **Source:** LCD
Date: 12/11/12 | **Run 2** | **VALID** | **End Time:** 7:50 PM | **Project No.:** 12-0209

STACK DATA (EST)		EQUIPMENT		STACK DATA (EST)		FILTER NO.	STACK DATA (FINAL)		MOIST. DATA
Moisture:	14.0 % est.	METER BOX:	1600	Est. Tm:	75 °F	D/F	Pb:	28.56 in. Hg	Vlc (ml)
Barometric:	28.60 in. Hg	Y:	1.004	Est. Ts:	126 °F		Pg:	-0.25 in. WC	346.4
Static Press:	-0.28 in. WC	ΔH @:	2.085 in. WC	Est. ΔP:	0.48 in. WC		CO_2:	6.4 %	K FACTOR
Stack Press:	28.58 in. Hg	PROBE ID:	P-104-0	Est. Dn:	0.263 in.		O_2:	13.1 %	3.815
CO_2:	6.5 %	Cp:	0.84						
O_2:	12.5 %	NOZZLE ID:	G-405						
N_2/CO:	81.0 %	Dn:	0.256 in^2						
Md:	29.54 lb/lb-mole	Stack Area:	9.62 ft^2						
Ms:	27.92 lb/lb-mole								

LEAK CHECKS

	Pre	Mid 1	Mid 2	Post
Leak Rate (cfm):	0.003	0.000	0.000	0.000
Vacuum (in Hg):	15	6	15	7
Pitot Tube:	Pass	--	--	Pass

Volume Corrections		
#1	2.103	cf
#2		cf
Total	2.103	cf

Sample Point	Sample Time (minutes)		Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP	Gas Temperatures (°F) DGM Average	Gas Temperatures (°F) Stack	Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temps (°F) Probe	Gas Temps (°F) Filter	Gas Temps (°F) Imp. Exit	XAD	% ISO	Vs (fps)
					Amb.	Amb.				Amb.	Amb.	Amb.			
	Begin	End		(in. WC)	---	--	Ideal	Actual		--	--	--			
A-1	0.00	11.25	152.326	0.45	72	124	1.72	1.70	5	254	266	39	49	93.4	41.21
2	11.25	22.50	159.550	0.48	71	126	1.82	1.50	6	256	266	40	35	98.5	42.63
3	22.50	33.75	167.400	0.50	72	127	1.90	1.90	6	255	265	42	36	95.1	43.55
4	33.75	45.00	175.135	0.48	73	126	1.83	1.85	6	255	265	41	37	97.5	42.63
5	45.00	56.25	182.925	0.48	75	126	1.83	1.85	6	255	265	41	37	97.3	42.63
6	56.25	67.50	190.730	0.50	76	126	1.91	1.90	6	255	264	41	36	96.6	43.51
7	67.50	78.75	198.650	0.48	77	126	1.84	1.85	6	255	265	41	37	98.1	42.63
8	78.75	90.00	206.550	0.46	78	125	1.77	1.80	6	255	265	42	38	99.8	41.70
B-1	90.00	101.25	216.536	0.43	74	124	1.65	1.65	6	255	264	42	40	97.0	40.28
2	101.25	112.50	223.900	0.44	75	126	1.68	1.70	6	256	267	44	49	93.5	40.82
3	112.50	123.75	231.080	0.45	75	126	1.72	1.70	6	254	264	49	55	97.6	41.28
4	123.75	135.00	238.665	0.45	75	127	1.72	1.70	6	255	264	49	37	99.0	41.31
5	135.00	146.25	246.350	0.50	75	125	1.91	1.90	7	254	263	42	37	96.6	43.47
6	146.25	157.50	254.260	0.53	77	125	2.03	2.05	7	255	264	43	41	97.9	44.76
7	157.50	168.75	262.545	0.51	78	122	1.97	2.00	7	255	265	45	44	98.7	43.79
8	168.75	180.00	270.775	0.41	78	122	1.59	1.60	6	255	265	46	47	100.9	39.27
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	Final DGM:		278.327			Saturated									

RESULTS

Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
180.0 min	123.898 ft^3	0.47 in. WC	75.1 °F	125.2 °F	7	1.791 in. WC	95.6	0.122	-2.4

NOTES

Post leak check on Port A was good. ~38 minute port change due to a leak caused during moving the train to Port B. The glassware shifted while moving and pinched an O-Ring between the condenser and short stem impinger. Changed probe and filter while trying to troubleshoot leak.

CSL

QA/QC Reviewer

DE: JDH

TL: JDH

Alliance
SOURCE TESTING

Isokinetic Field Data

Location: Eastman - Kingsport | Start Time: 8:41 PM | Source: LCD
Date: 12/11/12 | Run 3 | VALID | End Time: 11:50 PM | Project No.: 12-0209

STACK DATA (EST)		EQUIPMENT		STACK DATA (EST)		FILTER NO.	STACK DATA (FINAL)		MOIST. DATA
Moisture:	12.0 % est.	METER BOX:	1600	Est. Tm:	75 °F	D/F	Pb: 28.56	in. Hg	Vlc (ml)
Barometric:	28.60 in. Hg	Y:	1.004	Est. Ts:	125 °F		Pg: -0.25	in. WC	369.5
Static Press:	-0.28 in. WC	ΔH@:	2.085 in. WC	Est. ΔP:	0.47 in. WC		CO_2: 6.4	%	K FACTOR
Stack Press:	28.58 in. Hg	PROBE ID:	PR-104-3	Est. Dn:	0.261 in.		O_2: 13.0	%	3.709
CO_2:	6.5 %	Cp:	0.84						
O_2:	12.5 %	NOZZLE ID:	G-406						
N_2/CO:	81.0 %	Dn:	0.252 in²						
Md:	29.54 lb/lb-mole	Stack Area:	9.62 ft²						
Ms:	28.16 lb/lb-mole								

LEAK CHECKS

	Pre	Mid 1	Mid 2	Post
Leak Rate (cfm):	0.000	0.000	0.000	0.000
Vacuum (in Hg):	15	6	10	7
Pitot Tube:	Pass	--	--	Pass

Volume Corrections		
#1	0.214	cf
#2		cf
Total	0.214	cf

Sample Point	Sample Time (minutes)		Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temps (°F)			XAD	% ISO	Vs (fps)
					DGM Average	Stack				Probe	Filter	Imp. Exit			
					Amb.	Amb.				Amb.	Amb.	Amb.			
	Begin	End		(in. WC)	—	—	Ideal	Actual		—	—	—			
A-1	0.00	11.25	278.649	0.49	73	122	1.82	1.80	4	255	266	36	35	91.3	42.75
2	11.25	22.50	285.935	0.49	74	126	1.81	1.80	5	254	266	39	34	98.5	42.90
3	22.50	33.75	293.785	0.50	74	127	1.85	1.85	5	255	264	39	34	100.6	43.37
4	33.75	45.00	301.870	0.48	74	125	1.78	1.80	5	254	265	40	35	102.1	42.42
5	45.00	56.25	309.925	0.50	76	125	1.86	1.85	5	255	264	40	36	98.0	43.30
6	56.25	67.50	317.850	0.52	77	124	1.94	1.95	5	255	264	41	37	98.0	44.12
7	67.50	78.75	325.950	0.48	77	125	1.79	1.80	5	254	265	40	38	98.5	42.42
8	78.75	90.00	333.770	0.44	78	126	1.64	1.65	5	256	265	43	39	104.3	40.65
B-1	90.00	101.25	341.706	0.43	76	121	1.61	1.60	5	256	267	40	38	100.2	40.01
2	101.25	112.50	349.250	0.45	77	124	1.68	1.70	5	255	265	44	45	100.8	41.04
3	112.50	123.75	357.000	0.45	78	123	1.69	1.70	5	255	264	41	36	96.2	41.00
4	123.75	135.00	364.420	0.47	79	124	1.76	1.75	5	255	266	39	36	98.6	41.94
5	135.00	146.25	372.200	0.53	80	124	1.99	2.00	6	257	264	38	36	98.3	44.54
6	146.25	157.50	380.445	0.56	80	125	2.10	2.10	6	255	264	38	37	98.7	45.82
7	157.50	168.75	388.950	0.55	81	124	2.07	2.05	6	256	266	40	38	94.0	45.37
8	168.75	180.00	397.000	0.46	81	120	1.74	1.75	5	255	266	41	39	101.6	41.35
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	Final DGM:		404.985			Saturated									

RESULTS

Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
180.0 min	126.122 ft^3	0.49 in. WC	77.2 °F	124.1 °F	6	1.822 in. WC	99.1	0.127	-1.7

NOTES

CSL
QA/QC Reviewer

DE: JDH
TL: JDH

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Appendix C

20 February 2013

Chris LeMay
Alliance Source Testing
214 Central Circle SW
Decatur, AL 35603
Ph.: 256-260-3973
Fax : 256-351-0151
Email: chris.lemay@stacktest.com

Subject: Certificate of Results - Amended

Dear Chris;

Attached to this narrative are the analytical results you requested on the samples submitted for the determination of polychlorinated dibenzo-*p*-dioxins and dibenzofurans. The insert below summarizes the relevant information pertaining to your project. In particular, QC annotations bring to your attention specific analytical observations and assessments made during the sample handling and data interpretation phases. Results reported relate only to the items tested.

Project Information Summary	When applicable, see QC Annotations for details
Client Project No.	2012-0209
AP Project #	**A5045**
Analytical Protocol	Method 23
No. Samples Submitted	5
No. Samples Analyzed	5
No. Laboratory Method Blanks	1
No. OPRs / Batch CS3	1
No. Outstanding Samples	0
Date Received	18-Dec-2012
Condition Received	good
Temperature upon Receipt (C)	4 (Traps & Filters), 4 (Solvents)
Extraction within Holding Time	yes
Analysis within Holding Time	yes
Data meet QA/QC Requirements	yes
Exceptions	see below
Analytical Difficulties	none

ANALYTICAL PERSPECTIVES IS NOW PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.

QC Annotations:

1. Please see Appendix A & B attached for data qualifier/attribute and lab identifier descriptions which may be contained in the project.
2. It is likely that the results for 1,2,3,4,6,7,8-HpCDF and OCDF originate largely from laboratory background.
3. The second QC annotation was amended in this narrative.

Analytical Perspectives Certification IDs:

SOUTH CAROLINA	99054
ARKANSAS	88-0628
NEW JERSEY-NELAP SECONDARY	NC005
FLORIDA-NELAP PRIMARY	E87608
LOUISIANA	4024
NORTH CAROLINA	37783
WASHINGTON	C2027
NEW YORK	11988
VIRGINIA	460180
MINNESOTA	037-999-448
OREGON	pending
TEXAS	T104704484-10-1
PENNSYLVANIA-NELAP SECONDARY	68-01849

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Sincerely,



Heather Distel, Ph.D.
Project Scientist

APPENDIX A: DATA QUALIFIERS / DATA ATTRIBUTES	
>	Indicates high recoveries. Shown with the numeric value at the top of the range.[1]
B	The analyte was found in the method blank, at a concentration that was at least 10% of the concentration in the sample.
C	Two or more congeners co-elute. In EDDs C denotes the lowest IUPAC congener in a co-elution group and additional co-eluters for the group are shown with the number of the lowest IUPAC co-eluter.
E	The reported concentration exceeds the calibration range (upper point of the calibration curve).
EMPC	Represents an Estimated Maximum Possible Concentration. EMPC's arise in cases where the signal/noise ratio is not sufficient for peak identification (the determined ion-abundance ratio is outside the allowed theoretical range), or where there is a co-eluting interference.
ETH	Indicates the presence of a diphenyl ether that appears to interfere with the quantitation of a furan. The reported concentration is the maximum.
H/h	If the standard recovery is below the method or SOP specified value "H" is assigned. If the obtained value is less than half the specified value "h" is assigned.[1]
J	Indicates that an analyte has a concentration below the reporting limit (lowest point of the calibration curve).
ND	Indicates a non-detect.
NR	Indicates a value that is not reportable.
PR	Due to interference, the associated congener is poorly resolved.
QI	Indicates the presence of a quantitative interference.
SI	Denotes "Single Ion Mode" and is utilized for PCBs where the secondary ion trace has a significantly elevated noise level due to background PFK. Responses for such peaks are calculated using an EMPC approach based solely on the primary ion area(s) and may be considered estimates.[1]
U	The analyte was not detected. The estimated detection limit (EDL) may be reported for this analyte.
V	The labeled standard recovery was found to be outside of the method control limits.
X	Indicates results reported from reinjection, refractionation, or repeat analyses.
APPENDIX B: LAB ID IDENTIFIERS	
AR	Indicates use of the archived portion of the sample extract.
CU	Indicates a sample that required additional clean-up prior to MS injection/processing.
D	Indicates a dilution of the sample extract. The number that follows the "D" indicates the dilution factor.
DE	Indicates a dilution performed with the addition of ES (extraction standard) solution.
DUP	Designation for a duplicate sample.
MS	Designation for a matrix spike.
MSD	Designation for a matrix spike duplicate.
RJ	Indicates a reinjection of the sample extract.

S	Indicates a sample split. The number that follows the “S” indicates the split factor.

[1]Denotes data qualifiers/attributes whose use will be phased out over time

A5045 - TEQ

Project ID: 2012-0209-001

Sample Summary Part 1

SGS ANALYTICAL PERSPECTIVES

Method 23

Analyte	MB1_10493_DF_SDS	Field Blank	LCD/Run 01	LCD/Run 02	LCD/Run 03	Reagent Blank
	pg	pg	pg	pg	pg	pg
2,3,7,8-TCDD	(1.4)	(2.49)	(2)	(1.66)	3.2	(2.36)
1,2,3,7,8-PeCDD	(1.54)	(3.09)	4.58	7.8	5.54	(2.88)
1,2,3,4,7,8-HxCDD	(1.59)	(2.51)	5.79	5.63	4.35	(2.68)
1,2,3,6,7,8-HxCDD	(1.63)	(2.5)	11.3	9.5	[6.96]	(2.79)
1,2,3,7,8,9-HxCDD	(1.6)	(2.77)	7.27	[7.26]	7.45	(3.07)
1,2,3,4,6,7,8-HpCDD	(1.63)	[9.99]	30.2	46	39.9	(2.65)
OCDD	(1.7)	21.5	38.2	64.1	47.6	[5.8]
2,3,7,8-TCDF	(0.815)	3.47	27.2	25.4	28.6	(1.53)
1,2,3,7,8-PeCDF	(0.91)	[1.99]	30	37.3	45.5	(1.92)
2,3,4,7,8-PeCDF	(0.824)	5.3	47.3	57	63	(1.88)
1,2,3,4,7,8-HxCDF	(1.43)	3.8	51.5	71.3	79.2	(2.33)
1,2,3,6,7,8-HxCDF	(1.35)	3.43	37.2	57.7	62.4	(2.11)
2,3,4,6,7,8-HxCDF	(1.38)	5	35.1	52.3	54.3	(2.22)
1,2,3,7,8,9-HxCDF	(1.79)	(3.28)	(2.71)	(3.8)	(3.6)	(2.67)
1,2,3,4,6,7,8-HpCDF	9.59	19.9	91.7	148	168	7.76
1,2,3,4,7,8,9-HpCDF	(2.29)	(3.58)	18.5	28.9	32.7	(3.85)
OCDF	269	190	377	319	302	164
ITEF TEQ (ND=0; EMPC=0)	**0.365**	**4.63**	**46.8**	**59.1**	**66.1**	**0.242**
ITEF TEQ (ND=0; EMPC=EMPC)	**0.365**	**4.83**	**46.8**	**59.8**	**66.8**	**0.248**
ITEF TEQ (ND=DL/2; EMPC=0)	**2.28**	**7.27**	**47.9**	**60.2**	**66.4**	**3.67**
ITEF TEQ (ND=DL/2; EMPC=EMPC)	**2.28**	**7.42**	**47.9**	**60.8**	**67.0**	**3.67**
ITEF TEQ (ND=DL; EMPC=EMPC)	**4.19**	**10.0**	**49.1**	**61.8**	**67.2**	**7.09**
Checkcode	148-498-WLH	436-219-KSQ	879-504-MPL	127-600-RPH	503-843-WYK	777-690-WLZ
Lab ID	MB1_10493_DF_SDS	A5045_10493_DF_001	A5045_10493_DF_002	A5045_10493_DF_003	A5045_10493_DF_004	A5045_10493_DF_005

( ) = DL
[ ] = EMPC

A5045 - Totals

Project ID: 2012-0209-001

Sample Summary Part 2

Method 23

Analyte	MB1_10493_DF_SDS pg	Field Blank pg	LCD/Run 01 pg	LCD/Run 02 pg	LCD/Run 03 pg	Reagent Blank pg
Totals						
TCDDs	0	28.9	48.5	116	128	0
PeCDDs	0	29.9	72.9	131	119	0
HxCDDs	0	27.4	94.1	153	132	0
HpCDDs	0	0	57.3	89.2	78.3	0
OCDD	0	21.5	38.2	64.1	47.6	0
TCDFs	0	43.4	581	679	682	0
PeCDFs	0	24.8	463	674	691	0
HxCDFs	0	22.2	342	494	518	0
HpCDFs	9.59	19.9	157	252	279	7.76
OCDF	269	190	377	319	302	164
Total PCDD/Fs (ND=0; EMPC=0)	**279**	**407**	**2,230**	**2,970**	**2,980**	**172**
Total PCDD/Fs (ND=0; EMPC=EMPC)	**281**	**505**	**2,340**	**3,030**	**3,030**	**182**
Total PCDD/Fs (2378-X ND=DL; EMPC=EMPC)	**303**	**526**	**2,350**	**3,040**	**3,030**	**217**
Total 2378s (ND=0; EMPC=0)	**279**	**252**	**813**	**929**	**943**	**172**
Total 2378s (ND=0.5; EMPC=0)	**290**	**264**	**815**	**934**	**946**	**192**
Total 2378s (ND=1; EMPC=0)	**301**	**276**	**817**	**938**	**949**	**212**
Total 2378s (ND=0; EMPC=1)	**279**	**264**	**813**	**937**	**950**	**178**
Total 2378s (ND=0.5; EMPC=1)	**290**	**274**	**815**	**939**	**952**	**196**
Total 2378s (ND=1; EMPC=1)	**301**	**284**	**817**	**942**	**954**	**213**
Checkcode	148-498-WLH	436-219-KSQ	879-504-MPL	127-600-RPH	503-843-WYK	777-690-WLZ
Lab ID	MB1_10493_DF_SDS	A5045_10493_DF_001	A5045_10493_DF_002	A5045_10493_DF_003	A5045_10493_DF_004	A5045_10493_DF_005

( ) = DL
[ ] = EMPC

A5045 - Others
Project ID: 2012-0209-001

Sample Summary Part 3

SGS ANALYTICAL PERSPECTIVES

Method 23

Analyte	MB1_10493_DF_SDS	Field Blank	LCD/Run 01	LCD/Run 02	LCD/Run 03	Reagent Blank
	pg	pg	pg	pg	pg	pg
Other PCDD/Fs (ND=0, EMPC=0)						
Other TCDD	0	28.9	48.5	116	125	0
Other PeCDD	0	29.9	68.3	123	114	0
Other HxCDD	0	27.4	69.8	137	120	0
Other HpCDD	0	0	27.1	43.2	38.4	0
Other TCDF	0	39.9	554	654	654	0
Other PeCDF	0	19.5	386	579	583	0
Other HxCDF	0	9.96	218	313	322	0
Other HpCDF	0	0	47	75.7	79.2	0
Other PCDD/Fs (ND=0, EMPC=EMPC)						
Other TCDD	0	28.9	60.1	116	125	3.67
Other PeCDD	0	41.2	74.4	128	127	0
Other HxCDD	0	27.4	76.6	137	124	0
Other HpCDD	0	9.73	27.1	43.2	38.4	0
Other TCDF	0	69.2	559	693	663	0
Other PeCDF	0	37.6	454	579	583	0
Other HxCDF	0	18.3	229	324	337	0
Other HpCDF	2.33	9.29	47	75.7	79.2	0
Checkcode	148-498-WLH	436-219-KSQ	879-504-MPL	127-600-RPH	503-843-WYK	777-690-WLZ
Lab ID	MB1_10493_DF_SDS	A5045_10493_DF_001	A5045_10493_DF_002	A5045_10493_DF_003	A5045_10493_DF_004	A5045_10493_DF_005

( ) = DL
[ ] = EMPC

A5045 - DLs

Project ID: 2012-0209-001

Sample Summary
Part 5 (DLs)

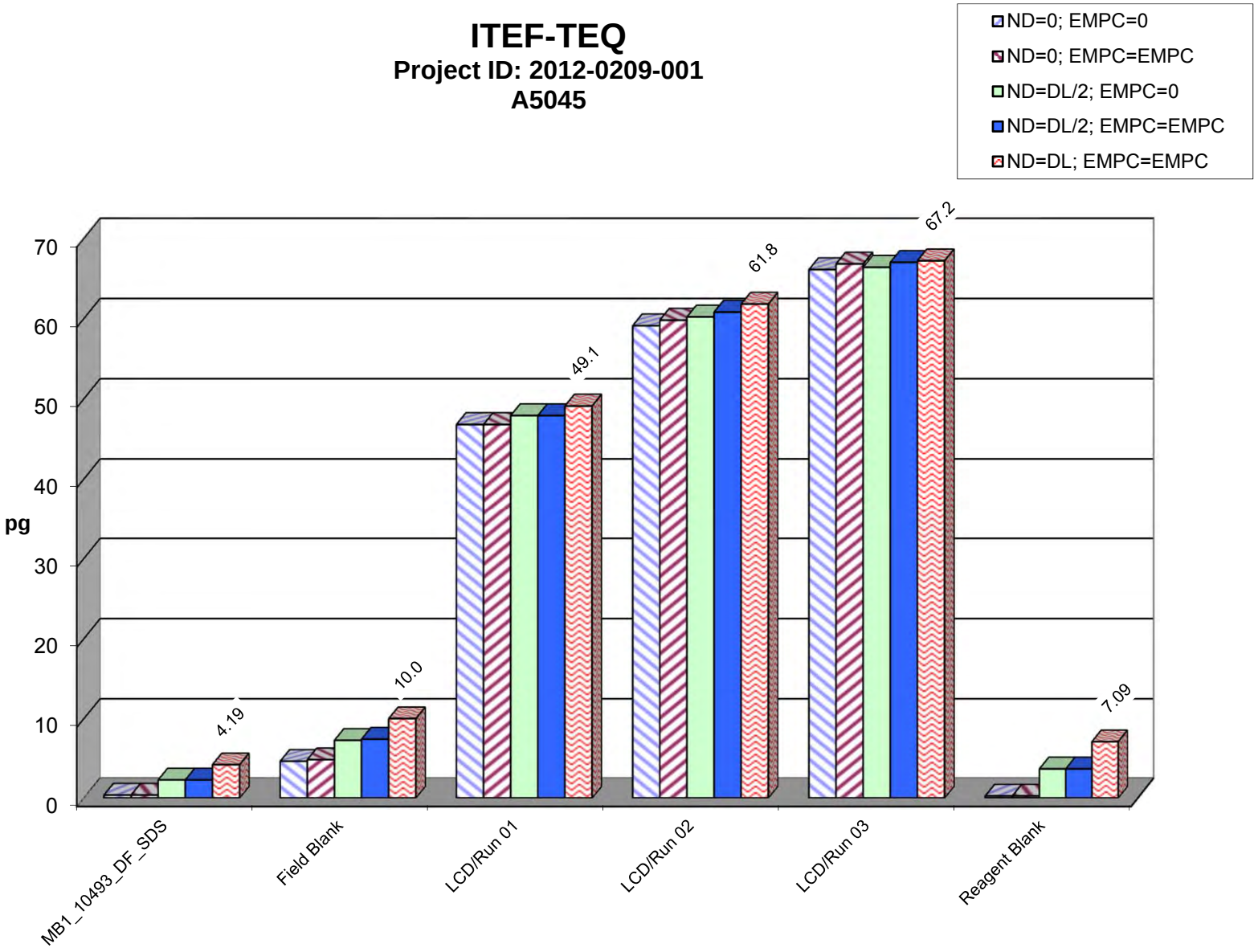
Method 23

Analyte	MB1_10493_DF_SDS	Field Blank	LCD/Run 01	LCD/Run 02	LCD/Run 03	Reagent Blank
	pg	pg	pg	pg	pg	pg
2,3,7,8-TCDD	1.4	2.49	2	1.66	1.68	2.36
1,2,3,7,8-PeCDD	1.54	3.09	2.42	2.63	2.41	2.88
1,2,3,4,7,8-HxCDD	1.59	2.51	2.63	2.71	2.02	2.68
1,2,3,6,7,8-HxCDD	1.63	2.5	2.57	2.9	2.14	2.79
1,2,3,7,8,9-HxCDD	1.6	2.77	2.75	3.28	2.32	3.07
1,2,3,4,6,7,8-HpCDD	1.63	2.67	1.74	2.2	2.38	2.65
OCDD	1.7	3.72	3.34	3.03	2.47	4.33
2,3,7,8-TCDF	0.815	1.48	2.6	2.45	2.28	1.53
1,2,3,7,8-PeCDF	0.91	1.64	3.08	3.46	2.7	1.92
2,3,4,7,8-PeCDF	0.824	1.54	3.16	3.04	2.42	1.88
1,2,3,4,7,8-HxCDF	1.43	2.57	2.21	2.71	2.82	2.33
1,2,3,6,7,8-HxCDF	1.35	2.5	2.2	2.62	2.73	2.11
2,3,4,6,7,8-HxCDF	1.38	2.53	2.02	2.93	2.85	2.22
1,2,3,7,8,9-HxCDF	1.79	3.28	2.71	3.8	3.6	2.67
1,2,3,4,6,7,8-HpCDF	1.64	2.83	2.36	3.34	2.28	2.94
1,2,3,4,7,8,9-HpCDF	2.29	3.58	3.14	3.95	2.79	3.85
OCDF	2.56	4.27	4.04	3.29	2.63	4.05
Total TCDD	1.4	2.49	2	1.66	1.68	2.36
Total PeCDD	1.54	3.09	2.42	2.63	2.41	2.88
Total HxCDD	1.6	2.58	2.64	2.95	2.15	2.84
Total HpCDD	1.63	2.67	1.74	2.2	2.38	2.65
Total TCDF	0.815	1.48	2.6	2.45	2.28	1.53
Total PeCDF	0.867	1.59	3.12	3.25	2.56	1.9
Total HxCDF	1.48	2.7	2.27	2.98	2.98	2.31
Total HpCDF	1.93	3.16	2.71	3.62	2.51	3.35
Checkcode	148-498-WLH	436-219-KSQ	879-504-MPL	127-600-RPH	503-843-WYK	777-690-WLZ
Lab ID	MB1_10493_DF_SDS	A5045_10493_DF_001	A5045_10493_DF_002	A5045_10493_DF_003	A5045_10493_DF_004	A5045_10493_DF_005

ITEF-TEQ

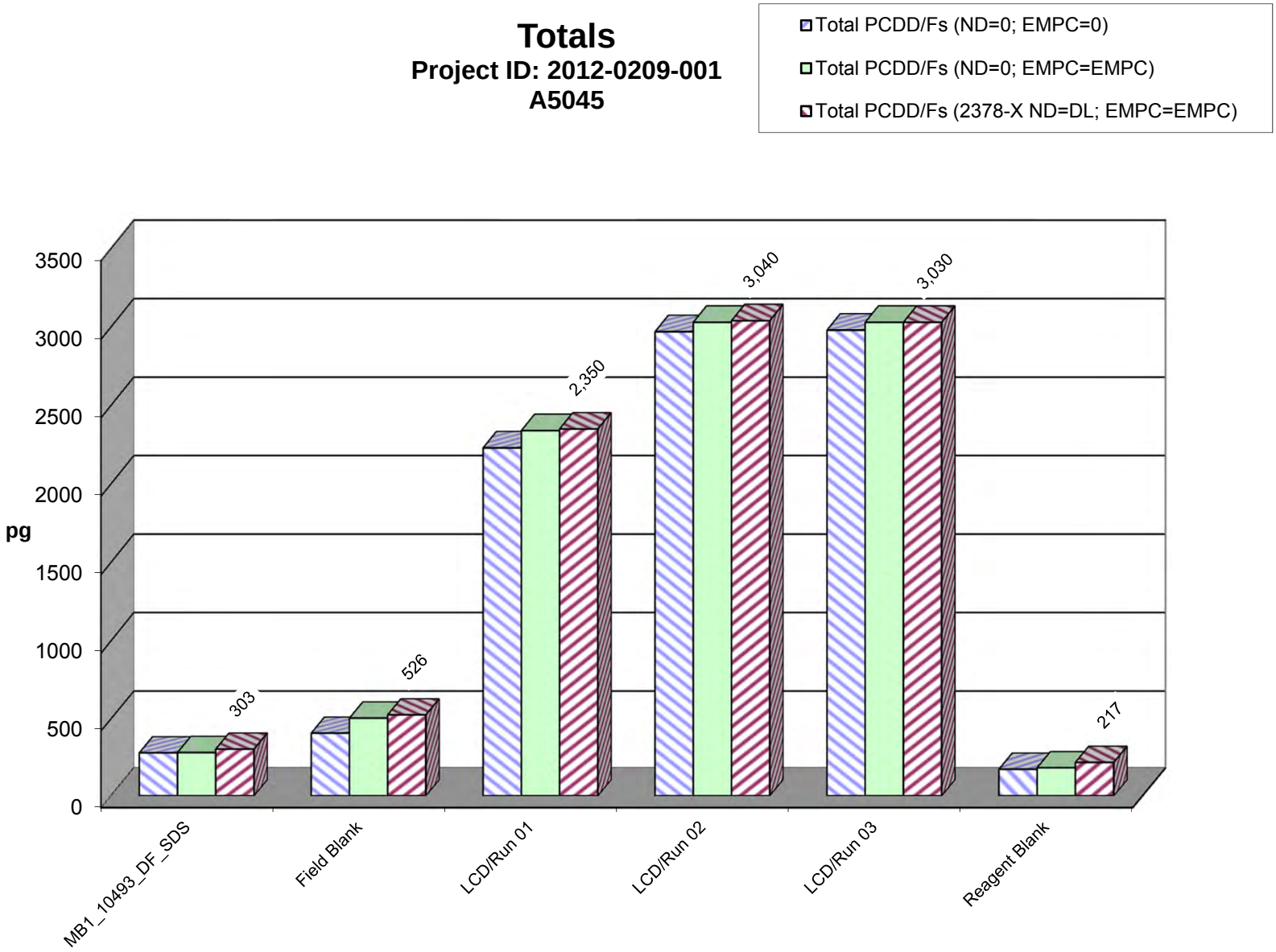
Project ID: 2012-0209-001

A5045

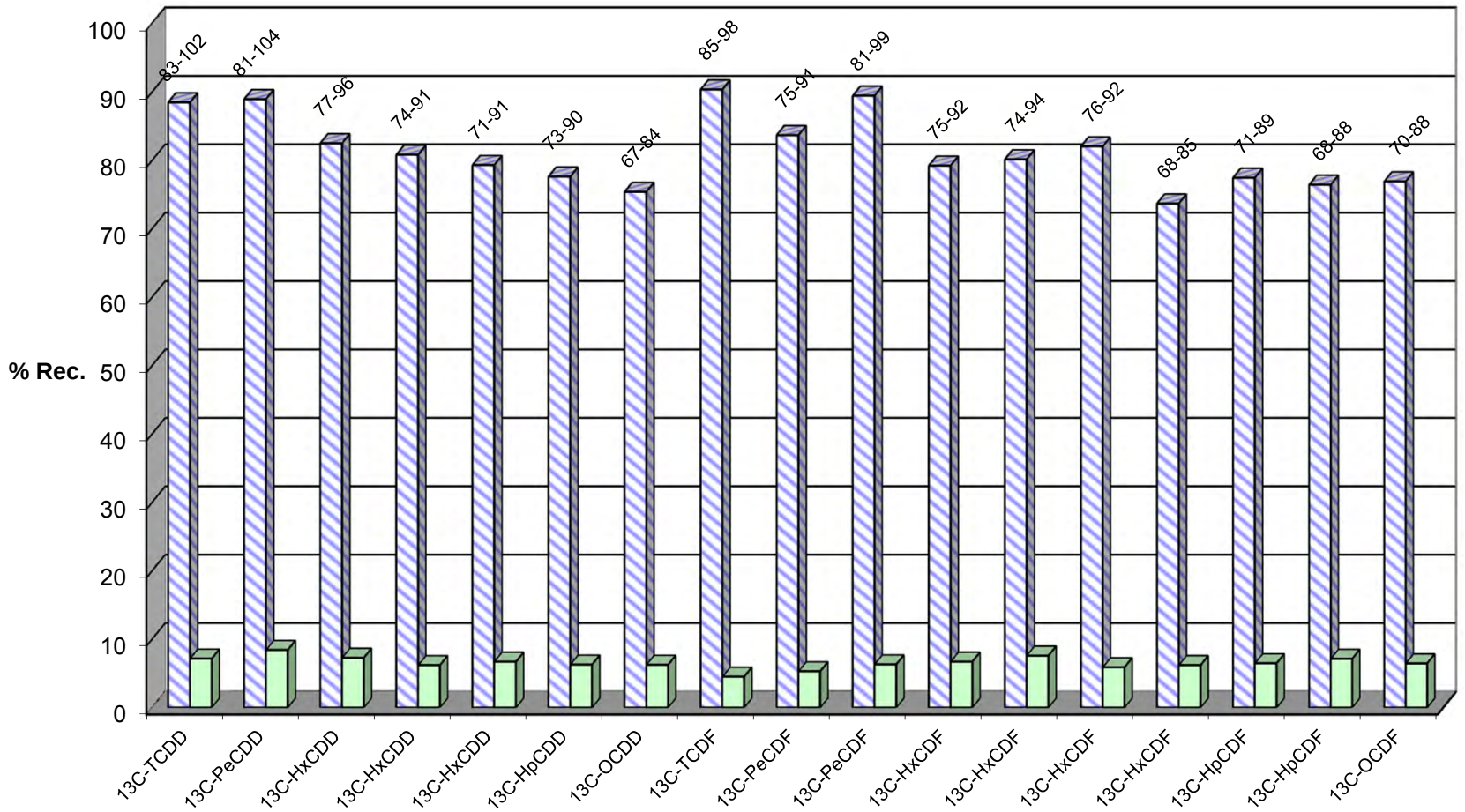


Totals

Project ID: 2012-0209-001
A5045

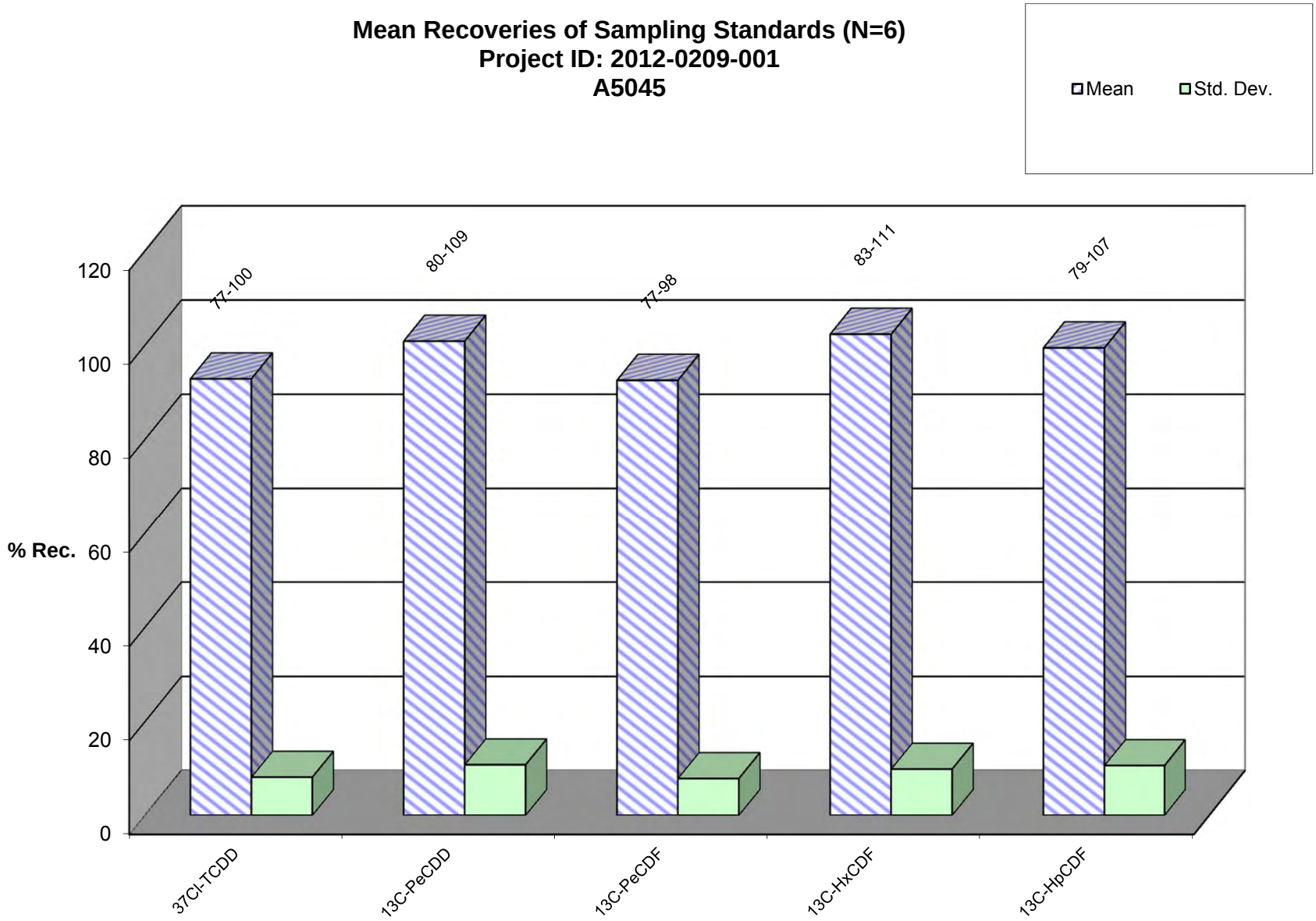


Mean Recoveries of Extraction Standards (N=6)
Project ID: 2012-0209-001
A5045

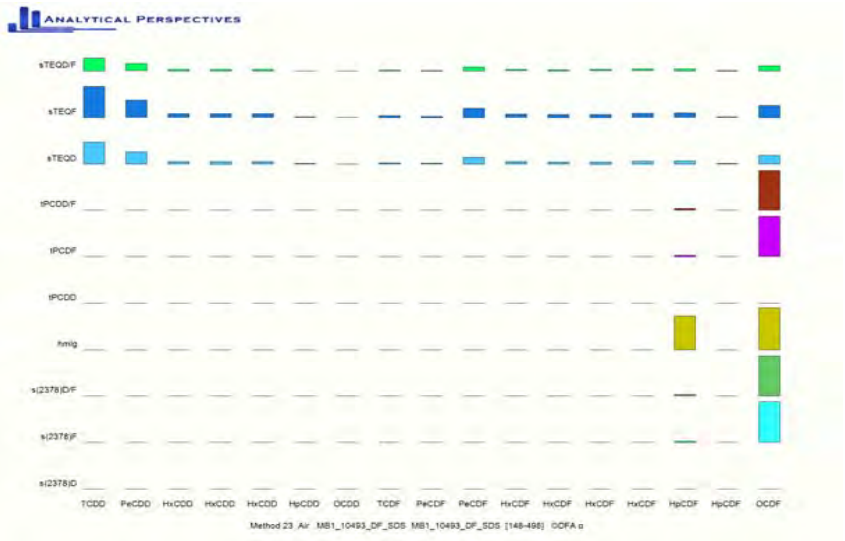


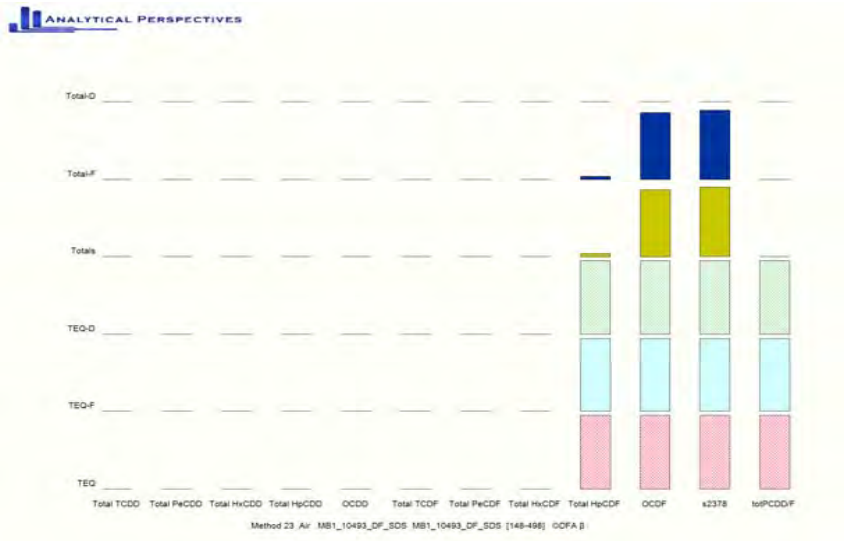
Method Specification Limits: Tetra-Hexa ES: 40-130%, Hepta-Octa ES: 25-130% (F = fail)

Mean Recoveries of Sampling Standards (N=6)
Project ID: 2012-0209-001
A5045

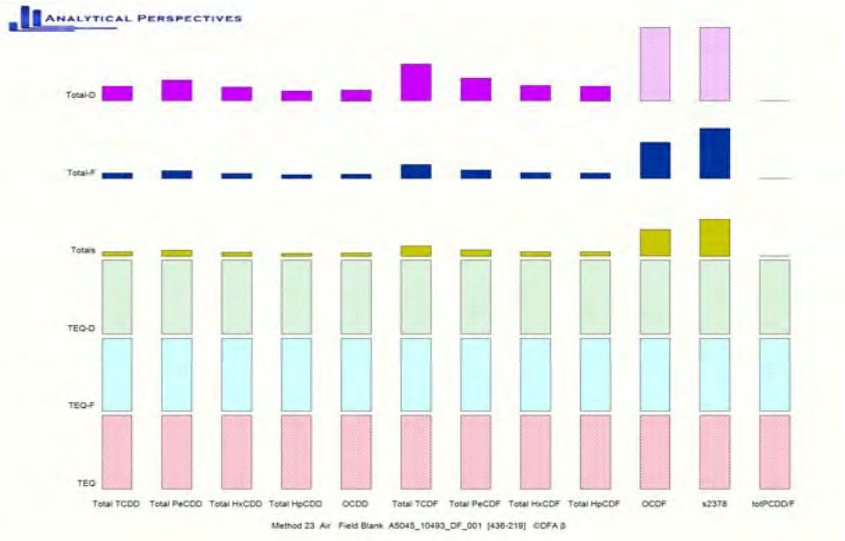


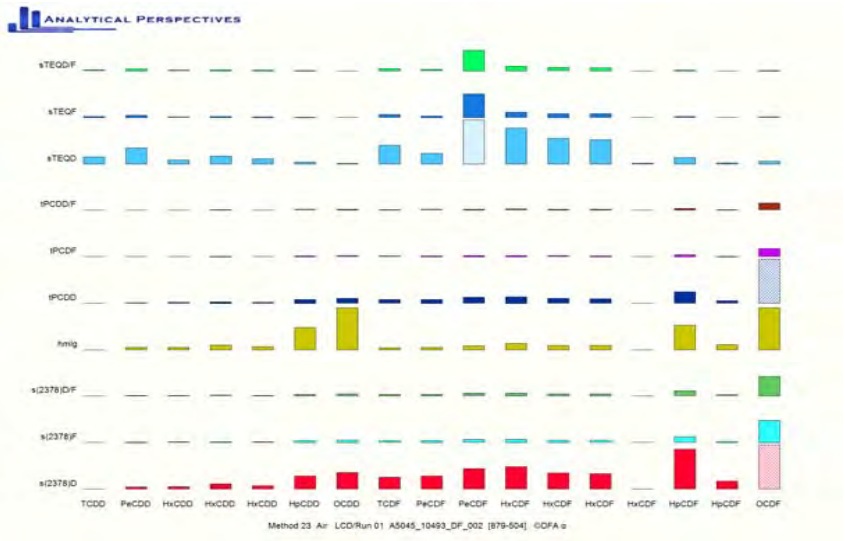
Method Specification Limits: Tetra-Octa SS: 70-130% (F = fail)

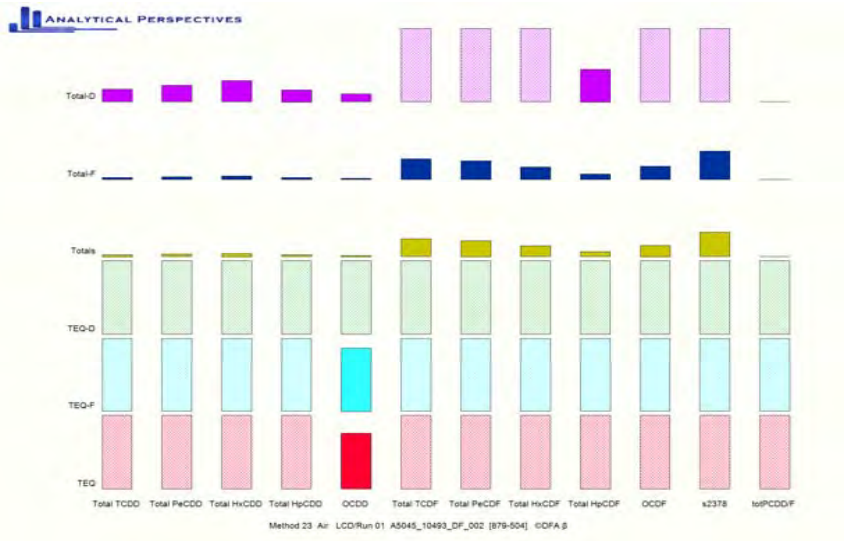

ANALYTICAL PERSPECTIVES
sTEQD/F
sTEQF
sTEQD
tPCDD/F
tPCDF
tPCDD
hmlg
s(2378)D/F
s(2378)F
s(2378)D
TCDD PeCDD HxCDD HxCDD HxCDD HpCDD OCDD TCDF PeCDF PeCDF HxCDF HxCDF HxCDF HxCDF HpCDF HpCDF OCDF
Method 23 Air MB1_10493_DF_SDS MB1_10493_DF_SDS [148-498] ODFA α


ANALYTICAL PERSPECTIVES
Total-D
Total-F
Totals
TEQ-D
TEQ-F
TEQ
Total TCDD Total PeCDD Total HxCDD Total HpCDD OCDD Total TCDF Total PeCDF Total HxCDF Total HpCDF OCDF s2378 totPCDD/F
Method 23 Air MB1_10493_DF_SDS MB1_10493_DF_SDS [148-498] ODFA β

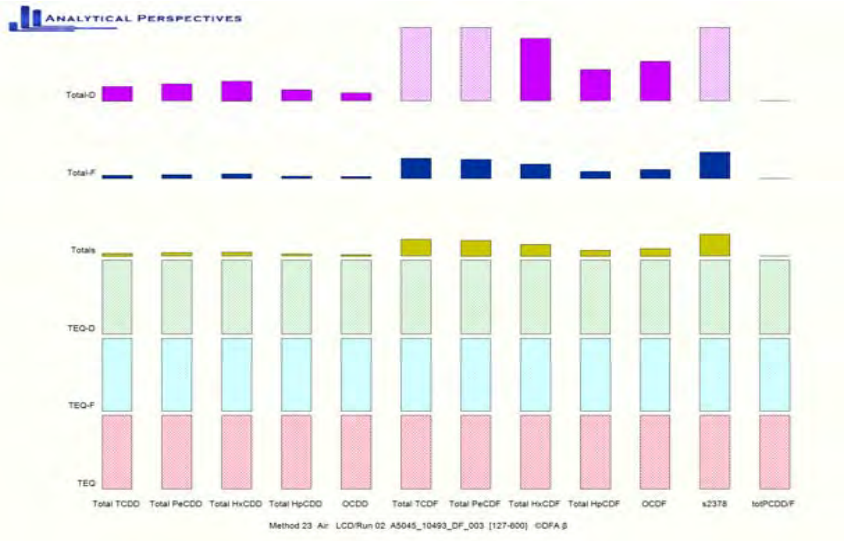

ANALYTICAL PERSPECTIVES
sTEQD/F
sTEQF
sTEQD
tPCDD/F
tPCDF
tPCDD
hmlg
s(2378)D/F
s(2378)F
s(2378)D
TCDD PeCDD HxCDD HxCDD HxCDD HpCDD OCDD TCDF PeCDF PeCDF HxCDF HxCDF HxCDF HxCDF HpCDF HpCDF OCDF
Method 23 Air Field Blank A5045_10493_DF_001 [436-219] ODFA α


ANALYTICAL PERSPECTIVES
Total-D
Total-F
Totals
TEQ-D
TEQ-F
TEQ
Total TCDD Total PeCDD Total HxCDD Total HpCDD OCDD Total TCDF Total PeCDF Total HxCDF Total HpCDF OCDF s2378 totPCDD/F
Method 23 Air Field Blank A5045_10493_DF_001 [436-219] ODFA β

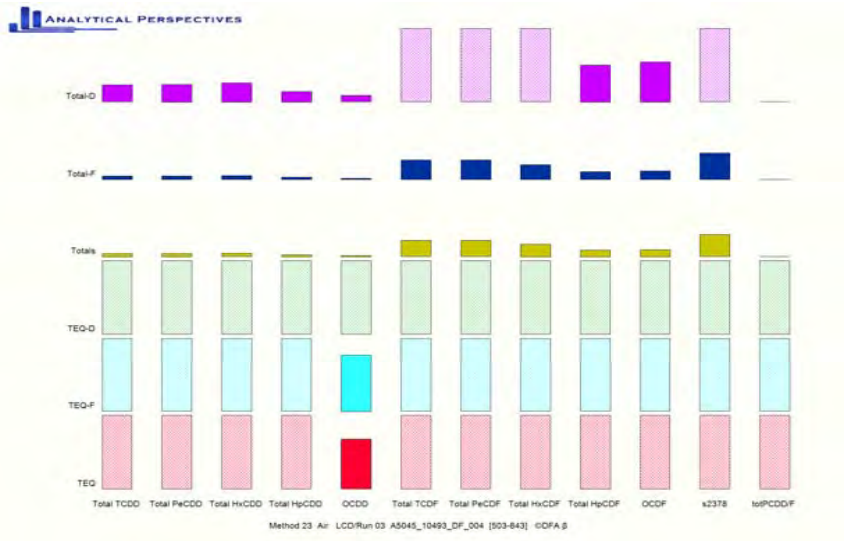

ANALYTICAL PERSPECTIVES
sTEQD/F
sTEQF
sTEQD
tPCDD/F
tPCDF
tPCDD
hmlg
s(2378)D/F
s(2378)F
s(2378)D
TCDD PeCDD HxCDD HxCDD HxCDD HpCDD OCDD TCDF PeCDF PeCDF HxCDF HxCDF HxCDF HxCDF HpCDF HpCDF OCDF
Method 23 Air LCD/Run 01 A5045_10493_DF_002 [879-504] ©DFA α


ANALYTICAL PERSPECTIVES
Total-D
Total-F
Totals
TEQ-D
TEQ-F
TEQ
Total TCDD Total PeCDD Total HxCDD Total HpCDD OCDD Total TCDF Total PeCDF Total HxCDF Total HpCDF OCDF s2378 totPCDD/F
Method 23 Air LCD/Run 01 A5045_10493_DF_002 [879-504] ©DFA β

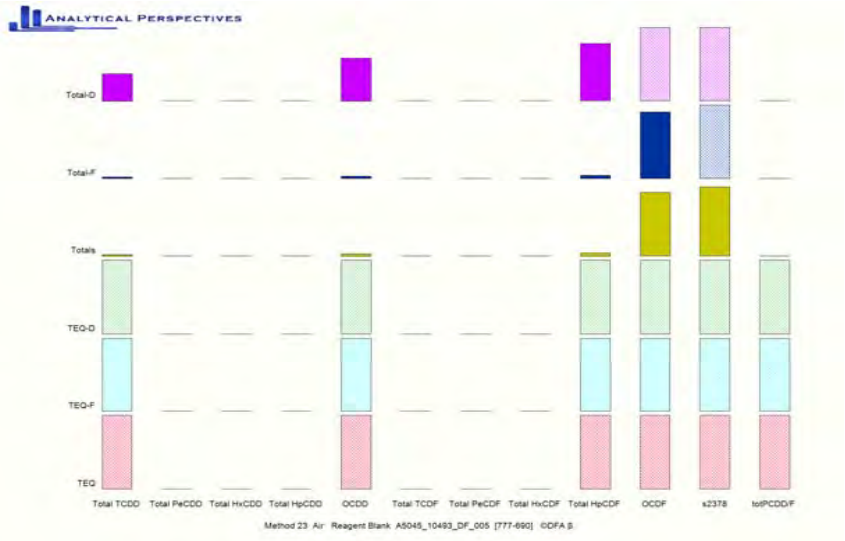

ANALYTICAL PERSPECTIVES
sTEQD/F
sTEQF
sTEQD
tPCDD/F
tPCDF
tPCDD
hmlg
s(2378)D/F
s(2378)F
s(2378)D
TCDD PeCDD HxCDD HxCDD HxCDD HpCDD OCDD TCDF PeCDF PeCDF HxCDF HxCDF HxCDF HxCDF HpCDF HpCDF OCDF
Method 23 Air LCD/Run 02 A5045_10493_DF_003 [127-600] ©DFA α


ANALYTICAL PERSPECTIVES
Total-D
Total-F
Totals
TEQ-D
TEQ-F
TEQ
Total TCDD Total PeCDD Total HxCDD Total HpCDD OCDD Total TCDF Total PeCDF Total HxCDF Total HpCDF OCDF s2378 totPCDD/F
Method 23 Air LCD/Run 02 A5045_10493_DF_003 [127-600] ©DFA β


ANALYTICAL PERSPECTIVES
sTEQD/F
sTEQF
sTEQD
tPCDD/F
tPCDF
tPCDD
hmig
s(2378)D/F
s(2378)F
s(2378)D
TCDD PeCDD HxCDD HxCDD HxCDD HpCDD OCDD TCDF PeCDF PeCDF HxCDF HxCDF HxCDF HxCDF HpCDF HpCDF OCDF
Method 23 Air LCD/Run 03 A5045_10493_DF_004 [503-843] ©DFA α


ANALYTICAL PERSPECTIVES
Total-D
Total-F
Totals
TEQ-D
TEQ-F
TEQ
Total TCDD Total PeCDD Total HxCDD Total HpCDD OCDD Total TCDF Total PeCDF Total HxCDF Total HpCDF OCDF s2378 totPCDD/F
Method 23 Air LCD/Run 03 A5045_10493_DF_004 [503-843] ©DFA β


ANALYTICAL PERSPECTIVES
sTEQD/F
sTEQF
sTEQD
tPCDD/F
tPCDF
tPCDD
hmig
s(2378)D/F
s(2378)F
s(2378)D
TCDD PeCDD HxCDD HxCDD HxCDD HpCDD OCDD TCDF PeCDF PeCDF HxCDF HxCDF HxCDF HxCDF HpCDF HpCDF OCDF
Method 23 Air Reagent Blank A5045_10493_DF_005 [777-690] ©DFA α


ANALYTICAL PERSPECTIVES
Total-D
Total-F
Totals
TEQ-D
TEQ-F
TEQ
Total TCDD Total PeCDD Total HxCDD Total HpCDD OCDD Total TCDF Total PeCDF Total HxCDF Total HpCDF OCDF s2378 totPCDD/F
Method 23 Air Reagent Blank A5045_10493_DF_005 [777-690] ©DFA β

Sample ID: MB1_10493_DF_SDS

Method 23

Client Data		Sample Data		Laboratory Data			
Name:	Alliance Source Testing	Matrix:	Air	Lab Project ID:	A5045	Date Received:	n/a
Project ID:	2012-0209-001	Weight/Volume:	1	Lab Sample ID	MB1_10493_DF_SDS	Date Extracted:	31-Dec-2013
Date Collected:	n/a			QC Batch No:	10493	Date Analyzed:	05-Jan-2013
		Split:	2	Dilution:	-	Time Analyzed:	18:26:11

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	1.4			ES 2378-TCDD	90	
12378-PeCDD	ND	1.54			ES 12378-PeCDD	92	
123478-HxCDD	ND	1.59			ES 123478-HxCDD	86.1	
123678-HxCDD	ND	1.63			ES 123678-HxCDD	85.2	
123789-HxCDD	ND	1.6			ES 123789-HxCDD	82.7	
1234678-HpCDD	ND	1.63			ES 1234678-HpCDD	78.7	
OCDD	ND	1.7			ES OCDD	80.9	
2378-TCDF	ND	0.815			ES 2378-TCDF	90.7	
12378-PeCDF	ND	0.91			ES 12378-PeCDF	86.7	
23478-PeCDF	ND	0.824			ES 23478-PeCDF	92	
123478-HxCDF	ND	1.43			ES 123478-HxCDF	80	
123678-HxCDF	ND	1.35			ES 123678-HxCDF	83.7	
234678-HxCDF	ND	1.38			ES 234678-HxCDF	85.1	
123789-HxCDF	ND	1.79			ES 123789-HxCDF	77	
1234678-HpCDF	9.59			J	ES 1234678-HpCDF	81.7	
1234789-HpCDF	ND	2.29			ES 1234789-HpCDF	81.2	
OCDF	269				ES OCDF	79.2	
Totals					**Standard**	**SS/AS Recoveries**	
					SS 37Cl-2378-TCDD	100	
Total TCDD	ND	1.4	ND		SS 12347-PeCDD	109	
Total PeCDD	ND	1.54	ND		SS 12346-PeCDF	94.5	
Total HxCDD	ND	1.6	ND		SS 123469-HxCDF	106	
Total HpCDD	ND	1.63	ND		SS 1234689-HpCDF	104	
					AS 1368-TCDD	94.7	
Total TCDF	ND	0.815	ND		AS 1368-TCDF	88.5	
Total PeCDF	ND	0.867	ND				
Total HxCDF	ND	1.48	ND				
Total HpCDF	9.59		11.9				
Total PCDD/Fs	**279**		**281**				
ITEF TEQs							
TEQ: ND=0	0.365		0.365				
TEQ: ND=DL/2	2.28	1.92	2.28				
TEQ: ND=DL	4.19	3.84	4.19				

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Sample ID: Field Blank — Method 23

Client Data		Sample Data		Laboratory Data			
Name:	Alliance Source Testing	Matrix:	Air	Lab Project ID:	A5045	Date Received:	20-Dec-2012
Project ID:	2012-0209-001	Weight/Volume:	1	Lab Sample ID	A5045_10493_DF_001	Date Extracted:	31-Dec-2012
Date Collected:	11-Dec-2012			QC Batch No:	10493	Date Analyzed:	05-Jan-2013
		Split:	2	Dilution:	-	Time Analyzed:	19:17:37

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	2.49			ES 2378-TCDD	86.1	
12378-PeCDD	ND	3.09			ES 12378-PeCDD	85.5	
123478-HxCDD	ND	2.51			ES 123478-HxCDD	78	
123678-HxCDD	ND	2.5			ES 123678-HxCDD	78.8	
123789-HxCDD	ND	2.77			ES 123789-HxCDD	77	
1234678-HpCDD	EMPC		9.99	J	ES 1234678-HpCDD	72.8	
OCDD	21.5			J	ES OCDD	67.1	
2378-TCDF	3.47			J	ES 2378-TCDF	90.8	
12378-PeCDF	EMPC		1.99	J	ES 12378-PeCDF	85.7	
23478-PeCDF	5.3			J	ES 23478-PeCDF	92.7	
123478-HxCDF	3.8			J	ES 123478-HxCDF	76.5	
123678-HxCDF	3.43			J	ES 123678-HxCDF	76.4	
234678-HxCDF	5			J	ES 234678-HxCDF	80.4	
123789-HxCDF	ND	3.28			ES 123789-HxCDF	70.5	
1234678-HpCDF	19.9			J B	ES 1234678-HpCDF	73.6	
1234789-HpCDF	ND	3.58			ES 1234789-HpCDF	68.5	
OCDF	190			B	ES OCDF	70.5	

Totals					Standard	SS/AS Recoveries	
					SS 37Cl-2378-TCDD	94.3	
Total TCDD	28.9		28.9		SS 12347-PeCDD	105	
Total PeCDD	29.9		41.2		SS 12346-PeCDF	94.3	
Total HxCDD	27.4		27.4		SS 123469-HxCDF	104	
Total HpCDD	ND		19.7		SS 1234689-HpCDF	97.7	
					AS 1368-TCDD	87.6	
Total TCDF	43.4		72.7		AS 1368-TCDF	89.1	
Total PeCDF	24.8		44.9				
Total HxCDF	22.2		30.5				
Total HpCDF	19.9		29.2				
Total PCDD/Fs	**407**		**505**				
ITEF TEQs							
TEQ: ND=0	4.63		4.83				
TEQ: ND=DL/2	7.27	3.5	7.42				
TEQ: ND=DL	9.92	7	10				

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Sample ID: LCD/Run 01

Method 23

Client Data		Sample Data		Laboratory Data			
Name:	Alliance Source Testing	Matrix:	Air	Lab Project ID:	A5045	Date Received:	20-Dec-2012
Project ID:	2012-0209-001	Weight/Volume:	1	Lab Sample ID	A5045_10493_DF_002	Date Extracted:	31-Dec-2013
Date Collected:	11-Dec-2012			QC Batch No:	10493	Date Analyzed:	05-Jan-2013
		Split:	2	Dilution:	-	Time Analyzed:	20:09:02

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	2			ES 2378-TCDD	86.8	
12378-PeCDD	4.58			J	ES 12378-PeCDD	88.8	
123478-HxCDD	5.79			J	ES 123478-HxCDD	80.9	
123678-HxCDD	11.3			J	ES 123678-HxCDD	79	
123789-HxCDD	7.27			J	ES 123789-HxCDD	77.1	
1234678-HpCDD	30.2			J	ES 1234678-HpCDD	74	
OCDD	38.2			J	ES OCDD	72.7	
2378-TCDF	27.2				ES 2378-TCDF	89.1	
12378-PeCDF	30			J	ES 12378-PeCDF	82.6	
23478-PeCDF	47.3			J	ES 23478-PeCDF	87.1	
123478-HxCDF	51.5				ES 123478-HxCDF	76.3	
123678-HxCDF	37.2			J	ES 123678-HxCDF	78.2	
234678-HxCDF	35.1			J	ES 234678-HxCDF	80.8	
123789-HxCDF	ND	2.71			ES 123789-HxCDF	72	
1234678-HpCDF	91.7			B	ES 1234678-HpCDF	74.8	
1234789-HpCDF	18.5			J	ES 1234789-HpCDF	75.2	
OCDF	377			B	ES OCDF	74.2	
Totals					**Standard**	**SS/AS Recoveries**	
					SS 37Cl-2378-TCDD	77.3	
Total TCDD	48.5		60.1		SS 12347-PeCDD	79.9	
Total PeCDD	72.9		79		SS 12346-PeCDF	76.8	
Total HxCDD	94.1		101		SS 123469-HxCDF	82.9	
Total HpCDD	57.3		57.3		SS 1234689-HpCDF	78.8	
					AS 1368-TCDD	94.5	
Total TCDF	581		587		AS 1368-TCDF	91.4	
Total PeCDF	463		531				
Total HxCDF	342		353				
Total HpCDF	157		157				
Total PCDD/Fs	**2230**		**2340**				
ITEF TEQs							
TEQ: ND=0	46.8		46.8				
TEQ: ND=DL/2	47.9	3.5	47.9				
TEQ: ND=DL	49.1	7	49.1				

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Sample ID: LCD/Run 02

Method 23

Client Data		Sample Data		Laboratory Data			
Name:	Alliance Source Testing	Matrix:	Air	Lab Project ID:	A5045	Date Received:	20-Dec-2012
Project ID:	2012-0209-001	Weight/Volume:	1	Lab Sample ID	A5045_10493_DF_003	Date Extracted:	31-Dec-2013
Date Collected:	11-Dec-2012			QC Batch No:	10493	Date Analyzed:	05-Jan-2013
		Split:	2	Dilution:	-	Time Analyzed:	21:00:28

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	1.66			ES 2378-TCDD	83.2	
12378-PeCDD	7.8			J	ES 12378-PeCDD	82.4	
123478-HxCDD	5.63			J	ES 123478-HxCDD	76.6	
123678-HxCDD	9.5			J	ES 123678-HxCDD	73.7	
123789-HxCDD	EMPC		7.26	J	ES 123789-HxCDD	70.8	
1234678-HpCDD	46			J	ES 1234678-HpCDD	73.4	
OCDD	64.1			J	ES OCDD	71.6	
2378-TCDF	25.4				ES 2378-TCDF	88.6	
12378-PeCDF	37.3			J	ES 12378-PeCDF	81.3	
23478-PeCDF	57				ES 23478-PeCDF	84.9	
123478-HxCDF	71.3				ES 123478-HxCDF	74.9	
123678-HxCDF	57.7				ES 123678-HxCDF	73.9	
234678-HxCDF	52.3				ES 234678-HxCDF	75.9	
123789-HxCDF	ND	3.8			ES 123789-HxCDF	68	
1234678-HpCDF	148				ES 1234678-HpCDF	71.4	
1234789-HpCDF	28.9			J	ES 1234789-HpCDF	71.4	
OCDF	319			B	ES OCDF	72.4	
Totals					**Standard**	**SS/AS Recoveries**	
					SS 37Cl-2378-TCDD	98.4	
Total TCDD	116		116		SS 12347-PeCDD	107	
Total PeCDD	131		136		SS 12346-PeCDF	95.6	
Total HxCDD	153		160		SS 123469-HxCDF	111	
Total HpCDD	89.2		89.2		SS 1234689-HpCDF	106	
					AS 1368-TCDD	88.8	
Total TCDF	679		718		AS 1368-TCDF	86.3	
Total PeCDF	674		674				
Total HxCDF	494		505				
Total HpCDF	252		252				
Total PCDD/Fs	**2970**		**3030**				
ITEF TEQs							
TEQ: ND=0	59.1		59.8				
TEQ: ND=DL/2	60.2	3.55	60.8				
TEQ: ND=DL	61.4	7.11	61.8				

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Sample ID: LCD/Run 03

Method 23

Client Data		Sample Data		Laboratory Data			
Name:	Alliance Source Testing	Matrix:	Air	Lab Project ID:	A5045	Date Received:	20-Dec-2012
Project ID:	2012-0209-001	Weight/Volume:	1	Lab Sample ID	A5045_10493_DF_004	Date Extracted:	31-Dec-2013
Date Collected:	11-Dec-2012			QC Batch No:	10493	Date Analyzed:	05-Jan-2013
		Split:	2	Dilution:	-	Time Analyzed:	21:51:57

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	3.2			J	ES 2378-TCDD	102	
12378-PeCDD	5.54			J	ES 12378-PeCDD	104	
123478-HxCDD	4.35			J	ES 123478-HxCDD	95.6	
123678-HxCDD	EMPC		6.96	J	ES 123678-HxCDD	90.9	
123789-HxCDD	7.45			J	ES 123789-HxCDD	90.6	
1234678-HpCDD	39.9			J	ES 1234678-HpCDD	89.5	
OCDD	47.6			J	ES OCDD	84	
2378-TCDF	28.6				ES 2378-TCDF	98.3	
12378-PeCDF	45.5			J	ES 12378-PeCDF	90.6	
23478-PeCDF	63				ES 23478-PeCDF	98.8	
123478-HxCDF	79.2				ES 123478-HxCDF	92.4	
123678-HxCDF	62.4				ES 123678-HxCDF	93.9	
234678-HxCDF	54.3				ES 234678-HxCDF	92.2	
123789-HxCDF	ND	3.6			ES 123789-HxCDF	84.7	
1234678-HpCDF	168				ES 1234678-HpCDF	88.6	
1234789-HpCDF	32.7			J	ES 1234789-HpCDF	88.1	
OCDF	302			B	ES OCDF	88.5	
Totals					**Standard**	**SS/AS Recoveries**	
					SS 37Cl-2378-TCDD	94.8	
Total TCDD	128		128		SS 12347-PeCDD	99.2	
Total PeCDD	119		132		SS 12346-PeCDF	98.3	
Total HxCDD	132		143		SS 123469-HxCDF	104	
Total HpCDD	78.3		78.3		SS 1234689-HpCDF	103	
					AS 1368-TCDD	103	
Total TCDF	682		692		AS 1368-TCDF	94.2	
Total PeCDF	691		691				
Total HxCDF	518		533				
Total HpCDF	279		279				
Total PCDD/Fs	**2980**		**3030**				
ITEF TEQs							
TEQ: ND=0	66.1		66.8				
TEQ: ND=DL/2	66.4	3.2	67				
TEQ: ND=DL	66.7	6.39	67.2				

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Sample ID: Reagent Blank — Method 23

Client Data		Sample Data		Laboratory Data			
Name:	Alliance Source Testing	Matrix:	Air	Lab Project ID:	A5045	Date Received:	20-Dec-2012
Project ID:	2012-0209-001	Weight/Volume:	1	Lab Sample ID	A5045_10493_DF_005	Date Extracted:	31-Dec-2013
Date Collected:	11-Dec-2012			QC Batch No:	10493	Date Analyzed:	05-Jan-2013
		Split:	2	Dilution:	-	Time Analyzed:	22:43:26

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	2.36			ES 2378-TCDD	82.7	
12378-PeCDD	ND	2.88			ES 12378-PeCDD	81	
123478-HxCDD	ND	2.68			ES 123478-HxCDD	77.8	
123678-HxCDD	ND	2.79			ES 123678-HxCDD	77.3	
123789-HxCDD	ND	3.07			ES 123789-HxCDD	77.6	
1234678-HpCDD	ND	2.65			ES 1234678-HpCDD	77.3	
OCDD	EMPC		5.8	J	ES OCDD	76	
2378-TCDF	ND	1.53			ES 2378-TCDF	84.6	
12378-PeCDF	ND	1.92			ES 12378-PeCDF	75.2	
23478-PeCDF	ND	1.88			ES 23478-PeCDF	81.2	
123478-HxCDF	ND	2.33			ES 123478-HxCDF	75.2	
123678-HxCDF	ND	2.11			ES 123678-HxCDF	74.8	
234678-HxCDF	ND	2.22			ES 234678-HxCDF	77.8	
123789-HxCDF	ND	2.67			ES 123789-HxCDF	69.9	
1234678-HpCDF	7.76			J B	ES 1234678-HpCDF	74.6	
1234789-HpCDF	ND	3.85			ES 1234789-HpCDF	74.2	
OCDF	164			B	ES OCDF	76.7	
Totals					**Standard**	**SS/AS Recoveries**	
					SS 37Cl-2378-TCDD	92.3	
Total TCDD	ND		3.67		SS 12347-PeCDD	105	
Total PeCDD	ND	2.88	ND		SS 12346-PeCDF	95.7	
Total HxCDD	ND	2.84	ND		SS 123469-HxCDF	106	
Total HpCDD	ND	2.65	ND		SS 1234689-HpCDF	107	
					AS 1368-TCDD	83.1	
Total TCDF	ND	1.53	ND		AS 1368-TCDF	79.7	
Total PeCDF	ND	1.9	ND				
Total HxCDF	ND	2.31	ND				
Total HpCDF	7.76		7.76				
Total PCDD/Fs	**172**		**182**				
ITEF TEQs							
TEQ: ND=0	0.242		0.248				
TEQ: ND=DL/2	3.67	3.44	3.67				
TEQ: ND=DL	7.09	6.88	7.09				

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Project Initiation Form

Project Number:	A5045	Initiation Date:	20-Dec-12
Client Name:	Alliance Source Testing	Sample Matrix:	Air - M23
Analysis Method:	M23	TAT:	21 days
		Project Manager:	Heather

Special Instructions

N/A

Reporting Instructions

17 Toxics
Send COC with narrative in e-mail

PM Initials: dmccall Date: 20-Dec-2012

Sample Path

Version B

SGS-AP Project No.: A5045
Protocol: 23 PCDD/F

Sample Processing

- **Extraction**
  - ☑ *SDS*
  - ☑ *Extraction Standards ($^{13}C_{12}$ - PCDD / F) " ES "*
- **Fractionation** *Split 1:1*
  - ☑ *Alternate Standard ($^{13}C_{12}$-TCDD/F "AS")*
  - ☑ *Multi-Column Cleanup (ASECS)*
  - ☑ *Final Extract*
- **Analysis**
  - ☑ *Injection Standards " JS "*
  - ☑ *HRGC / HRMS*
  - ☑ *12-H Performance Checks*
- **Interpretation**
  - ☑ *ID Criteria*
  - ☑ *Detection Limits*
  - ☑ *Recoveries*

Spike Profile

A_x:	400 pg (400 µL; 0.001 ng/ µL) for BCS_3 only (prepared w/ traps)
ES:	4 ng (400 µL; 0.01 ng/ µL)
SS:	4 ng (40 µL; 0.1 ng/ µL; 0.04 ng/ µL or 1.6 ng for TCDD)
AS:	4 ng (400 µL; 0.01 ng/ µL)
JS:	2 ng (200 µL; 0.01 ng/ µL)

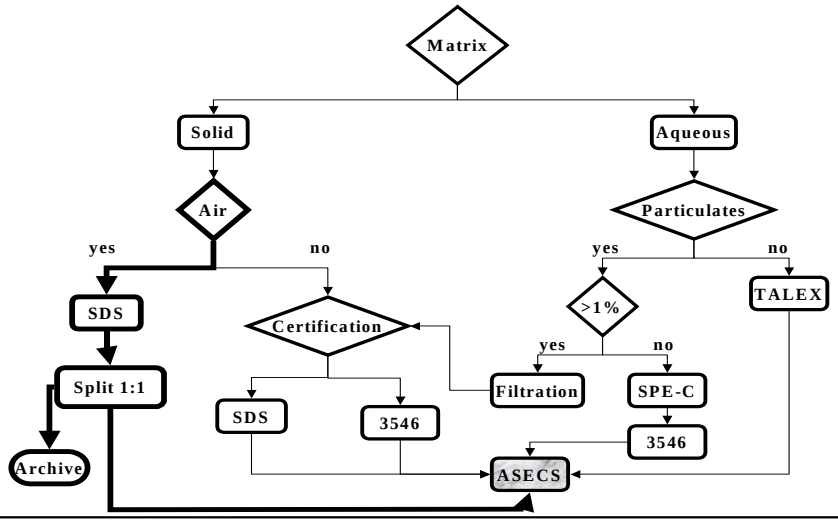
SOPs

Extraction:	AP-SP-E
Fractionation:	AP-SP-CU
Analysis:	AP-SP-A
Concentration:	AP-SP-N
Fortification:	AP-SP-F
Data Validation:	AP-SP-R

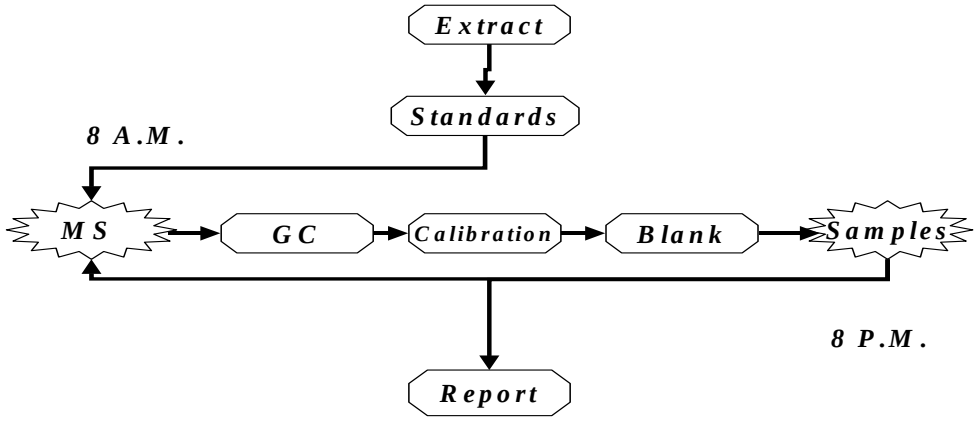
QC Profile

LMB:	always required
BCS_3:	always required

Sample Extraction



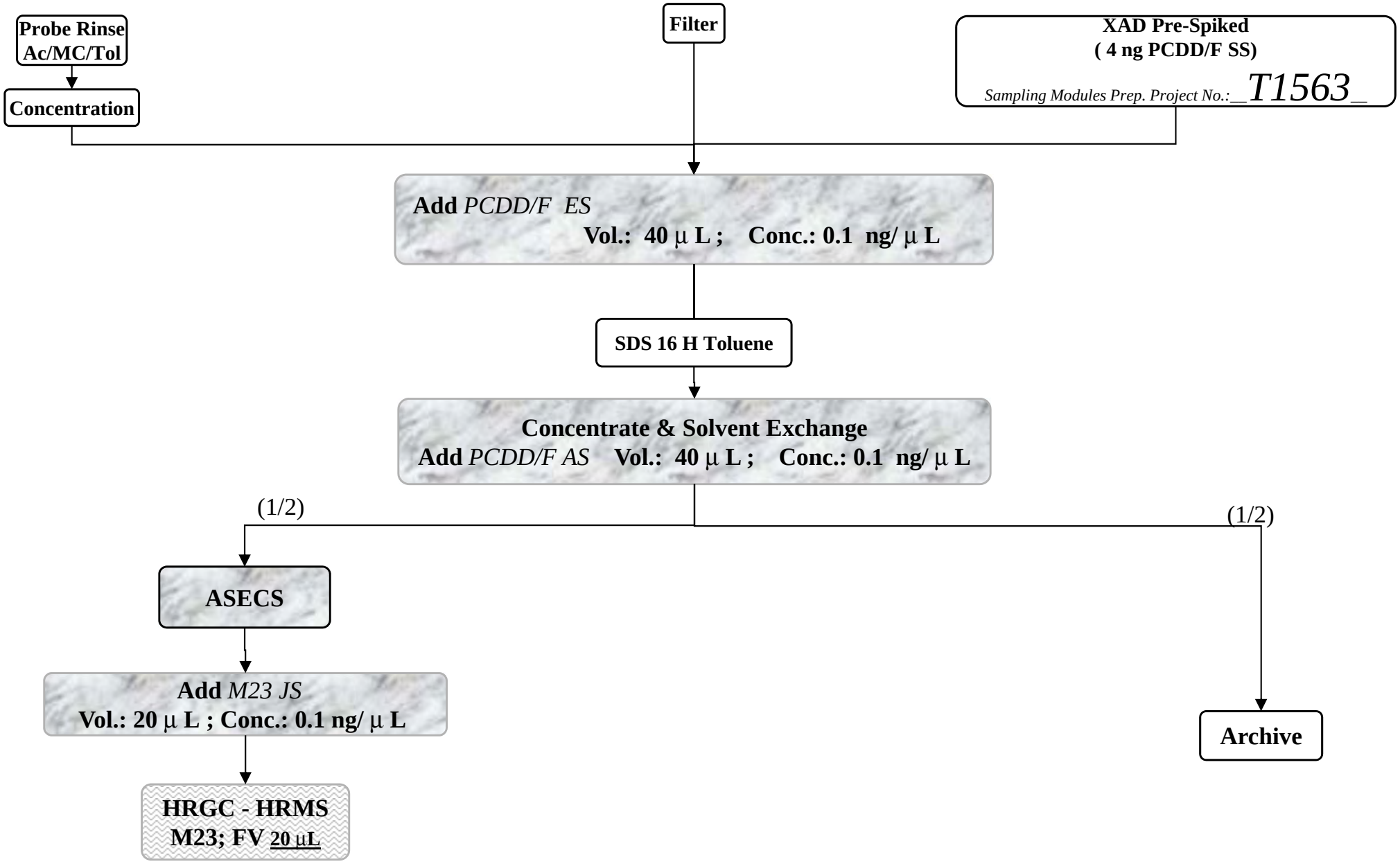
Sample Analysis



SAMPLE PATH

Version B

SGS-AP PROJECT NO: A5045
PROTOCOL: 23 PCDD/F



Prep Sheet

TRANSFER: M 1/4/13

RECEIVED: ow 1.4.13

SGS ANALYTICAL PERSPECTIVES

M23 | AIR

Project # A5045 | Batch # 10493 | Extract Init/Date: VS 1231-12 | ASECS Init/Date: TM 1/3/13 | Transfer Init/Date: M 1/4/13

AP Sample ID	Client Sample ID	SDS #	RV & S.E. Initials	RV & S.E. #	Split 1/2 1/4	ASECS #	(Td)	Supply IDs	
A5045_10493_001	Field Blank	9	mnl	4	TM	16	TM	Toluene	DH378
A5045_10493_002	LCD/Run 01	10	mnl	1	TM	15	TM	CH_2CL_2	DH240
A5045_10493_003	LCD/Run 02	11	mnl	3	TM	14	TM	Sand	—
A5045_10493_004	LCD/Run 03	12	mnl	1	TM	13	TM	Florisil	12222012
A5045_10493_005	Reagent Blank	13	mnl	2	TM	12	TM	Hexane	DH434
BCS3_10493	0_10493_BCS3	—	~~mnl~~ 1-2-13	—	—	—	40-1	Silica	12202012
MB1_10493	Method Blank	8	mnl	1	TM	8	TM	Acid Silica	12212012
			1-2-13		1/2/13	1/3/13	1/3/13	Base Silica	12312012
								HydroMatrix	—
								Tetradecane	10252011
								~~H_2SO_4~~ Na_2SO_4	12052012
								~~K Silicate~~ $AgNO_3$	12312012

Special Instructions

N/A

Cycle Time

Start 7:30pm

Stop 12:30 pm

SGS ANALYTICAL PERSPECTIVES

M23

AIR

Project # A5045-AR | Batch # 10493 | Extract Init/Date: | ASECS Init/Date: TM 1/4/13 | Transfer Init/Date: MM 1-9-13

AP Sample ID	Client Sample ID	SDS #	RV & S.E. Initials	RV & S.E. #	Split 1/2 1/4	ASECS #	(Td)
A5045_10493_001-AR	Field Blank	NA	NA	NA	AR	13	TM
A5045_10493_002-AR	LCD/Run 01	NA	NA	NA	AR	12	TM
A5045_10493_003-AR	LCD/Run 02	NA	NA	NA	AR	11	TM
A5045_10493_004-AR	LCD/Run 03	NA	NA	NA	AR	10	TM
A5045_10493_005-AR	Reagent Blank	NA	NA	NA	AR	9	TM
BCS3_10493-AR	0_10493_BCS3	NA	NA	NA	AR	—	-
MB1_10493-AR	Method Blank	NA	NA	NA	AR	14	TM
						TM 1/9/13	1/9/13

Supply IDs

Toluene	DH378
CH_2CL_2	D6836
Sand	—
Florisil	D1022013
Hexane	D11434
Silica	1202012
Acid Silica	01082013
Base Silica	01072013
HydroMatrix	—
Tetradecane	10252012
~~H_2SO_4~~ Na_2SO_4	12052012
~~K Silicate~~ $AgNO_3$	01092013

Special Instructions

N/A

Cycle Time

Start

Stop

SGS ANALYTICAL PERSPECTIVES

M23 | AIR

Project # A5045 Batch # 10493

Inter-Department Communication Sheet

VS 12-31-12

T1563_MB000
Alliance Source Testi
PREP: 5 DEC 2012
EXP: 19 DEC 2012
4 NG Sampling Standard PCDD/F
AM
SGS ANALYTICAL PERSPECTIVES
5045

Filed archives. AM 8 Jan 2013

	XAD	FILTERS	RINSES	OTHER
A5045_10493_001	WH, D, F	WH, D	CLR w/BLK, pm	WH, D
A5045_10493_002	WH, M	YW CHECKERBOARD	SEE 001	WH, M
A5045_10493_003	SEE 002	SEE 002	SEE 001	SEE 002
A5045_10493_004	SEE 002	SEE 002	SEE 001	SEE 002
A5045_10493_005	SEE 001	SEE 001	CLEAN, CLEAR	SEE 001

Special Instructions

N/A

Sample Path

Version B

M23 / M0023A PCDD/F Spike Profile

Analyte	Sampling Standards Amount Spiked (ng)
$^{37}Cl_4$-2,3,7,8-TCDD	1.6
$^{13}C_{12}$-1,2,3,4,7-PeCDD	4
$^{13}C_{12}$-1,2,3,4,6-PeCDF	4
$^{13}C_{12}$-1,2,3,4,6,9-HxCDF	4
$^{13}C_{12}$-1,2,3,4,6,8,9-HpCDF	4

Compound	Injection Standards Amount Spiked ng
$^{13}C_{12}$–1,2,3,4-TCDD	2
$^{13}C_{12}$-1,2,3,4-TCDF	2
$^{13}C_{12}$-1,2,3,4,6,7-HxCDD	1

Compound	Alternate Standard Amount Spiked ng
$^{13}C_{12}$–1,3,6,8-TCDD	4
$^{13}C_{12}$-1,3,6,8-TCDF	4

Compound	Extraction Standards Amount Spiked ng
$^{13}C_{12}$-2,3,7,8-TCDD	4
$^{13}C_{12}$-1,2,3,7,8-PeCDD	4
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	4
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	4
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	4
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	4
$^{13}C_{12}$-OCDD	8
$^{13}C_{12}$-2,3,7,8-TCDF	4
$^{13}C_{12}$-1,2,3,7,8-PeCDF	4
$^{13}C_{12}$-2,3,4,7,8-PeCDF	4
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	4
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	4
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	4
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	4
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	4
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	4
$^{13}C_{12}$-OCDF	8

8290B/23 ICAL (pg/µL)

SGS	CS0	CS1	CS2	CS3	CS4	CS5	CS6
Unlabeled Analytes							
2,3,7,8-TCDD	0.25	0.5	2	10	40	200	500
2,3,7,8-TCDF	0.25	0.5	2	10	40	200	500
1,2,3,7,8-PeCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,7,8-PeCDF	1.25	2.5	10	50	200	1000	2500
2,3,4,7,8-PeCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,4,7,8-HxCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,6,7,8-HxCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,7,8,9-HxCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,4,7,8-HxCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,6,7,8-HxCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,7,8,9-HxCDF	1.25	2.5	10	50	200	1000	2500
2,3,4,6,7,8-HxCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,4,6,7,8-HpCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,4,6,7,8-HpCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,4,7,8,9-HpCDF	1.25	2.5	10	50	200	1000	2500
OCDD	2.5	5	20	100	400	2000	5000
OCDF	2.5	5	20	100	400	2000	5000
Extraction Standards							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
$^{13}C_{12}$-OCDF	200	200	200	200	200	200	200
Cleanup Standards							
$^{37}Cl_4$-2,3,7,8-TCDD	-	0.5	2	10	40	200	-
$^{13}C_{12}$-1,2,3,4,7-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,8,9-HpCDF	100	100	100	100	100	100	100
Alternate Standards							
$^{13}C_{12}$-1,3,6,8-TCDD				100			
$^{13}C_{12}$-1,3,6,8-TCDF				100			
Injection Standards							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7-HxCDD	50	50	50	50	50	50	50

SGS ANALYTICAL PERSPECTIVES

M23 | AIR

Project # A5045 Batch # 10493

SPIKE PROFILE PCDD/Fs

Analyte	Spike Compounds	Spiked Amount	Spiked Volume	Solution Conc.	Split Factor	Final Volume	Final Solvent
PCDD/F	SS	4 ng	40 uL	40 pg/uL	2	20 uL	Td
	ES	4 ng	400 uL	10 pg/uL	2	20 uL	Td
	AS	4 ng	400 uL	10 pg/uL	2	20 uL	Td
	JS	2 ng	200 uL	10 pg/uL	1	20 uL	Td
	Ax Batch CS3	0.4 ng	400 uL	1 pg/uL	2 EE NA 1/2/13	40 uL	Td
	Td Batch CS3		40 uL		1/2/13	40 uL	Td
Spiker Initials:		NA 12/31/12	NA 12/31/12	NA 12/31/12	NA [illegible]	NA 1/4/13	

AP Sample ID	Client Sample ID	PCDD/F ES	PCDD/F Ax-A	PCDD/F Ax-B	PCDD/F AS	PCDD/F JS	
		Amount: 400 uL	Amount: 400 uL	Amount: 40 uL	Amount: 400 uL	Amount: 200 uL	Amount:
		Observer Initials	Observer Initials	Observer Initials	Observer Initials	Observer Initials	Observer Initials
A5045_10493_001	Field Blank	TM	—	—	TM	tm	
A5045_10493_002	LCD/Run 01	TM	—	—	TM	tm	
A5045_10493_003	LCD/Run 02	TM	—	—	TM	tm	
A5045_10493_004	LCD/Run 03	TM	—	—	TM	tm	
A5045_10493_005	Reagent Blank	TM	—	—	TM	tm	
BCS3_10493	0_10493_BCS3	TM	TM	TM	TM	tm	
MB1_10493	Method Blank	TM	—	—	TM	tm	
		12/31/12	12/31/12	12/31/12	1/2/13	1/4/13	

Standard Information

STD Type	AX-a	ES		Ax-B	AS	JS	
Spike ID	033120106	101712dl		033120108	11012012AS1	11012012AS1	
SIL #	12-88-1	12-96-1		12-77-1	12-97-3	12-97-1	
Concentration	1	10		10	10	10	
Units	pg/µL	pg/µL		pg/µL	pg/µL	pg/µL	
Exp. Date	10/9/13	11/15/13		9/4/13	11/26/13	11/26/13	
Spike amount (µL)	400	400		40	400	200	

SGS ANALYTICAL PERSPECTIVES

M23 **AIR**

Project # A5045-AR Batch # 10493

SPIKE PROFILE PCDD/Fs

Analyte	Spike Compounds	Spiked Amount	Spiked Volume	Solution Conc.	Split Factor	Final Volume	Final Solvent
PCDD/F	SS	4 ng	40 uL	40 pg/uL	2	20 uL	Td
	ES	4 ng	400 uL	10 pg/uL	2	20 uL	Td
	AS	4 ng	400 uL	10 pg/uL	2	20 uL	Td
	JS	2 ng	200 uL	10 pg/uL	1	20 uL	Td
	Ax Batch CS3	0.4 ng	400 uL	1 pg/uL	2	40 uL	Td
	Td Batch CS3		40 uL			40 uL	Td

Spiker Initials: Am 1/9/13

AP Sample ID	Client Sample ID	PCDD/F ES Amount: / Observer Initials	PCDD/F Ax-A Amount: / Observer Initials	PCDD/F Ax-B Amount: / Observer Initials	PCDD/F AS Amount: / Observer Initials	PCDD/F JS Amount: 200uL / Observer Initials	Amount: / Observer Initials
A5045_10493_001-AR	Field Blank					mn 1	
A5045_10493_002-AR	LCD/Run 01					mn 1	
A5045_10493_003-AR	LCD/Run 02					mn 1	
A5045_10493_004-AR	LCD/Run 03					mn 1	
A5045_10493_005-AR	Reagent Blank					mn 1	
BCS3_10493-AR	0_10493_BCS3					—	
MB1_10493-AR	Method Blank					mn 1	
						1-9-13	

Standard Information

STD Type	AX			Ax-B	AS	JS	
Spike ID						130120128A01	
SIL #						12-97-1	
Concentration	1			10	10	10	
Units	pg /µL			pg /µL	pg /µL	pg /µL	
Exp. Date						11-26-13	
Spike amount (µL)	400			40	400	200	

TRANSFER: MN Mn 1-9-13

RECEIVED: GM 1/9/13

Sample Receipt Notification

2714 Exchange Drive
Wilmington, NC 28405 USA
Tel: 910 794-1613
Toll Free: 866 846-8290
Fax: 910 794-3919

Project Manager:	*Heather Steele*
Receipt Date & Time:	*18-Dec-12 at 06:30*
AP Project name:	*A5045*
Requested TAT:	*21 days*
Projected due date:	*10-Jan-13*
Matrix:	*Air - M23*
Phone#:	*910-794-1613*
Email Address:	*Heather.Steele@sgs.com*

Company Contact:	*Chris LeMay*
Company:	*Alliance Source Testing*
Project Name & Site:	*2012-0209-001*
Project PO#:	*2012-0209-001*
QAAP/Contract #:	*N/A*
Requested Analysis:	*method 23 17 Toxics*
Phone#:	*256-351-0121*
Email Address:	*chris.lemay@stacktest.com*

Received Temps

Client Smp ID	AP Smp ID	Components	Sampling Date	Sampling Time	XAD	Solvent Rinse(s)	Container #	Shipping #
Field Blank	A5045_001	Filter #1, T1563-004, Acetone, Toluene, XAD #1	11-Dec-12	00:00	4	4	1	N/A
LCD/Run 01	A5045_002	Filter #1, T1563-006, Acetone, Toluene, XAD #1	11-Dec-12	00:00	4	4	1	N/A
LCD/Run 02	A5045_003	Filter #1, T1563-002, Acetone, Toluene, XAD #1	11-Dec-12	00:00	4	4	1	N/A
LCD/Run 03	A5045_004	Filter #1, T1563-005, Acetone, Toluene, XAD #1	11-Dec-12	00:00	4	4	1	N/A
Reagent Blank	A5045_005	Filter #1, T1563-001, Acetone, Toluene, XAD #1	11-Dec-12	00:00	4	4	1	N/A

Sample Seals Intact: No **Sample(s) Condition:** Client - Intact

Notes/Comments:

Samples received intact.
Collection dates missing on samples.

Any un-extracted sample will be stored for 90 days from reporting date.
Additional storage fees may apply for any samples stored longer than 90 days.

Received by: Nancy Musselwhite *Logged in by: Nancy Musselwhite* *QC'ed by: DRM 20Dec12*

FOR METHOD 23
FH & BH RINSES ARE COMBINED
NO CONDENSATES

ANALYTICAL PERSPECTIVES

PAGE 1 OF 2
A5045

CHAIN-OF-CUSTODY RECORD

PROJECT ID: Eastman P.O. No.: 2012-0209-001 SAMPLER: Jeremy Hutchens (PRINTED NAME) (SIGNATURE)

RELINQUISHED BY: (SIGNATURE & PRINTED NAME)	DATE:	TIME:	RECEIVED BY: (SIGNATURE & PRINTED NAME)	DATE:	TIME:
J. Hutchens	12/12/12	07:00	Shanne R Hudson / Shanne R Hudson	17Dec12	1250m
Reginald McCarver	12/17/12	0725			

SHIPMENT ID: Courier

SAMPLING TRAIN VERSION

REQUESTED TAT: 21 DAYS

QAPP

SHIP TO: ANALYTICAL PERSPECTIVES
2714 EXCHANGE DRIVE
WILMINGTON, NC 28405
PH.: 910-794-1613

ATTN: DR. YVES TONDEUR

SAMPLE ID	DATE	TIME	FILTER	FIELD QC	LAB QC	XAD-2 RESIN	FIELD QC	LAB QC	FH Ac./MC	FIELD QC	LAB QC	FH TOLUENE	FIELD QC	LAB QC	BH Ac./MC	FIELD QC	LAB QC	BH TOLUENE	FIELD QC	LAB QC	CONDENSATES	FIELD QC	LAB QC
LCD/Run01	12/11	✓	1			1			1			1			C			C			No		
LCD/Run 02	12/11	✓	1			1			1			1			C			C			No		
LCD/Run03	12/11	✓	1			1			1			1			C			C			No		
Field Blank	12/11	✓	1			1			1			1			C			C			No		
Reagent Blanks	12/11	✓	1			1			1			1			C			C			No		

SPECIAL INSTRUCTIONS/COMMENTS: (CIRCLE ALL THAT APPLY)

M23 M 0023A ANALYZE SOLVENT BLANK

"DIOXINS/FURANS ONLY" "D/F - PCB"

"D/F - PCB - PAH" "D/F – USVOST"

"D/F – PCB – PAH – USVOST" "TRI – OCTA"

PLEASE SPECIFY TEF: See attachment

"ITEF" "WHO TEF" "CT TEF" "MA TEF"

NOTE: M23 REPRESENTS ONE SAMPLE (FH/BH COMBINED) WHILE M0023A REPRESENTS TWO SAMPLES (FH/BH SEPARATE). IF 0023A OPTION IS SELECTED, WE WILL APPEND FH AND BH TO THE SAMPLE ID.

NO ENTRIES FOR THE BH COMPONENTS = FH & BH ARE COMBINED.

AN "X" IN LAB QC SLOT = DO NOT ANALYZE

SEND DOCUMENTATION & RESULTS TO:

NAME: Chris LeMay
COMPANY: Alliance Source Testing
ADDRESS: 214 Central Circle SW
CITY: Decatur
STATE: AL ZIP: 35603
PH.: 256-351-0121
E-MAIL: chris.lemay@stacktest.com

BILL TO: (☑ CHECK IF SAME)

NAME:
COMPANY:
ADDRESS:
CITY:
STATE: ZIP:
PH.:

2 of 2
A5045

Congener	TEF
PCDD	
2,3,7,8-TCDD	1
1,2,3,7,8-PeCDD	0.5
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
1,2,3,4,6,7,8,9-OCDD	0.001
PCDF	
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF	0.05
2,3,4,7,8-PeCDF	0.5
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
1,2,3,4,6,7,8,9-OCDF	0.001

CLIENT SAMPLE ID	Field Blank	LCD/Run 01	LCD/Run 02	LCD/Run 03
LAB SAMPLE #	A5045-001	-002	-003	-004
DATE SAMPLED	12-11-12	12-11-12	12-11-12	12-11-12
OBSERVATIONS				
COMPONENTS	**QUANTITY**	**QUANTITY**	**QUANTITY**	**QUANTITY**
FILTER	1	1	1	1
XAD	1	1	1	1
TRAP PREP#	T1563-004	T1563-006	T1563-002	T1563-005
ACETONE / ~~CH_2Cl_2~~ FH/BH RINSE	1	1	1	1
TOLUENE FH/BH RINSE	1	1	1	1
OTHER (IMPING ERS, ETC…)				
TRAP SOURCE	☐AP ☒CLIENT	☐AP ☒CLIENT	☐AP ☒CLIENT	☐AP ☒CLIENT

CLIENT SAMPLE ID	Reagent Blank -005			
LAB SAMPLE #				
DATE SAMPLED	12-11-12			
OBSERVATIONS				
COMPONENTS	**QUANTITY**	**QUANTITY**	**QUANTITY**	**QUANTITY**
FILTER	1			
XAD	1			
TRAP PREP#	T1563-001			
ACETONE / ~~CH_2Cl_2~~ FH/BH RINSE	1			
TOLUENE FH/BH RINSE	1			
OTHER (IMPINGERS, ETC…)				
TRAP SOURCE	☐AP ☒CLIENT	☐AP ☐CLIENT	☐AP ☐CLIENT	☐AP ☐CLIENT

UNUSED TRAPS: T1563-003

METHOD 23
PCDD/PCDFs

Sampling Module Request Form

AP Project #: T1563

Type & Quantity of Sampling Modules

Qty. XAD: 6

Resin Batch No.: 5175

Qty. PUF: N/A

PUF Batch No.: —

Filter Size: 82.6mm

Qty. Filters: 12

Filter Batch#: 10172012

Qty. Petri Dishes: 6

Jars and/or Bottles: N/A

Client Specific Instructions

USE AP RENTAL TRAPS

Spike Profile

* # 0F MB / BCS_3 NEEDED: 2 OF EACH*

Vol. PCDD/F: 40 µL

Solution ID: 033120WP ; 1.6-4 ng

Vial ID: 12-92-1 Expiration: 10/13/13

Vol. HR_PAH: 40 µL (40 ng)

Solution ID: N/A ; 0.5 ng/ µL

Vial ID: N/A Expiration: N/A

Vol. HR_PCB: 40 µL (4 ng)

Solution ID: N/A ; 0.1 ng/ µL

Vial ID: N/A Expiration: N/A

Following sample recovery, please return this form with the field samples to:

2714 Exchange Drive
Wilmington, NC 28405
Ph.: 910-794-1613
Fax: 910-794-3919

Please be aware of your trap batch #

QC begins when we prep your traps. The Method Blank and a BCS_3 are prepared simultaneously with the trap and are properly stored until the trap batch returns for analysis.

We recommend keeping trap batches together and if a set of traps is to be split into multiple project, please let us know so we can prepare extra Method Blanks/BCS_3

Thank you.

Initial Below

Prep By: KY

Spike By: KY

Witness: VS Date: 12/5/12

CLIENT INFORMATION

Company/Org.: Alliance Source Testing
Contact: Chris LeMay
Client Project ID: 2012-0209-001
Client PO #:

Date of Request: 15 NOV 2012

Arrival Date: 06 DEC 2012

Ship To:

Alliance Source Testing
Attn: Jeremy Hutchens
214 Central Circle S.W.
Decatur, AL 35603

Ph.: 256-280-6005
Email: Chris.LeMay@stacktest.com

ALL PROJECTS ARE SHIPPED PRIORITY OVERNIGHT VIA FEDEX

ADDITIONAL NOTES

D/Fs ONLY
EASTMAN-KINGSPORT, TN

Airway Bill #: 7942 2943 2493

Date Shipped: 05-Dec. 2012

AP Invoice # 15082

AP Rental Traps: (Y) N

Qty.: 6

Trap Batch

T1563

Initial & Date below for each trap

Spiking Traps

only fill out applicable table

Amdec52012

Solution ID: 03120101	
Spike Volume : 40uL	
TRAP ID	PCDD/Fs
BCS3	VS
MB-000	VS
001	VS
002	VS
003	VS
004	VS
005	VS
006	VS
007	—

12/5/12

Solution ID:	
Spike Volume :	
TRAP ID	HRPCBs
BCS3	
MB-000	
001	
002	
003	
004	
005	
006	
007	

Solution ID:	
Spike Volume :	
TRAP ID	HRPAHs
BCS3	
MB-000	
001	
002	
003	
004	
005	
006	
007	

Solution ID:	
Spike Volume :	
TRAP ID	OTHER
BCS3	
MB-000	
001	
002	
003	
004	
005	
006	
007	

SGS

ANALYTICAL PERSPECTIVES

ANALYTICAL PERSPECTIVES

SAMPLE LOG-IN FORM Cooler #1

Date Samples Arrived: 18 Dec 12 Initials: NM

Time / Date logged in: 6:30 AM 20 Dec 12 Refrigerator:_____ Initials:

Samples Arrived By: (circle one) FedEx UPS Airborne Express DHL Emery
Freezer Truck (Company Courier) Other_____

Shipping Preservation: Traps & Filters: Ice / (Blue Ice) / Dry Ice / None Temp °C 4°

ee NM 12/20/12
Solvents: Ice / (Blue Ice) / Dry Ice / None Temp °C_____

Shipping Documentation Present? (circle one) Shipping Label or Airbill

of boxes: 0 # of coolers: 1 Tracking #s:

Shipping Container(s) intact? yes If no, describe condition:

Container Custody Seals Present & Intact? NA If not intact, describe condition:

Sample Cutody Seals Present & Intact? NA If not intact, describe condition:

of Seals: 0 or Seal #: 0

Sample Container Intact? yes If no, indicate sample condition:

Chain of Custody (COC) / Sample Documentation Present? yes Exceptions? N/A

If not, complete COC Anomaly Form

Shipping Containers: Coolers: Client or (AP) ..... Return (Retain) Dispose

Boxes: Client or AP ..... Return Retain Dispose

Sample Control Log In/Out Completed? yes

Client Project / Job ID: Eastman

PO #: 2012-0209-001

AP Project ID: AS045

CHAIN OF CUSTODY ANOMALY FORM

The following items were omited from the COC

Project ID and/or PO#:

Sampler:

Relinquished By:

Date:

Time:

Sample ID:

Sample Date:

Sample Collection Times: missing on COC

Sample Description:

Analysis Requested:

Container Qty.:

Container Type:

Other:

FILL BELOW IF APPLICABLE

Have all the samples arrived? yes If no, complete the following.

Shipment #:_____ Date of Arrival:_____ Condition:_____ Temp°C_____

Delivered by:_____ Tracking #s_____

COC Present?_____ Acceptable?_____ If no, document on COC Anomaly Form additional shipment comments.

Container Intact?_____ Samples Intact?_____ If no, describe:

Do we expect another shipment?_____ If yes, start a new log-in sheet. ☺

COMMENTS

Collection dates missing on samples

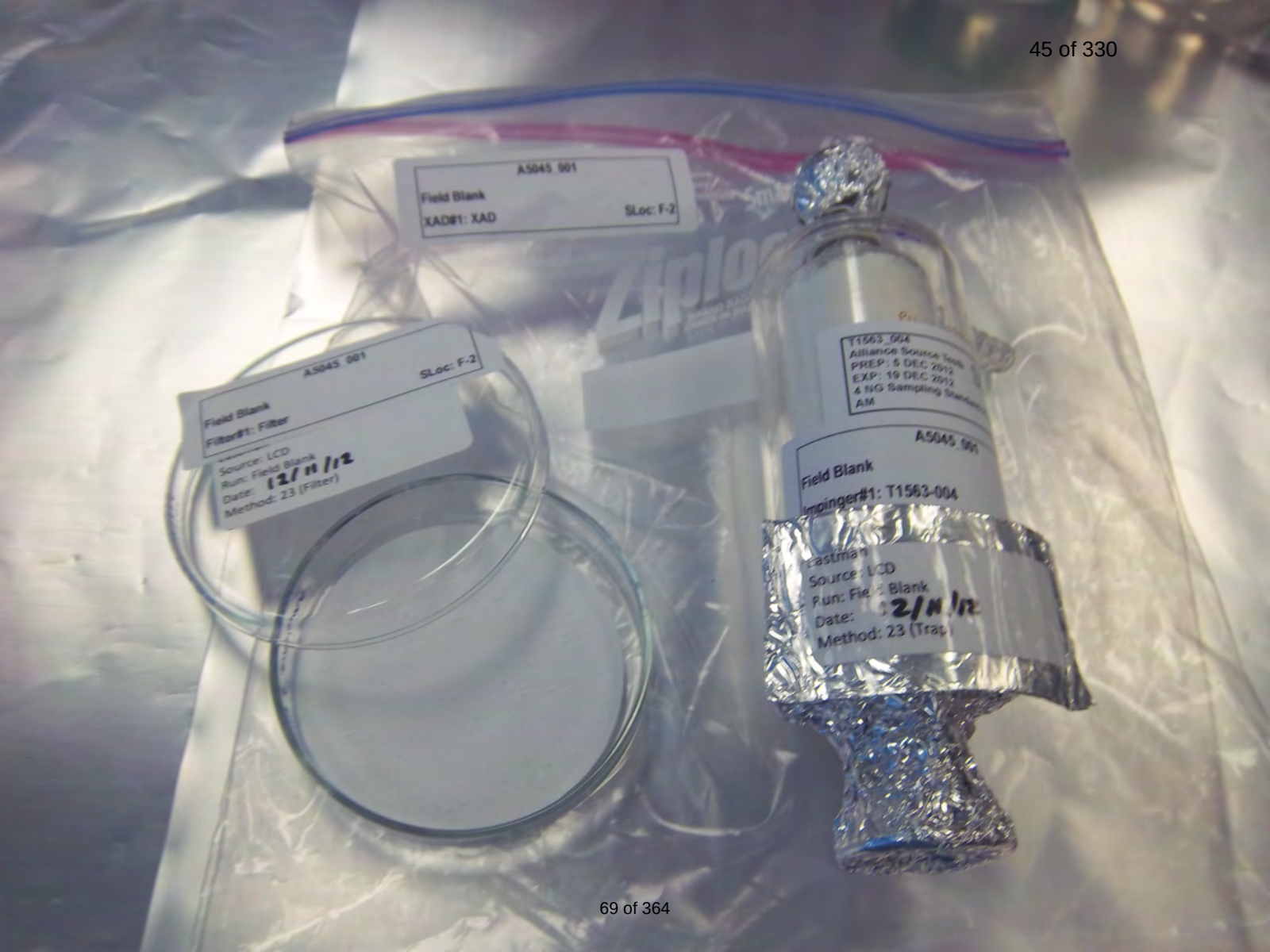

FRAGILE

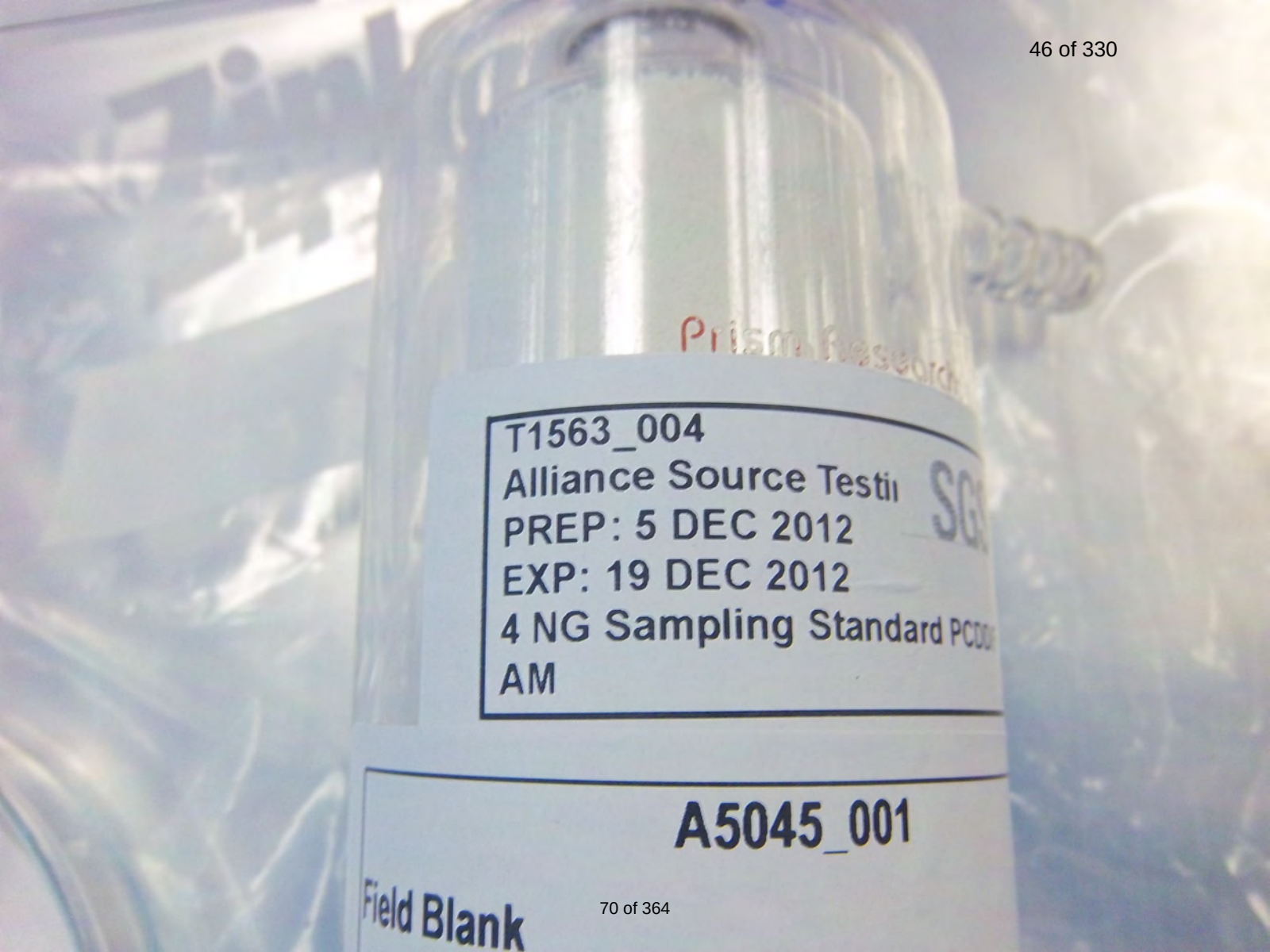
Ziploc
Smart Zip

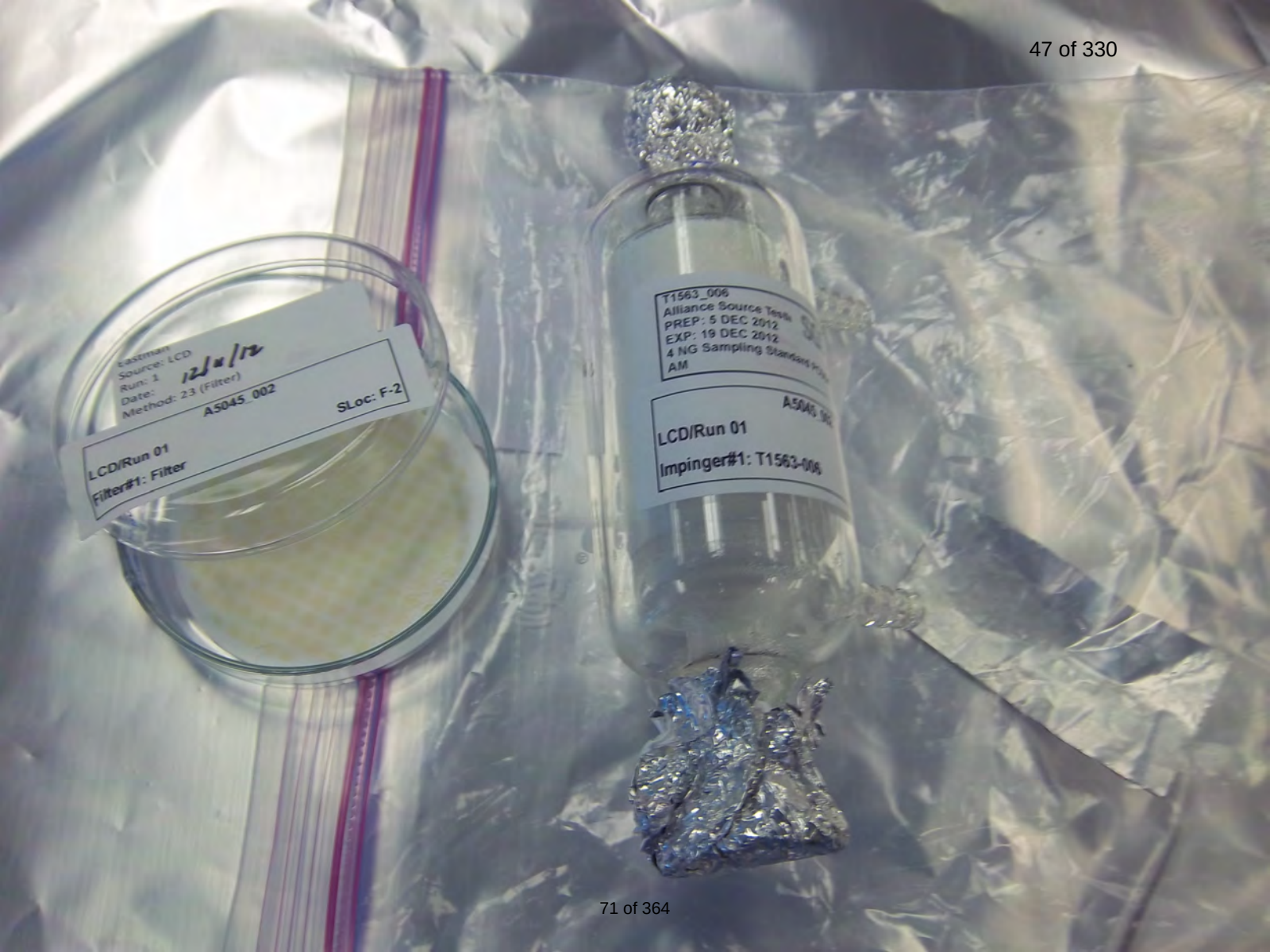

FRAGILE HANDLE WITH CARE
GLASS
SCIENTIFIC PRODUCTS LLC
CUSTODY SEAL TAPE
ALLIANCE SOURCE TESTING LLC
HEATHER MORGAN
214 CENTRAL CIR SW
DECATUR
AL 35603 – 1667
AL 356 2 – 02
121-08A

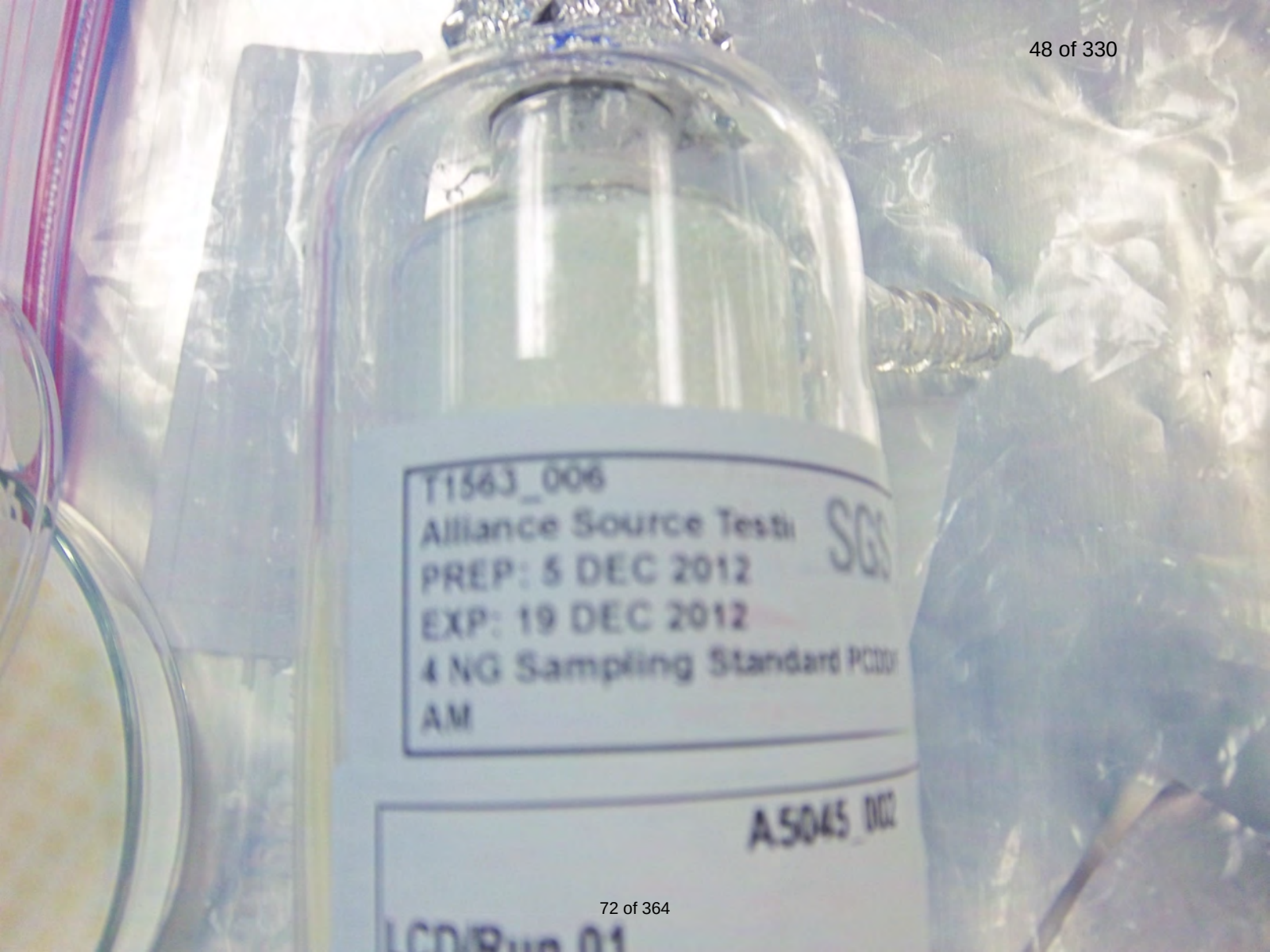


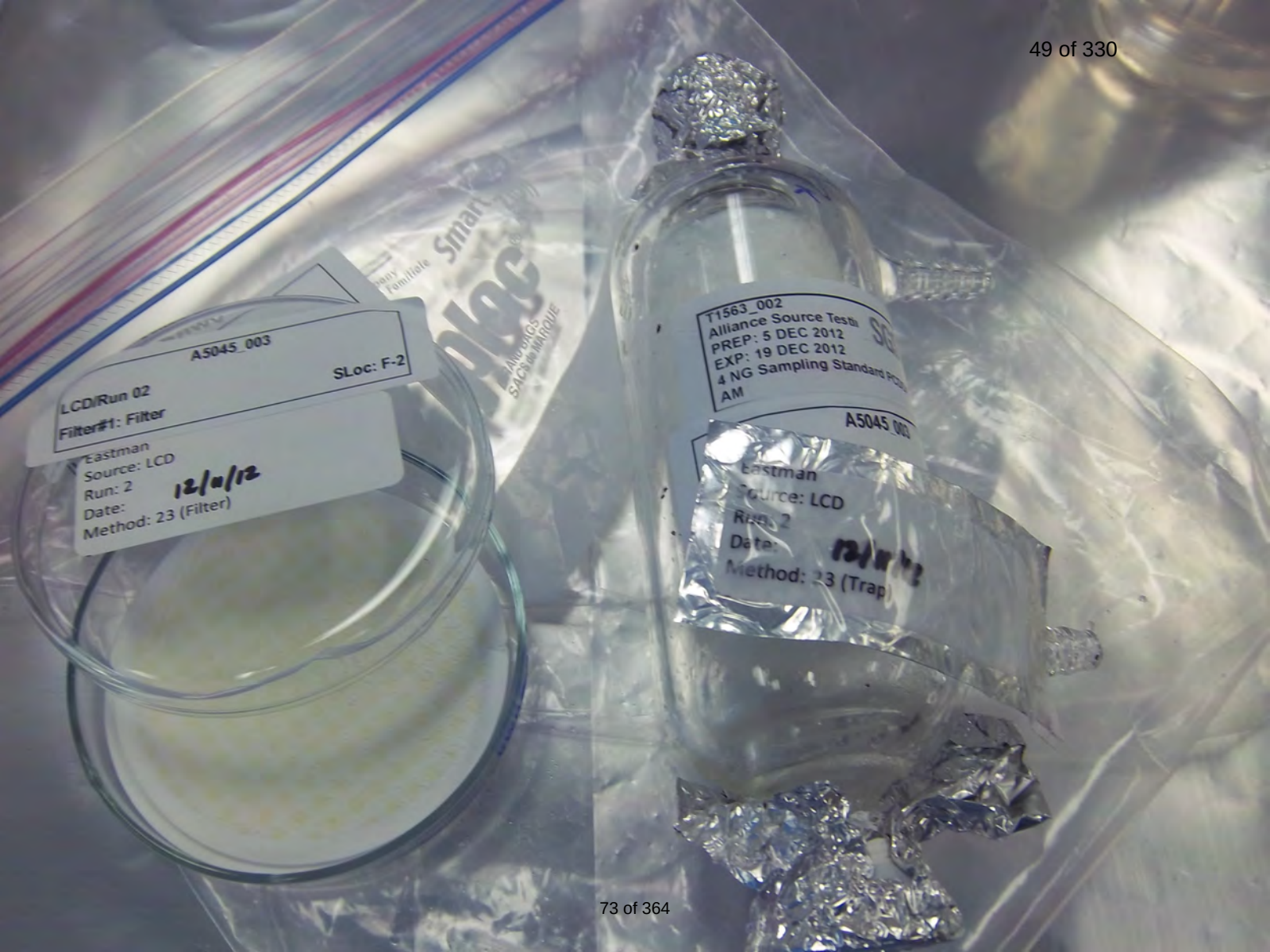

A5045_001
Field Blank
Filter#1: Filter
SLoc: F-2
Source: LCD
Run: Field Blank
Date: 12/11/12
Method: 23 (Filter)
A5045_002
LCD/Run 01
Filter#1: Filter
SLoc: F-2
Eastman
Source: LCD
Run: 1
Date: 12/6/12
Method: 23 (Filter)
A5045_003
LCD/Run 02
Filter#1: Filter
SLoc: F-2
Eastman
Source: LCD
Run: 2
Date: 12/6/12
Method: 23 (Filter)
A5045_004
LCD/Run 03
Filter#1: Filter
SLoc: F-2
Eastman
Source: LCD
Run: 3
Date: 12/6/12
Method: 23 (Filter)
A5045_005
SLoc: F-2


A5045_001
Field Blank
XAD#1: XAD
SLoc: F-2
A5045_001
SLoc: F-2
Field Blank
Filter#1: Filter
Source: LCD
Run: Field Blank
Date: 12/11/12
Method: 23 (Filter)
T1563_004
Alliance Source Test
PREP: 5 DEC 2012
EXP: 19 DEC 2012
4 NG Sampling Standard
AM
A5045_001
Field Blank
Impinger#1: T1563-004
Source: LCD
Run: Field Blank
Date: 12/11/12
Method: 23 (Trap)

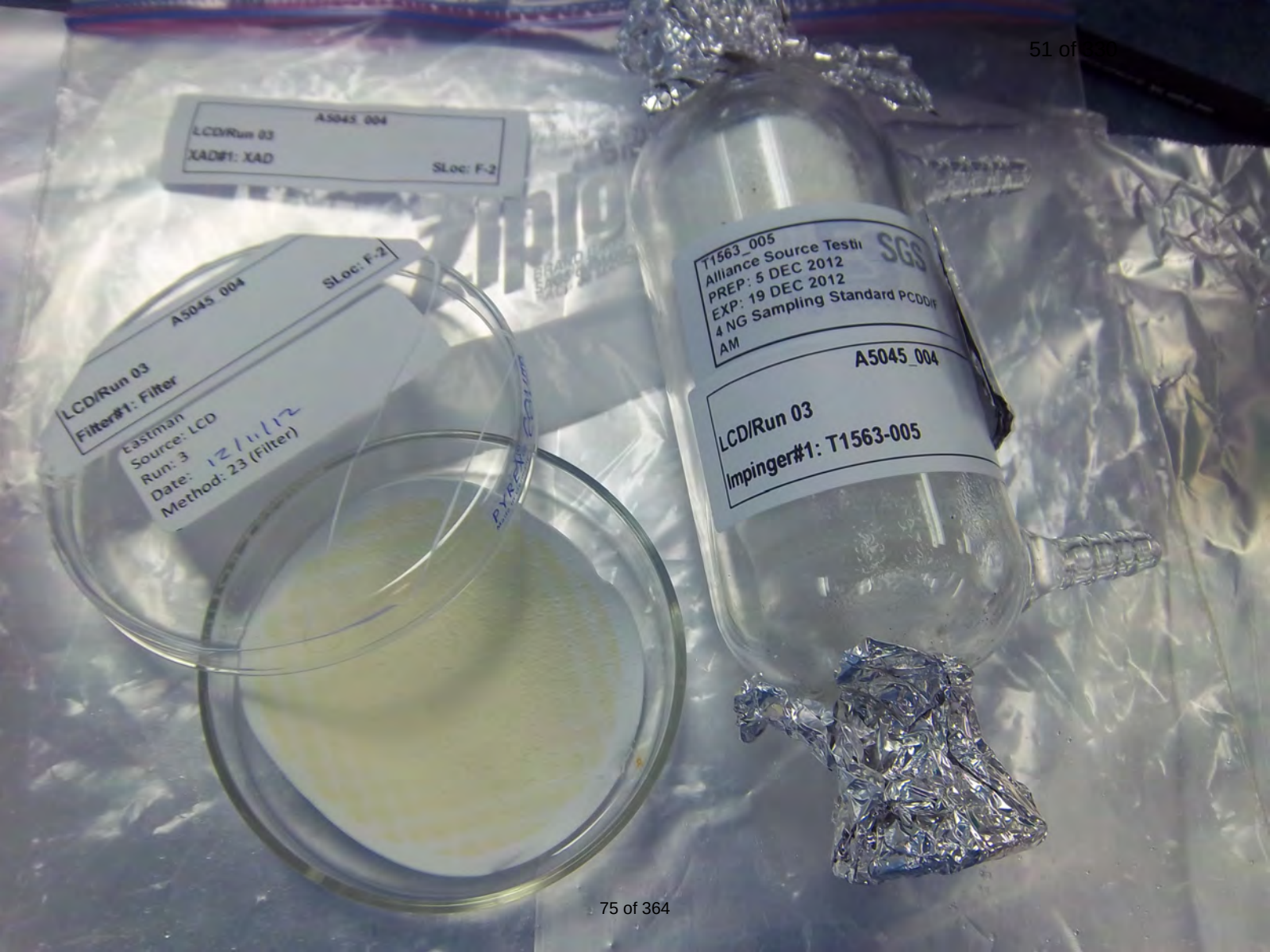

T1563_004
Alliance Source Testi
PREP: 5 DEC 2012
EXP: 19 DEC 2012
4 NG Sampling Standard
AM
A5045_001
Field Blank

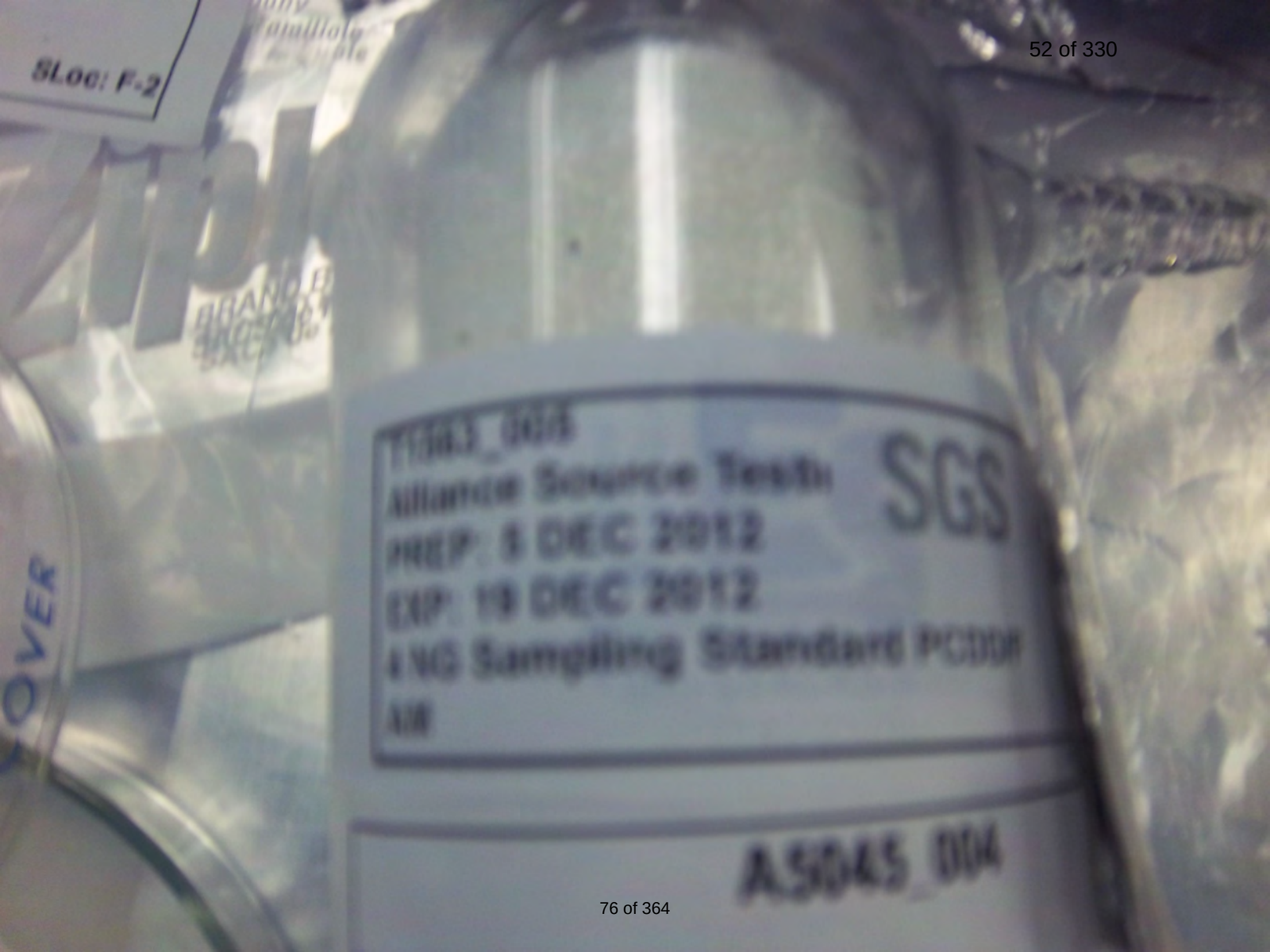

Eastman
Source: LCD
Run: 1
Date: 12/11/12
Method: 23 (Filter)
A5045_002
SLoc: F-2
LCD/Run 01
Filter#1: Filter
T1563_006
Alliance Source Tes
PREP: 5 DEC 2012
EXP: 19 DEC 2012
4 NG Sampling Standard
AM
LCD/Run 01
Impinger#1: T1563-00

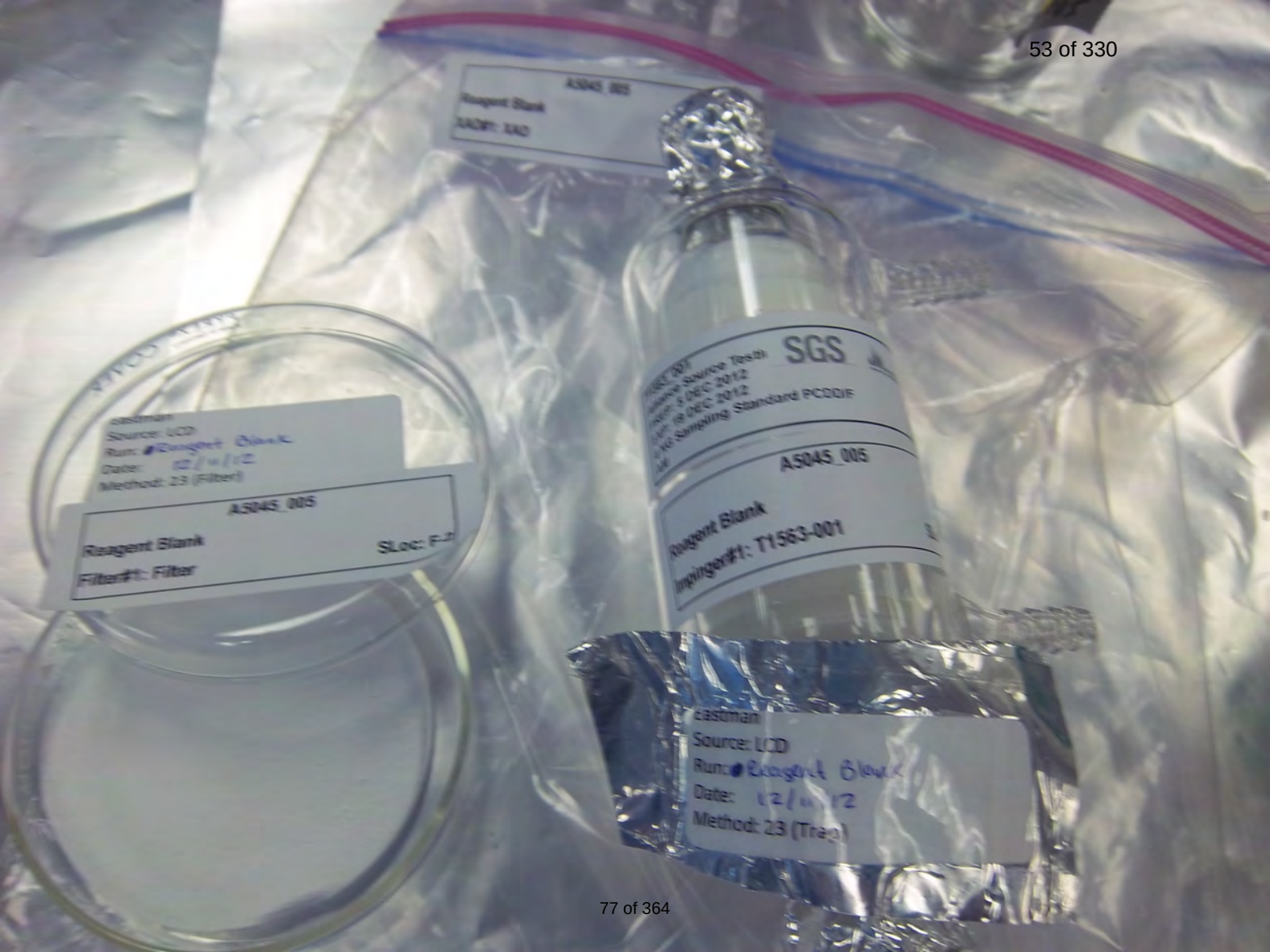

T1563_006
Alliance Source Testi
SGS
PREP: 5 DEC 2012
EXP: 19 DEC 2012
4 NG Sampling Standard PCDD
AM
A5045_002

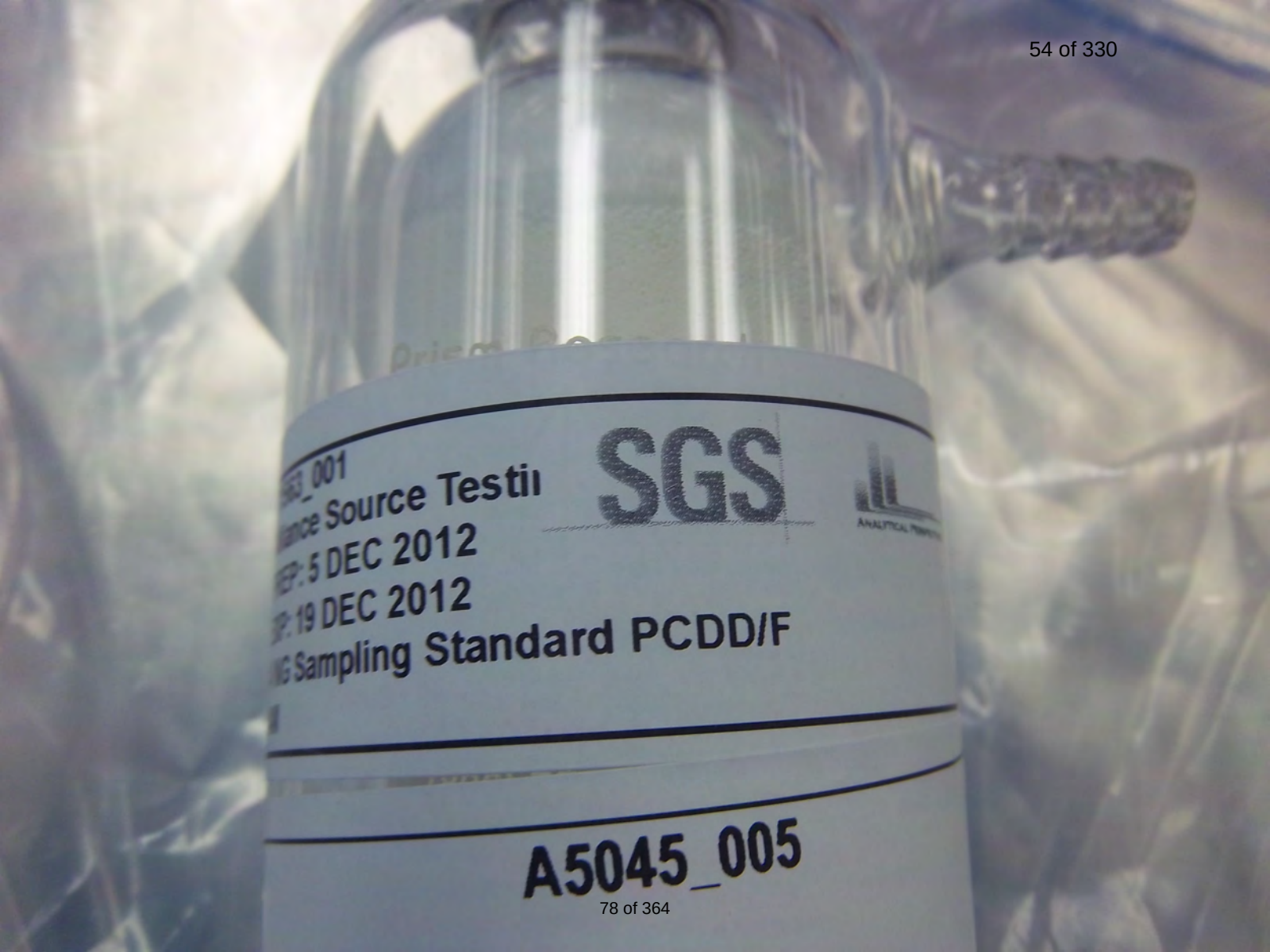

A5045_003
SLoc: F-2
LCD/Run 02
Filter#1: Filter
Eastman
Source: LCD
Run: 2
Date: 12/11/12
Method: 23 (Filter)
T1563_002
Alliance Source Testi
PREP: 5 DEC 2012
EXP: 19 DEC 2012
4 NG Sampling Standard
AM
A5045_003
Eastman
Source: LCD
Run: 2
Date:
Method: 23 (Trap)


T1563_002
Alliance Source Testi
SGS
PREP: 5 DEC 2012
EXP: 19 DEC 2012
4 NG Sampling Standard PCDDF
AM
A5045_003


A5045_004
LCD/Run 03
XAD#1: XAD
SLoc: F-2
A5045_004
SLoc: F-2
LCD/Run 03
Filter#1: Filter
Eastman
Source: LCD
Run: 3
Date: 12/11/12
Method: 23 (Filter)
T1563_005
Alliance Source Testi
SGS
PREP: 5 DEC 2012
EXP: 19 DEC 2012
4 NG Sampling Standard PCDD/F
AM
A5045_004
LCD/Run 03
Impinger#1: T1563-005


SLoc: F-2
SGS
A50455_004


A5045_003
Reagent Blank
SGS
A5045_005
Reagent Blank
Eastman
Source: LCD
Date:
Method: 23 (Filter)
A5045_005
Reagent Blank
Filter#: Filter
Eastman
Source: LCD
Date:
Method: 23 (Train)


SGS_001
ance Source Testi
EP: 5 DEC 2012
P: 19 DEC 2012
G Sampling Standard PCDD/F
SGS
A5045_005

SGS Analytical Perspectives — Run Log **Project: A5045_10493_DF**

Instrument: MM1 (AutoSpec-Ultima) MS Experiment: DF_CL4-8B GC Program: DB5MS_60M

#	Datafile	Vial#	Lab ID	Wt/Vol	Client/Sample ID	Analyst(s)	Checkcode	Acq Date	Acq Time
1	130105P2-01	31	BCS3_10493_DF_PA	1.00	BCS3_10493_DF_PA	MDC	424-138	05-JAN-2013	16:43:15
2	130105P2-02	15	SBS_130105_DF_PB	1.00	solvent blank	MDC	935-834	05-JAN-2013	17:34:41
3	130105P2-03	32	MB1_10493_DF_SDS	1.00	MB1_10493_DF_SDS	MDC	148-498	05-JAN-2013	18:26:11
4	130105P2-04	33	A5045_10493_DF_001	1.00	Field Blank	MDC	436-219	05-JAN-2013	19:17:37
5	130105P2-05	34	A5045_10493_DF_002	1.00	LCD/Run 01	MDC	879-504	05-JAN-2013	20:09:02
6	130105P2-06	35	A5045_10493_DF_003	1.00	LCD/Run 02	MDC	127-600	05-JAN-2013	21:00:28
7	130105P2-07	36	A5045_10493_DF_004	1.00	LCD/Run 03	MDC	503-843	05-JAN-2013	21:51:57
8	130105P2-08	37	A5045_10493_DF_005	1.00	Reagent Blank	MDC	777-690	05-JAN-2013	22:43:26
9	130105P2-09	31	BCS3_10493_DF_PB	1.00	BCS3_10493_DF_PB	MDC	997-611	05-JAN-2013	23:34:57

REVIEWED
By Michael D H Chu at 9:59 am, Jan 06, 2013

REVIEWED
By Heather Steele at 5:18 pm, Jan 12, 2013

Lab ID: MB1_10493_DF_SDS **Acq'd:** 05 Jan 2013 18:26 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: MB1_10493_DF_SDS **UTP:** 06-Jan-2013 09:38 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 148-498-WLH

Datafile: 130105P2-03 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
2378-TCDD	NotFnd		1.0010	-		-	-	-	1.15	-	970	1.4
12378-PeCDD	NotFnd		1.0006	-		-	-	-	1.06	-	987	1.54
123478-HxCDD	NotFnd		1.0004	-		-	-	-	1.13	-	993	1.59
123678-HxCDD	NotFnd		1.0040	-		-	-	-	1.17	-	993	1.63
123789-HxCDD	NotFnd		1.0130	-		-	-	-	1.01	-	993	1.6
1234678-HpCDD	NotFnd		1.0003	-		-	-	-	1.09	-	957	1.63
OCDD	NotFnd		1.0004	-		-	-	-	1.19	-	757	1.7
2378-TCDF	NotFnd		1.0009	-		-	-	-	1.15	-	903	0.815
12378-PeCDF	NotFnd		1.0006	-		-	-	-	1.07	-	871	0.91
23478-PeCDF	NotFnd		1.0005	-		-	-	-	1.10	-	871	0.824
123478-HxCDF	NotFnd		1.0005	-		-	-	-	1.28	-	1275	1.43
123678-HxCDF	NotFnd		1.0005	-		-	-	-	1.19	-	1275	1.35
234678-HxCDF	NotFnd		1.0005	-		-	-	-	1.23	-	1275	1.38
123789-HxCDF	NotFnd		1.0005	-		-	-	-	1.23	-	1275	1.79
1234678-HpCDF	40.90		1.0004	1.0004	0	8.56E+04	1.07	Y	1.49	9.59	1470	1.64
1234789-HpCDF	NotFnd		1.0003	-		-	-	-	1.40	-	1470	2.29
OCDF	46.09		1.0004	1.0003	-0.3	1.68E+06	0.88	Y	1.15	269	1397	2.56

Name	Act RT	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
ES 2378-TCDD	26.92	1.0286	1.0288	+0.3	3.11E+07	0.82	Y	1.05	90
ES 12378-PeCDD	33.32	1.2729	1.2733	+0.6	2.55E+07	1.65	Y	0.84	92
ES 123478-HxCDD	38.00	0.9907	0.9907	0	2.29E+07	1.28	Y	1.00	86.1
ES 123678-HxCDD	38.14	0.9941	0.9942	+0.2	2.34E+07	1.25	Y	1.04	85.2
ES 123789-HxCDD	38.48	1.0031	1.0032	+0.2	2.62E+07	1.29	Y	1.20	82.7
ES 1234678-HpCDD	42.21	1.1005	1.1005	0	2.02E+07	1.09	Y	0.97	78.7
ES OCDD	45.85	1.1953	1.1953	0	3.36E+07	0.88	Y	0.78	80.9
ES 2378-TCDF	25.89	1.0637	1.0641	+0.6	4.94E+07	0.80	Y	1.01	90.7
ES 12378-PeCDF	31.57	1.2966	1.2974	+1.2	4.14E+07	1.56	Y	0.88	86.7
ES 23478-PeCDF	32.89	1.3512	1.3519	+1.0	4.18E+07	1.57	Y	0.84	92
ES 123478-HxCDF	36.83	0.9601	0.9601	0	2.71E+07	0.53	Y	1.28	80
ES 123678-HxCDF	37.00	0.9644	0.9645	+0.2	3.33E+07	0.52	Y	1.50	83.7
ES 234678-HxCDF	37.77	0.9848	0.9848	0	3.13E+07	0.52	Y	1.39	85.1
ES 123789-HxCDF	38.89	1.0138	1.0140	+0.5	2.74E+07	0.52	Y	1.34	77
ES 1234678-HpCDF	40.88	1.0659	1.0659	0	2.39E+07	0.45	Y	1.10	81.7
ES 1234789-HpCDF	42.79	1.1155	1.1156	+0.2	1.98E+07	0.44	Y	0.92	81.2
ES OCDF	46.07	1.2013	1.2012	-0.2	4.35E+07	0.91	Y	1.04	79.2

Lab ID: MB1_10493_DF_SDS **Acq'd:** 05 Jan 2013 18:26 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: MB1_10493_DF_SDS **UTP:** 06-Jan-2013 09:38 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 148-498-WLH

Datafile: 130105P2-03 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
JS 1234-TCDD	26.17		-	-	-	3.28E+07	0.82	Y	-	-
JS 1234-TCDF	24.33		-	-	-	5.41E+07	0.78	Y	-	-
JS 123467-HxCDD	38.36		-	-	-	1.32E+07	1.27	Y	-	-
CS 37Cl-2378-TCDD	26.95		1.0296	1.0298	+0.3	1.47E+07	n/a	-	1.24	90.1
CS 12347-PeCDD	32.72		1.2501	1.2505	+0.6	2.89E+07	1.64	Y	0.88	100
CS 12346-PeCDF	30.94		1.2711	1.2714	+0.4	4.67E+07	1.59	Y	1.05	81.9
CS 123469-HxCDF	37.36		0.9739	0.9739	0	3.24E+07	0.51	Y	1.38	88.7
CS 1234689-HpCDF	41.50		1.0818	1.0819	+0.2	2.40E+07	0.45	Y	1.07	84.6
SS 37Cl-2378-TCDD	26.95		1.0296	1.0298	+0.3	1.47E+07	n/a	-	1.18	100
SS 12347-PeCDD	32.72		1.2501	1.2505	+0.6	2.89E+07	1.64	Y	1.04	109
SS 12346-PeCDF	30.94		1.2711	1.2714	+0.4	4.67E+07	1.59	Y	1.20	94.5
SS 123469-HxCDF	37.36		0.9739	0.9739	0	3.24E+07	0.51	Y	0.92	106
SS 1234689-HpCDF	41.50		1.0818	1.0819	+0.2	2.40E+07	0.45	Y	0.97	104
AS 1368-TCDD	22.67		0.8666	0.8664	-0.3	3.26E+07	0.82	Y	1.05	94.7
AS 1368-TCDF	20.52		0.8431	0.8431	0	5.98E+07	0.79	Y	1.25	88.5
FS 1278-TCDD	NotFnd		1.0144							
FS 12478-PeCDD	NotFnd		0.9559							
FS 123468-HxCDD	NotFnd		0.9672							
FS 1234679-HpCDD	NotFnd		0.9785							
TS 1378-TCDD	NotFnd		0.9285							

Totals	Conc	EMPC
Total TCDD	0	0
Total PeCDD	0	0
Total HxCDD	0	0
Total HpCDD	0	0
Total Tetra-Octa Dioxins	0	0
Total TCDF	0	0
Total PeCDF	0	0
Total HxCDF	0	0
Total HpCDF	9.59	11.9
Total Tetra-Octa Furans	279	281
Total Tetra-Octa Dioxins & Furans	279	281

Lab ID: MB1_10493_DF_SDS **Acq'd: 05 Jan 2013 18:26 MDC** **Wt/Vol: 1** **Cal: BCS3_10493_DF_PAB**

Client ID: MB1_10493_DF_SDS **UTP: 06-Jan-2013 09:38 MDC** **J-level: 10 pg** **Split: 2** **Checkcode: 148-498-WLH**

Datafile: 130105P2-03 **Report: 06 Jan 2013 09:39 MC** **Stds (pg): JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)**

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1368-TCDD	NotFnd		0.8437						1.15		970	1.4
1379-TCDD	NotFnd		0.8592						1.15		970	1.4
1369-TCDD	NotFnd		0.8775						1.15		970	1.4
1469-TCDD	NotFnd		0.9109						1.15		970	1.4
1247/1246/1248/1249-TCDD	NotFnd		0.9212						1.15		970	1.4
1378-TCDD	NotFnd		0.9294						1.15		970	1.4
1268-TCDD	NotFnd		0.9380						1.15		970	1.4
1478-TCDD	NotFnd		0.9486						1.15		970	1.4
1279-TCDD	NotFnd		0.9561						1.15		970	1.4
1234/1269-TCDD	NotFnd		0.9718						1.15		970	1.4
1236-TCDD	NotFnd		0.9776						1.15		970	1.4
1237/1238-TCDD	NotFnd		0.9886						1.15		970	1.4
1239-TCDD	NotFnd		0.9946						1.15		970	1.4
2378-TCDD	**NotFnd**		**1.0010**						**1.15**		**970**	**1.4**
1278-TCDD	NotFnd		1.0153						1.15		970	1.4
1267-TCDD	NotFnd		1.0213						1.15		970	1.4
1289-TCDD	NotFnd		1.0439						1.15		970	1.4
12479/12468-PeCDD	NotFnd		0.9111						1.06		987	1.54
12469-PeCDD	NotFnd		0.9301						1.06		987	1.54
12368-PeCDD	NotFnd		0.9498						1.06		987	1.54
12478-PeCDD	NotFnd		0.9565						1.06		987	1.54
12379-PeCDD	NotFnd		0.9601						1.06		987	1.54
12369/12467/12489-PeCDD	NotFnd		0.9695						1.06		987	1.54
12346/12347-PeCDD	NotFnd		0.9828						1.06		987	1.54
12378-PeCDD	**NotFnd**		**1.0006**						**1.06**		**987**	**1.54**
12367-PeCDD	NotFnd		1.0040						1.06		987	1.54
12389-PeCDD	NotFnd		1.0164						1.06		987	1.54
124679/124689-HxCDD	NotFnd		0.9471						1.10		993	1.6
123468-HxCDD	NotFnd		0.9676						1.10		993	1.6
123679/123689-HxCDD	NotFnd		0.9768						1.10		993	1.6
123469-HxCDD	NotFnd		0.9809						1.10		993	1.6
123478-HxCDD	**NotFnd**		**1.0004**						**1.13**		**993**	**1.59**
123678-HxCDD	**NotFnd**		**1.0040**						**1.17**		**993**	**1.63**
123467-HxCDD	NotFnd		1.0099						1.10		993	1.6
123789-HxCDD	**NotFnd**		**1.0130**						**1.01**		**993**	**1.6**

Lab ID: MB1_10493_DF_SDS **Acq'd:** 05 Jan 2013 18:26 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: MB1_10493_DF_SDS **UTP:** 06-Jan-2013 09:38 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 148-498-WLH

Datafile: 130105P2-03 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1234679-HpCDD	NotFnd		0.9789						1.09		957	1.63
1234678-HpCDD	**NotFnd**		**1.0003**						**1.09**		**957**	**1.63**
OCDD	**NotFnd**		**1.0004**						**1.19**		**757**	**1.7**
OCDD-a	NotFnd		1.0003						0.07		1500	58.2
1368-TCDF	NotFnd		0.7936						1.15		903	0.815
1468-TCDF	NotFnd		0.8144						1.15		903	0.815
2468-TCDF	NotFnd		0.8382						1.15		903	0.815
1346/1246-TCDF	NotFnd		0.8546						1.15		903	0.815
1347/1378/1247-TCDF	NotFnd		0.8602						1.15		903	0.815
1348-TCDF	NotFnd		0.8716						1.15		903	0.815
1248/1367/1379-TCDF	NotFnd		0.8774						1.15		903	0.815
1268-TCDF	NotFnd		0.8944						1.15		903	0.815
1467-TCDF	NotFnd		0.9003						1.15		903	0.815
1478-TCDF	NotFnd		0.9077						1.15		903	0.815
1369/1237-TCDF	NotFnd		0.9241						1.15		903	0.815
2467-TCDF	NotFnd		0.9299						1.15		903	0.815
2368-TCDF	NotFnd		0.9363						1.15		903	0.815
1238/1234/1678/1469/1236-TCDF	NotFnd		0.9413						1.15		903	0.815
1278-TCDF	NotFnd		0.9611						1.15		903	0.815
1349-TCDF	NotFnd		0.9656						1.15		903	0.815
1267-TCDF	NotFnd		0.9734						1.15		903	0.815
2346/1249-TCDF	NotFnd		0.9823						1.15		903	0.815
2347/1279-TCDF	NotFnd		0.9913						1.15		903	0.815
2348-TCDF	NotFnd		0.9961						1.15		903	0.815
2378-TCDF	**NotFnd**		**1.0009**						**1.15**		**903**	**0.815**
2367/3467-TCDF	NotFnd		1.0175						1.15		903	0.815
1269-TCDF	NotFnd		1.0287						1.15		903	0.815
1239-TCDF	NotFnd		1.0411						1.15		903	0.815
1289-TCDF	NotFnd		1.0924						1.15		903	0.815
13468/12468-PeCDF	NotFnd		0.8956						1.08		1004	0.999
13678/13467/12467-PeCDF	NotFnd		0.9530						1.08		871	0.867
12368/13478/12478-PeCDF	NotFnd		0.9590						1.08		871	0.867
14678-PeCDF	NotFnd		0.9629						1.08		871	0.867
13479-PeCDF	NotFnd		0.9662						1.08		871	0.867
13469/12479-PeCDF	NotFnd		0.9753						1.08		871	0.867
12346-PeCDF	NotFnd		0.9806						1.08		871	0.867

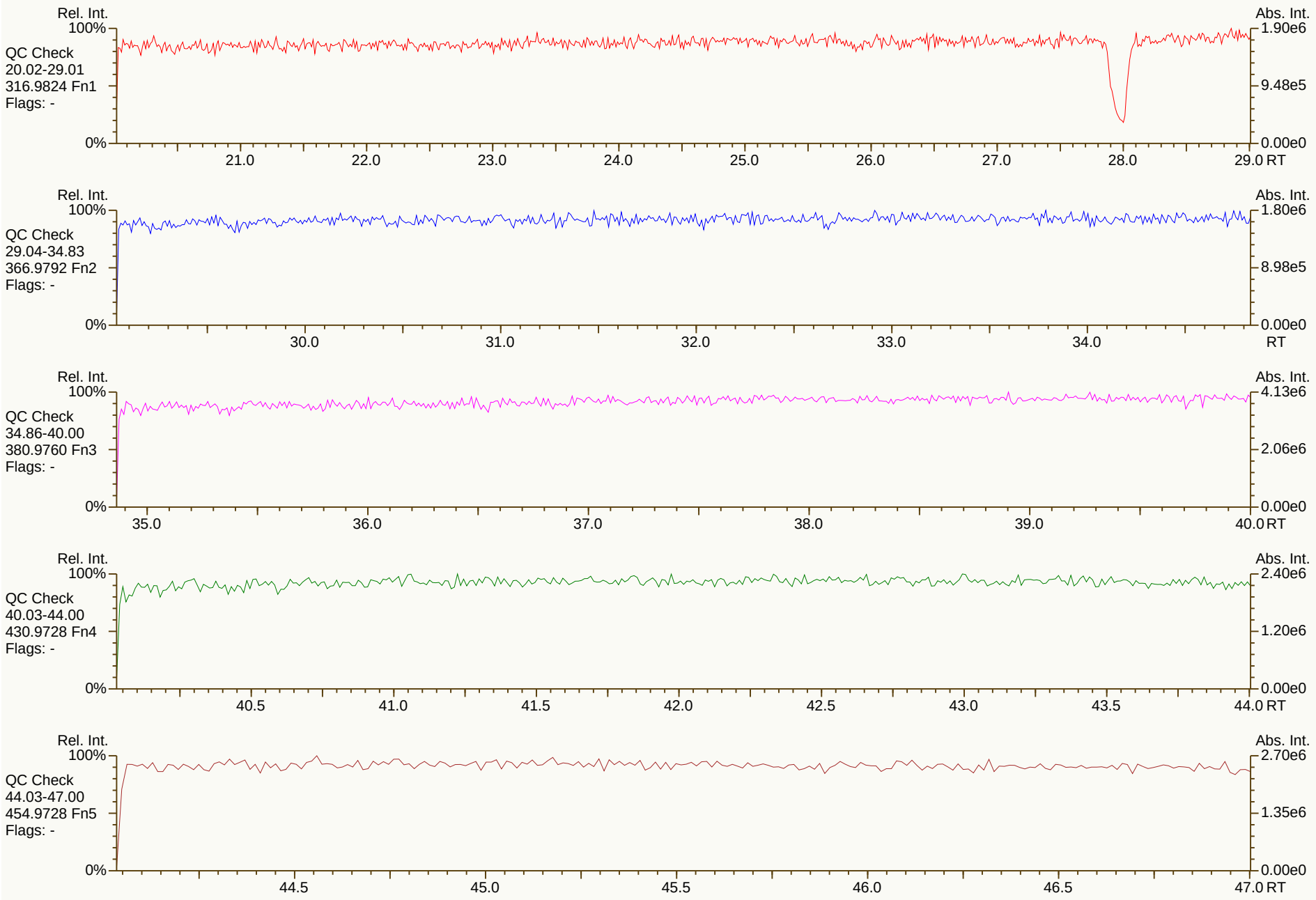
Lab ID: MB1_10493_DF_SDS **Acq'd:** 05 Jan 2013 18:26 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: MB1_10493_DF_SDS **UTP:** 06-Jan-2013 09:38 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 148-498-WLH

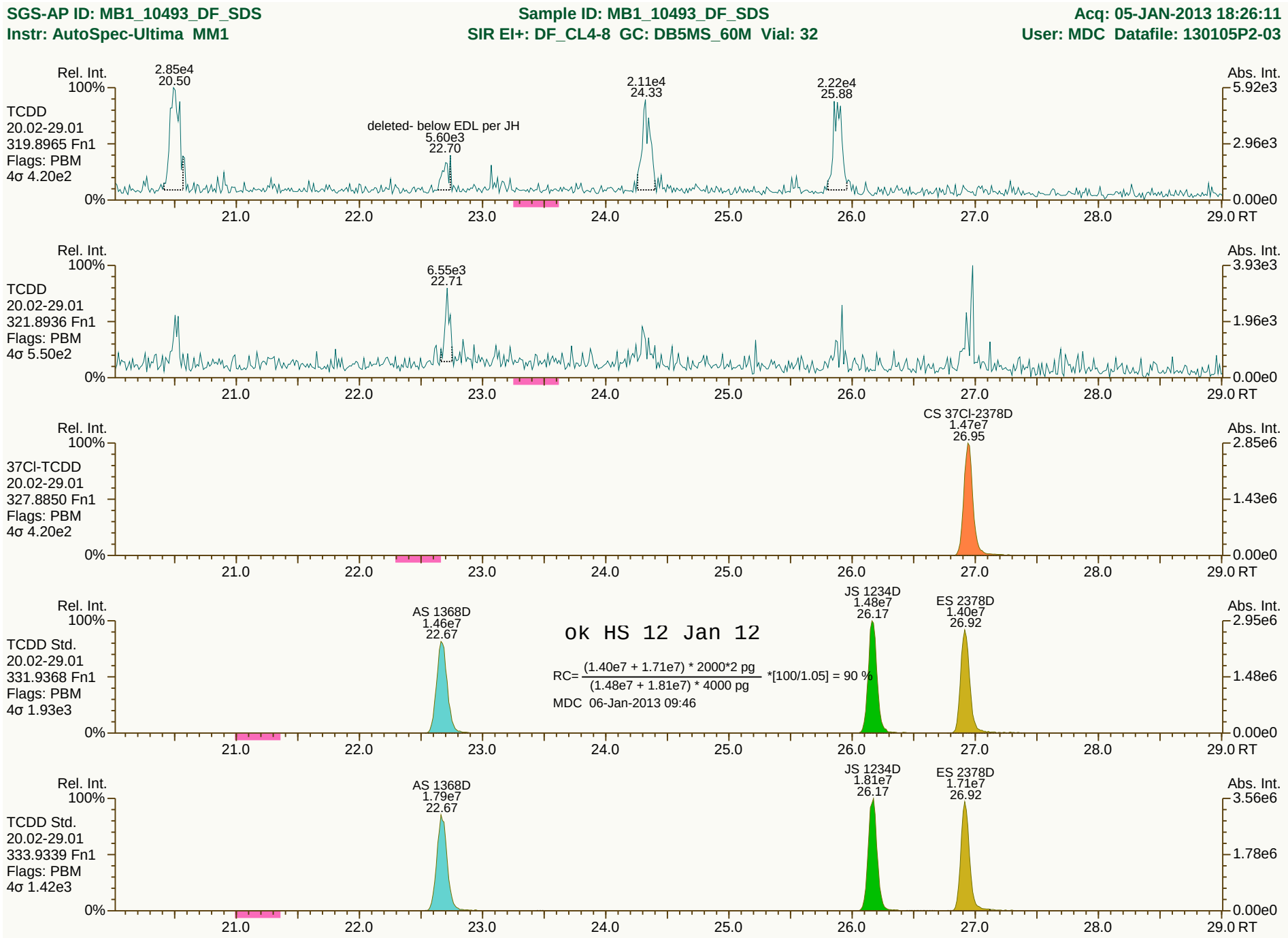
Datafile: 130105P2-03 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
23468/12469-PeCDF	NotFnd		0.9839						1.08		871	0.867
12347-PeCDF	NotFnd		0.9868						1.08		871	0.867
12348-PeCDF	NotFnd		0.9930						1.08		871	0.867
12378-PeCDF	**NotFnd**		**1.0006**						**1.07**		**871**	**0.91**
12678/12367-PeCDF	NotFnd		1.0110						1.08		871	0.867
12379-PeCDF	NotFnd		1.0173						1.08		871	0.867
12679-PeCDF	NotFnd		0.9914						1.08		871	0.867
23467/12369-PeCDF	NotFnd		0.9962						1.08		871	0.867
23478-PeCDF	**NotFnd**		**1.0005**						**1.10**		**871**	**0.824**
23478/12489-PeCDF	NotFnd		1.0006						1.10		871	0.824
12489-PeCDF	NotFnd		1.0023						1.08		871	0.867
12349-PeCDF	NotFnd		1.0123						1.08		871	0.867
12389-PeCDF	NotFnd		1.0397						1.08		871	0.867
123468-HxCDF	NotFnd		0.9556						1.23		1275	1.48
124678/134678-HxCDF	NotFnd		0.9621						1.23		1275	1.48
134679-HxCDF	NotFnd		0.9695						1.23		1275	1.48
124679-HxCDF	NotFnd		0.9759						1.23		1275	1.48
124689-HxCDF	NotFnd		0.9830						1.23		1275	1.48
123467-HxCDF	NotFnd		0.9966						1.23		1275	1.48
123478-HxCDF	**NotFnd**		**1.0005**						**1.28**		**1275**	**1.43**
123678-HxCDF	**NotFnd**		**1.0005**						**1.19**		**1275**	**1.35**
123479-HxCDF	NotFnd		1.0056						1.23		1275	1.48
123469-HxCDF	NotFnd		1.0103						1.23		1275	1.48
123679-HxCDF	NotFnd		0.9933						1.23		1275	1.48
234678-HxCDF	**NotFnd**		**1.0005**						**1.23**		**1275**	**1.38**
234678/123689-HxCDF	NotFnd		1.0004						1.23		1275	1.38
123689-HxCDF	NotFnd		1.0009						1.23		1275	1.48
123789-HxCDF	**NotFnd**		**1.0005**						**1.23**		**1275**	**1.79**
123789/123489-HxCDF	NotFnd		0.9869						1.23		1275	1.79
123489-HxCDF	NotFnd		1.0013						1.23		1275	1.48
1234678-HpCDF	**40.90**		**1.0004**	**1.0004**	**0**	**8.56E+04**	**1.07**	**Y**	**1.49**	**9.59**	**1470**	**1.64**
1234679-HpCDF	NotFnd		1.0104						1.45		1470	1.93
1234689-HpCDF	41.51		1.0152	1.0154	+0.5	1.84E+04	1.25	N	1.45	2.33	1470	1.93
1234789-HpCDF	**NotFnd**		**1.0003**						**1.40**		**1470**	**2.29**
OCDF	**46.09**		**1.0004**	**1.0003**	**-0.3**	**1.68E+06**	**0.88**	**Y**	**1.15**	**269**	**1397**	**2.56**
OCDF-a	NotFnd		1.0002						0.07		1092	34.1

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 scc: 148-498 *PKD: n/a Printed: 06-Jan-2013 09:48 Page 1 of 12*


SGS-AP ID: MB1_10493_DF_SDS
Sample ID: MB1_10493_DF_SDS
Acq: 05-JAN-2013 18:26:11
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32
User: MDC Datafile: 130105P2-03
Rel. Int.
Abs. Int.
TCDD
20.02-29.01
319.8965 Fn1
Flags: PBM
4σ 4.20e2
2.85e4
20.50
deleted- below EDL per JH
5.60e3
22.70
2.11e4
24.33
2.22e4
25.88
5.92e3
2.96e3
0.00e0
TCDD
20.02-29.01
321.8936 Fn1
Flags: PBM
4σ 5.50e2
6.55e3
22.71
3.93e3
1.96e3
0.00e0
37Cl-TCDD
20.02-29.01
327.8850 Fn1
Flags: PBM
4σ 4.20e2
CS 37Cl-2378D
1.47e7
26.95
2.85e6
1.43e6
0.00e0
TCDD Std.
20.02-29.01
331.9368 Fn1
Flags: PBM
4σ 1.93e3
AS 1368D
1.46e7
22.67
JS 1234D
1.48e7
26.17
ES 2378D
1.40e7
26.92
ok HS 12 Jan 12
RC= (1.40e7 + 1.71e7) * 2000*2 pg / (1.48e7 + 1.81e7) * 4000 pg *[100/1.05] = 90 %
MDC 06-Jan-2013 09:46
2.95e6
1.48e6
0.00e0
TCDD Std.
20.02-29.01
333.9339 Fn1
Flags: PBM
4σ 1.42e3
AS 1368D
1.79e7
22.67
JS 1234D
1.81e7
26.17
ES 2378D
1.71e7
26.92
3.56e6
1.78e6
0.00e0
100%
0%
21.0
22.0
23.0
24.0
25.0
26.0
27.0
28.0
29.0 RT
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1746, 5008, 7753 scc: 148-498
Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 2 of 12

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0373, 7591 scc: 148-498 *Revised: 06-Jan-2013 09:22 (MDC) Printed: 06-Jan-2013 09:48 Page 3 of 12*

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



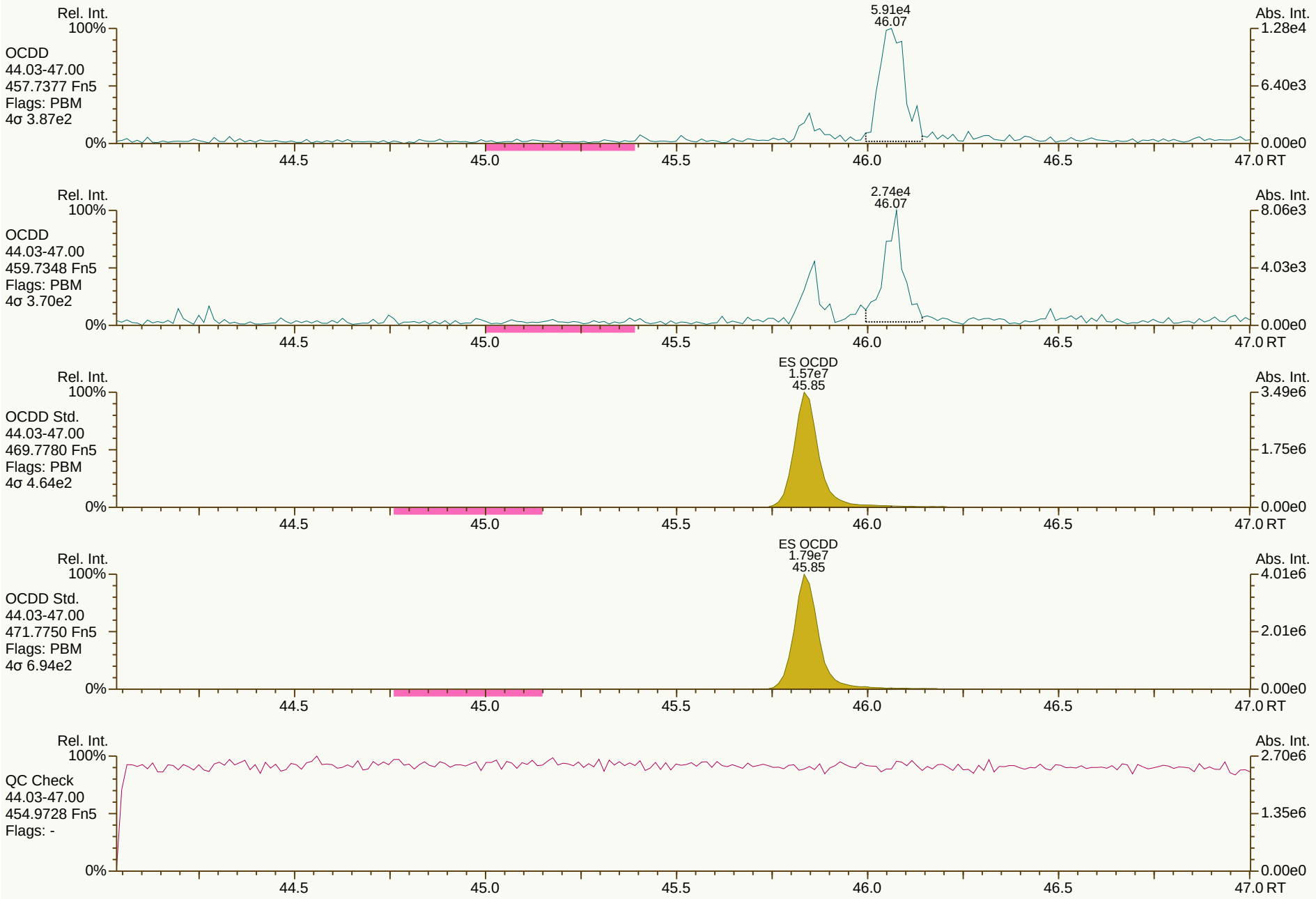
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1928, 6021 scc: 148-498 *Revised: 06-Jan-2013 09:23 (MDC) Printed: 06-Jan-2013 09:48 Page 4 of 12*

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5864, 0723 scc: 148-498 *Revised: 06-Jan-2013 09:22 (MDC) Printed: 06-Jan-2013 09:48 Page 5 of 12*

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0368, 1065 scc: 148-498 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 6 of 12*

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 9908, 8029, 3260 scc: 148-498 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:49 Page 7 of 12*

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



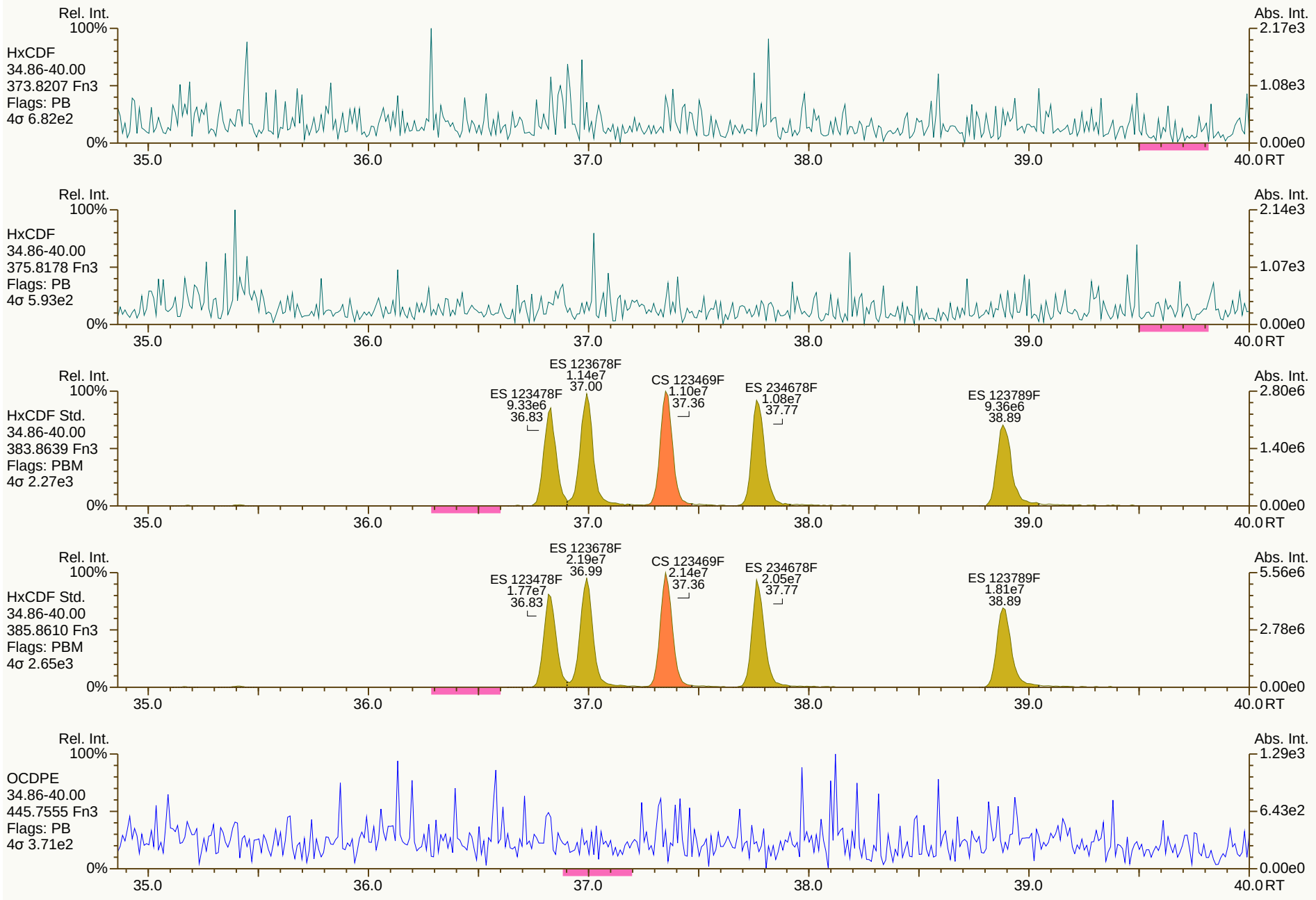
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 6088 scc: 148-498 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:49 Page 8 of 12*

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5021, 4355, 3432 scc: 148-498 *Revised: 06-Jan-2013 09:22 (MDC) Printed: 06-Jan-2013 09:49 Page 9 of 12*

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5588, 8520, 4575 scc: 148-498 *Revised: 06-Jan-2013 09:23 (MDC) Printed: 06-Jan-2013 09:49 Page 10 of 12*

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5436, 2557, 5341 scc: 148-498 *Revised: 06-Jan-2013 09:22 (MDC) Printed: 06-Jan-2013 09:49 Page 11 of 12*

SGS-AP ID: MB1_10493_DF_SDS **Sample ID: MB1_10493_DF_SDS** **Acq: 05-JAN-2013 18:26:11**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 32** **User: MDC Datafile: 130105P2-03**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\MB1_10493_DF_SDS.utp_res, saved 06-Jan-2013 09:46 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 9588, 6405, 0868 scc: 148-498 *Revised: 06-Jan-2013 09:22 (MDC) Printed: 06-Jan-2013 09:49 Page 12 of 12*

Lab ID: A5045_10493_DF_001 **Acq'd:** 05 Jan 2013 19:17 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: Field Blank **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 436-219-KSQ

Datafile: 130105P2-04 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
2378-TCDD	NotFnd		1.0010	-		-	-	-	1.15	-	1086	2.49
12378-PeCDD	NotFnd		1.0006	-		-	-	-	1.06	-	1134	3.09
123478-HxCDD	NotFnd		1.0004	-		-	-	-	1.13	-	1023	2.51
123678-HxCDD	NotFnd		1.0040	-		-	-	-	1.17	-	1023	2.5
123789-HxCDD	NotFnd		1.0130	-		-	-	-	1.01	-	1023	2.77
1234678-HpCDD	42.22		1.0003	1.0002	-0.3	3.40E+04	1.26	N	1.09	9.99	909	2.67
OCDD	45.85		1.0004	1.0002	-0.6	5.95E+04	0.82	Y	1.19	21.5	863	3.72
2378-TCDF	25.94		1.0009	1.0017	+1.2	3.02E+04	0.79	Y	1.15	3.47	980	1.48
12378-PeCDF	31.59		1.0006	1.0005	-0.2	1.33E+04	1.20	N	1.07	1.99	968	1.64
23478-PeCDF	32.93		1.0005	1.0009	+0.8	3.76E+04	1.51	Y	1.10	5.3	968	1.54
123478-HxCDF	36.84		1.0005	1.0003	-0.4	2.11E+04	1.06	Y	1.28	3.8	1417	2.57
123678-HxCDF	37.01		1.0005	1.0005	0	2.07E+04	1.08	Y	1.19	3.43	1417	2.5
234678-HxCDF	37.79		1.0005	1.0003	-0.5	3.05E+04	1.13	Y	1.23	5	1417	2.53
123789-HxCDF	NotFnd		1.0005	-		-	-	-	1.23	-	1417	3.28
1234678-HpCDF	40.90		1.0004	1.0004	0	1.07E+05	0.99	Y	1.49	19.9	1325	2.83
1234789-HpCDF	NotFnd		1.0003	-		-	-	-	1.40	-	1325	3.58
OCDF	46.09		1.0004	1.0003	-0.3	7.02E+05	0.87	Y	1.15	190	1406	4.27

Name	Act RT	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
ES 2378-TCDD	26.92	1.0286	1.0288	+0.3	1.96E+07	0.83	Y	1.05	86.1
ES 12378-PeCDD	33.33	1.2729	1.2736	+1.1	1.56E+07	1.55	Y	0.84	85.5
ES 123478-HxCDD	38.00	0.9907	0.9907	0	1.38E+07	1.29	Y	1.00	78
ES 123678-HxCDD	38.14	0.9941	0.9942	+0.2	1.45E+07	1.25	Y	1.04	78.8
ES 123789-HxCDD	38.48	1.0031	1.0032	+0.2	1.63E+07	1.27	Y	1.20	77
ES 1234678-HpCDD	42.22	1.1005	1.1006	+0.2	1.25E+07	1.12	Y	0.97	72.8
ES OCDD	45.85	1.1953	1.1952	-0.2	1.86E+07	0.89	Y	0.78	67.1
ES 2378-TCDF	25.89	1.0637	1.0641	+0.6	3.04E+07	0.78	Y	1.01	90.8
ES 12378-PeCDF	31.57	1.2966	1.2974	+1.2	2.52E+07	1.59	Y	0.88	85.7
ES 23478-PeCDF	32.90	1.3512	1.3519	+1.0	2.59E+07	1.57	Y	0.84	92.7
ES 123478-HxCDF	36.83	0.9601	0.9601	0	1.73E+07	0.51	Y	1.28	76.5
ES 123678-HxCDF	37.00	0.9644	0.9645	+0.2	2.03E+07	0.52	Y	1.50	76.4
ES 234678-HxCDF	37.78	0.9848	0.9849	+0.2	1.98E+07	0.52	Y	1.39	80.4
ES 123789-HxCDF	38.90	1.0138	1.0140	+0.5	1.68E+07	0.53	Y	1.34	70.5
ES 1234678-HpCDF	40.89	1.0659	1.0659	0	1.44E+07	0.43	Y	1.10	73.6
ES 1234789-HpCDF	42.79	1.1155	1.1156	+0.2	1.12E+07	0.46	Y	0.92	68.5
ES OCDF	46.08	1.2013	1.2013	0	2.58E+07	0.90	Y	1.04	70.5

Lab ID: A5045_10493_DF_001 **Acq'd:** 05 Jan 2013 19:17 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: Field Blank **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 436-219-KSQ

Datafile: 130105P2-04 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
JS 1234-TCDD	26.17		-	-	-	2.16E+07	0.81	Y	-	-
JS 1234-TCDF	24.33		-	-	-	3.33E+07	0.78	Y	-	-
JS 123467-HxCDD	38.36		-	-	-	8.85E+06	1.28	Y	-	-
CS 37Cl-2378-TCDD	26.95		1.0296	1.0298	+0.3	8.73E+06	n/a	-	1.24	81.2
CS 12347-PeCDD	32.73		1.2501	1.2506	+0.8	1.70E+07	1.63	Y	0.88	89.5
CS 12346-PeCDF	30.93		1.2711	1.2713	+0.3	2.84E+07	1.57	Y	1.05	80.9
CS 123469-HxCDF	37.36		0.9739	0.9739	0	1.95E+07	0.53	Y	1.38	79.7
CS 1234689-HpCDF	41.50		1.0818	1.0819	+0.2	1.36E+07	0.45	Y	1.07	71.9
SS 37Cl-2378-TCDD	26.95		1.0296	1.0298	+0.3	8.73E+06	n/a	-	1.18	94.3
SS 12347-PeCDD	32.73		1.2501	1.2506	+0.8	1.70E+07	1.63	Y	1.04	105
SS 12346-PeCDF	30.93		1.2711	1.2713	+0.3	2.84E+07	1.57	Y	1.20	94.3
SS 123469-HxCDF	37.36		0.9739	0.9739	0	1.95E+07	0.53	Y	0.92	104
SS 1234689-HpCDF	41.50		1.0818	1.0819	+0.2	1.36E+07	0.45	Y	0.97	97.7
AS 1368-TCDD	22.67		0.8666	0.8665	-0.2	1.98E+07	0.80	Y	1.05	87.6
AS 1368-TCDF	20.50		0.8431	0.8426	-0.7	3.70E+07	0.79	Y	1.25	89.1
FS 1278-TCDD	NotFnd		1.0144							
FS 12478-PeCDD	NotFnd		0.9559							
FS 123468-HxCDD	NotFnd		0.9672							
FS 1234679-HpCDD	NotFnd		0.9785							
TS 1378-TCDD	NotFnd		0.9285							

Totals	Conc	EMPC
Total TCDD	28.9	28.9
Total PeCDD	29.9	41.2
Total HxCDD	27.4	27.4
Total HpCDD	0	19.7
Total Tetra-Octa Dioxins	108	139
Total TCDF	43.4	72.7
Total PeCDF	24.8	44.9
Total HxCDF	22.2	30.5
Total HpCDF	19.9	29.2
Total Tetra-Octa Furans	300	367
Total Tetra-Octa Dioxins & Furans	407	505

Lab ID: A5045_10493_DF_001 **Acq'd:** 05 Jan 2013 19:17 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: Field Blank **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 436-219-KSQ

Datafile: 130105P2-04 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1368-TCDD	22.71		0.8437	0.8435	-0.3	1.15E+05	0.78	Y	1.15	20.4	1086	2.49
1379-TCDD	23.14		0.8592	0.8596	+0.6	4.77E+04	0.85	Y	1.15	8.43	1086	2.49
1369-TCDD	NotFnd		0.8775						1.15		1086	2.49
1469-TCDD	NotFnd		0.9109						1.15		1086	2.49
1247/1246/1248/1249-TCDD	NotFnd		0.9212						1.15		1086	2.49
1378-TCDD	NotFnd		0.9294						1.15		1086	2.49
1268-TCDD	NotFnd		0.9380						1.15		1086	2.49
1478-TCDD	NotFnd		0.9486						1.15		1086	2.49
1279-TCDD	NotFnd		0.9561						1.15		1086	2.49
1234/1269-TCDD	NotFnd		0.9718						1.15		1086	2.49
1236-TCDD	NotFnd		0.9776						1.15		1086	2.49
1237/1238-TCDD	NotFnd		0.9886						1.15		1086	2.49
1239-TCDD	NotFnd		0.9946						1.15		1086	2.49
2378-TCDD	**NotFnd**		**1.0010**						**1.15**		**1086**	**2.49**
1278-TCDD	NotFnd		1.0153						1.15		1086	2.49
1267-TCDD	NotFnd		1.0213						1.15		1086	2.49
1289-TCDD	NotFnd		1.0439						1.15		1086	2.49
12479/12468-PeCDD	30.37		0.9111	0.9112	+0.2	8.35E+04	1.54	Y	1.06	20.3	1134	3.09
12469-PeCDD	NotFnd		0.9301						1.06		1134	3.09
12368-PeCDD	31.66		0.9498	0.9499	+0.2	4.67E+04	1.29	N	1.06	11.3	1134	3.09
12478-PeCDD	NotFnd		0.9565						1.06		1134	3.09
12379-PeCDD	32.00		0.9601	0.9603	+0.4	2.45E+04	1.42	Y	1.06	5.96	1134	3.09
12369/12467/12489-PeCDD	NotFnd		0.9695						1.06		1134	3.09
12346/12347-PeCDD	32.75		0.9828	0.9826	-0.4	1.50E+04	1.39	Y	1.06	3.64	1134	3.09
12378-PeCDD	**NotFnd**		**1.0006**						**1.06**		**1134**	**3.09**
12367-PeCDD	NotFnd		1.0040						1.06		1134	3.09
12389-PeCDD	NotFnd		1.0164						1.06		1134	3.09
124679/124689-HxCDD	NotFnd		0.9471						1.10		1023	2.58
123468-HxCDD	36.78		0.9676	0.9678	+0.5	8.49E+04	1.35	Y	1.10	20.7	1023	2.58
123679/123689-HxCDD	37.12		0.9768	0.9768	0	2.74E+04	1.35	Y	1.10	6.68	1023	2.58
123469-HxCDD	NotFnd		0.9809						1.10		1023	2.58
123478-HxCDD	**NotFnd**		**1.0004**						**1.13**		**1023**	**2.51**
123678-HxCDD	**NotFnd**		**1.0040**						**1.17**		**1023**	**2.5**
123467-HxCDD	NotFnd		1.0099						1.10		1023	2.58
123789-HxCDD	**NotFnd**		**1.0130**						**1.01**		**1023**	**2.77**

Lab ID: A5045_10493_DF_001 **Acq'd: 05 Jan 2013 19:17 MDC** **Wt/Vol: 1** **Cal: BCS3_10493_DF_PAB**

Client ID: Field Blank **UTP: 06-Jan-2013 09:35 MDC** **J-level: 10 pg** **Split: 2** **Checkcode: 436-219-KSQ**

Datafile: 130105P2-04 **Report: 06 Jan 2013 09:39 MC** **Stds (pg): JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)**

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1234679-HpCDD	41.33		0.9789	0.9789	0	3.31E+04	1.21	N	1.09	9.73	909	2.67
1234678-HpCDD	**42.22**		**1.0003**	**1.0002**	**-0.3**	**3.40E+04**	**1.26**	**N**	**1.09**	**9.99**	**909**	**2.67**
OCDD	**45.85**		**1.0004**	**1.0002**	**-0.6**	**5.95E+04**	**0.82**	**Y**	**1.19**	**21.5**	**863**	**3.72**
OCDD-a	NotFnd		1.0003						0.07		1007	75
1368-TCDF	20.53		0.7936	0.7928	-1.2	1.47E+04	0.96	N	1.15	1.69	980	1.48
1468-TCDF	21.08		0.8144	0.8140	-0.6	1.61E+04	0.56	N	1.15	1.84	980	1.48
2468-TCDF	21.70		0.8382	0.8382	0	2.10E+04	0.51	N	1.15	2.4	980	1.48
1346/1246-TCDF	22.12		0.8546	0.8543	-0.5	2.73E+04	0.67	Y	1.15	3.13	980	1.48
1347/1378/1247-TCDF	22.28		0.8602	0.8606	+0.6	4.62E+04	0.87	Y	1.15	5.3	980	1.48
1348-TCDF	22.58		0.8716	0.8719	+0.5	2.00E+04	0.80	Y	1.15	2.29	980	1.48
1248/1367/1379-TCDF	22.72		0.8774	0.8776	+0.3	3.06E+04	0.90	N	1.15	3.51	980	1.48
1268-TCDF	23.13		0.8944	0.8934	-1.6	2.08E+04	0.88	Y	1.15	2.38	980	1.48
1467-TCDF	NotFnd		0.9003						1.15		980	1.48
1478-TCDF	NotFnd		0.9077						1.15		980	1.48
1369/1237-TCDF	23.93		0.9241	0.9240	-0.2	1.81E+04	0.78	Y	1.15	2.07	980	1.48
2467-TCDF	24.08		0.9299	0.9301	+0.3	5.36E+04	0.63	N	1.15	6.14	980	1.48
2368-TCDF	24.27		0.9363	0.9372	+1.4	4.68E+04	1.05	N	1.15	5.37	980	1.48
1238/1234/1678/1469/1236-TCDF	24.38		0.9413	0.9415	+0.3	1.11E+05	0.82	Y	1.15	12.7	980	1.48
1278-TCDF	24.89		0.9611	0.9613	+0.3	2.57E+04	0.80	Y	1.15	2.94	980	1.48
1349-TCDF	NotFnd		0.9656						1.15		980	1.48
1267-TCDF	NotFnd		0.9734						1.15		980	1.48
2346/1249-TCDF	25.45		0.9823	0.9830	+1.1	4.04E+04	0.89	N	1.15	4.63	980	1.48
2347/1279-TCDF	25.67		0.9913	0.9913	0	3.23E+04	0.70	Y	1.15	3.7	980	1.48
2348-TCDF	25.79		0.9961	0.9960	-0.2	3.20E+04	1.01	N	1.15	3.67	980	1.48
2378-TCDF	**25.94**		**1.0009**	**1.0017**	**+1.2**	**3.02E+04**	**0.79**	**Y**	**1.15**	**3.47**	**980**	**1.48**
2367/3467-TCDF	26.36		1.0175	1.0180	+0.8	4.72E+04	0.78	Y	1.15	5.41	980	1.48
1269-TCDF	NotFnd		1.0287						1.15		980	1.48
1239-TCDF	NotFnd		1.0411						1.15		980	1.48
1289-TCDF	NotFnd		1.0924						1.15		980	1.48
13468/12468-PeCDF	NotFnd		0.8956						1.08		1046	1.71
13678/13467/12467-PeCDF	30.09		0.9530	0.9531	+0.2	4.75E+04	1.75	Y	1.08	6.89	968	1.59
12368/13478/12478-PeCDF	30.26		0.9590	0.9586	-0.8	5.99E+04	1.50	Y	1.08	8.67	968	1.59
14678-PeCDF	NotFnd		0.9629						1.08		968	1.59
13479-PeCDF	NotFnd		0.9662						1.08		968	1.59
13469/12479-PeCDF	NotFnd		0.9753						1.08		968	1.59
12346-PeCDF	30.94		0.9806	0.9802	-0.8	1.68E+04	0.84	N	1.08	2.43	968	1.59

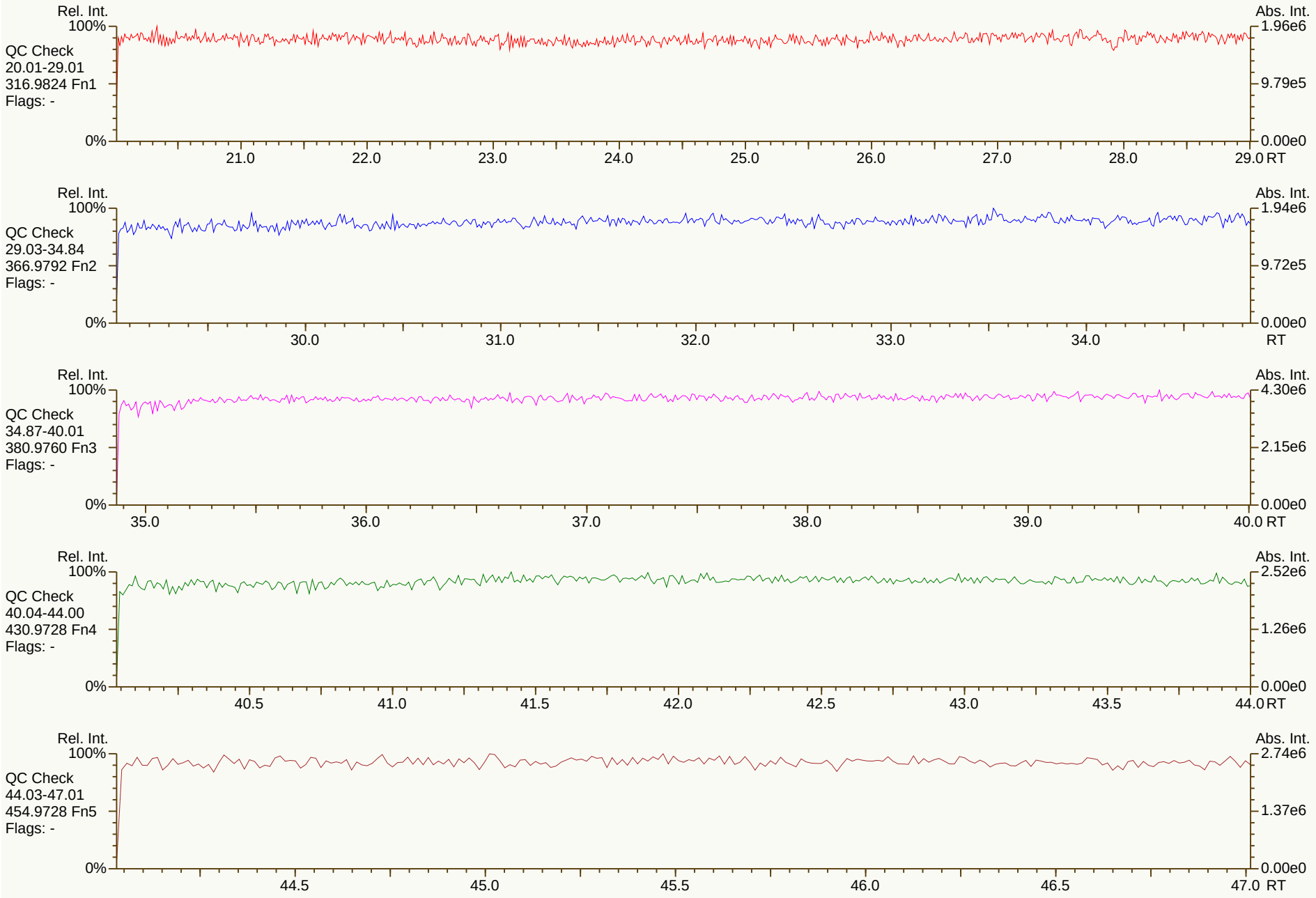
Lab ID: A5045_10493_DF_001 **Acq'd: 05 Jan 2013 19:17 MDC** **Wt/Vol: 1** **Cal: BCS3_10493_DF_PAB**

Client ID: Field Blank **UTP: 06-Jan-2013 09:35 MDC** **J-level: 10 pg** **Split: 2** **Checkcode: 436-219-KSQ**

Datafile: 130105P2-04 **Report: 06 Jan 2013 09:39 MC** **Stds (pg): JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)**

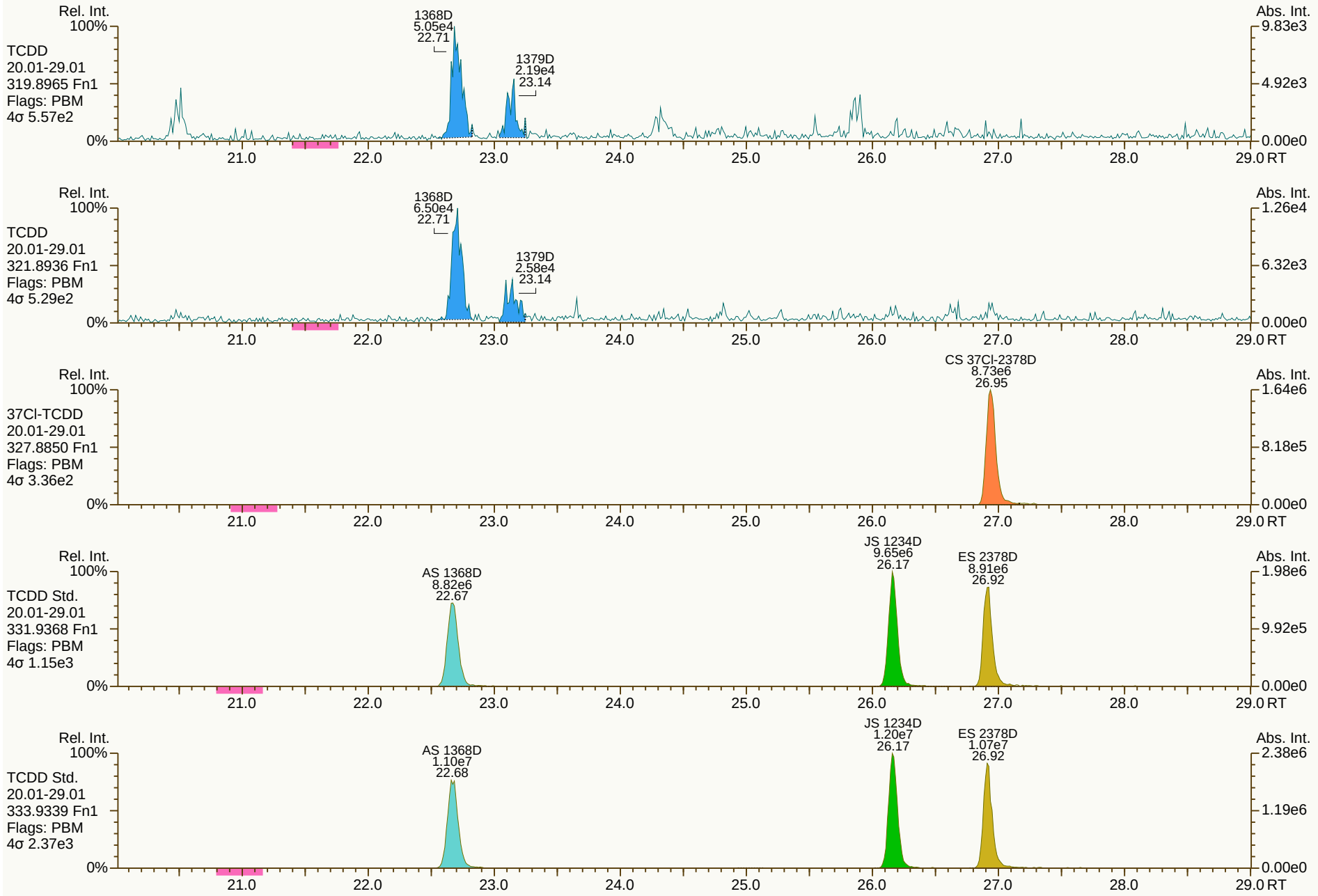
Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
23468/12469-PeCDF	31.06		0.9839	0.9837	-0.4	3.23E+04	1.29	N	1.08	4.68	968	1.59
12347-PeCDF	31.14		0.9868	0.9865	-0.6	2.46E+04	1.22	N	1.08	3.56	968	1.59
12348-PeCDF	31.33		0.9930	0.9923	-1.3	1.69E+04	1.92	N	1.08	2.45	968	1.59
12378-PeCDF	**31.59**		**1.0006**	**1.0005**	**-0.2**	**1.33E+04**	**1.20**	**N**	**1.07**	**1.99**	**968**	**1.64**
12678/12367-PeCDF	31.92		1.0110	1.0112	+0.4	2.74E+04	1.38	Y	1.08	3.98	968	1.59
12379-PeCDF	NotFnd		1.0173						1.08		968	1.59
12679-PeCDF	NotFnd		0.9914						1.08		968	1.59
23467/12369-PeCDF	32.78		0.9962	0.9964	+0.4	3.41E+04	0.91	N	1.08	4.94	968	1.59
23478-PeCDF	**32.93**		**1.0005**	**1.0009**	**+0.8**	**3.76E+04**	**1.51**	**Y**	**1.10**	**5.3**	**968**	**1.54**
23478/12489-PeCDF	NotFnd		1.0006						1.10		968	1.54
12489-PeCDF	NotFnd		1.0023						1.08		968	1.59
12349-PeCDF	NotFnd		1.0123						1.08		968	1.59
12389-PeCDF	NotFnd		1.0397						1.08		968	1.59
123468-HxCDF	35.19		0.9556	0.9555	-0.2	2.65E+04	1.02	N	1.23	4.63	1417	2.7
124678/134678-HxCDF	35.44		0.9621	0.9622	+0.2	5.70E+04	1.30	Y	1.23	9.96	1417	2.7
134679-HxCDF	NotFnd		0.9695						1.23		1417	2.7
124679-HxCDF	NotFnd		0.9759						1.23		1417	2.7
124689-HxCDF	NotFnd		0.9830						1.23		1417	2.7
123467-HxCDF	36.70		0.9966	0.9966	0	2.09E+04	1.85	N	1.23	3.66	1417	2.7
123478-HxCDF	**36.84**		**1.0005**	**1.0003**	**-0.4**	**2.11E+04**	**1.06**	**Y**	**1.28**	**3.8**	**1417**	**2.57**
123678-HxCDF	**37.01**		**1.0005**	**1.0005**	**0**	**2.07E+04**	**1.08**	**Y**	**1.19**	**3.43**	**1417**	**2.5**
123479-HxCDF	NotFnd		1.0056						1.23		1417	2.7
123469-HxCDF	NotFnd		1.0103						1.23		1417	2.7
123679-HxCDF	NotFnd		0.9933						1.23		1417	2.7
234678-HxCDF	**37.79**		**1.0005**	**1.0003**	**-0.5**	**3.05E+04**	**1.13**	**Y**	**1.23**	**5**	**1417**	**2.53**
234678/123689-HxCDF	NotFnd		1.0004						1.23		1417	2.53
123689-HxCDF	NotFnd		1.0009						1.23		1417	2.7
123789-HxCDF	**NotFnd**		**1.0005**						**1.23**		**1417**	**3.28**
123789/123489-HxCDF	NotFnd		0.9869						1.23		1417	3.28
123489-HxCDF	NotFnd		1.0013						1.23		1417	2.7
1234678-HpCDF	**40.90**		**1.0004**	**1.0004**	**0**	**1.07E+05**	**0.99**	**Y**	**1.49**	**19.9**	**1325**	**2.83**
1234679-HpCDF	41.32		1.0104	1.0105	+0.2	1.67E+04	0.82	N	1.45	3.61	1325	3.16
1234689-HpCDF	41.51		1.0152	1.0153	+0.2	2.63E+04	0.84	N	1.45	5.68	1325	3.16
1234789-HpCDF	**NotFnd**		**1.0003**						**1.40**		**1325**	**3.58**
OCDF	**46.09**		**1.0004**	**1.0003**	**-0.3**	**7.02E+05**	**0.87**	**Y**	**1.15**	**190**	**1406**	**4.27**
OCDF-a	NotFnd		1.0002						0.07		1537	79.5

SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**



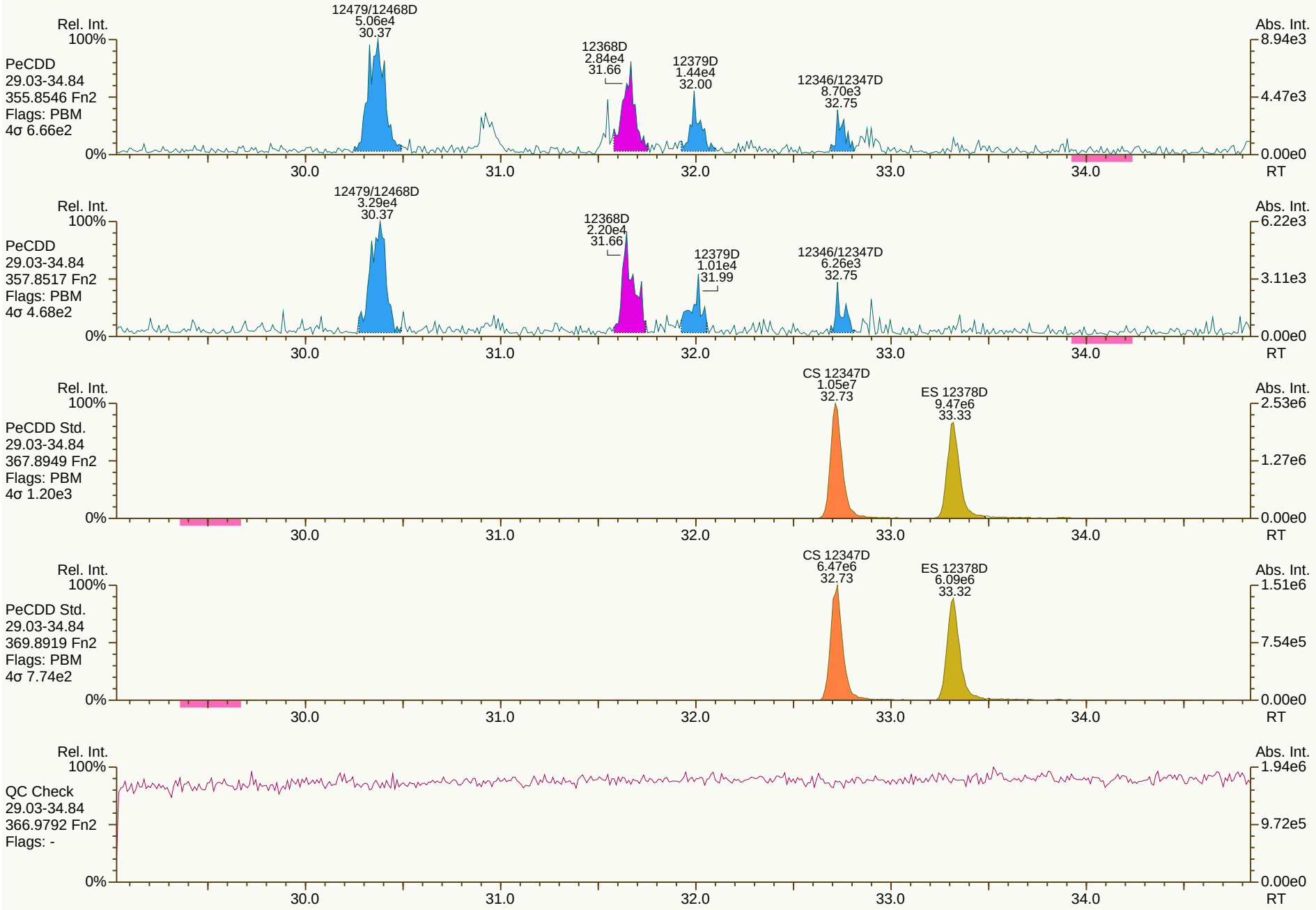
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 scc: 436-219 *PKD: n/a Printed: 06-Jan-2013 09:49 Page 1 of 12*

SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**



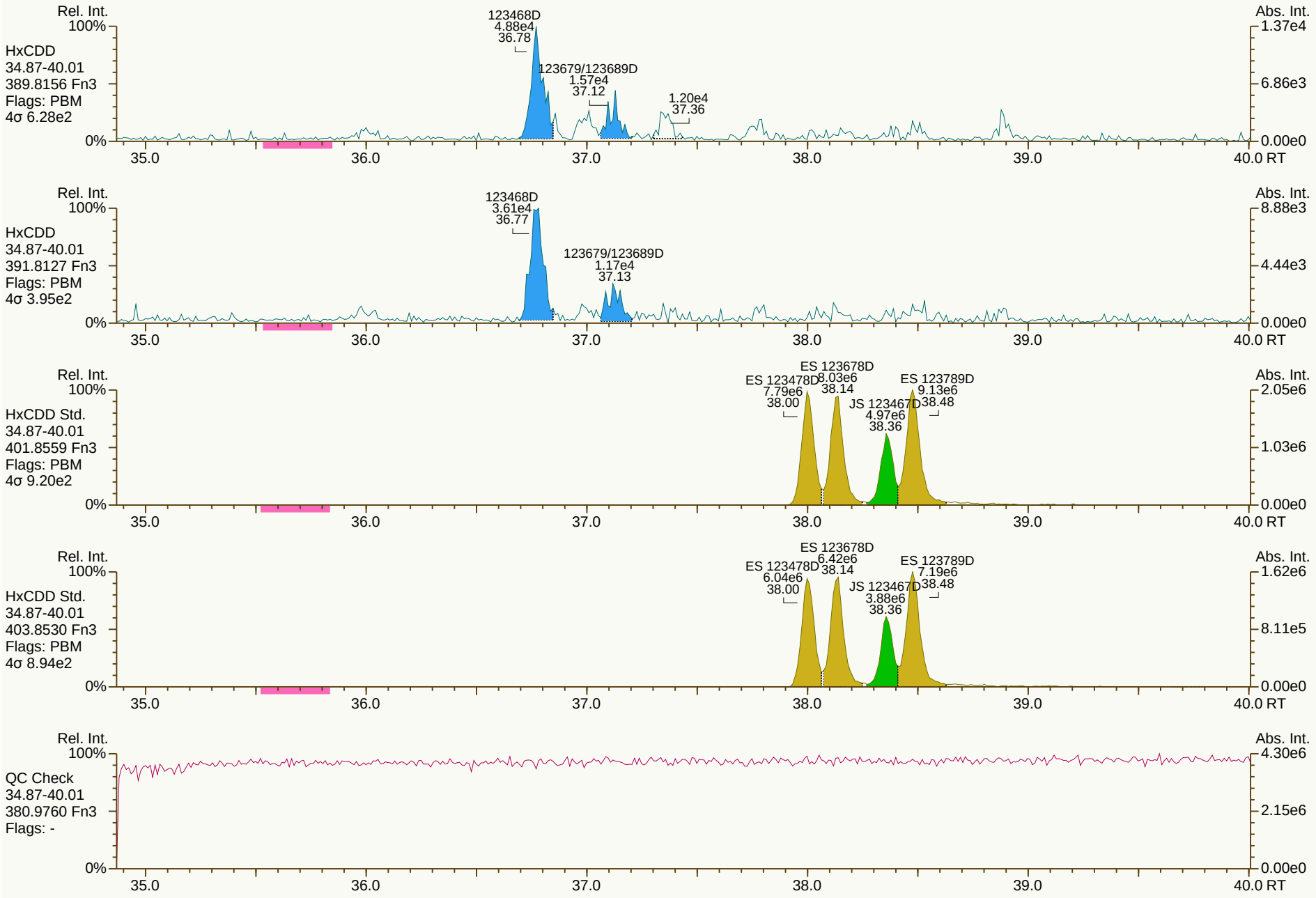
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7198, 1773, 7712 scc: 436-219 *Revised: 06-Jan-2013 09:23 (MDC) Printed: 06-Jan-2013 09:49 Page 2 of 12*

SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**



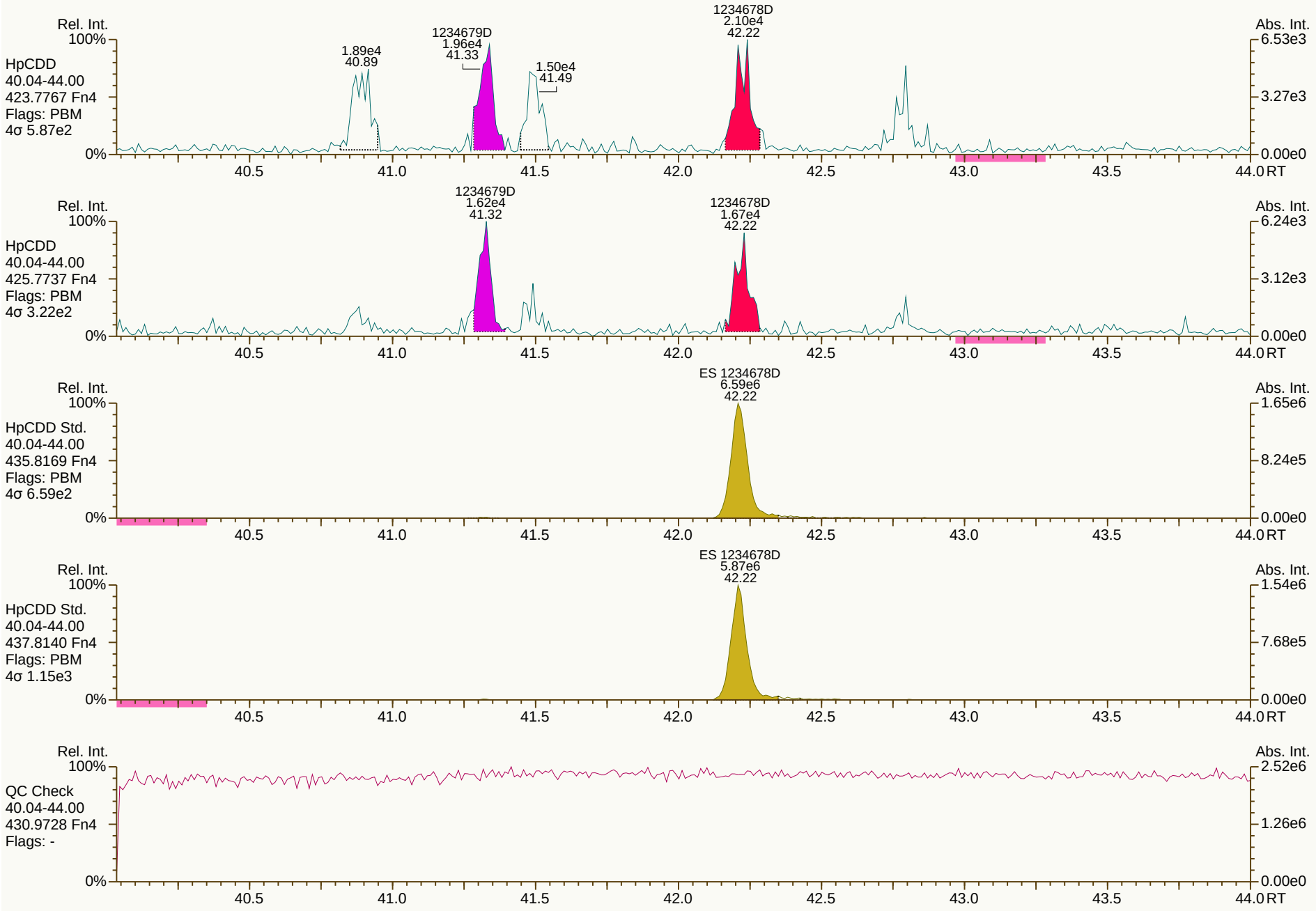
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3932, 0269 scc: 436-219 *Revised: 06-Jan-2013 09:23 (MDC) Printed: 06-Jan-2013 09:49 Page 3 of 12*

SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**



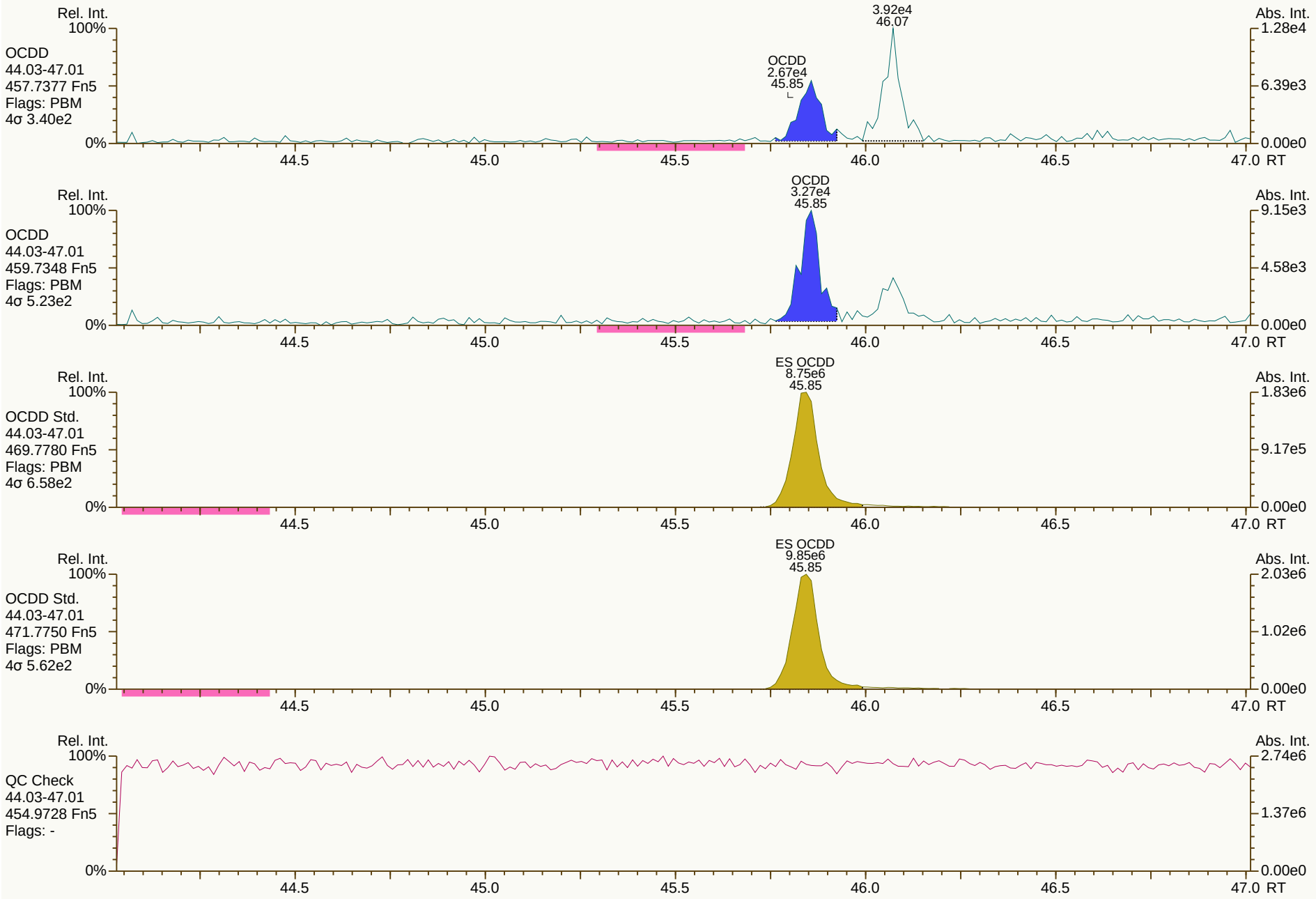
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_001.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3991, 9286 scc: 436-219 *Revised: 06-Jan-2013 09:23 (MDC) Printed: 06-Jan-2013 09:49 Page 4 of 12*

SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**

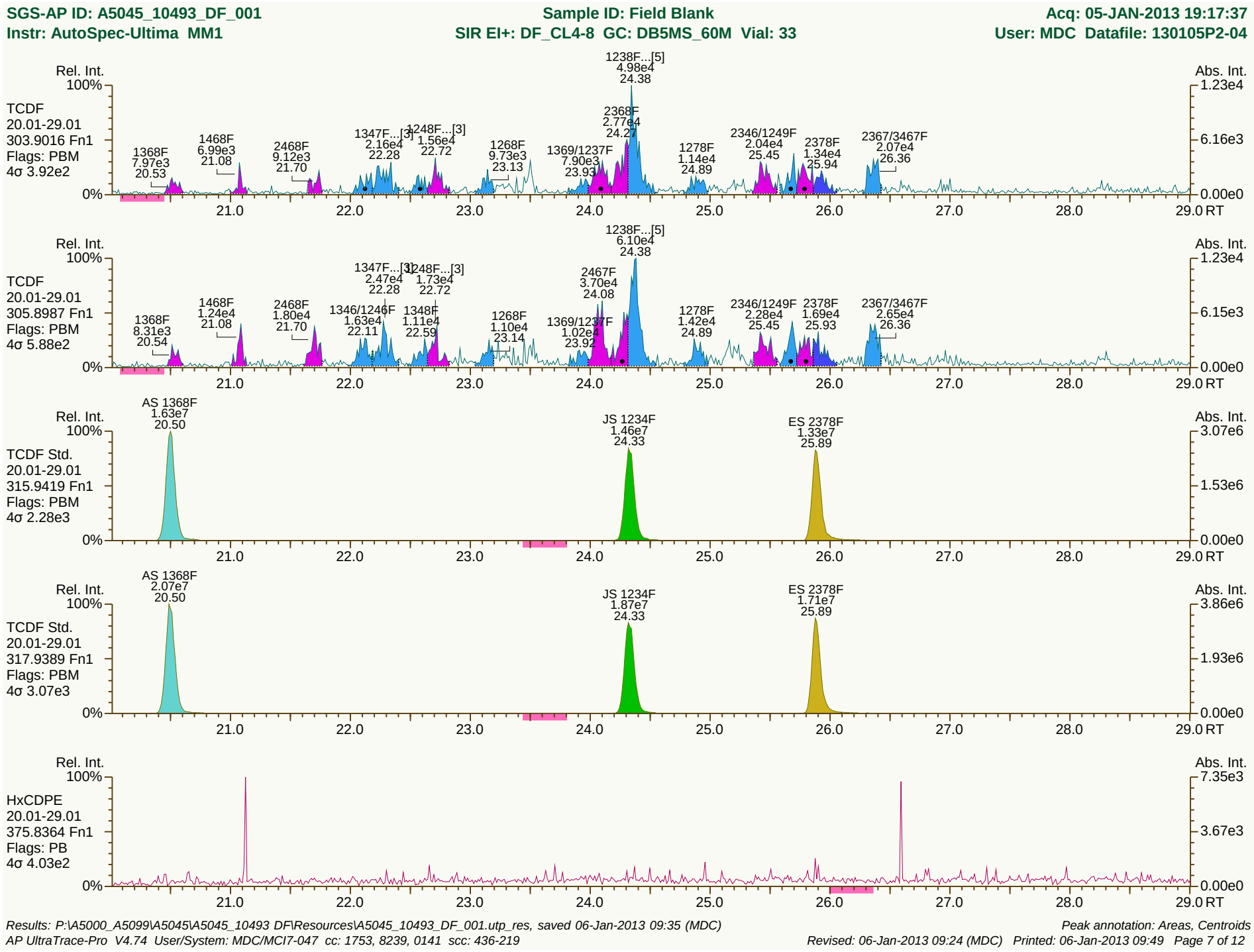


Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_001.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7913, 8715 scc: 436-219 *Revised: 06-Jan-2013 09:23 (MDC) Printed: 06-Jan-2013 09:49 Page 5 of 12*

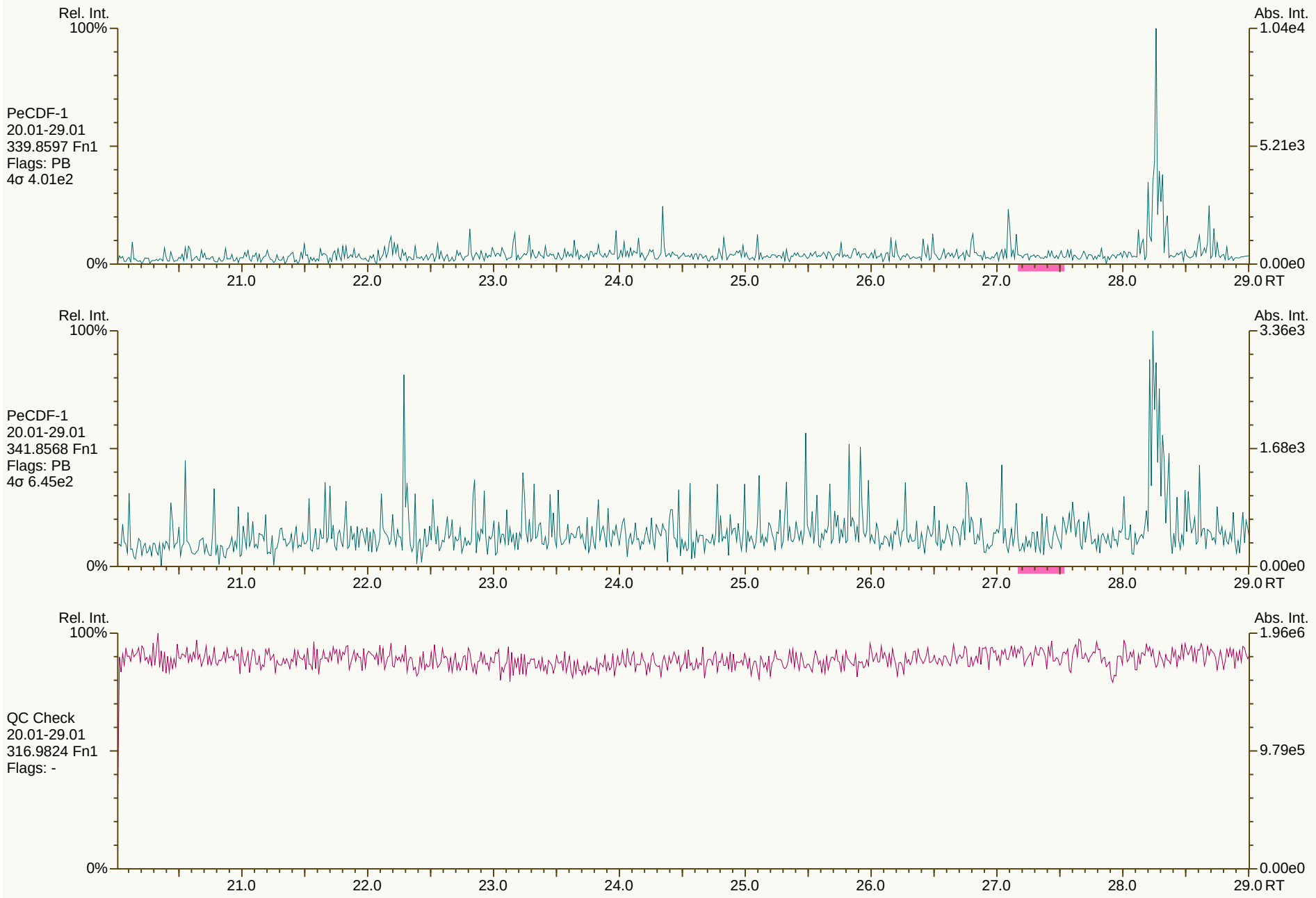
SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_001.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 6507, 4042 scc: 436-219 *Revised: 06-Jan-2013 09:25 (MDC) Printed: 06-Jan-2013 09:49 Page 6 of 12*

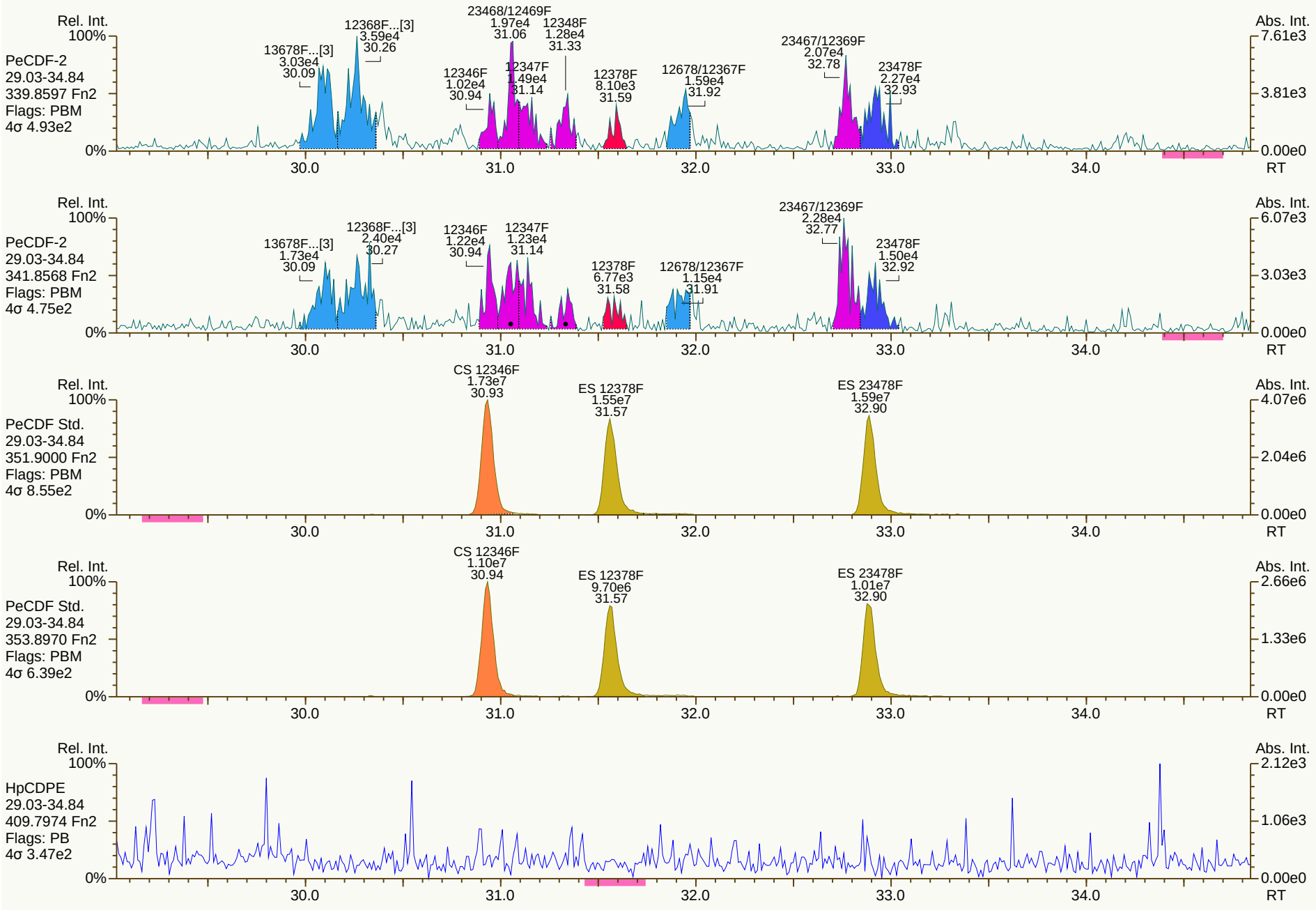

SGS-AP ID: A5045_10493_DF_001
Sample ID: Field Blank
Acq: 05-JAN-2013 19:17:37
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33
User: MDC Datafile: 130105P2-04
TCDF
20.01-29.01
303.9016 Fn1
Flags: PBM
4σ 3.92e2
TCDF
20.01-29.01
305.8987 Fn1
Flags: PBM
4σ 5.88e2
TCDF Std.
20.01-29.01
315.9419 Fn1
Flags: PBM
4σ 2.28e3
TCDF Std.
20.01-29.01
317.9389 Fn1
Flags: PBM
4σ 3.07e3
HxCDPE
20.01-29.01
375.8364 Fn1
Flags: PB
4σ 4.03e2
Rel. Int.
Abs. Int.
RT
AS 1368F 1.63e7 20.50
AS 1368F 2.07e7 20.50
JS 1234F 1.46e7 24.33
JS 1234F 1.87e7 24.33
ES 2378F 1.33e7 25.89
ES 2378F 1.71e7 25.89
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_001.utp_res, saved 06-Jan-2013 09:35 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1753, 8239, 0141 scc: 436-219
Revised: 06-Jan-2013 09:24 (MDC) Printed: 06-Jan-2013 09:49 Page 7 of 12

SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**



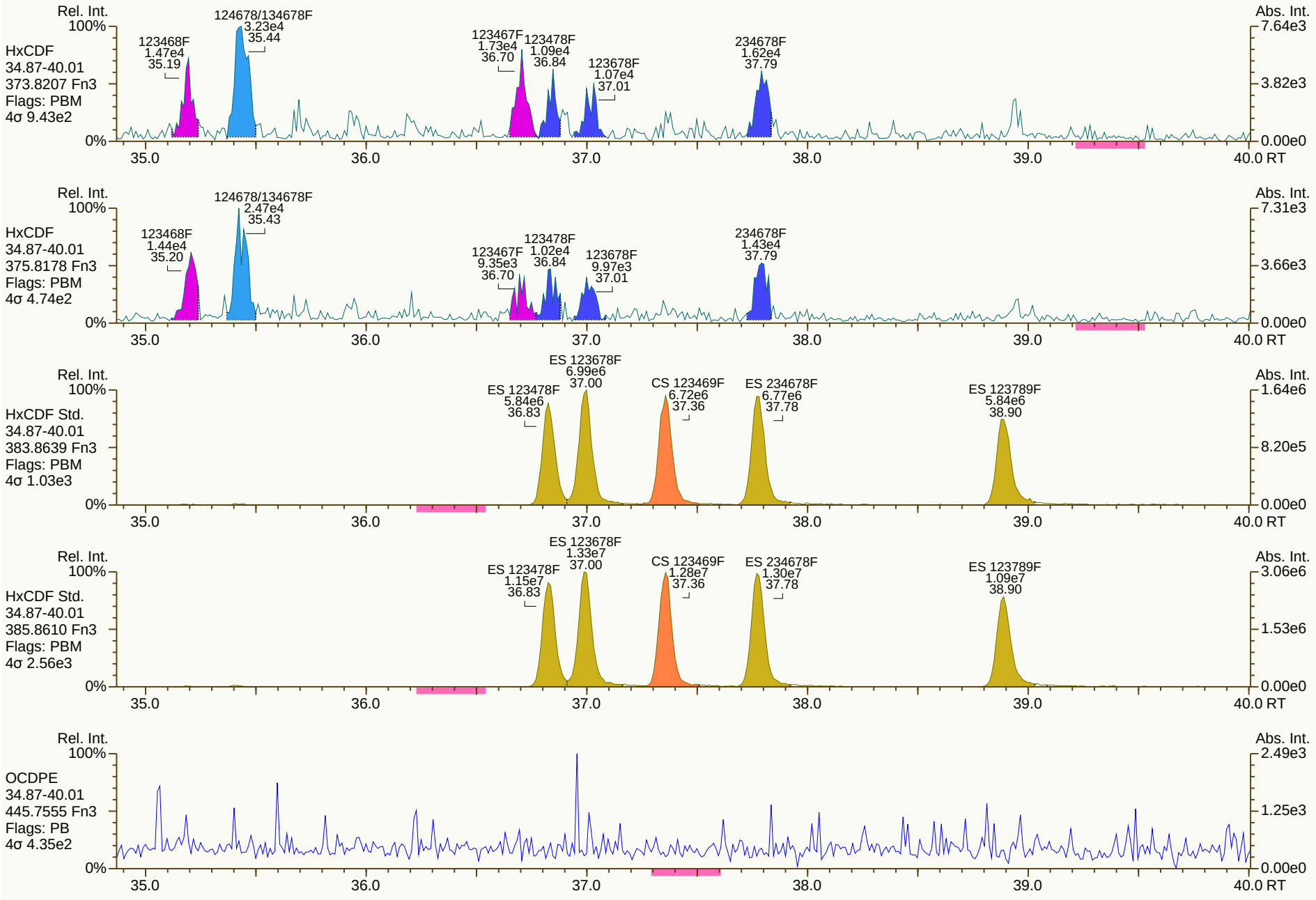
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_001.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4585 scc: 436-219 *Revised: 06-Jan-2013 09:23 (MDC) Printed: 06-Jan-2013 09:49 Page 8 of 12*

SGS-AP ID: A5045_10493_DF_001 | **Sample ID: Field Blank** | **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 | **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** | **User: MDC Datafile: 130105P2-04**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_001.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1965, 3511, 6811 scc: 436-219 *Revised: 06-Jan-2013 09:25 (MDC) Printed: 06-Jan-2013 09:49 Page 9 of 12*

SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**



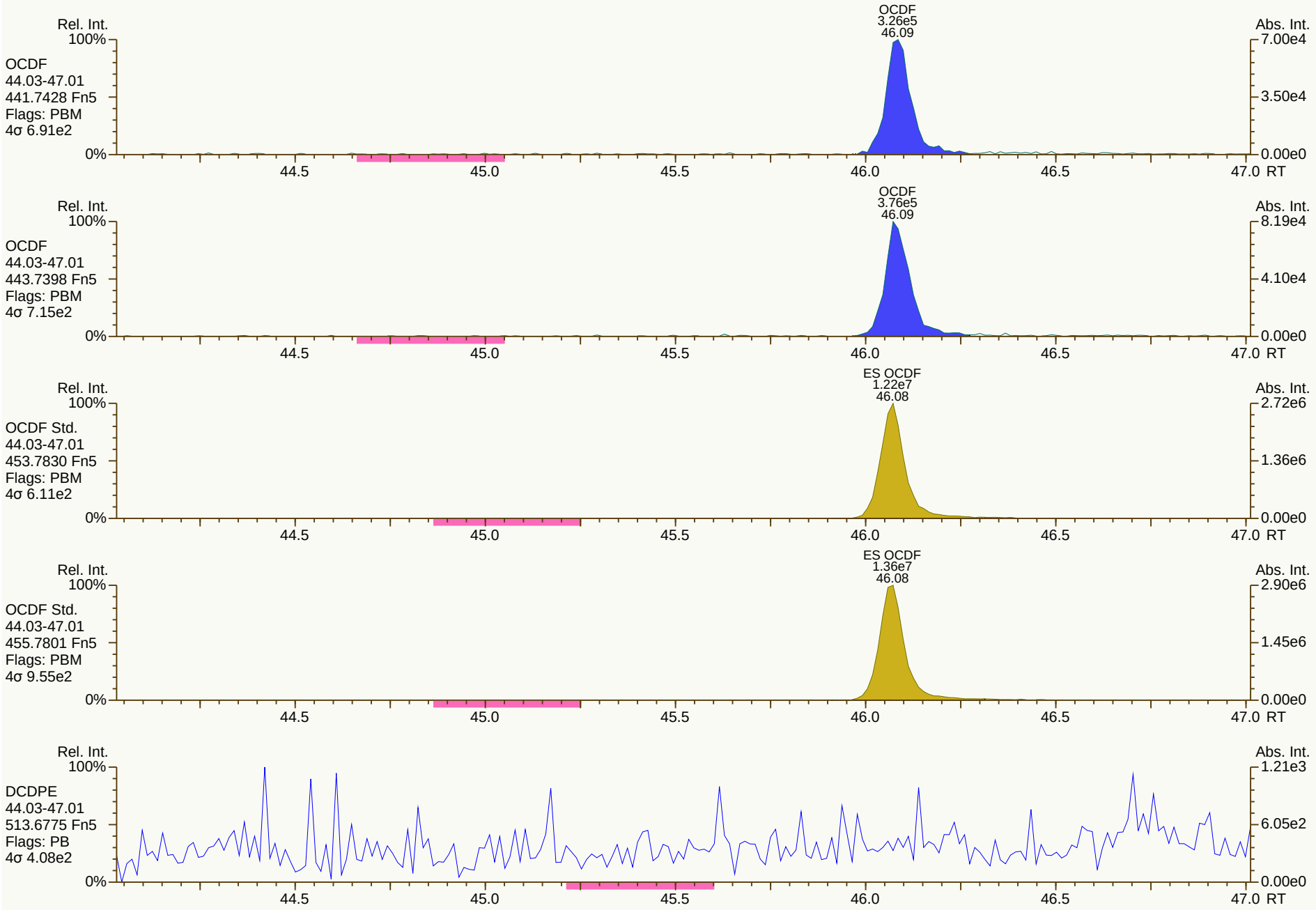
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_001.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 2613, 1453, 2258 scc: 436-219 *Revised: 06-Jan-2013 09:25 (MDC) Printed: 06-Jan-2013 09:49 Page 10 of 12*

SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_001.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 8995, 2706, 9119 scc: 436-219 *Revised: 06-Jan-2013 09:25 (MDC) Printed: 06-Jan-2013 09:49 Page 11 of 12*

SGS-AP ID: A5045_10493_DF_001 **Sample ID: Field Blank** **Acq: 05-JAN-2013 19:17:37**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 33** **User: MDC Datafile: 130105P2-04**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_001.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1521, 1286, 1213 scc: 436-219 *Revised: 06-Jan-2013 09:23 (MDC) Printed: 06-Jan-2013 09:49 Page 12 of 12*

Lab ID: A5045_10493_DF_002 **Acq'd:** 05 Jan 2013 20:09 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 01 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 879-504-MPL

Datafile: 130105P2-05 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
2378-TCDD	NotFnd		1.0010	-		-	-	-	1.15	-	1069	2
12378-PeCDD	33.34		1.0006	1.0007	+0.2	2.20E+04	1.75	Y	1.06	4.58	1029	2.42
123478-HxCDD	38.01		1.0004	1.0003	-0.2	2.75E+04	1.38	Y	1.13	5.79	1187	2.63
123678-HxCDD	38.14		1.0040	1.0037	-0.7	5.58E+04	1.07	Y	1.17	11.3	1187	2.57
123789-HxCDD	38.50		1.0130	1.0131	+0.2	3.51E+04	1.23	Y	1.01	7.27	1187	2.75
1234678-HpCDD	42.22		1.0003	1.0003	0	1.22E+05	0.98	Y	1.09	30.2	737	1.74
OCDD	45.86		1.0004	1.0002	-0.6	1.34E+05	0.95	Y	1.19	38.2	977	3.34
2378-TCDF	25.91		1.0009	1.0007	-0.3	2.73E+05	0.83	Y	1.15	27.2	2011	2.6
12378-PeCDF	31.58		1.0006	1.0007	+0.2	2.27E+05	1.71	Y	1.07	30	2053	3.08
23478-PeCDF	32.91		1.0005	1.0007	+0.4	3.71E+05	1.36	Y	1.10	47.3	2053	3.16
123478-HxCDF	36.84		1.0005	1.0005	0	3.34E+05	1.26	Y	1.28	51.5	1443	2.21
123678-HxCDF	37.01		1.0005	1.0005	0	2.69E+05	1.19	Y	1.19	37.2	1443	2.2
234678-HxCDF	37.79		1.0005	1.0004	-0.2	2.52E+05	1.14	Y	1.23	35.1	1443	2.02
123789-HxCDF	NotFnd		1.0005	-		-	-	-	1.23	-	1443	2.71
1234678-HpCDF	40.90		1.0004	1.0003	-0.2	5.87E+05	1.08	Y	1.49	91.7	1412	2.36
1234789-HpCDF	42.80		1.0003	1.0002	-0.3	9.28E+04	1.18	Y	1.40	18.5	1412	3.14
OCDF	46.09		1.0004	1.0003	-0.3	1.72E+06	0.91	Y	1.15	377	1396	4.04

Name	Act RT	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
ES 2378-TCDD	26.92	1.0286	1.0288	+0.3	2.22E+07	0.82	Y	1.05	86.8
ES 12378-PeCDD	33.32	1.2729	1.2735	+0.9	1.82E+07	1.59	Y	0.84	88.8
ES 123478-HxCDD	38.00	0.9907	0.9907	0	1.68E+07	1.27	Y	1.00	80.9
ES 123678-HxCDD	38.13	0.9941	0.9942	+0.2	1.70E+07	1.27	Y	1.04	79
ES 123789-HxCDD	38.48	1.0031	1.0032	+0.2	1.91E+07	1.24	Y	1.20	77.1
ES 1234678-HpCDD	42.21	1.1005	1.1005	0	1.48E+07	1.08	Y	0.97	74
ES OCDD	45.84	1.1953	1.1953	0	2.36E+07	0.90	Y	0.78	72.7
ES 2378-TCDF	25.89	1.0637	1.0640	+0.4	3.50E+07	0.78	Y	1.01	89.1
ES 12378-PeCDF	31.56	1.2966	1.2972	+0.9	2.85E+07	1.55	Y	0.88	82.6
ES 23478-PeCDF	32.89	1.3512	1.3518	+0.9	2.86E+07	1.52	Y	0.84	87.1
ES 123478-HxCDF	36.82	0.9601	0.9601	0	2.02E+07	0.52	Y	1.28	76.3
ES 123678-HxCDF	36.99	0.9644	0.9645	+0.2	2.44E+07	0.53	Y	1.50	78.2
ES 234678-HxCDF	37.77	0.9848	0.9849	+0.2	2.32E+07	0.52	Y	1.39	80.8
ES 123789-HxCDF	38.89	1.0138	1.0140	+0.5	2.01E+07	0.52	Y	1.34	72
ES 1234678-HpCDF	40.88	1.0659	1.0659	0	1.71E+07	0.45	Y	1.10	74.8
ES 1234789-HpCDF	42.79	1.1155	1.1158	+0.7	1.44E+07	0.45	Y	0.92	75.2
ES OCDF	46.07	1.2013	1.2012	-0.2	3.19E+07	0.91	Y	1.04	74.2

Lab ID: A5045_10493_DF_002 **Acq'd:** 05 Jan 2013 20:09 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 01 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 879-504-MPL

Datafile: 130105P2-05 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
JS 1234-TCDD	26.16		-	-	-	2.43E+07	0.82	Y	-	-
JS 1234-TCDF	24.33		-	-	-	3.91E+07	0.79	Y	-	-
JS 123467-HxCDD	38.35		-	-	-	1.04E+07	1.28	Y	-	-
CS 37Cl-2378-TCDD	26.94		1.0296	1.0297	+0.2	8.10E+06	n/a	-	1.24	67.1
CS 12347-PeCDD	32.72		1.2501	1.2506	+0.8	1.52E+07	1.68	Y	0.88	71
CS 12346-PeCDF	30.93		1.2711	1.2713	+0.3	2.61E+07	1.53	Y	1.05	63.5
CS 123469-HxCDF	37.35		0.9739	0.9740	+0.2	1.86E+07	0.52	Y	1.38	64.9
CS 1234689-HpCDF	41.49		1.0818	1.0819	+0.2	1.31E+07	0.45	Y	1.07	59
SS 37Cl-2378-TCDD	26.94		1.0296	1.0297	+0.2	8.10E+06	n/a	-	1.18	77.3
SS 12347-PeCDD	32.72		1.2501	1.2506	+0.8	1.52E+07	1.68	Y	1.04	79.9
SS 12346-PeCDF	30.93		1.2711	1.2713	+0.3	2.61E+07	1.53	Y	1.20	76.8
SS 123469-HxCDF	37.35		0.9739	0.9740	+0.2	1.86E+07	0.52	Y	0.92	82.9
SS 1234689-HpCDF	41.49		1.0818	1.0819	+0.2	1.31E+07	0.45	Y	0.97	78.8
AS 1368-TCDD	22.68		0.8666	0.8667	+0.2	2.41E+07	0.81	Y	1.05	94.5
AS 1368-TCDF	20.51		0.8431	0.8429	-0.3	4.46E+07	0.78	Y	1.25	91.4
FS 1278-TCDD	NotFnd		1.0144							
FS 12478-PeCDD	NotFnd		0.9559							
FS 123468-HxCDD	NotFnd		0.9672							
FS 1234679-HpCDD	NotFnd		0.9785							
TS 1378-TCDD	NotFnd		0.9285							

Totals	Conc	EMPC
Total TCDD	48.5	60.1
Total PeCDD	72.9	79
Total HxCDD	94.1	101
Total HpCDD	57.3	57.3
Total Tetra-Octa Dioxins	311	335
Total TCDF	581	587
Total PeCDF	463	531
Total HxCDF	342	353
Total HpCDF	157	157
Total Tetra-Octa Furans	1920	2010
Total Tetra-Octa Dioxins & Furans	2230	2340

Lab ID: A5045_10493_DF_002 **Acq'd:** 05 Jan 2013 20:09 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 01 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 879-504-MPL

Datafile: 130105P2-05 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1368-TCDD	22.70		0.8437	0.8435	-0.3	1.68E+05	0.81	Y	1.15	26.3	1069	2
1379-TCDD	23.13		0.8592	0.8594	+0.3	6.01E+04	0.86	Y	1.15	9.38	1069	2
1369-TCDD	NotFnd		0.8775						1.15		1069	2
1469-TCDD	NotFnd		0.9109						1.15		1069	2
1247/1246/1248/1249-TCDD	24.80		0.9212	0.9215	+0.5	4.12E+04	0.74	Y	1.15	6.42	1069	2
1378-TCDD	25.02		0.9294	0.9296	+0.3	4.08E+04	0.81	Y	1.15	6.37	1069	2
1268-TCDD	NotFnd		0.9380						1.15		1069	2
1478-TCDD	NotFnd		0.9486						1.15		1069	2
1279-TCDD	NotFnd		0.9561						1.15		1069	2
1234/1269-TCDD	NotFnd		0.9718						1.15		1069	2
1236-TCDD	NotFnd		0.9776						1.15		1069	2
1237/1238-TCDD	26.63		0.9886	0.9892	+1.0	7.48E+04	0.91	N	1.15	11.7	1069	2
1239-TCDD	NotFnd		0.9946						1.15		1069	2
2378-TCDD	**NotFnd**		**1.0010**						**1.15**		**1069**	**2**
1278-TCDD	NotFnd		1.0153						1.15		1069	2
1267-TCDD	NotFnd		1.0213						1.15		1069	2
1289-TCDD	NotFnd		1.0439						1.15		1069	2
12479/12468-PeCDD	30.35		0.9111	0.9109	-0.4	1.37E+05	1.62	Y	1.06	28.5	1029	2.42
12469-PeCDD	NotFnd		0.9301						1.06		1029	2.42
12368-PeCDD	31.65		0.9498	0.9498	0	1.25E+05	1.63	Y	1.06	26	1029	2.42
12478-PeCDD	NotFnd		0.9565						1.06		1029	2.42
12379-PeCDD	32.01		0.9601	0.9606	+1.0	6.62E+04	1.49	Y	1.06	13.8	1029	2.42
12369/12467/12489-PeCDD	NotFnd		0.9695						1.06		1029	2.42
12346/12347-PeCDD	32.74		0.9828	0.9826	-0.4	2.95E+04	2.33	N	1.06	6.14	1029	2.42
12378-PeCDD	**33.34**		**1.0006**	**1.0007**	**+0.2**	**2.20E+04**	**1.75**	**Y**	**1.06**	**4.58**	**1029**	**2.42**
12367-PeCDD	NotFnd		1.0040						1.06		1029	2.42
12389-PeCDD	NotFnd		1.0164						1.06		1029	2.42
124679/124689-HxCDD	35.99		0.9471	0.9470	-0.2	3.30E+04	1.71	N	1.10	6.78	1187	2.64
123468-HxCDD	36.77		0.9676	0.9677	+0.2	2.21E+05	1.40	Y	1.10	45.5	1187	2.64
123679/123689-HxCDD	37.12		0.9768	0.9768	0	1.18E+05	1.30	Y	1.10	24.2	1187	2.64
123469-HxCDD	NotFnd		0.9809						1.10		1187	2.64
123478-HxCDD	**38.01**		**1.0004**	**1.0003**	**-0.2**	**2.75E+04**	**1.38**	**Y**	**1.13**	**5.79**	**1187**	**2.63**
123678-HxCDD	**38.14**		**1.0040**	**1.0037**	**-0.7**	**5.58E+04**	**1.07**	**Y**	**1.17**	**11.3**	**1187**	**2.57**
123467-HxCDD	NotFnd		1.0099						1.10		1187	2.64
123789-HxCDD	**38.50**		**1.0130**	**1.0131**	**+0.2**	**3.51E+04**	**1.23**	**Y**	**1.01**	**7.27**	**1187**	**2.75**

Lab ID: A5045_10493_DF_002 **Acq'd:** 05 Jan 2013 20:09 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 01 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 879-504-MPL

Datafile: 130105P2-05 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1234679-HpCDD	41.32		0.9789	0.9789	0	1.10E+05	1.03	Y	1.09	27.1	737	1.74
1234678-HpCDD	**42.22**		**1.0003**	**1.0003**	**0**	**1.22E+05**	**0.98**	**Y**	**1.09**	**30.2**	**737**	**1.74**
OCDD	**45.86**		**1.0004**	**1.0002**	**-0.6**	**1.34E+05**	**0.95**	**Y**	**1.19**	**38.2**	**977**	**3.34**
OCDD-a	NotFnd		1.0003						0.07		1050	62.1
1368-TCDF	20.53		0.7936	0.7932	-0.6	2.52E+05	0.84	Y	1.15	25.1	2011	2.6
1468-TCDF	21.07		0.8144	0.8141	-0.5	1.72E+05	0.78	Y	1.15	17.1	2011	2.6
2468-TCDF	21.71		0.8382	0.8385	+0.5	2.75E+05	0.76	Y	1.15	27.4	2011	2.6
1346/1246-TCDF	22.14		0.8546	0.8554	+1.2	2.09E+05	0.72	Y	1.15	20.8	2011	2.6
1347/1378/1247-TCDF	22.30		0.8602	0.8612	+1.6	5.98E+05	0.74	Y	1.15	59.6	2011	2.6
1348-TCDF	22.57		0.8716	0.8718	+0.3	1.70E+05	0.75	Y	1.15	16.9	2011	2.6
1248/1367/1379-TCDF	22.70		0.8774	0.8769	-0.8	4.55E+05	0.76	Y	1.15	45.3	2011	2.6
1268-TCDF	23.16		0.8944	0.8946	+0.3	2.23E+05	0.78	Y	1.15	22.2	2011	2.6
1467-TCDF	23.31		0.9003	0.9004	+0.2	9.04E+04	0.72	Y	1.15	9.01	2011	2.6
1478-TCDF	23.51		0.9077	0.9080	+0.5	1.58E+05	0.72	Y	1.15	15.8	2011	2.6
1369/1237-TCDF	23.93		0.9241	0.9246	+0.8	1.46E+05	0.85	Y	1.15	14.6	2011	2.6
2467-TCDF	24.09		0.9299	0.9304	+0.8	2.86E+05	0.78	Y	1.15	28.5	2011	2.6
2368-TCDF	24.24		0.9363	0.9365	+0.3	3.36E+05	0.74	Y	1.15	33.5	2011	2.6
1238/1234/1678/1469/1236-TCDF	24.37		0.9413	0.9413	0	7.04E+05	0.77	Y	1.15	70.1	2011	2.6
1278-TCDF	24.91		0.9611	0.9621	+1.6	2.98E+05	0.79	Y	1.15	29.7	2011	2.6
1349-TCDF	NotFnd		0.9656						1.15		2011	2.6
1267-TCDF	25.21		0.9734	0.9739	+0.8	1.32E+05	0.80	Y	1.15	13.2	2011	2.6
2346/1249-TCDF	25.44		0.9823	0.9825	+0.3	2.17E+05	0.73	Y	1.15	21.6	2011	2.6
2347/1279-TCDF	25.67		0.9913	0.9915	+0.3	2.46E+05	0.73	Y	1.15	24.5	2011	2.6
2348-TCDF	25.78		0.9961	0.9960	-0.2	2.56E+05	0.84	Y	1.15	25.5	2011	2.6
2378-TCDF	**25.91**		**1.0009**	**1.0007**	**-0.3**	**2.73E+05**	**0.83**	**Y**	**1.15**	**27.2**	**2011**	**2.6**
2367/3467-TCDF	26.36		1.0175	1.0181	+0.9	3.41E+05	0.79	Y	1.15	34	2011	2.6
1269-TCDF	NotFnd		1.0287						1.15		2011	2.6
1239-TCDF	NotFnd		1.0411						1.15		2011	2.6
1289-TCDF	28.28		1.0924	1.0924	0	5.17E+04	1.17	N	1.15	5.15	2011	2.6
13468/12468-PeCDF	28.26		0.8956	0.8953	-0.6	3.97E+05	1.83	N	1.08	51.6	1212	1.84
13678/13467/12467-PeCDF	30.08		0.9530	0.9529	-0.2	4.97E+05	1.57	Y	1.08	64.5	2053	3.12
12368/13478/12478-PeCDF	30.26		0.9590	0.9586	-0.8	6.50E+05	1.39	Y	1.08	84.4	2053	3.12
14678-PeCDF	30.37		0.9629	0.9621	-1.5	1.74E+05	1.39	Y	1.08	22.6	2053	3.12
13479-PeCDF	30.48		0.9662	0.9658	-0.8	7.98E+04	1.64	Y	1.08	10.4	2053	3.12
13469/12479-PeCDF	30.78		0.9753	0.9753	0	9.16E+04	1.89	N	1.08	11.9	2053	3.12
12346-PeCDF	30.94		0.9806	0.9804	-0.4	1.20E+05	1.43	Y	1.08	15.6	2053	3.12

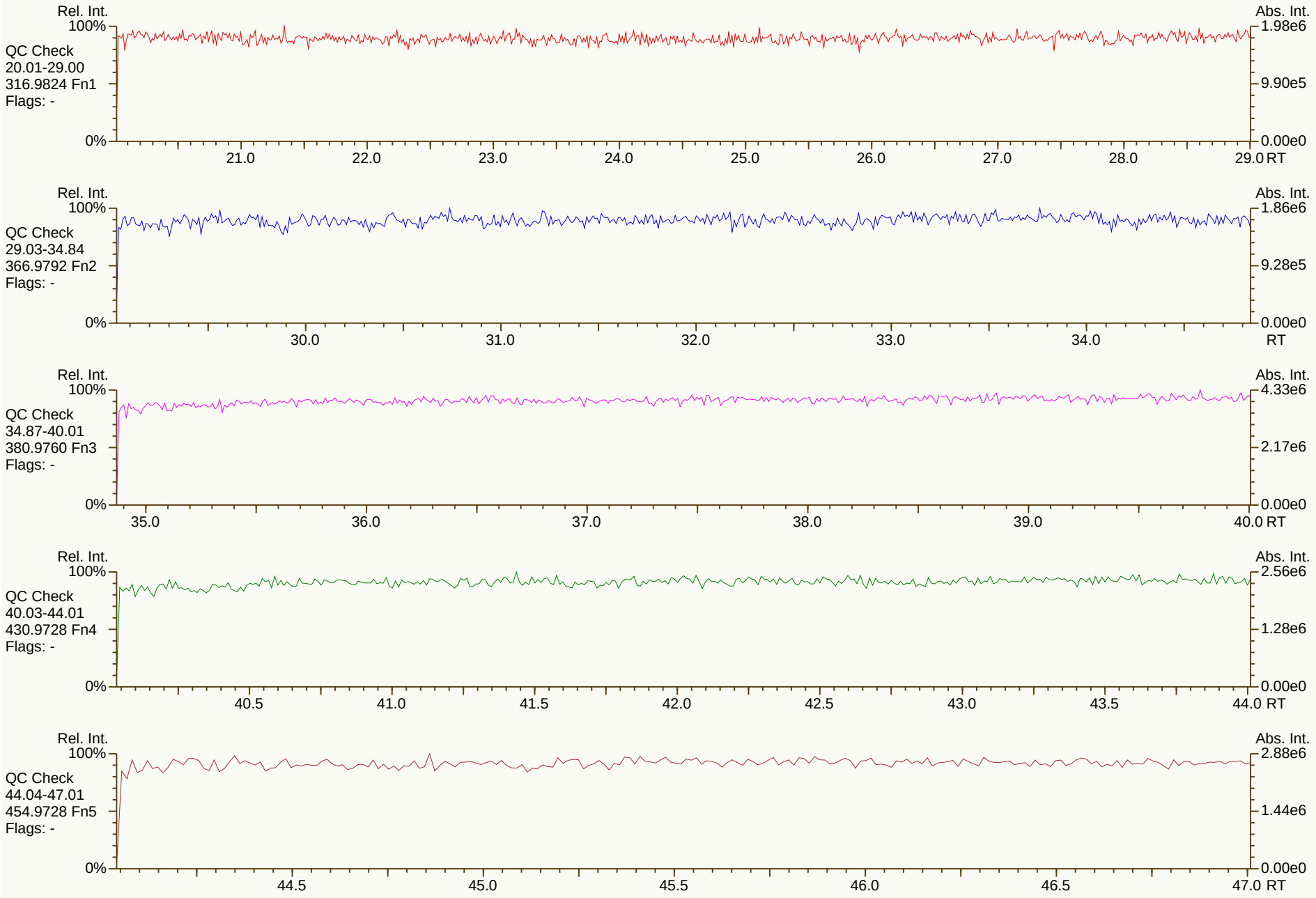
Lab ID: A5045_10493_DF_002 **Acq'd:** 05 Jan 2013 20:09 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 01 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 879-504-MPL

Datafile: 130105P2-05 **Report:** 06 Jan 2013 09:39 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

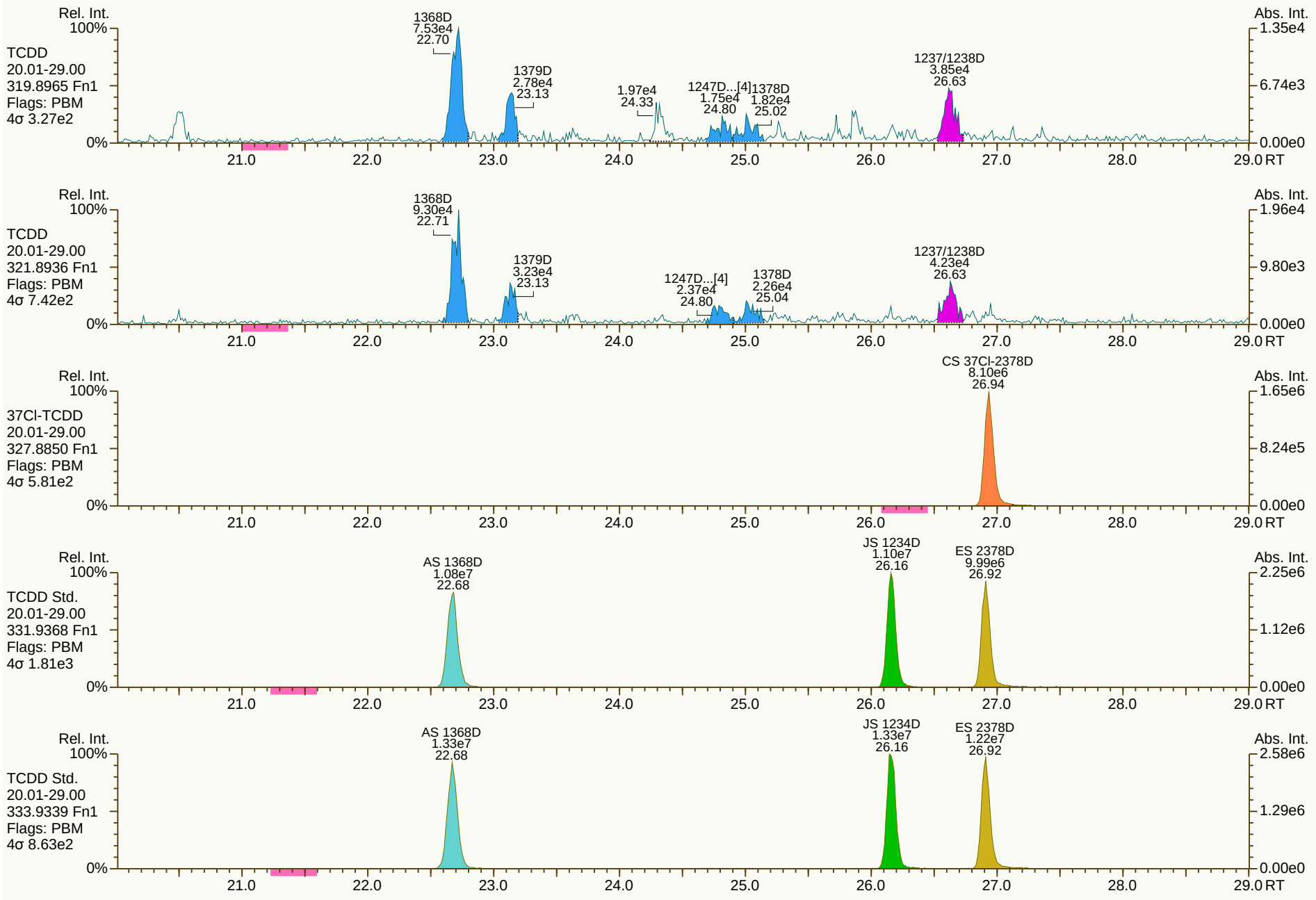
Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
23468/12469-PeCDF	31.06		0.9839	0.9840	+0.2	3.07E+05	1.55	Y	1.08	39.8	2053	3.12
12347-PeCDF	31.15		0.9868	0.9868	0	2.23E+05	1.57	Y	1.08	28.9	2053	3.12
12348-PeCDF	31.34		0.9930	0.9928	-0.4	2.12E+05	1.49	Y	1.08	27.5	2053	3.12
12378-PeCDF	**31.58**		**1.0006**	**1.0007**	**+0.2**	**2.27E+05**	**1.71**	**Y**	**1.07**	**30**	**2053**	**3.08**
12678/12367-PeCDF	31.91		1.0110	1.0111	+0.2	3.22E+05	1.54	Y	1.08	41.8	2053	3.12
12379-PeCDF	32.12		1.0173	1.0176	+0.6	3.74E+04	1.31	N	1.08	4.85	2053	3.12
12679-PeCDF	32.61		0.9914	0.9914	0	5.12E+04	1.44	Y	1.08	6.64	2053	3.12
23467/12369-PeCDF	32.76		0.9962	0.9962	0	2.47E+05	1.46	Y	1.08	32	2053	3.12
23478-PeCDF	**32.91**		**1.0005**	**1.0007**	**+0.4**	**3.71E+05**	**1.36**	**Y**	**1.10**	**47.3**	**2053**	**3.16**
23478/12489-PeCDF	NotFnd		1.0006						1.10		2053	3.16
12489-PeCDF	NotFnd		1.0023						1.08		2053	3.12
12349-PeCDF	33.29		1.0123	1.0121	-0.4	4.48E+04	1.48	Y	1.08	5.81	2053	3.12
12389-PeCDF	34.21		1.0397	1.0401	+0.8	4.37E+04	1.45	Y	1.08	5.67	2053	3.12
123468-HxCDF	35.19		0.9556	0.9557	+0.2	3.14E+05	1.18	Y	1.23	46.3	1443	2.27
124678/134678-HxCDF	35.43		0.9621	0.9623	+0.4	5.73E+05	1.27	Y	1.23	84.5	1443	2.27
134679-HxCDF	35.69		0.9695	0.9692	-0.7	4.85E+04	1.34	Y	1.23	7.15	1443	2.27
124679-HxCDF	35.93		0.9759	0.9758	-0.2	8.04E+04	1.34	Y	1.23	11.9	1443	2.27
124689-HxCDF	36.20		0.9830	0.9830	0	6.01E+04	1.34	Y	1.23	8.86	1443	2.27
123467-HxCDF	36.70		0.9966	0.9966	0	2.12E+05	1.27	Y	1.23	31.2	1443	2.27
123478-HxCDF	**36.84**		**1.0005**	**1.0005**	**0**	**3.34E+05**	**1.26**	**Y**	**1.28**	**51.5**	**1443**	**2.21**
123678-HxCDF	**37.01**		**1.0005**	**1.0005**	**0**	**2.69E+05**	**1.19**	**Y**	**1.19**	**37.2**	**1443**	**2.2**
123479-HxCDF	37.20		1.0056	1.0056	0	7.84E+04	1.21	Y	1.23	11.6	1443	2.27
123469-HxCDF	37.37		1.0103	1.0102	-0.2	5.91E+04	1.14	Y	1.23	8.71	1443	2.27
123679-HxCDF	37.52		0.9933	0.9934	+0.2	5.60E+04	1.30	Y	1.23	8.26	1443	2.27
234678-HxCDF	**37.79**		**1.0005**	**1.0004**	**-0.2**	**2.52E+05**	**1.14**	**Y**	**1.23**	**35.1**	**1443**	**2.02**
234678/123689-HxCDF	NotFnd		1.0004						1.23		1443	2.02
123689-HxCDF	NotFnd		1.0009						1.23		1443	2.27
123789-HxCDF	**NotFnd**		**1.0005**						**1.23**		**1443**	**2.71**
123789/123489-HxCDF	NotFnd		0.9869						1.23		1443	2.71
123489-HxCDF	38.94		1.0013	1.0013	0	7.45E+04	1.53	N	1.23	11	1443	2.27
1234678-HpCDF	**40.90**		**1.0004**	**1.0003**	**-0.2**	**5.87E+05**	**1.08**	**Y**	**1.49**	**91.7**	**1412**	**2.36**
1234679-HpCDF	41.31		1.0104	1.0105	+0.2	1.17E+05	1.06	Y	1.45	20.5	1412	2.71
1234689-HpCDF	41.50		1.0152	1.0152	0	1.51E+05	1.01	Y	1.45	26.5	1412	2.71
1234789-HpCDF	**42.80**		**1.0003**	**1.0002**	**-0.3**	**9.28E+04**	**1.18**	**Y**	**1.40**	**18.5**	**1412**	**3.14**
OCDF	**46.09**		**1.0004**	**1.0003**	**-0.3**	**1.72E+06**	**0.91**	**Y**	**1.15**	**377**	**1396**	**4.04**
OCDF-a	46.08		1.0002	1.0003	+0.3	9.72E+04	2.94	N	0.07	362	1448	71.3

SGS-AP ID: A5045_10493_DF_002 **Sample ID: LCD/Run 01** **Acq: 05-JAN-2013 20:09:02**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 34** **User: MDC Datafile: 130105P2-05**



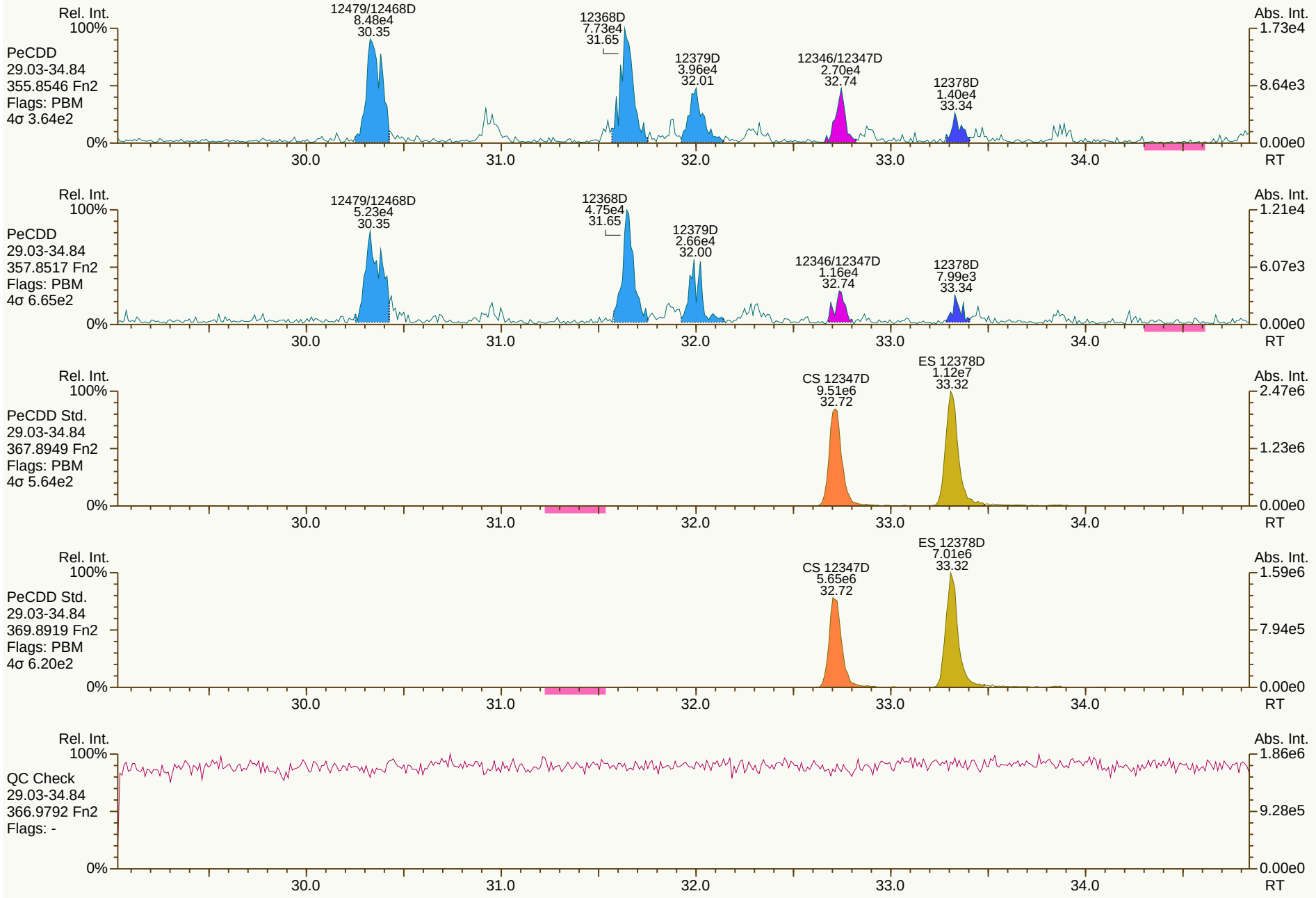
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 scc: 879-504 *PKD: n/a Printed: 06-Jan-2013 09:50 Page 1 of 12*

SGS-AP ID: A5045_10493_DF_002 **Sample ID: LCD/Run 01** **Acq: 05-JAN-2013 20:09:02**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 34** **User: MDC Datafile: 130105P2-05**

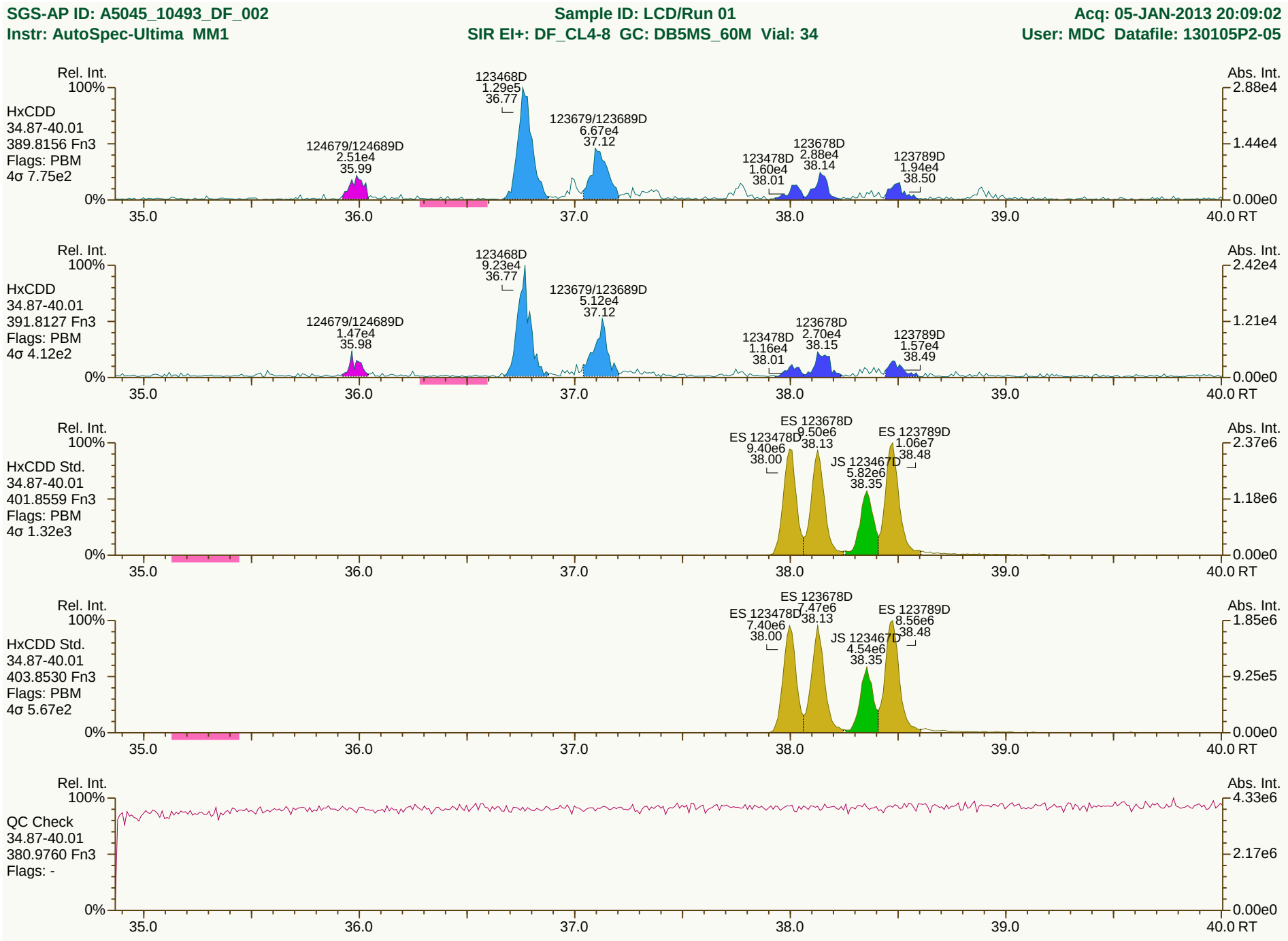


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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3097, 4791, 0545 scc: 879-504 *Revised: 06-Jan-2013 09:26 (MDC) Printed: 06-Jan-2013 09:50 Page 2 of 12*

SGS-AP ID: A5045_10493_DF_002 **Sample ID: LCD/Run 01** **Acq: 05-JAN-2013 20:09:02**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 34** **User: MDC Datafile: 130105P2-05**

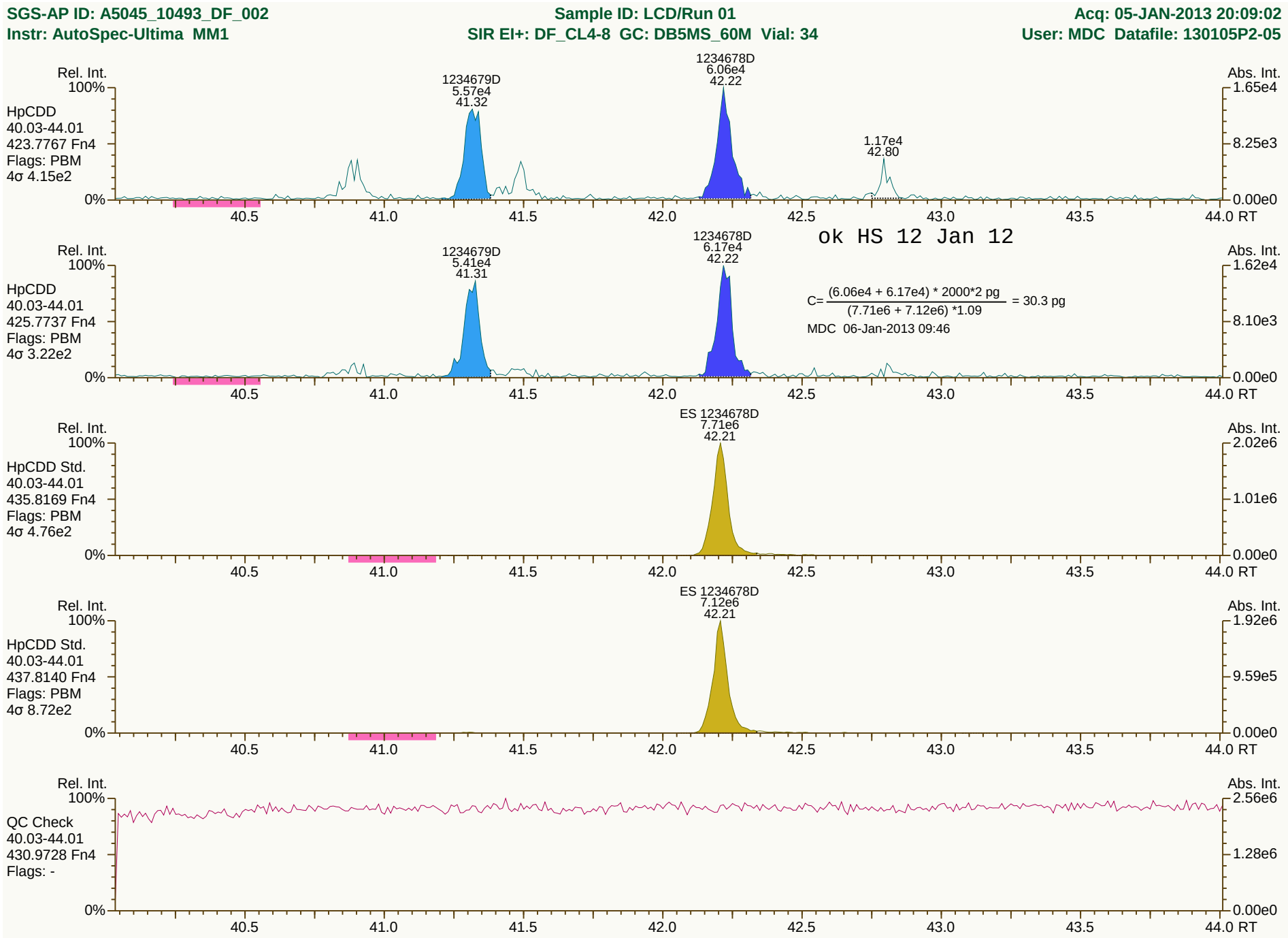


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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1008, 2946 scc: 879-504 *Revised: 06-Jan-2013 09:26 (MDC) Printed: 06-Jan-2013 09:50 Page 3 of 12*



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_002.utp_res, saved 06-Jan-2013 09:47 (MDC) *Peak annotation: Areas, Centroids*

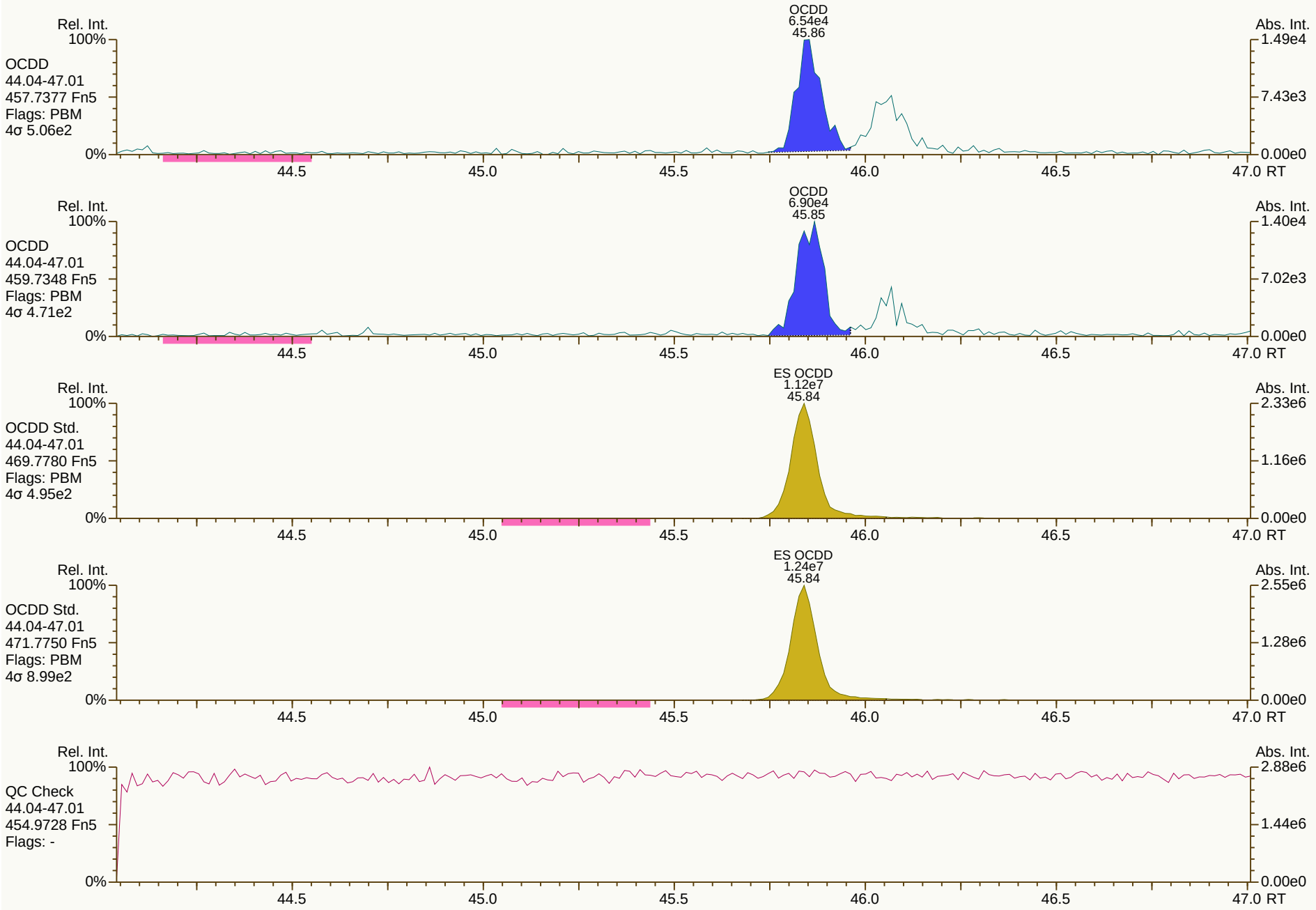
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Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_002.utp_res, saved 06-Jan-2013 09:47 (MDC) *Peak annotation: Areas, Centroids*

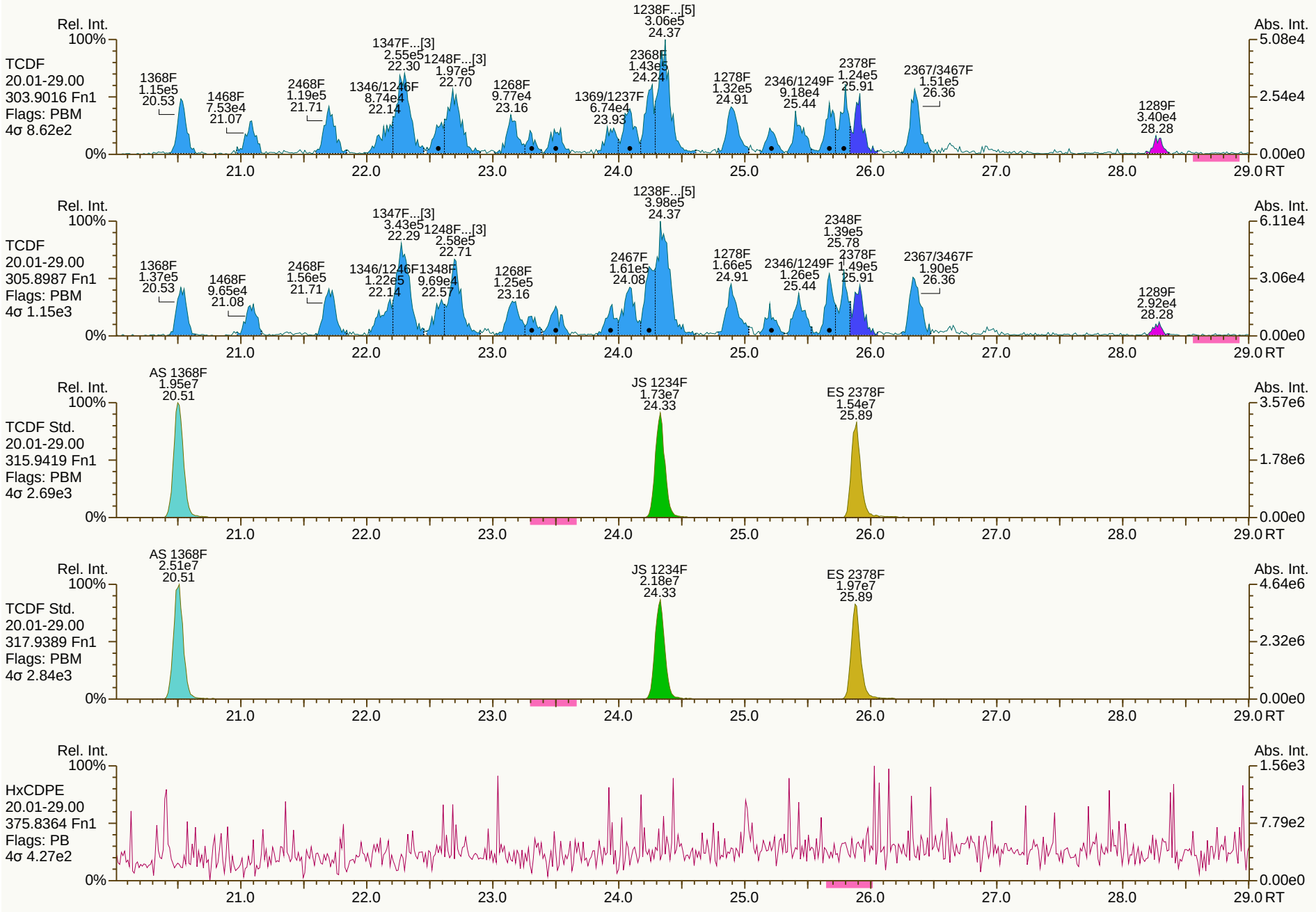
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SGS-AP ID: A5045_10493_DF_002 **Sample ID: LCD/Run 01** **Acq: 05-JAN-2013 20:09:02**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 34** **User: MDC Datafile: 130105P2-05**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_002.utp_res, saved 06-Jan-2013 09:47 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4996, 0313 scc: 879-504 *Revised: 06-Jan-2013 09:26 (MDC) Printed: 06-Jan-2013 09:50 Page 6 of 12*

SGS-AP ID: A5045_10493_DF_002 **Sample ID: LCD/Run 01** **Acq: 05-JAN-2013 20:09:02**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 34** **User: MDC Datafile: 130105P2-05**



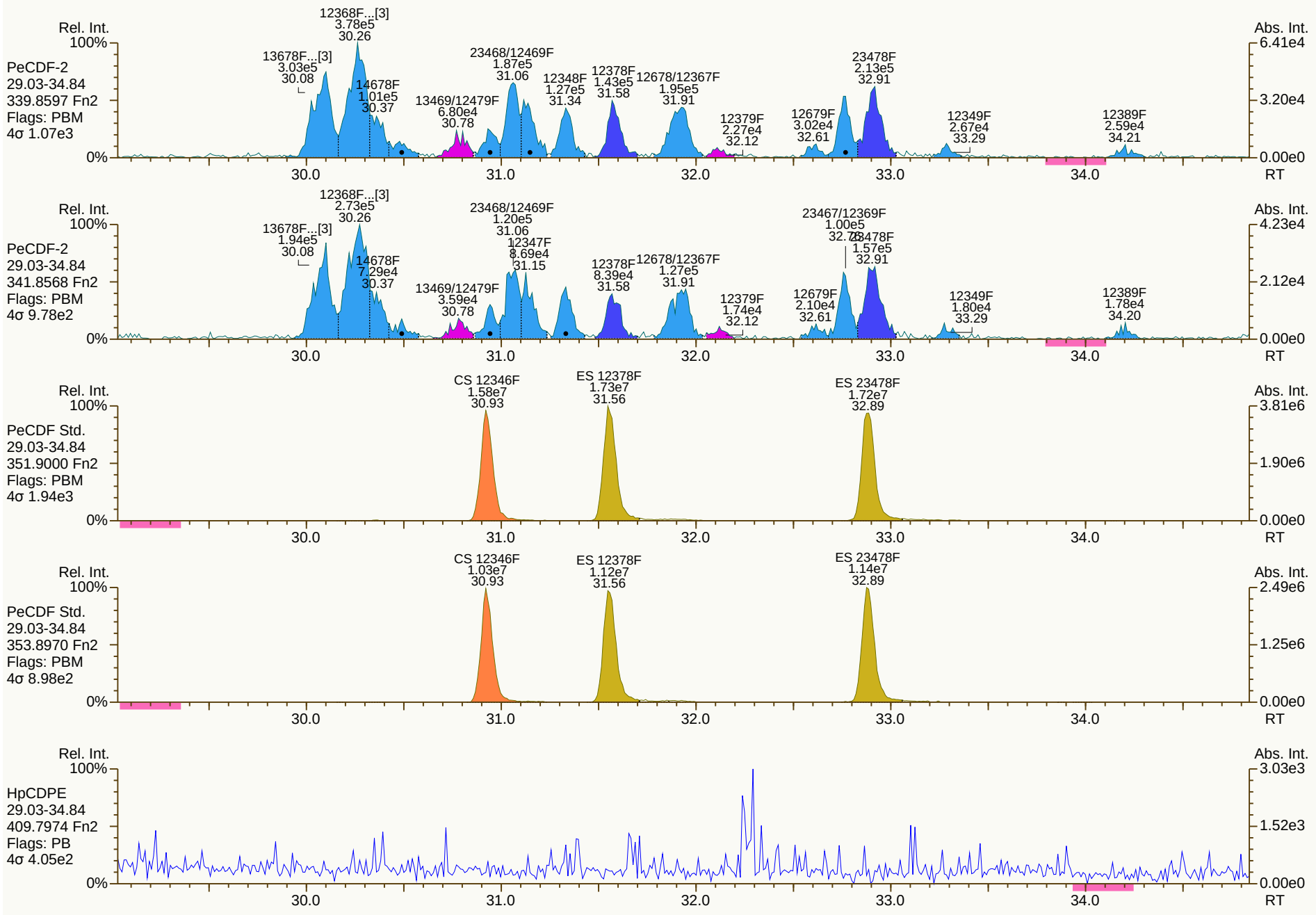
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 9486, 7287, 9894 scc: 879-504 *Revised: 06-Jan-2013 09:27 (MDC) Printed: 06-Jan-2013 09:50 Page 7 of 12*

SGS-AP ID: A5045_10493_DF_002 **Sample ID: LCD/Run 01** **Acq: 05-JAN-2013 20:09:02**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 34** **User: MDC Datafile: 130105P2-05**

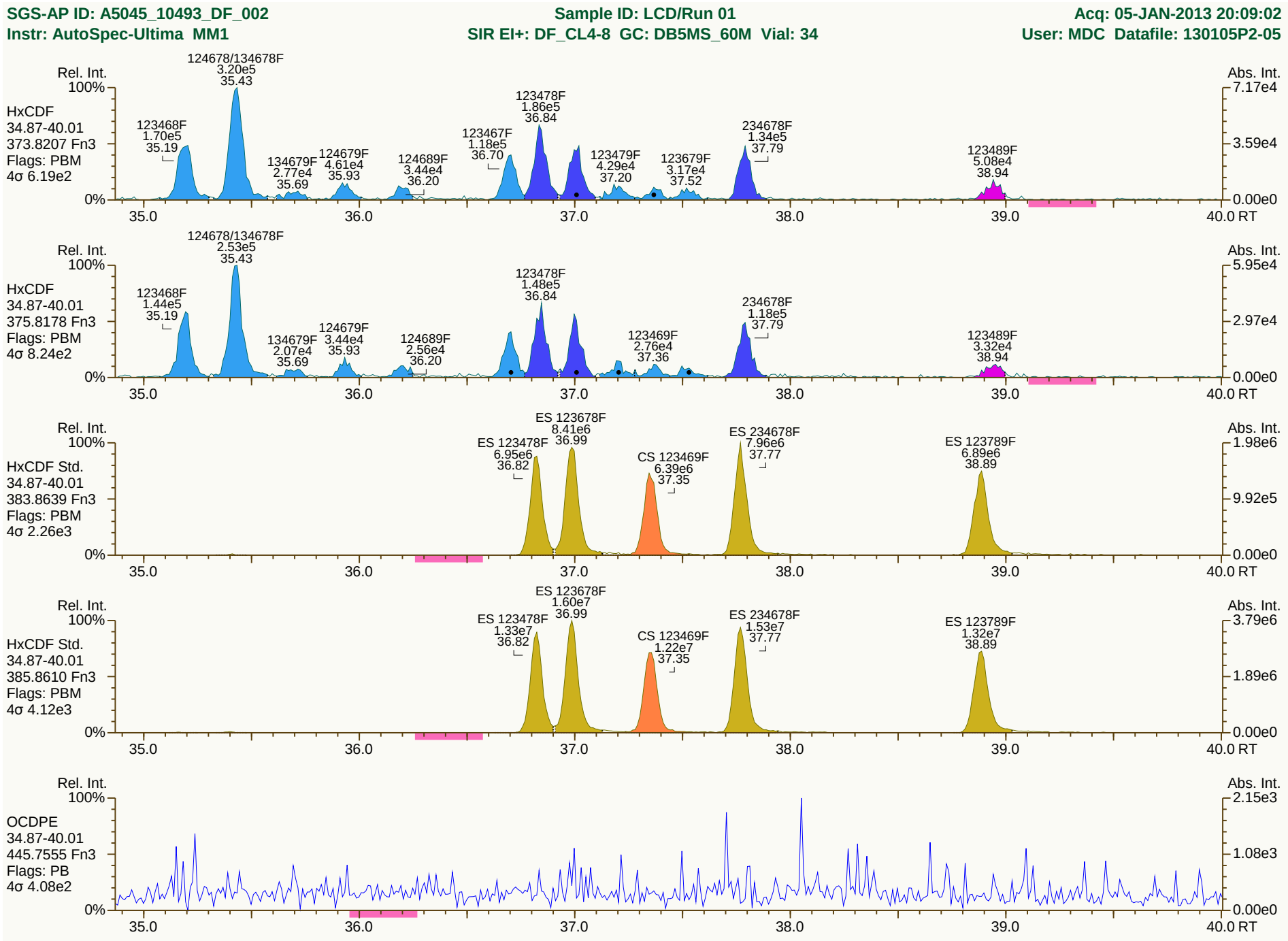


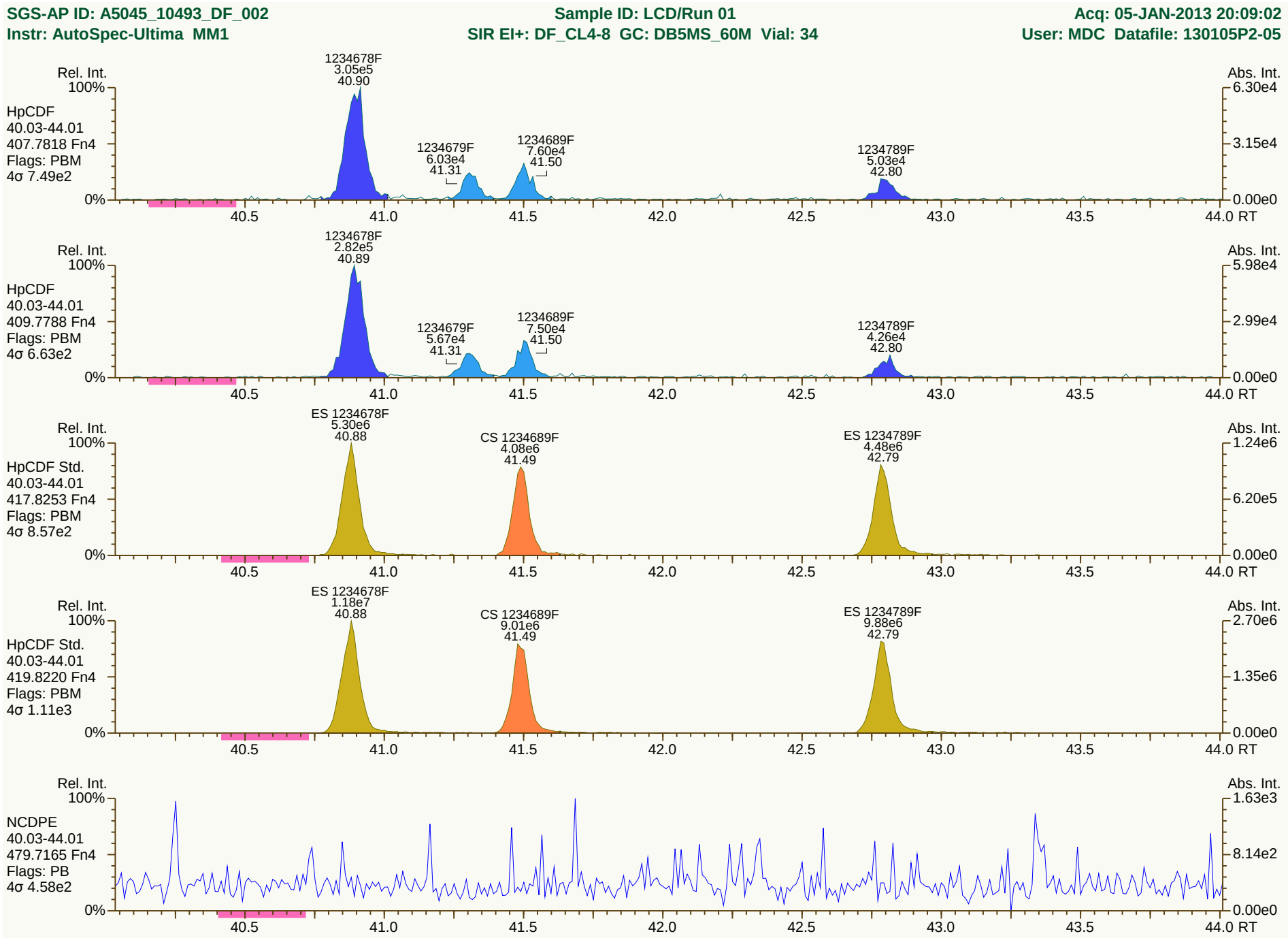
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3379 scc: 879-504 *Revised: 06-Jan-2013 09:26 (MDC) Printed: 06-Jan-2013 09:50 Page 8 of 12*

SGS-AP ID: A5045_10493_DF_002 | Sample ID: LCD/Run 01 | Acq: 05-JAN-2013 20:09:02
Instr: AutoSpec-Ultima MM1 | SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 34 | User: MDC Datafile: 130105P2-05



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_002.utp_res, saved 06-Jan-2013 09:47 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4507, 2209, 8374 scc: 879-504 *Revised: 06-Jan-2013 09:28 (MDC) Printed: 06-Jan-2013 09:50 Page 9 of 12*

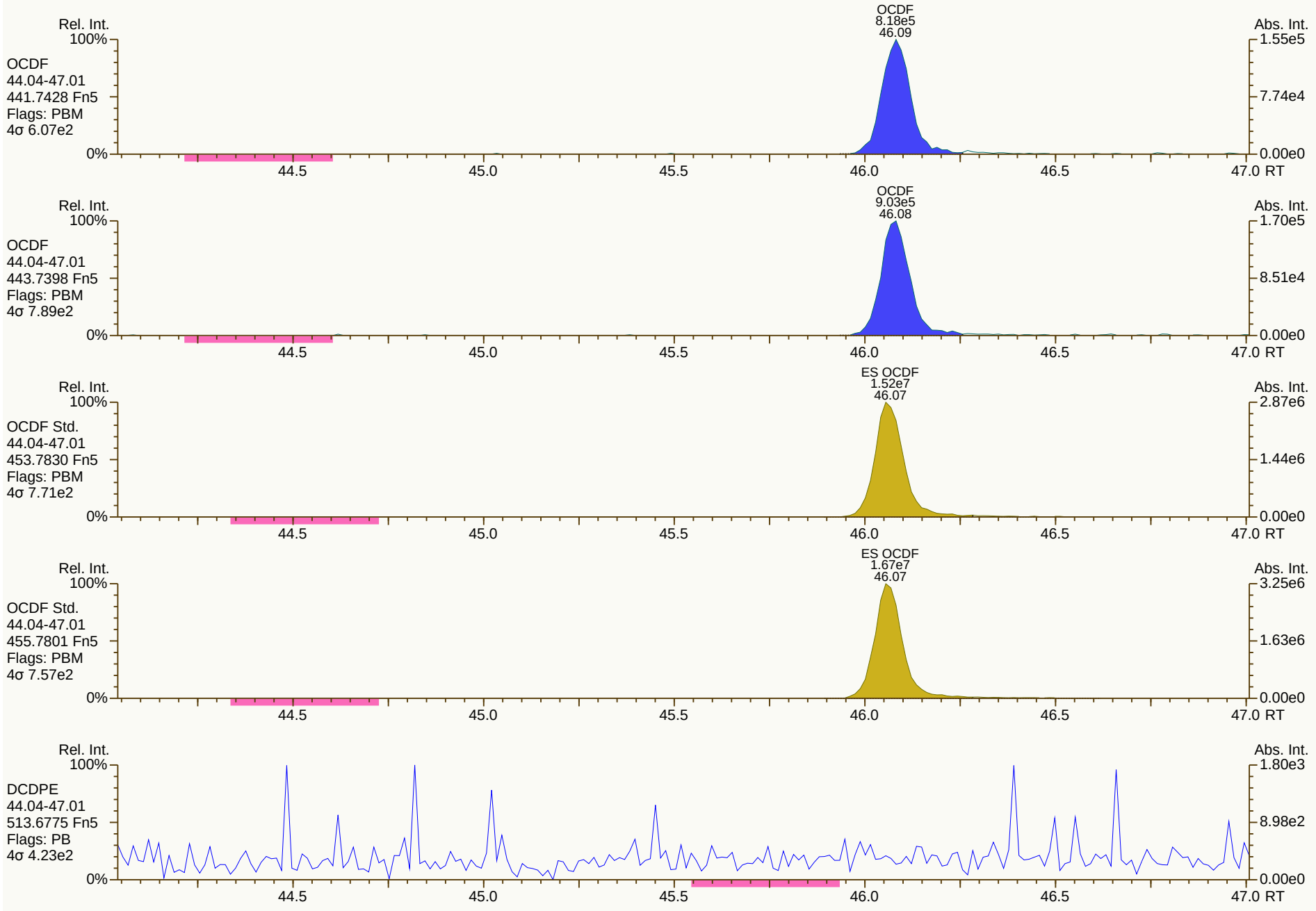

SGS-AP ID: A5045_10493_DF_002
Sample ID: LCD/Run 01
Acq: 05-JAN-2013 20:09:02
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 34
User: MDC Datafile: 130105P2-05
Rel. Int.
Abs. Int.
HxCDF
34.87-40.01
373.8207 Fn3
Flags: PBM
4σ 6.19e2
124678/134678F 3.20e5 35.43
123468F 1.70e5 35.19
134679F 2.77e4 35.69
124679F 4.61e4 35.93
124689F 3.44e4 36.20
123467F 1.18e5 36.70
123478F 1.86e5 36.84
123479F 4.29e4 37.20
123679F 3.17e4 37.52
234678F 1.34e5 37.79
123489F 5.08e4 38.94
HxCDF
34.87-40.01
375.8178 Fn3
Flags: PBM
4σ 8.24e2
124678/134678F 2.53e5 35.43
123468F 1.44e5 35.19
134679F 2.07e4 35.69
124679F 3.44e4 35.93
124689F 2.56e4 36.20
123478F 1.48e5 36.84
123469F 2.76e4 37.36
234678F 1.18e5 37.79
123489F 3.32e4 38.94
HxCDF Std.
34.87-40.01
383.8639 Fn3
Flags: PBM
4σ 2.26e3
ES 123678F 8.41e6 36.99
ES 123478F 6.95e6 36.82
CS 123469F 6.39e6 37.35
ES 234678F 7.96e6 37.77
ES 123789F 6.89e6 38.89
HxCDF Std.
34.87-40.01
385.8610 Fn3
Flags: PBM
4σ 4.12e3
ES 123678F 1.60e7 36.99
ES 123478F 1.33e7 36.82
CS 123469F 1.22e7 37.35
ES 234678F 1.53e7 37.77
ES 123789F 1.32e7 38.89
OCDPE
34.87-40.01
445.7555 Fn3
Flags: PB
4σ 4.08e2
100%
0%
35.0
36.0
37.0
38.0
39.0
40.0 RT
7.17e4
3.59e4
0.00e0
5.95e4
2.97e4
1.98e6
9.92e5
3.79e6
1.89e6
2.15e3
1.08e3



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_002.utp_res, saved 06-Jan-2013 09:47 (MDC) *Peak annotation: Areas, Centroids*

AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3226, 3094, 3368 scc: 879-504 *Revised: 06-Jan-2013 09:26 (MDC) Printed: 06-Jan-2013 09:50 Page 11 of 12*

SGS-AP ID: A5045_10493_DF_002 **Sample ID: LCD/Run 01** **Acq: 05-JAN-2013 20:09:02**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 34** **User: MDC Datafile: 130105P2-05**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_002.utp_res, saved 06-Jan-2013 09:47 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3687, 2715, 5129 scc: 879-504 *Revised: 06-Jan-2013 09:26 (MDC) Printed: 06-Jan-2013 09:50 Page 12 of 12*

Lab ID: A5045_10493_DF_003 **Acq'd:** 05 Jan 2013 21:00 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 02 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 127-600-RPH

Datafile: 130105P2-06 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
2378-TCDD	NotFnd		1.0010	-		-	-	-	1.15	-	919	1.66
12378-PeCDD	33.34		1.0006	1.0007	+0.2	3.92E+04	1.47	Y	1.06	7.8	1185	2.63
123478-HxCDD	38.01		1.0004	1.0004	0	2.65E+04	1.10	Y	1.13	5.63	1270	2.71
123678-HxCDD	38.14		1.0040	1.0039	-0.2	4.59E+04	1.25	Y	1.17	9.5	1270	2.9
123789-HxCDD	38.48		1.0130	1.0129	-0.2	3.36E+04	1.77	N	1.01	7.26	1270	3.28
1234678-HpCDD	42.22		1.0003	1.0003	0	1.93E+05	1.05	Y	1.09	46	885	2.2
OCDD	45.85		1.0004	1.0002	-0.6	2.32E+05	0.97	Y	1.19	64.1	881	3.03
2378-TCDF	25.91		1.0009	1.0007	-0.3	2.76E+05	0.77	Y	1.15	25.4	2046	2.45
12378-PeCDF	31.58		1.0006	1.0006	0	3.03E+05	1.51	Y	1.07	37.3	2306	3.46
23478-PeCDF	32.91		1.0005	1.0008	+0.6	4.74E+05	1.53	Y	1.10	57	2306	3.04
123478-HxCDF	36.84		1.0005	1.0005	0	4.74E+05	1.20	Y	1.28	71.3	1870	2.71
123678-HxCDF	37.00		1.0005	1.0005	0	4.12E+05	1.26	Y	1.19	57.7	1870	2.62
234678-HxCDF	37.79		1.0005	1.0004	-0.2	3.68E+05	1.28	Y	1.23	52.3	1870	2.93
123789-HxCDF	NotFnd		1.0005	-		-	-	-	1.23	-	1870	3.8
1234678-HpCDF	40.89		1.0004	1.0003	-0.2	9.43E+05	1.13	Y	1.49	148	1813	3.34
1234789-HpCDF	42.80		1.0003	1.0004	+0.3	1.44E+05	1.01	Y	1.40	28.9	1813	3.95
OCDF	46.09		1.0004	1.0003	-0.3	1.48E+06	0.91	Y	1.15	319	1204	3.29

Name	Act RT	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
ES 2378-TCDD	26.91	1.0286	1.0288	+0.3	2.40E+07	0.81	Y	1.05	83.2
ES 12378-PeCDD	33.32	1.2729	1.2735	+0.9	1.90E+07	1.62	Y	0.84	82.4
ES 123478-HxCDD	38.00	0.9907	0.9907	0	1.66E+07	1.29	Y	1.00	76.6
ES 123678-HxCDD	38.13	0.9941	0.9941	0	1.65E+07	1.28	Y	1.04	73.7
ES 123789-HxCDD	38.48	1.0031	1.0032	+0.2	1.84E+07	1.25	Y	1.20	70.8
ES 1234678-HpCDD	42.21	1.1005	1.1005	0	1.54E+07	1.07	Y	0.97	73.4
ES OCDD	45.84	1.1953	1.1953	0	2.43E+07	0.89	Y	0.78	71.6
ES 2378-TCDF	25.89	1.0637	1.0641	+0.6	3.80E+07	0.79	Y	1.01	88.6
ES 12378-PeCDF	31.56	1.2966	1.2974	+1.2	3.05E+07	1.55	Y	0.88	81.3
ES 23478-PeCDF	32.89	1.3512	1.3519	+1.0	3.04E+07	1.50	Y	0.84	84.9
ES 123478-HxCDF	36.82	0.9601	0.9601	0	2.07E+07	0.52	Y	1.28	74.9
ES 123678-HxCDF	36.99	0.9644	0.9643	-0.2	2.40E+07	0.51	Y	1.50	73.9
ES 234678-HxCDF	37.77	0.9848	0.9848	0	2.28E+07	0.53	Y	1.39	75.9
ES 123789-HxCDF	38.89	1.0138	1.0140	+0.5	1.98E+07	0.52	Y	1.34	68
ES 1234678-HpCDF	40.88	1.0659	1.0659	0	1.71E+07	0.45	Y	1.10	71.4
ES 1234789-HpCDF	42.79	1.1155	1.1156	+0.2	1.42E+07	0.45	Y	0.92	71.4
ES OCDF	46.07	1.2013	1.2013	0	3.25E+07	0.90	Y	1.04	72.4

Lab ID: A5045_10493_DF_003 **Acq'd:** 05 Jan 2013 21:00 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 02 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 127-600-RPH

Datafile: 130105P2-06 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
JS 1234-TCDD	26.16		-	-	-	2.74E+07	0.79	Y	-	-
JS 1234-TCDF	24.33		-	-	-	4.26E+07	0.78	Y	-	-
JS 123467-HxCDD	38.35		-	-	-	1.08E+07	1.30	Y	-	-
CS 37Cl-2378-TCDD	26.94		1.0296	1.0298	+0.3	1.11E+07	n/a	-	1.24	81.8
CS 12347-PeCDD	32.72		1.2501	1.2506	+0.8	2.12E+07	1.62	Y	0.88	87.9
CS 12346-PeCDF	30.93		1.2711	1.2714	+0.4	3.49E+07	1.59	Y	1.05	77.7
CS 123469-HxCDF	37.35		0.9739	0.9738	-0.2	2.44E+07	0.52	Y	1.38	81.7
CS 1234689-HpCDF	41.49		1.0818	1.0818	0	1.76E+07	0.44	Y	1.07	75.9
SS 37Cl-2378-TCDD	26.94		1.0296	1.0298	+0.3	1.11E+07	n/a	-	1.18	98.4
SS 12347-PeCDD	32.72		1.2501	1.2506	+0.8	2.12E+07	1.62	Y	1.04	107
SS 12346-PeCDF	30.93		1.2711	1.2714	+0.4	3.49E+07	1.59	Y	1.20	95.6
SS 123469-HxCDF	37.35		0.9739	0.9738	-0.2	2.44E+07	0.52	Y	0.92	111
SS 1234689-HpCDF	41.49		1.0818	1.0818	0	1.76E+07	0.44	Y	0.97	106
AS 1368-TCDD	22.67		0.8666	0.8666	0	2.55E+07	0.81	Y	1.05	88.8
AS 1368-TCDF	20.51		0.8431	0.8432	+0.1	4.59E+07	0.78	Y	1.25	86.3
FS 1278-TCDD	NotFnd		1.0144							
FS 12478-PeCDD	NotFnd		0.9559							
FS 123468-HxCDD	NotFnd		0.9672							
FS 1234679-HpCDD	NotFnd		0.9785							
TS 1378-TCDD	NotFnd		0.9285							

Totals	Conc	EMPC
Total TCDD	116	116
Total PeCDD	131	136
Total HxCDD	153	160
Total HpCDD	89.2	89.2
Total Tetra-Octa Dioxins	553	565
Total TCDF	679	718
Total PeCDF	674	674
Total HxCDF	494	505
Total HpCDF	252	252
Total Tetra-Octa Furans	2420	2470
Total Tetra-Octa Dioxins & Furans	2970	3030

Lab ID: A5045_10493_DF_003 **Acq'd:** 05 Jan 2013 21:00 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 02 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 127-600-RPH

Datafile: 130105P2-06 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1368-TCDD	22.70		0.8437	0.8435	-0.3	3.39E+05	0.77	Y	1.15	49	919	1.66
1379-TCDD	23.13		0.8592	0.8595	+0.5	1.61E+05	0.71	Y	1.15	23.3	919	1.66
1369-TCDD	NotFnd		0.8775						1.15		919	1.66
1469-TCDD	NotFnd		0.9109						1.15		919	1.66
1247/1246/1248/1249-TCDD	24.81		0.9212	0.9219	+1.1	6.89E+04	0.70	Y	1.15	9.95	919	1.66
1378-TCDD	25.04		0.9294	0.9305	+1.8	5.23E+04	0.75	Y	1.15	7.56	919	1.66
1268-TCDD	25.24		0.9380	0.9378	-0.3	3.31E+04	0.76	Y	1.15	4.79	919	1.66
1478-TCDD	NotFnd		0.9486						1.15		919	1.66
1279-TCDD	NotFnd		0.9561						1.15		919	1.66
1234/1269-TCDD	26.18		0.9718	0.9727	+1.5	3.37E+04	0.75	Y	1.15	4.87	919	1.66
1236-TCDD	NotFnd		0.9776						1.15		919	1.66
1237/1238-TCDD	26.63		0.9886	0.9896	+1.6	1.14E+05	0.86	Y	1.15	16.5	919	1.66
1239-TCDD	NotFnd		0.9946						1.15		919	1.66
2378-TCDD	**NotFnd**		**1.0010**						**1.15**		**919**	**1.66**
1278-TCDD	NotFnd		1.0153						1.15		919	1.66
1267-TCDD	NotFnd		1.0213						1.15		919	1.66
1289-TCDD	NotFnd		1.0439						1.15		919	1.66
12479/12468-PeCDD	30.35		0.9111	0.9111	0	2.20E+05	1.52	Y	1.06	43.8	1185	2.63
12469-PeCDD	NotFnd		0.9301						1.06		1185	2.63
12368-PeCDD	31.65		0.9498	0.9499	+0.2	1.95E+05	1.58	Y	1.06	38.8	1185	2.63
12478-PeCDD	31.87		0.9565	0.9565	0	3.24E+04	1.38	Y	1.06	6.46	1185	2.63
12379-PeCDD	32.00		0.9601	0.9604	+0.6	9.84E+04	1.43	Y	1.06	19.6	1185	2.63
12369/12467/12489-PeCDD	32.29		0.9695	0.9691	-0.8	2.58E+04	1.89	N	1.06	5.14	1185	2.63
12346/12347-PeCDD	32.74		0.9828	0.9827	-0.2	7.21E+04	1.39	Y	1.06	14.4	1185	2.63
12378-PeCDD	**33.34**		**1.0006**	**1.0007**	**+0.2**	**3.92E+04**	**1.47**	**Y**	**1.06**	**7.8**	**1185**	**2.63**
12367-PeCDD	NotFnd		1.0040						1.06		1185	2.63
12389-PeCDD	NotFnd		1.0164						1.06		1185	2.63
124679/124689-HxCDD	35.99		0.9471	0.9472	+0.2	6.89E+04	1.38	Y	1.10	14.5	1270	2.95
123468-HxCDD	36.77		0.9676	0.9677	+0.2	4.02E+05	1.28	Y	1.10	84.8	1270	2.95
123679/123689-HxCDD	37.11		0.9768	0.9768	0	1.63E+05	1.31	Y	1.10	34.5	1270	2.95
123469-HxCDD	NotFnd		0.9809						1.10		1270	2.95
123478-HxCDD	**38.01**		**1.0004**	**1.0004**	**0**	**2.65E+04**	**1.10**	**Y**	**1.13**	**5.63**	**1270**	**2.71**
123678-HxCDD	**38.14**		**1.0040**	**1.0039**	**-0.2**	**4.59E+04**	**1.25**	**Y**	**1.17**	**9.5**	**1270**	**2.9**
123467-HxCDD	38.37		1.0099	1.0099	0	1.67E+04	1.24	Y	1.10	3.52	1270	2.95
123789-HxCDD	**38.48**		**1.0130**	**1.0129**	**-0.2**	**3.36E+04**	**1.77**	**N**	**1.01**	**7.26**	**1270**	**3.28**

Lab ID: A5045_10493_DF_003 **Acq'd: 05 Jan 2013 21:00 MDC** **Wt/Vol: 1** **Cal: BCS3_10493_DF_PAB**

Client ID: LCD/Run 02 **UTP: 06-Jan-2013 09:35 MDC** **J-level: 10 pg** **Split: 2** **Checkcode: 127-600-RPH**

Datafile: 130105P2-06 **Report: 06 Jan 2013 09:40 MC** **Stds (pg): JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)**

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1234679-HpCDD	41.32		0.9789	0.9789	0	1.81E+05	1.04	Y	1.09	43.2	885	2.2
1234678-HpCDD	**42.22**		**1.0003**	**1.0003**	**0**	**1.93E+05**	**1.05**	**Y**	**1.09**	**46**	**885**	**2.2**
OCDD	**45.85**		**1.0004**	**1.0002**	**-0.6**	**2.32E+05**	**0.97**	**Y**	**1.19**	**64.1**	**881**	**3.03**
OCDD-a	NotFnd		1.0003						0.07		873	51.9
1368-TCDF	20.54		0.7936	0.7933	-0.5	3.31E+05	0.79	Y	1.15	30.4	2046	2.45
1468-TCDF	21.07		0.8144	0.8140	-0.6	2.08E+05	0.79	Y	1.15	19.1	2046	2.45
2468-TCDF	21.71		0.8382	0.8385	+0.5	3.35E+05	0.86	Y	1.15	30.8	2046	2.45
1346/1246-TCDF	22.14		0.8546	0.8554	+1.2	3.12E+05	0.77	Y	1.15	28.6	2046	2.45
1347/1378/1247-TCDF	22.29		0.8602	0.8611	+1.4	7.71E+05	0.77	Y	1.15	70.8	2046	2.45
1348-TCDF	22.56		0.8716	0.8715	-0.2	2.41E+05	0.79	Y	1.15	22.1	2046	2.45
1248/1367/1379-TCDF	22.70		0.8774	0.8768	-0.9	5.54E+05	0.84	Y	1.15	50.9	2046	2.45
1268-TCDF	23.14		0.8944	0.8940	-0.6	3.10E+05	0.76	Y	1.15	28.5	2046	2.45
1467-TCDF	23.30		0.9003	0.9002	-0.2	1.50E+05	0.95	N	1.15	13.8	2046	2.45
1478-TCDF	23.51		0.9077	0.9080	+0.5	2.25E+05	0.71	Y	1.15	20.6	2046	2.45
1369/1237-TCDF	23.92		0.9241	0.9242	+0.2	2.19E+05	0.73	Y	1.15	20.1	2046	2.45
2467-TCDF	24.08		0.9299	0.9301	+0.3	4.05E+05	0.78	Y	1.15	37.2	2046	2.45
2368-TCDF	24.24		0.9363	0.9362	-0.2	3.87E+05	0.81	Y	1.15	35.5	2046	2.45
1238/1234/1678/1469/1236-TCDF	24.35		0.9413	0.9407	-0.9	9.26E+05	0.81	Y	1.15	85	2046	2.45
1278-TCDF	24.90		0.9611	0.9617	+0.9	3.24E+05	0.79	Y	1.15	29.8	2046	2.45
1349-TCDF	25.02		0.9656	0.9663	+1.1	8.10E+04	0.76	Y	1.15	7.44	2046	2.45
1267-TCDF	25.21		0.9734	0.9737	+0.5	1.77E+05	0.89	N	1.15	16.2	2046	2.45
2346/1249-TCDF	25.44		0.9823	0.9827	+0.6	3.03E+05	0.85	Y	1.15	27.8	2046	2.45
2347/1279-TCDF	25.67		0.9913	0.9917	+0.6	3.37E+05	0.76	Y	1.15	31	2046	2.45
2348-TCDF	25.79		0.9961	0.9962	+0.2	2.96E+05	0.80	Y	1.15	27.2	2046	2.45
2378-TCDF	**25.91**		**1.0009**	**1.0007**	**-0.3**	**2.76E+05**	**0.77**	**Y**	**1.15**	**25.4**	**2046**	**2.45**
2367/3467-TCDF	26.36		1.0175	1.0181	+0.9	4.27E+05	0.78	Y	1.15	39.3	2046	2.45
1269-TCDF	26.64		1.0287	1.0289	+0.3	6.51E+04	0.69	Y	1.15	5.98	2046	2.45
1239-TCDF	26.95		1.0411	1.0410	-0.2	6.59E+04	0.74	Y	1.15	6.05	2046	2.45
1289-TCDF	28.29		1.0924	1.0930	+0.9	9.41E+04	1.11	N	1.15	8.64	2046	2.45
13468/12468-PeCDF	28.27		0.8956	0.8958	+0.4	6.46E+05	1.56	Y	1.08	78.6	1217	1.71
13678/13467/12467-PeCDF	30.08		0.9530	0.9531	+0.2	6.56E+05	1.39	Y	1.08	79.7	2306	3.25
12368/13478/12478-PeCDF	30.27		0.9590	0.9589	-0.2	9.26E+05	1.46	Y	1.08	113	2306	3.25
14678-PeCDF	30.38		0.9629	0.9625	-0.8	1.64E+05	1.48	Y	1.08	19.9	2306	3.25
13479-PeCDF	30.49		0.9662	0.9661	-0.2	7.85E+04	1.43	Y	1.08	9.54	2306	3.25
13469/12479-PeCDF	30.78		0.9753	0.9753	0	1.09E+05	1.64	Y	1.08	13.3	2306	3.25
12346-PeCDF	30.94		0.9806	0.9802	-0.8	1.30E+05	1.59	Y	1.08	15.8	2306	3.25

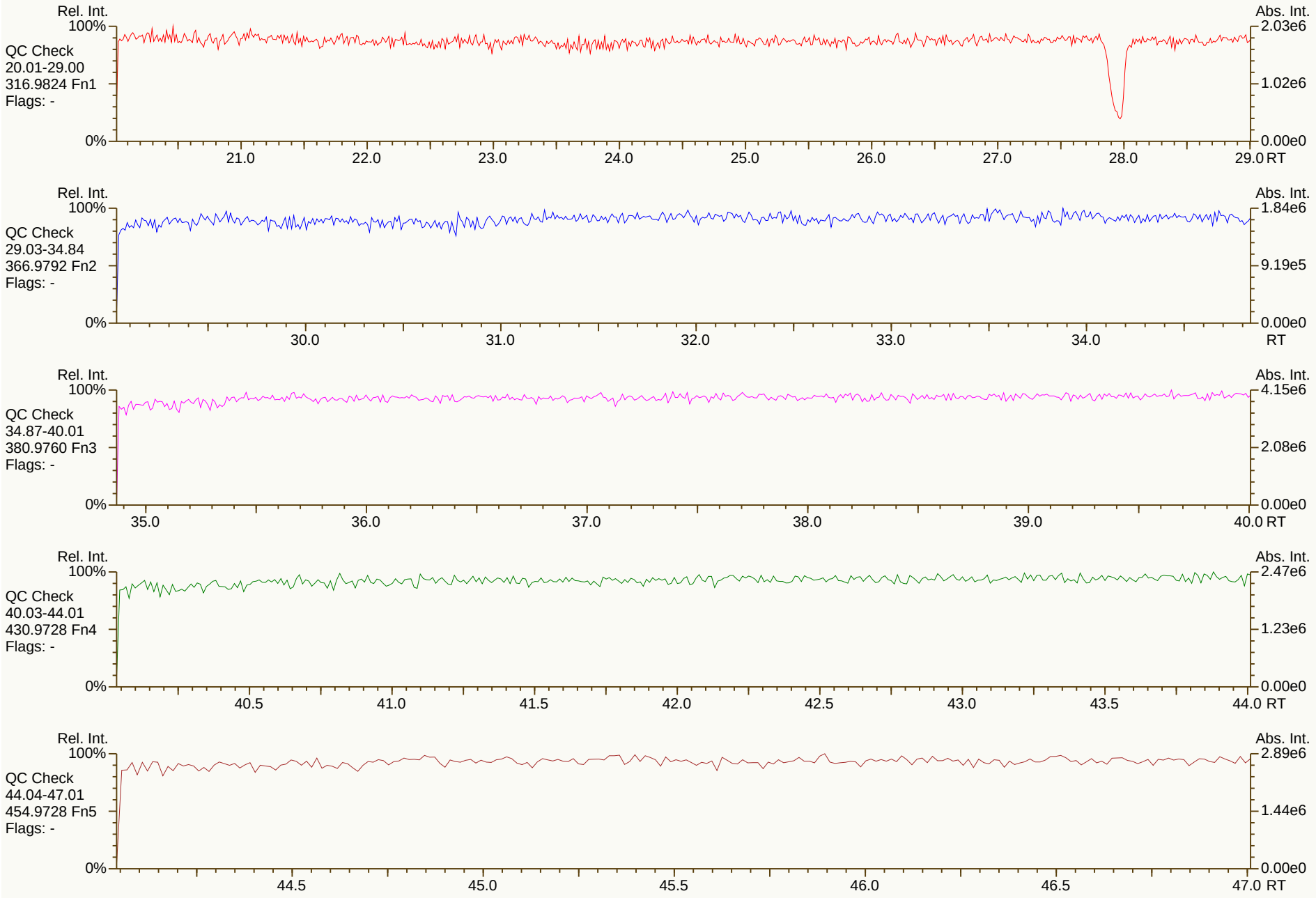
Lab ID: A5045_10493_DF_003 **Acq'd:** 05 Jan 2013 21:00 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 02 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 127-600-RPH

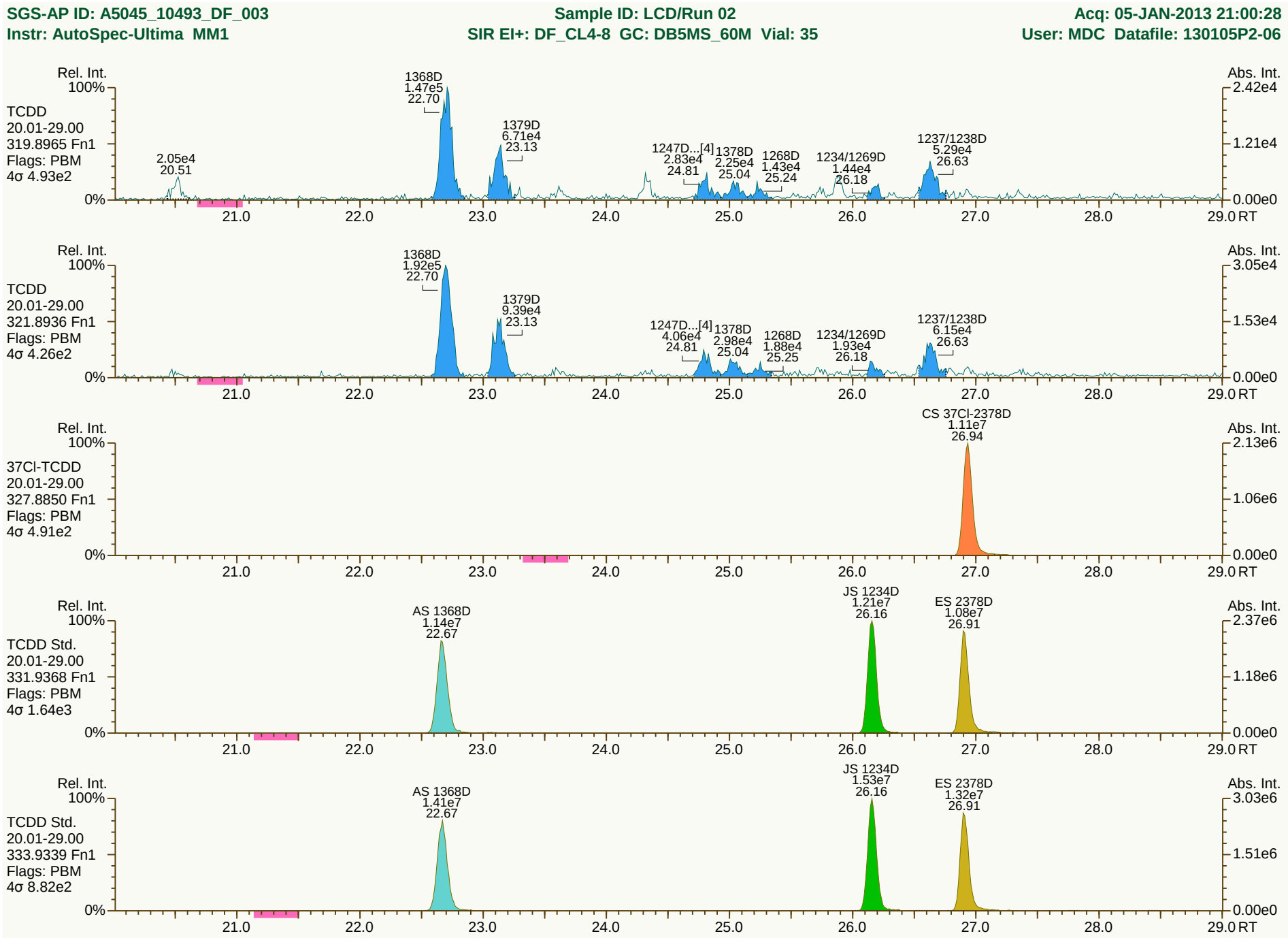
Datafile: 130105P2-06 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
23468/12469-PeCDF	31.05		0.9839	0.9838	-0.2	4.41E+05	1.52	Y	1.08	53.6	2306	3.25
12347-PeCDF	31.15		0.9868	0.9869	+0.2	2.87E+05	1.55	Y	1.08	34.9	2306	3.25
12348-PeCDF	31.34		0.9930	0.9929	-0.2	2.71E+05	1.50	Y	1.08	32.9	2306	3.25
12378-PeCDF	**31.58**		**1.0006**	**1.0006**	**0**	**3.03E+05**	**1.51**	**Y**	**1.07**	**37.3**	**2306**	**3.46**
12678/12367-PeCDF	31.91		1.0110	1.0111	+0.2	4.52E+05	1.75	Y	1.08	55	2306	3.25
12379-PeCDF	32.11		1.0173	1.0172	-0.2	6.49E+04	1.75	Y	1.08	7.89	2306	3.25
12679-PeCDF	32.61		0.9914	0.9915	+0.2	5.13E+04	1.39	Y	1.08	6.24	2306	3.25
23467/12369-PeCDF	32.76		0.9962	0.9962	0	3.79E+05	1.49	Y	1.08	46.1	2306	3.25
23478-PeCDF	**32.91**		**1.0005**	**1.0008**	**+0.6**	**4.74E+05**	**1.53**	**Y**	**1.10**	**57**	**2306**	**3.04**
23478/12489-PeCDF	NotFnd		1.0006						1.10		2306	3.04
12489-PeCDF	NotFnd		1.0023						1.08		2306	3.25
12349-PeCDF	33.28		1.0123	1.0120	-0.6	5.42E+04	1.50	Y	1.08	6.59	2306	3.25
12389-PeCDF	34.21		1.0397	1.0403	+1.2	5.64E+04	1.57	Y	1.08	6.86	2306	3.25
123468-HxCDF	35.19		0.9556	0.9557	+0.2	4.11E+05	1.12	Y	1.23	60.9	1870	2.98
124678/134678-HxCDF	35.43		0.9621	0.9622	+0.2	8.31E+05	1.23	Y	1.23	123	1870	2.98
134679-HxCDF	35.70		0.9695	0.9694	-0.2	6.06E+04	1.37	Y	1.23	8.99	1870	2.98
124679-HxCDF	35.93		0.9759	0.9758	-0.2	1.27E+05	1.19	Y	1.23	18.8	1870	2.98
124689-HxCDF	36.20		0.9830	0.9831	+0.2	8.08E+04	1.40	Y	1.23	12	1870	2.98
123467-HxCDF	36.70		0.9966	0.9966	0	3.00E+05	1.30	Y	1.23	44.5	1870	2.98
123478-HxCDF	**36.84**		**1.0005**	**1.0005**	**0**	**4.74E+05**	**1.20**	**Y**	**1.28**	**71.3**	**1870**	**2.71**
123678-HxCDF	**37.00**		**1.0005**	**1.0005**	**0**	**4.12E+05**	**1.26**	**Y**	**1.19**	**57.7**	**1870**	**2.62**
123479-HxCDF	37.19		1.0056	1.0054	-0.4	9.85E+04	1.15	Y	1.23	14.6	1870	2.98
123469-HxCDF	37.36		1.0103	1.0101	-0.4	7.75E+04	1.46	N	1.23	11.5	1870	2.98
123679-HxCDF	37.52		0.9933	0.9934	+0.2	8.06E+04	1.14	Y	1.23	12	1870	2.98
234678-HxCDF	**37.79**		**1.0005**	**1.0004**	**-0.2**	**3.68E+05**	**1.28**	**Y**	**1.23**	**52.3**	**1870**	**2.93**
234678/123689-HxCDF	NotFnd		1.0004						1.23		1870	2.93
123689-HxCDF	NotFnd		1.0009						1.23		1870	2.98
123789-HxCDF	**NotFnd**		**1.0005**						**1.23**		**1870**	**3.8**
123789/123489-HxCDF	NotFnd		0.9869						1.23		1870	3.8
123489-HxCDF	38.93		1.0013	1.0011	-0.5	1.18E+05	1.10	Y	1.23	17.5	1870	2.98
1234678-HpCDF	**40.89**		**1.0004**	**1.0003**	**-0.2**	**9.43E+05**	**1.13**	**Y**	**1.49**	**148**	**1813**	**3.34**
1234679-HpCDF	41.30		1.0104	1.0104	0	1.93E+05	1.03	Y	1.45	34.1	1813	3.62
1234689-HpCDF	41.50		1.0152	1.0152	0	2.36E+05	0.97	Y	1.45	41.6	1813	3.62
1234789-HpCDF	**42.80**		**1.0003**	**1.0004**	**+0.3**	**1.44E+05**	**1.01**	**Y**	**1.40**	**28.9**	**1813**	**3.95**
OCDF	**46.09**		**1.0004**	**1.0003**	**-0.3**	**1.48E+06**	**0.91**	**Y**	**1.15**	**319**	**1204**	**3.29**
OCDF-a	46.07		1.0002	0.9999	-0.8	7.14E+04	2.51	Y	0.07	261	1211	56.3

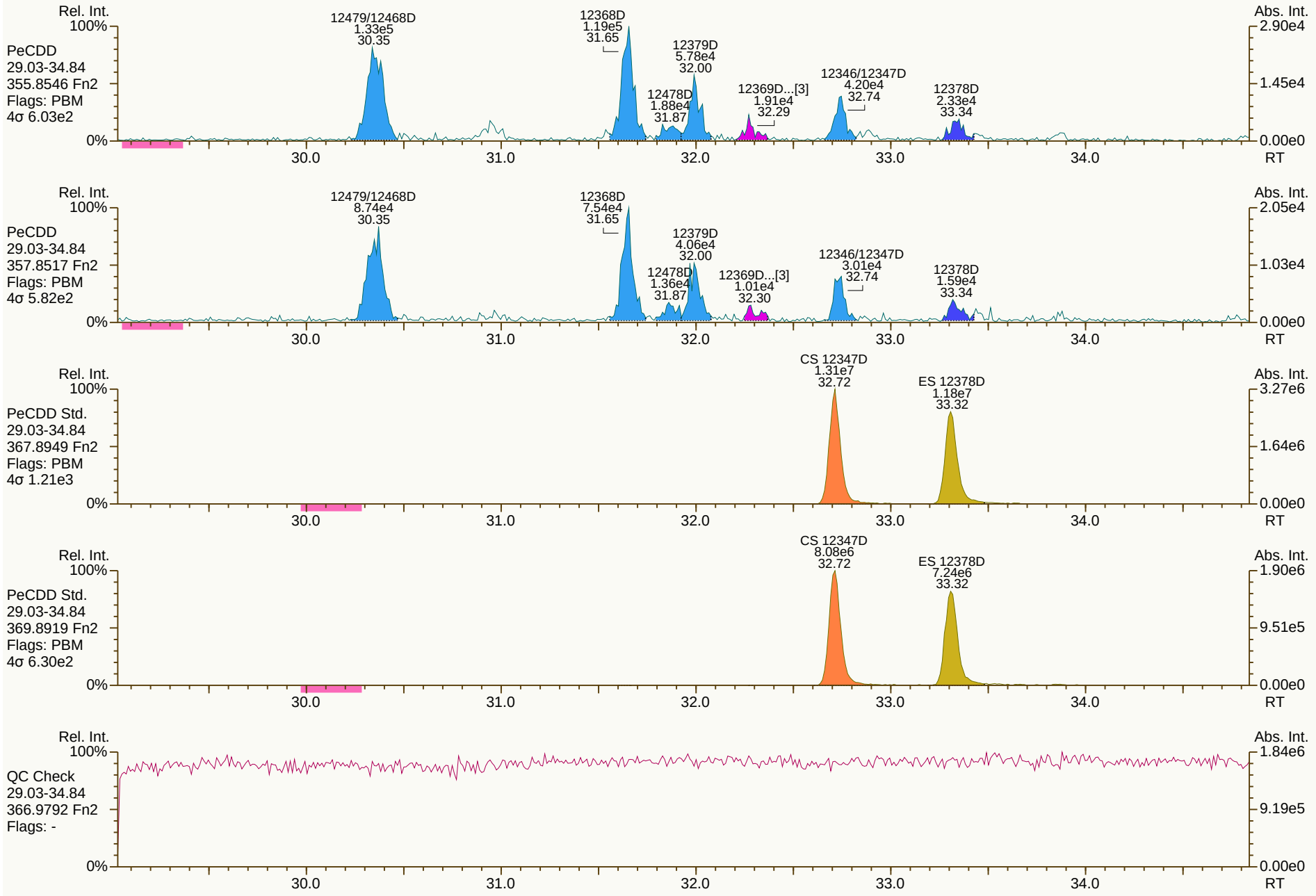
SGS-AP ID: A5045_10493_DF_003 **Sample ID: LCD/Run 02** **Acq: 05-JAN-2013 21:00:28**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35** **User: MDC Datafile: 130105P2-06**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 scc: 127-600 *PKD: n/a Printed: 06-Jan-2013 09:50 Page 1 of 12*

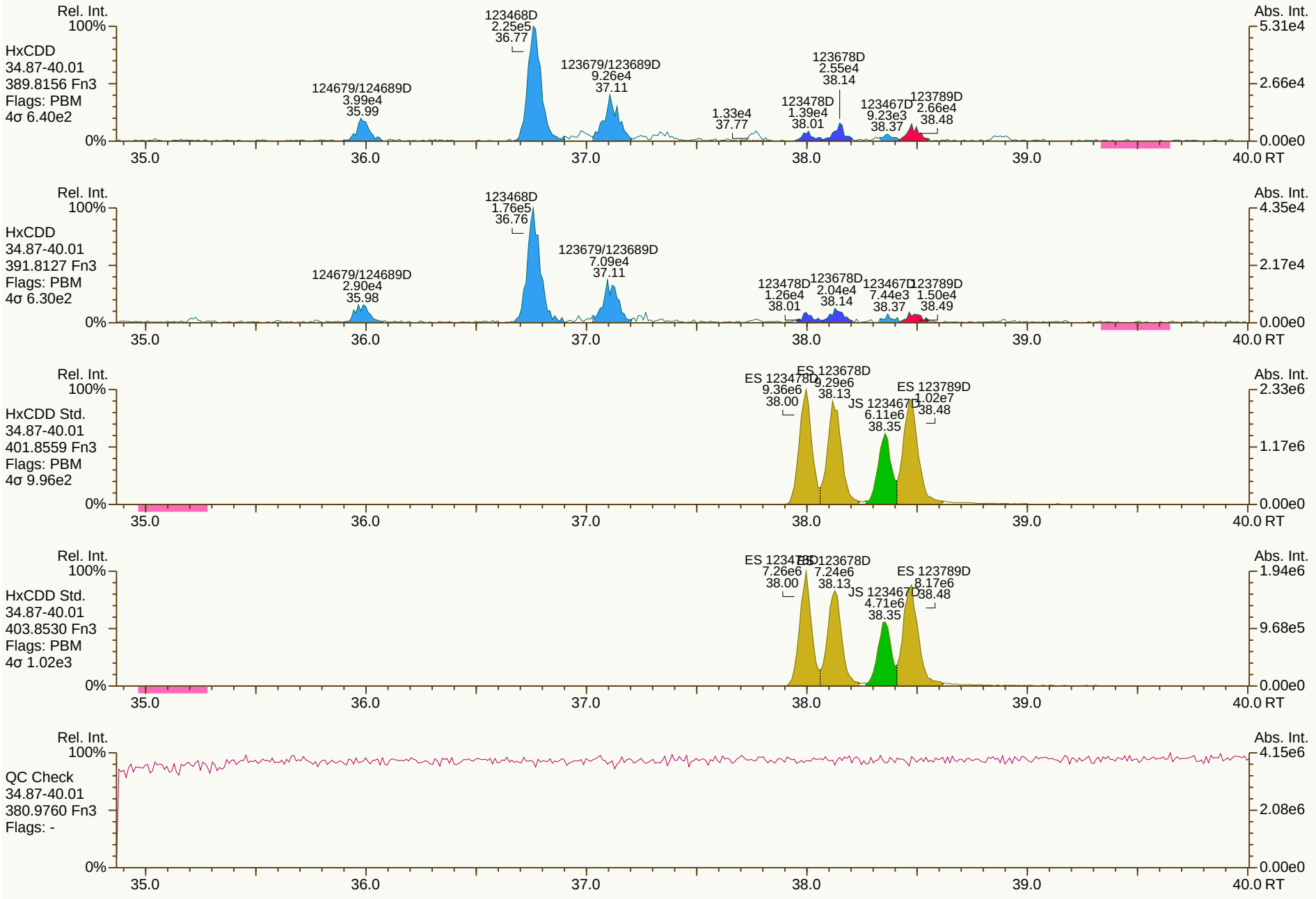

SGS-AP ID: A5045_10493_DF_003
Sample ID: LCD/Run 02
Acq: 05-JAN-2013 21:00:28
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35
User: MDC Datafile: 130105P2-06
Rel. Int.
Abs. Int.
TCDD
20.01-29.00
319.8965 Fn1
Flags: PBM
4σ 4.93e2
1368D 1.47e5 22.70
1379D 6.71e4 23.13
2.05e4 20.51
1247D...[4] 2.83e4 24.81
1378D 2.25e4 25.04
1268D 1.43e4 25.24
1234/1269D 1.44e4 26.18
1237/1238D 5.29e4 26.63
TCDD
20.01-29.00
321.8936 Fn1
Flags: PBM
4σ 4.26e2
1368D 1.92e5 22.70
1379D 9.39e4 23.13
1247D...[4] 4.06e4 24.81
1378D 2.98e4 25.04
1268D 1.88e4 25.25
1234/1269D 1.93e4 26.18
1237/1238D 6.15e4 26.63
37Cl-TCDD
20.01-29.00
327.8850 Fn1
Flags: PBM
4σ 4.91e2
CS 37Cl-2378D 1.11e7 26.94
TCDD Std.
20.01-29.00
331.9368 Fn1
Flags: PBM
4σ 1.64e3
AS 1368D 1.14e7 22.67
JS 1234D 1.21e7 26.16
ES 2378D 1.08e7 26.91
TCDD Std.
20.01-29.00
333.9339 Fn1
Flags: PBM
4σ 8.82e2
AS 1368D 1.41e7 22.67
JS 1234D 1.53e7 26.16
ES 2378D 1.32e7 26.91
21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 RT
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5536, 7433, 2120 scc: 127-600
Revised: 06-Jan-2013 09:29 (MDC) Printed: 06-Jan-2013 09:50 Page 2 of 12

SGS-AP ID: A5045_10493_DF_003 **Sample ID: LCD/Run 02** **Acq: 05-JAN-2013 21:00:28**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35** **User: MDC Datafile: 130105P2-06**

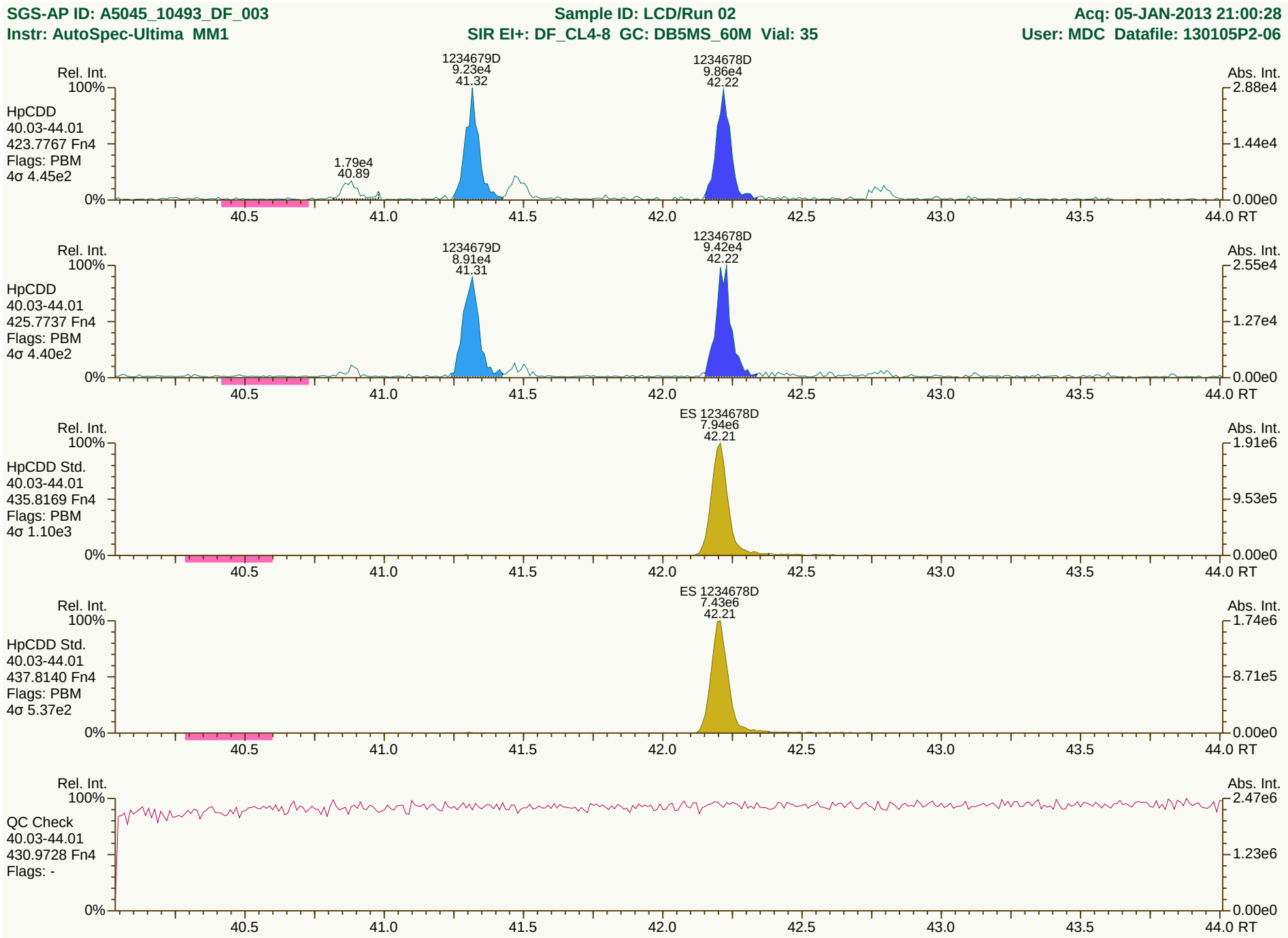


Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 8047, 8234 scc: 127-600 *Revised: 06-Jan-2013 09:29 (MDC) Printed: 06-Jan-2013 09:50 Page 3 of 12*

SGS-AP ID: A5045_10493_DF_003 **Sample ID: LCD/Run 02** **Acq: 05-JAN-2013 21:00:28**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35** **User: MDC Datafile: 130105P2-06**

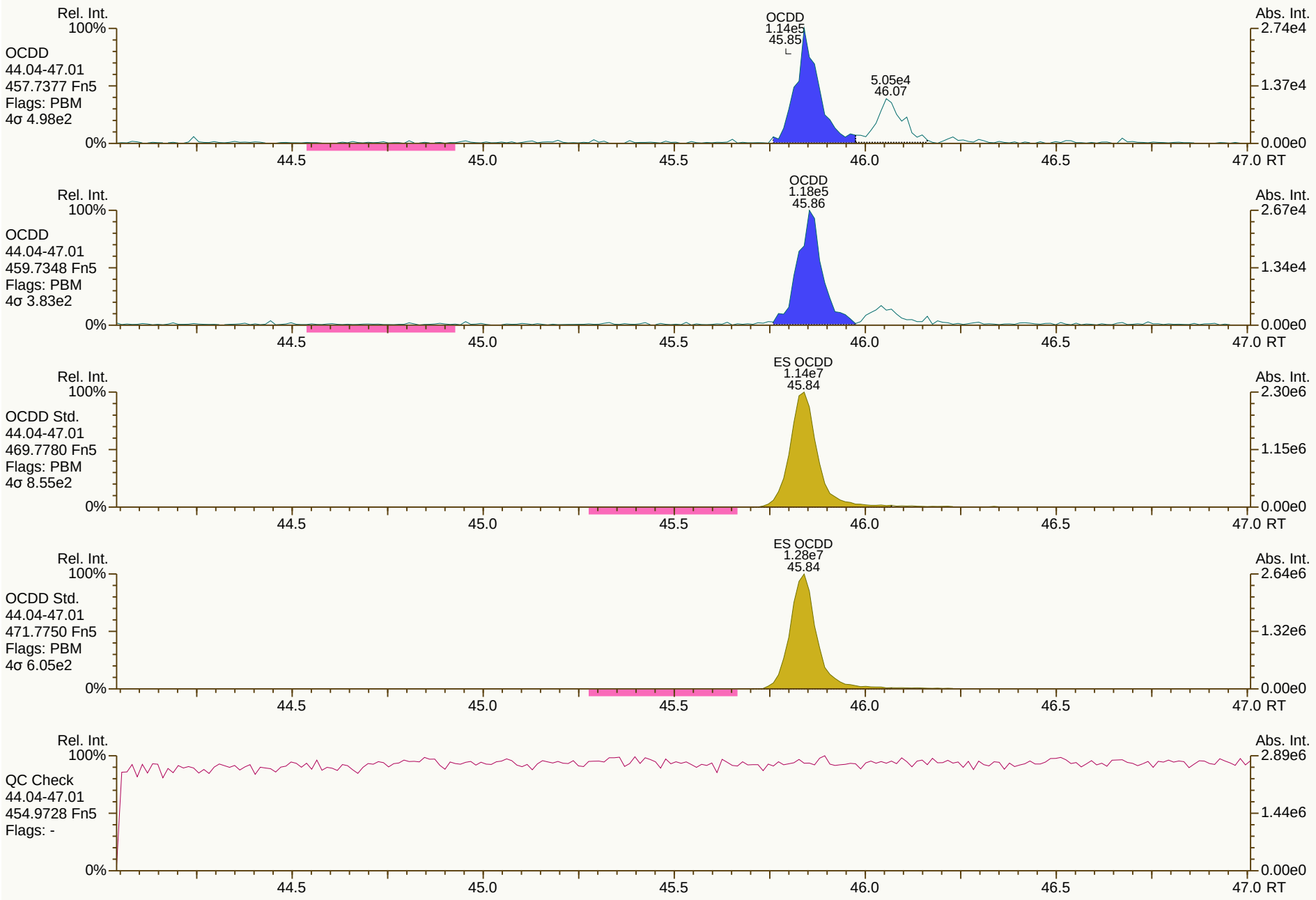


Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 6005, 3784 scc: 127-600 *Revised: 06-Jan-2013 09:29 (MDC) Printed: 06-Jan-2013 09:50 Page 4 of 12*

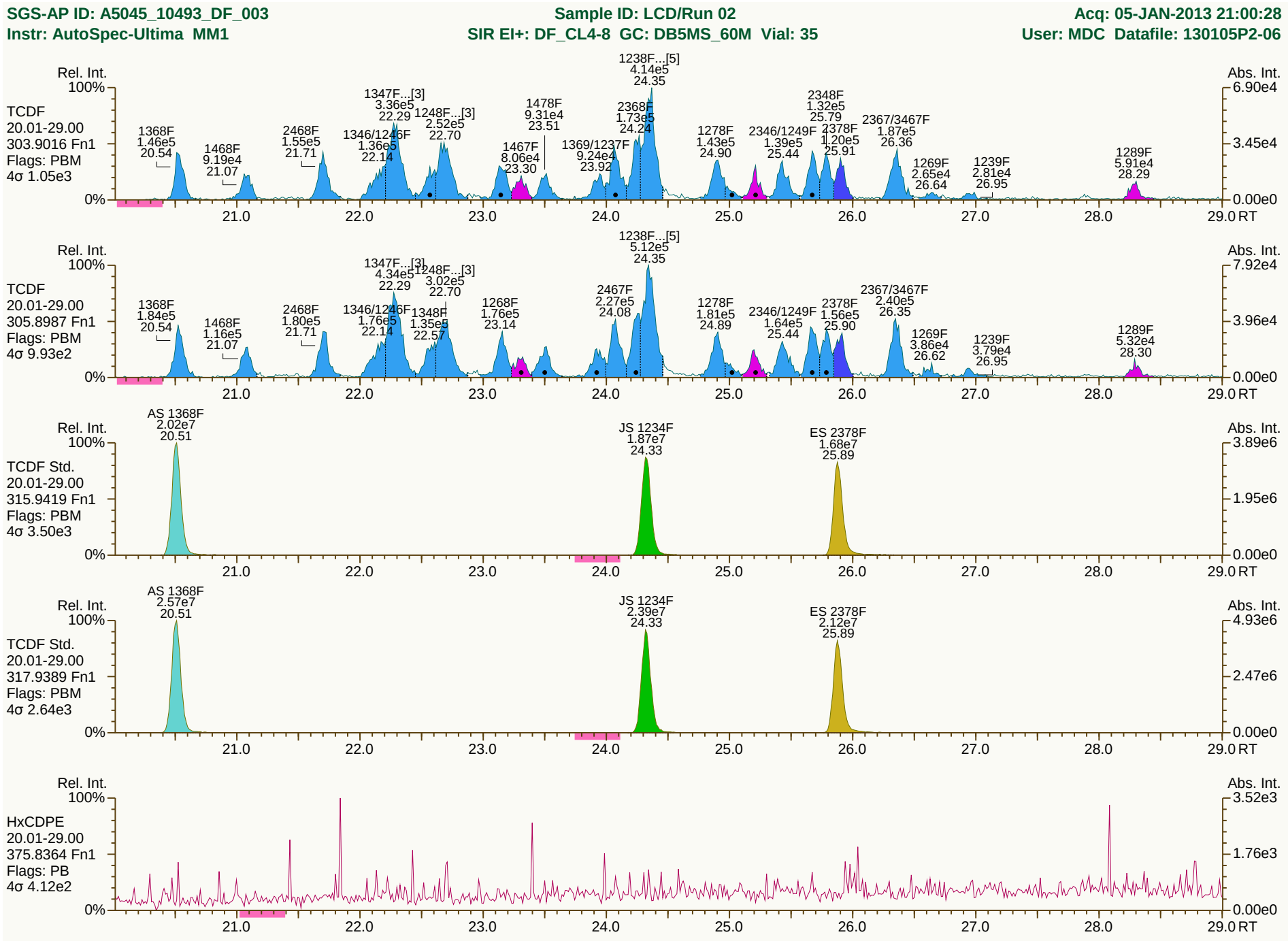


Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7551, 8123 scc: 127-600
Revised: 06-Jan-2013 09:31 (MDC) Printed: 06-Jan-2013 09:50 Page 5 of 12

SGS-AP ID: A5045_10493_DF_003 **Sample ID: LCD/Run 02** **Acq: 05-JAN-2013 21:00:28**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35** **User: MDC Datafile: 130105P2-06**



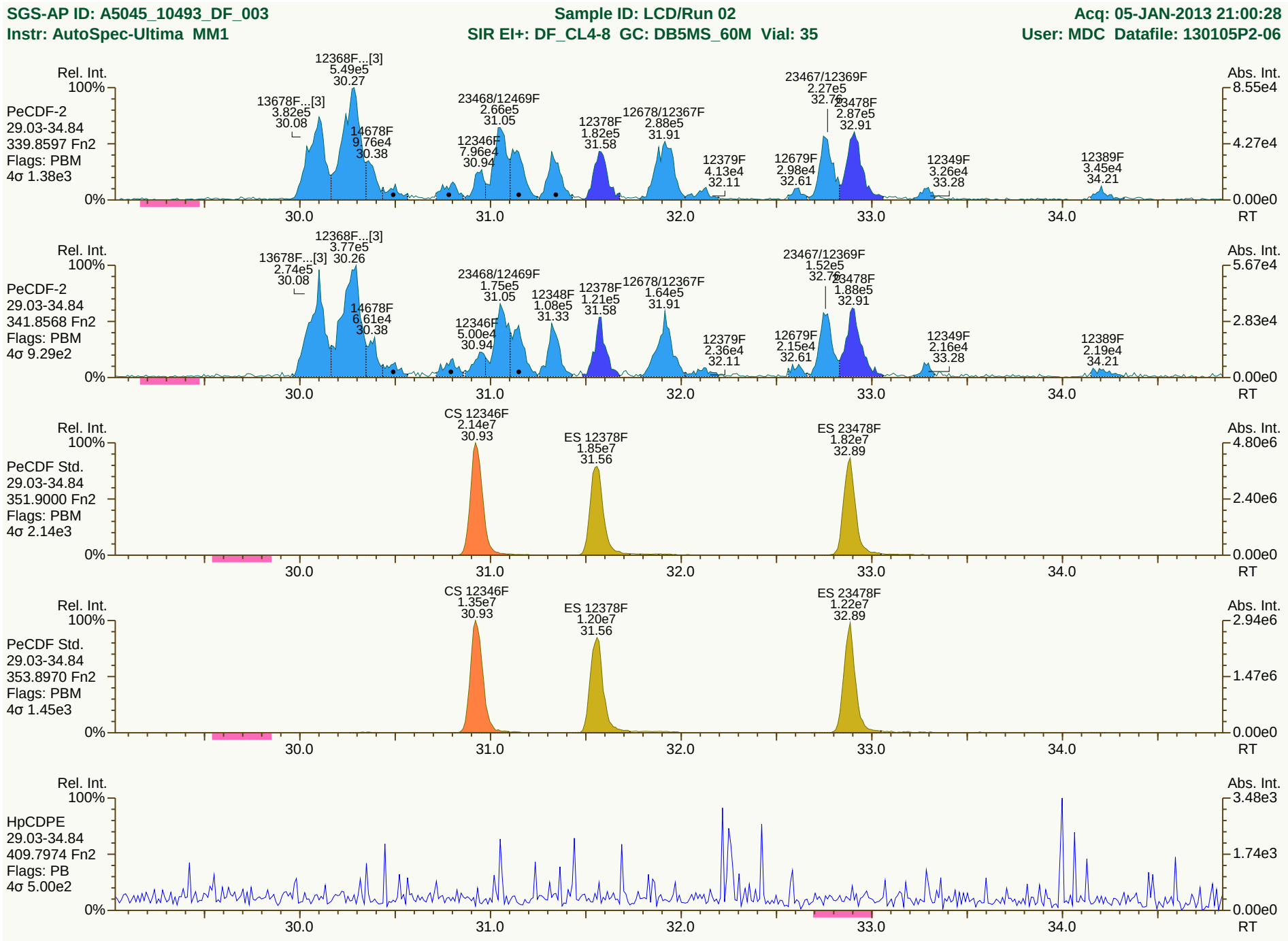
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3167, 7196 scc: 127-600 *Revised: 06-Jan-2013 09:28 (MDC) Printed: 06-Jan-2013 09:50 Page 6 of 12*

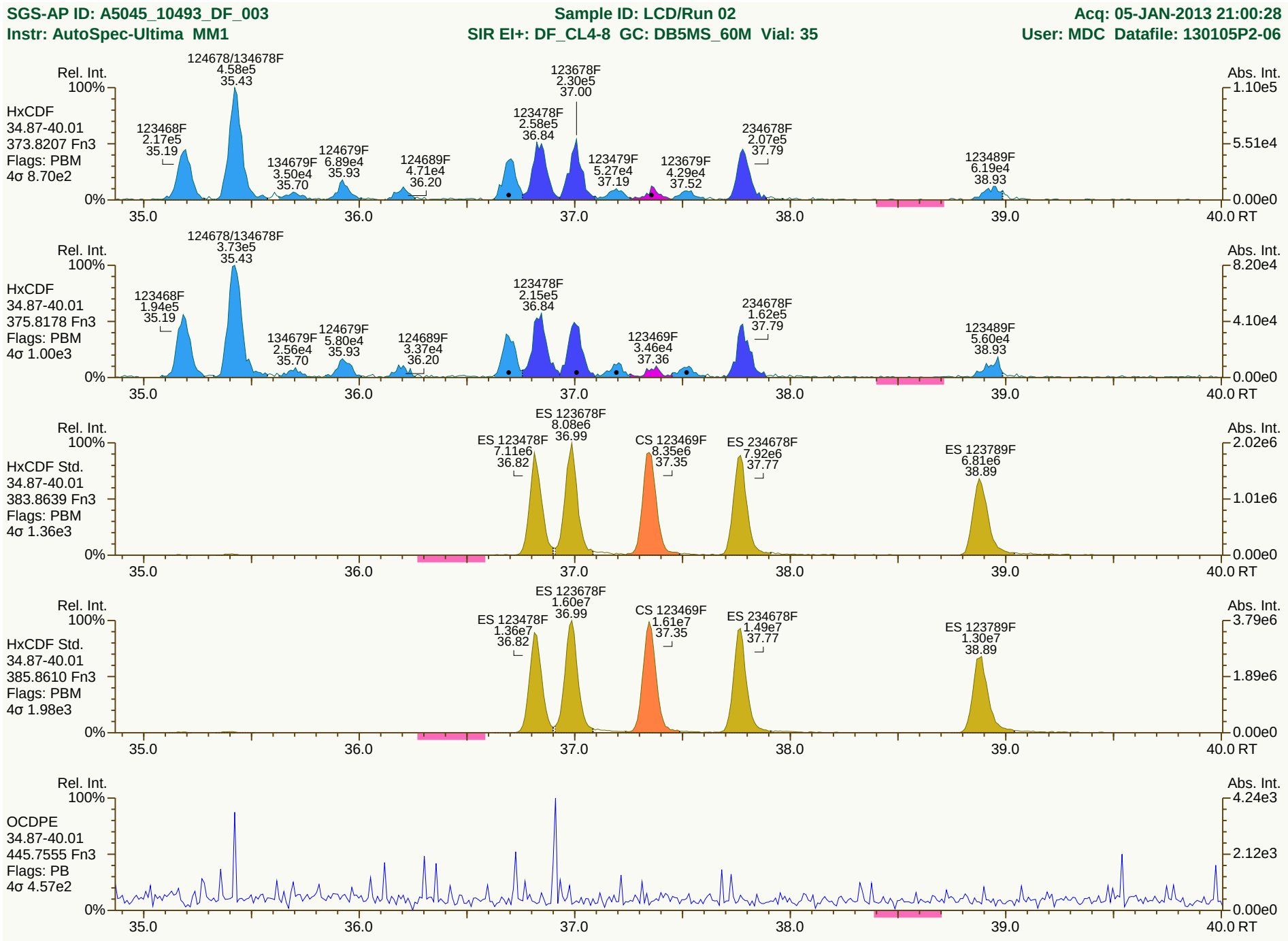

SGS-AP ID: A5045_10493_DF_003
Sample ID: LCD/Run 02
Acq: 05-JAN-2013 21:00:28
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35
User: MDC Datafile: 130105P2-06
Rel. Int.
Abs. Int.
TCDF
20.01-29.00
303.9016 Fn1
Flags: PBM
4σ 1.05e3
1368F 1.46e5 20.54
1468F 9.19e4 21.07
2468F 1.55e5 21.71
1346/1246F 1.36e5 22.14
1347F...[3] 3.36e5 22.29
1248F...[3] 2.52e5 22.70
1467F 8.06e4 23.30
1478F 9.31e4 23.51
1369/1237F 9.24e4 23.92
2368F 1.73e5 24.24
1238F...[5] 4.14e5 24.35
1278F 1.43e5 24.90
2346/1249F 1.39e5 25.44
2378F 1.20e5 25.91
2348F 1.32e5 25.79
2367/3467F 1.87e5 26.36
1269F 2.65e4 26.64
1239F 2.81e4 26.95
1289F 5.91e4 28.29
TCDF
20.01-29.00
305.8987 Fn1
Flags: PBM
4σ 9.93e2
1368F 1.84e5 20.54
1468F 1.16e5 21.07
2468F 1.80e5 21.71
1346/1246F 1.76e5 22.14
1347F...[3] 4.34e5 22.29
1348F 1.35e5 22.57
1248F...[3] 3.02e5 22.70
1268F 1.76e5 23.14
2467F 2.27e5 24.08
1238F...[5] 5.12e5 24.35
1278F 1.81e5 24.89
2346/1249F 1.64e5 25.44
2378F 1.56e5 25.90
2367/3467F 2.40e5 26.35
1269F 3.86e4 26.62
1239F 3.79e4 26.95
1289F 5.32e4 28.30
TCDF Std.
20.01-29.00
315.9419 Fn1
Flags: PBM
4σ 3.50e3
AS 1368F 2.02e7 20.51
JS 1234F 1.87e7 24.33
ES 2378F 1.68e7 25.89
TCDF Std.
20.01-29.00
317.9389 Fn1
Flags: PBM
4σ 2.64e3
AS 1368F 2.57e7 20.51
JS 1234F 2.39e7 24.33
ES 2378F 2.12e7 25.89
HxCDPE
20.01-29.00
375.8364 Fn1
Flags: PB
4σ 4.12e2
100%
0%
21.0
22.0
23.0
24.0
25.0
26.0
27.0
28.0
29.0 RT
6.90e4
3.45e4
0.00e0
7.92e4
3.96e4
3.89e6
1.95e6
4.93e6
2.47e6
3.52e3
1.76e3
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5184, 8644, 7927 scc: 127-600
Revised: 06-Jan-2013 09:30 (MDC) Printed: 06-Jan-2013 09:51 Page 7 of 12

SGS-AP ID: A5045_10493_DF_003 **Sample ID: LCD/Run 02** **Acq: 05-JAN-2013 21:00:28**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35** **User: MDC Datafile: 130105P2-06**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4859 scc: 127-600 *Revised: 06-Jan-2013 09:28 (MDC) Printed: 06-Jan-2013 09:51 Page 8 of 12*

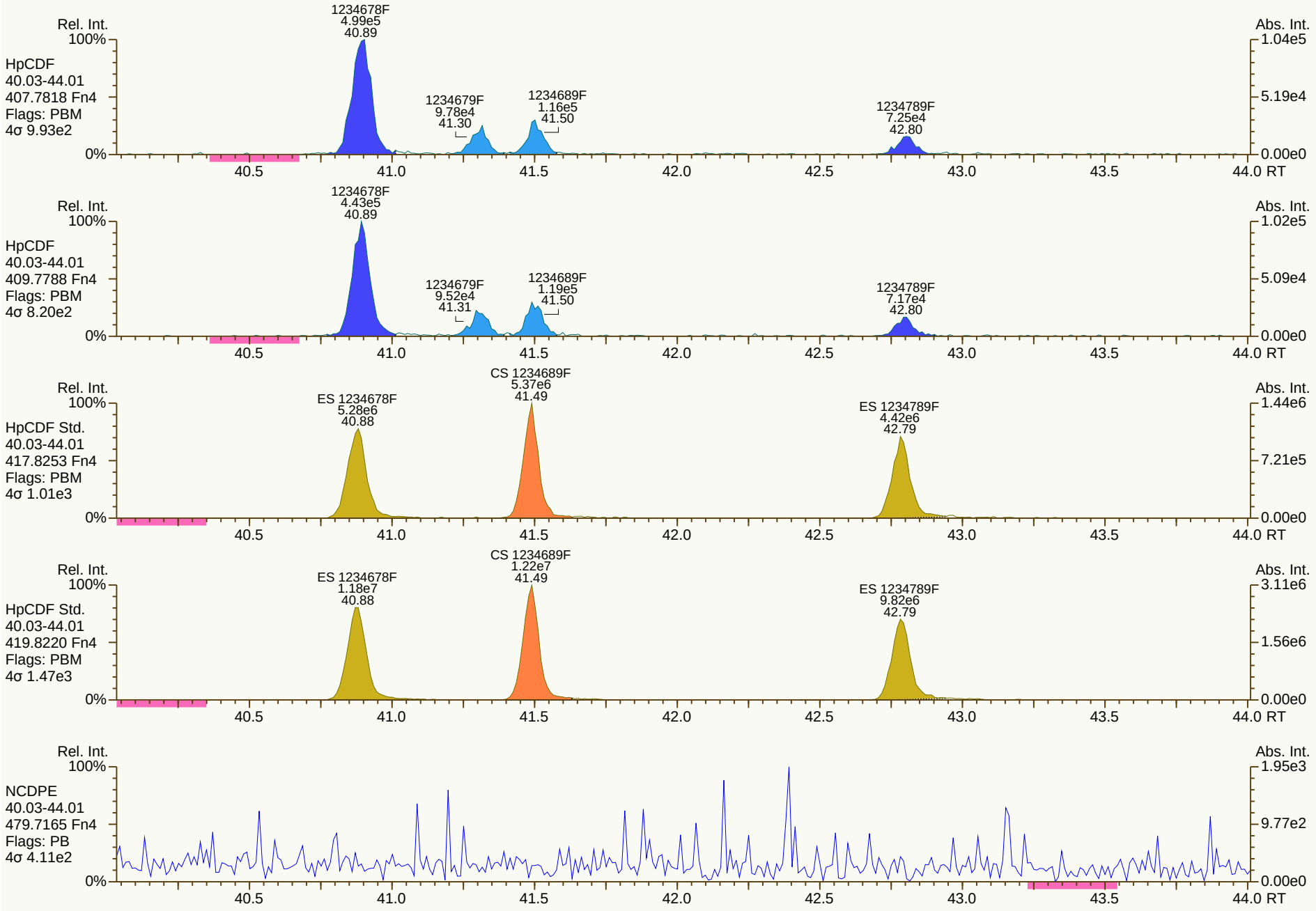

SGS-AP ID: A5045_10493_DF_003
Sample ID: LCD/Run 02
Acq: 05-JAN-2013 21:00:28
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35
User: MDC Datafile: 130105P2-06
PeCDF-2
29.03-34.84
339.8597 Fn2
Flags: PBM
4σ 1.38e3
PeCDF-2
29.03-34.84
341.8568 Fn2
Flags: PBM
4σ 9.29e2
PeCDF Std.
29.03-34.84
351.9000 Fn2
Flags: PBM
4σ 2.14e3
PeCDF Std.
29.03-34.84
353.8970 Fn2
Flags: PBM
4σ 1.45e3
HpCDPE
29.03-34.84
409.7974 Fn2
Flags: PB
4σ 5.00e2
Rel. Int.
Abs. Int.
RT
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7047, 3613, 8557 scc: 127-600
Revised: 06-Jan-2013 09:30 (MDC) Printed: 06-Jan-2013 09:51 Page 9 of 12



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*

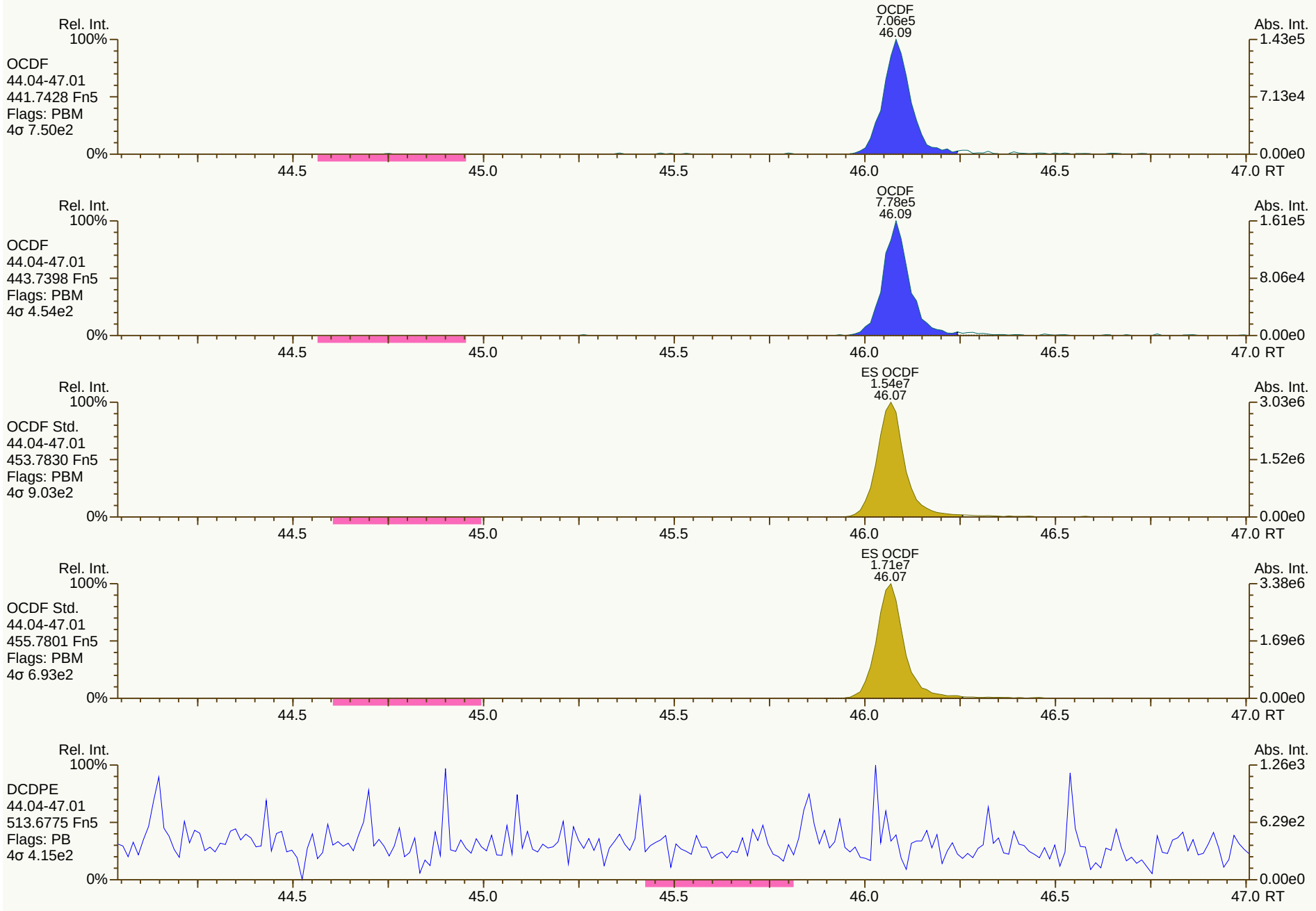
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5489, 4725, 5270 scc: 127-600 *Revised: 06-Jan-2013 09:31 (MDC) Printed: 06-Jan-2013 09:51 Page 10 of 12*

SGS-AP ID: A5045_10493_DF_003 **Sample ID: LCD/Run 02** **Acq: 05-JAN-2013 21:00:28**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35** **User: MDC Datafile: 130105P2-06**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1904, 8237, 7804 scc: 127-600 *Revised: 06-Jan-2013 09:31 (MDC) Printed: 06-Jan-2013 09:51 Page 11 of 12*

SGS-AP ID: A5045_10493_DF_003 **Sample ID: LCD/Run 02** **Acq: 05-JAN-2013 21:00:28**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 35** **User: MDC Datafile: 130105P2-06**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_003.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1726, 2095, 2387 scc: 127-600 *Revised: 06-Jan-2013 09:28 (MDC) Printed: 06-Jan-2013 09:51 Page 12 of 12*

Lab ID: A5045_10493_DF_004 **Acq'd:** 05 Jan 2013 21:51 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 03 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 503-843-WYK

Datafile: 130105P2-07 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
2378-TCDD	26.95		1.0010	1.0008	-0.3	2.63E+04	0.77	Y	1.15	3.2	1148	1.68
12378-PeCDD	33.34		1.0006	1.0001	-1.0	3.39E+04	1.58	Y	1.06	5.54	1324	2.41
123478-HxCDD	38.03		1.0004	1.0005	+0.2	2.47E+04	1.40	Y	1.13	4.35	1119	2.02
123678-HxCDD	38.16		1.0040	1.0039	-0.2	4.02E+04	1.61	N	1.17	6.96	1119	2.14
123789-HxCDD	38.52		1.0130	1.0132	+0.5	4.27E+04	1.21	Y	1.01	7.45	1119	2.32
1234678-HpCDD	42.24		1.0003	1.0004	+0.3	1.98E+05	1.01	Y	1.09	39.9	1198	2.38
OCDD	45.87		1.0004	1.0003	-0.3	1.96E+05	0.90	Y	1.19	47.6	854	2.47
2378-TCDF	25.93		1.0009	1.0010	+0.2	3.62E+05	0.81	Y	1.15	28.6	2239	2.28
12378-PeCDF	31.60		1.0006	1.0006	0	4.34E+05	1.58	Y	1.07	45.5	2242	2.7
23478-PeCDF	32.93		1.0005	1.0008	+0.6	6.41E+05	1.53	Y	1.10	63	2242	2.42
123478-HxCDF	36.86		1.0005	1.0005	0	6.29E+05	1.31	Y	1.28	79.2	2182	2.82
123678-HxCDF	37.02		1.0005	1.0003	-0.4	5.49E+05	1.27	Y	1.19	62.4	2182	2.73
234678-HxCDF	37.81		1.0005	1.0004	-0.2	4.51E+05	1.27	Y	1.23	54.3	2182	2.85
123789-HxCDF	NotFnd		1.0005	-		-	-	-	1.23	-	2182	3.6
1234678-HpCDF	40.91		1.0004	1.0004	0	1.28E+06	1.01	Y	1.49	168	1507	2.28
1234789-HpCDF	42.82		1.0003	1.0002	-0.3	1.95E+05	1.02	Y	1.40	32.7	1507	2.79
OCDF	46.10		1.0004	1.0003	-0.3	1.66E+06	0.86	Y	1.15	302	1242	2.63

Name	Act RT	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
ES 2378-TCDD	26.93	1.0286	1.0287	+0.2	2.85E+07	0.79	Y	1.05	102
ES 12378-PeCDD	33.34	1.2729	1.2734	+0.8	2.31E+07	1.56	Y	0.84	104
ES 123478-HxCDD	38.02	0.9907	0.9908	+0.2	2.01E+07	1.30	Y	1.00	95.6
ES 123678-HxCDD	38.15	0.9941	0.9942	+0.2	1.98E+07	1.27	Y	1.04	90.9
ES 123789-HxCDD	38.49	1.0031	1.0032	+0.2	2.28E+07	1.28	Y	1.20	90.6
ES 1234678-HpCDD	42.23	1.1005	1.1005	0	1.82E+07	1.08	Y	0.97	89.5
ES OCDD	45.86	1.1953	1.1952	-0.2	2.76E+07	0.89	Y	0.78	84
ES 2378-TCDF	25.91	1.0637	1.0639	+0.3	4.43E+07	0.80	Y	1.01	98.3
ES 12378-PeCDF	31.58	1.2966	1.2970	+0.6	3.58E+07	1.58	Y	0.88	90.6
ES 23478-PeCDF	32.91	1.3512	1.3515	+0.4	3.71E+07	1.56	Y	0.84	98.8
ES 123478-HxCDF	36.84	0.9601	0.9602	+0.2	2.48E+07	0.52	Y	1.28	92.4
ES 123678-HxCDF	37.01	0.9644	0.9646	+0.5	2.96E+07	0.52	Y	1.50	93.9
ES 234678-HxCDF	37.79	0.9848	0.9849	+0.2	2.69E+07	0.52	Y	1.39	92.2
ES 123789-HxCDF	38.91	1.0138	1.0141	+0.7	2.39E+07	0.52	Y	1.34	84.7
ES 1234678-HpCDF	40.90	1.0659	1.0659	0	2.05E+07	0.44	Y	1.10	88.6
ES 1234789-HpCDF	42.81	1.1155	1.1157	+0.5	1.70E+07	0.45	Y	0.92	88.1
ES OCDF	46.09	1.2013	1.2013	0	3.85E+07	0.91	Y	1.04	88.5

Lab ID: A5045_10493_DF_004 **Acq'd:** 05 Jan 2013 21:51 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 03 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 503-843-WYK

Datafile: 130105P2-07 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
JS 1234-TCDD	26.18		-	-	-	2.65E+07	0.82	Y	-	-
JS 1234-TCDF	24.35		-	-	-	4.48E+07	0.79	Y	-	-
JS 123467-HxCDD	38.37		-	-	-	1.05E+07	1.27	Y	-	-
CS 37Cl-2378-TCDD	26.96		1.0296	1.0296	0	1.28E+07	n/a	-	1.24	96.8
CS 12347-PeCDD	32.74		1.2501	1.2505	+0.6	2.39E+07	1.62	Y	0.88	103
CS 12346-PeCDF	30.95		1.2711	1.2709	-0.3	4.20E+07	1.57	Y	1.05	89.1
CS 123469-HxCDF	37.37		0.9739	0.9740	+0.2	2.82E+07	0.53	Y	1.38	97.5
CS 1234689-HpCDF	41.51		1.0818	1.0819	+0.2	2.04E+07	0.45	Y	1.07	90.9
SS 37Cl-2378-TCDD	26.96		1.0296	1.0296	0	1.28E+07	n/a	-	1.18	94.8
SS 12347-PeCDD	32.74		1.2501	1.2505	+0.6	2.39E+07	1.62	Y	1.04	99.2
SS 12346-PeCDF	30.95		1.2711	1.2709	-0.3	4.20E+07	1.57	Y	1.20	98.3
SS 123469-HxCDF	37.37		0.9739	0.9740	+0.2	2.82E+07	0.53	Y	0.92	104
SS 1234689-HpCDF	41.51		1.0818	1.0819	+0.2	2.04E+07	0.45	Y	0.97	103
AS 1368-TCDD	22.69		0.8666	0.8668	+0.3	2.87E+07	0.78	Y	1.05	103
AS 1368-TCDF	20.53		0.8431	0.8430	-0.1	5.26E+07	0.79	Y	1.25	94.2
FS 1278-TCDD	NotFnd		1.0144							
FS 12478-PeCDD	NotFnd		0.9559							
FS 123468-HxCDD	NotFnd		0.9672							
FS 1234679-HpCDD	NotFnd		0.9785							
TS 1378-TCDD	NotFnd		0.9285							

Totals	Conc	EMPC
Total TCDD	128	128
Total PeCDD	119	132
Total HxCDD	132	143
Total HpCDD	78.3	78.3
Total Tetra-Octa Dioxins	505	529
Total TCDF	682	692
Total PeCDF	691	691
Total HxCDF	518	533
Total HpCDF	279	279
Total Tetra-Octa Furans	2470	2500
Total Tetra-Octa Dioxins & Furans	2980	3030

* 37Cl correction has been applied to 2378-TCDD

	Original Values	Corrected Values
Ratio	0.51	0.77
Response	3.40E+04	2.63E+04

Lab ID: A5045_10493_DF_004 **Acq'd:** 05 Jan 2013 21:51 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 03 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 503-843-WYK

Datafile: 130105P2-07 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1368-TCDD	22.72		0.8437	0.8438	+0.2	4.64E+05	0.77	Y	1.15	56.4	1148	1.68
1379-TCDD	23.15		0.8592	0.8597	+0.8	2.71E+05	0.83	Y	1.15	32.9	1148	1.68
1369-TCDD	NotFnd		0.8775						1.15		1148	1.68
1469-TCDD	NotFnd		0.9109						1.15		1148	1.68
1247/1246/1248/1249-TCDD	24.82		0.9212	0.9217	+0.8	4.77E+04	0.81	Y	1.15	5.8	1148	1.68
1378-TCDD	25.05		0.9294	0.9303	+1.5	5.08E+04	0.74	Y	1.15	6.17	1148	1.68
1268-TCDD	25.29		0.9380	0.9391	+1.8	2.40E+04	0.76	Y	1.15	2.92	1148	1.68
1478-TCDD	NotFnd		0.9486						1.15		1148	1.68
1279-TCDD	NotFnd		0.9561						1.15		1148	1.68
1234/1269-TCDD	26.21		0.9718	0.9733	+2.4	4.16E+04	0.80	Y	1.15	5.06	1148	1.68
1236-TCDD	NotFnd		0.9776						1.15		1148	1.68
1237/1238-TCDD	26.66		0.9886	0.9897	+1.8	1.31E+05	0.70	Y	1.15	15.9	1148	1.68
1239-TCDD	NotFnd		0.9946						1.15		1148	1.68
2378-TCDD	**26.95**		**1.0010**	**1.0008**	**-0.3**	**2.63E+04**	**0.77**	**Y**	**1.15**	**3.2**	**1148**	**1.68**
1278-TCDD	NotFnd		1.0153						1.15		1148	1.68
1267-TCDD	NotFnd		1.0213						1.15		1148	1.68
1289-TCDD	NotFnd		1.0439						1.15		1148	1.68
12479/12468-PeCDD	30.37		0.9111	0.9109	-0.4	2.63E+05	1.62	Y	1.06	42.9	1324	2.41
12469-PeCDD	NotFnd		0.9301						1.06		1324	2.41
12368-PeCDD	31.67		0.9498	0.9499	+0.2	2.66E+05	1.71	Y	1.06	43.4	1324	2.41
12478-PeCDD	NotFnd		0.9565						1.06		1324	2.41
12379-PeCDD	32.02		0.9601	0.9604	+0.6	1.68E+05	1.51	Y	1.06	27.5	1324	2.41
12369/12467/12489-PeCDD	NotFnd		0.9695						1.06		1324	2.41
12346/12347-PeCDD	32.76		0.9828	0.9827	-0.2	7.74E+04	1.96	N	1.06	12.7	1324	2.41
12378-PeCDD	**33.34**		**1.0006**	**1.0001**	**-1.0**	**3.39E+04**	**1.58**	**Y**	**1.06**	**5.54**	**1324**	**2.41**
12367-PeCDD	NotFnd		1.0040						1.06		1324	2.41
12389-PeCDD	NotFnd		1.0164						1.06		1324	2.41
124679/124689-HxCDD	36.00		0.9471	0.9470	-0.2	5.34E+04	1.32	Y	1.10	9.28	1119	2.15
123468-HxCDD	36.79		0.9676	0.9677	+0.2	4.62E+05	1.32	Y	1.10	80.2	1119	2.15
123679/123689-HxCDD	37.13		0.9768	0.9768	0	1.76E+05	1.36	Y	1.10	30.6	1119	2.15
123469-HxCDD	NotFnd		0.9809						1.10		1119	2.15
123478-HxCDD	**38.03**		**1.0004**	**1.0005**	**+0.2**	**2.47E+04**	**1.40**	**Y**	**1.13**	**4.35**	**1119**	**2.02**
123678-HxCDD	**38.16**		**1.0040**	**1.0039**	**-0.2**	**4.02E+04**	**1.61**	**N**	**1.17**	**6.96**	**1119**	**2.14**
123467-HxCDD	38.40		1.0099	1.0101	+0.5	2.51E+04	1.54	N	1.10	4.36	1119	2.15
123789-HxCDD	**38.52**		**1.0130**	**1.0132**	**+0.5**	**4.27E+04**	**1.21**	**Y**	**1.01**	**7.45**	**1119**	**2.32**

Lab ID: A5045_10493_DF_004 **Acq'd: 05 Jan 2013 21:51 MDC** **Wt/Vol: 1** **Cal: BCS3_10493_DF_PAB**

Client ID: LCD/Run 03 **UTP: 06-Jan-2013 09:35 MDC** **J-level: 10 pg** **Split: 2** **Checkcode: 503-843-WYK**

Datafile: 130105P2-07 **Report: 06 Jan 2013 09:40 MC** **Stds (pg): JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)**

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1234679-HpCDD	41.34		0.9789	0.9790	+0.3	1.90E+05	0.99	Y	1.09	38.4	1198	2.38
1234678-HpCDD	**42.24**		**1.0003**	**1.0004**	**+0.3**	**1.98E+05**	**1.01**	**Y**	**1.09**	**39.9**	**1198**	**2.38**
OCDD	**45.87**		**1.0004**	**1.0003**	**-0.3**	**1.96E+05**	**0.90**	**Y**	**1.19**	**47.6**	**854**	**2.47**
OCDD-a	NotFnd		1.0003						0.07		1185	59.2
1368-TCDF	20.55		0.7936	0.7932	-0.6	4.29E+05	0.80	Y	1.15	33.8	2239	2.28
1468-TCDF	21.09		0.8144	0.8142	-0.3	2.77E+05	0.83	Y	1.15	21.8	2239	2.28
2468-TCDF	21.73		0.8382	0.8388	+0.9	4.07E+05	0.72	Y	1.15	32.1	2239	2.28
1346/1246-TCDF	22.14		0.8546	0.8545	-0.2	2.16E+05	0.85	Y	1.15	17.1	2239	2.28
1347/1378/1247-TCDF	22.30		0.8602	0.8609	+1.1	1.02E+06	0.77	Y	1.15	80.8	2239	2.28
1348-TCDF	22.58		0.8716	0.8715	-0.2	2.43E+05	0.76	Y	1.15	19.1	2239	2.28
1248/1367/1379-TCDF	22.72		0.8774	0.8770	-0.6	6.23E+05	0.73	Y	1.15	49.1	2239	2.28
1268-TCDF	23.17		0.8944	0.8945	+0.2	3.46E+05	0.70	Y	1.15	27.3	2239	2.28
1467-TCDF	23.32		0.9003	0.9001	-0.3	1.44E+05	0.67	Y	1.15	11.4	2239	2.28
1478-TCDF	23.52		0.9077	0.9078	+0.2	2.37E+05	0.78	Y	1.15	18.7	2239	2.28
1369/1237-TCDF	23.95		0.9241	0.9243	+0.3	2.24E+05	0.79	Y	1.15	17.6	2239	2.28
2467-TCDF	24.10		0.9299	0.9302	+0.5	4.06E+05	0.82	Y	1.15	32	2239	2.28
2368-TCDF	24.26		0.9363	0.9364	+0.2	5.19E+05	0.78	Y	1.15	40.9	2239	2.28
1238/1234/1678/1469/1236-TCDF	24.37		0.9413	0.9408	-0.8	9.96E+05	0.78	Y	1.15	78.5	2239	2.28
1278-TCDF	24.91		0.9611	0.9617	+0.9	3.88E+05	0.75	Y	1.15	30.6	2239	2.28
1349-TCDF	25.04		0.9656	0.9665	+1.4	7.58E+04	0.82	Y	1.15	5.97	2239	2.28
1267-TCDF	25.23		0.9734	0.9739	+0.8	1.93E+05	0.82	Y	1.15	15.2	2239	2.28
2346/1249-TCDF	25.45		0.9823	0.9824	+0.2	2.76E+05	0.76	Y	1.15	21.8	2239	2.28
2347/1279-TCDF	25.69		0.9913	0.9915	+0.3	3.88E+05	0.82	Y	1.15	30.6	2239	2.28
2348-TCDF	25.81		0.9961	0.9964	+0.5	3.65E+05	0.74	Y	1.15	28.7	2239	2.28
2378-TCDF	**25.93**		**1.0009**	**1.0010**	**+0.2**	**3.62E+05**	**0.81**	**Y**	**1.15**	**28.6**	**2239**	**2.28**
2367/3467-TCDF	26.37		1.0175	1.0180	+0.8	4.68E+05	0.74	Y	1.15	36.9	2239	2.28
1269-TCDF	NotFnd		1.0287						1.15		2239	2.28
1239-TCDF	26.96		1.0411	1.0406	-0.8	4.93E+04	0.78	Y	1.15	3.89	2239	2.28
1289-TCDF	28.29		1.0924	1.0920	-0.6	1.22E+05	1.04	N	1.15	9.63	2239	2.28
13468/12468-PeCDF	28.28		0.8956	0.8954	-0.4	7.13E+05	1.68	Y	1.08	72.4	1089	1.24
13678/13467/12467-PeCDF	30.09		0.9530	0.9529	-0.2	8.06E+05	1.42	Y	1.08	81.8	2242	2.56
12368/13478/12478-PeCDF	30.28		0.9590	0.9588	-0.4	1.22E+06	1.58	Y	1.08	124	2242	2.56
14678-PeCDF	30.40		0.9629	0.9625	-0.8	2.51E+05	1.45	Y	1.08	25.5	2242	2.56
13479-PeCDF	30.53		0.9662	0.9666	+0.8	1.05E+05	1.64	Y	1.08	10.7	2242	2.56
13469/12479-PeCDF	30.80		0.9753	0.9754	+0.2	1.31E+05	1.35	Y	1.08	13.3	2242	2.56
12346-PeCDF	30.95		0.9806	0.9802	-0.8	1.39E+05	1.42	Y	1.08	14.1	2242	2.56

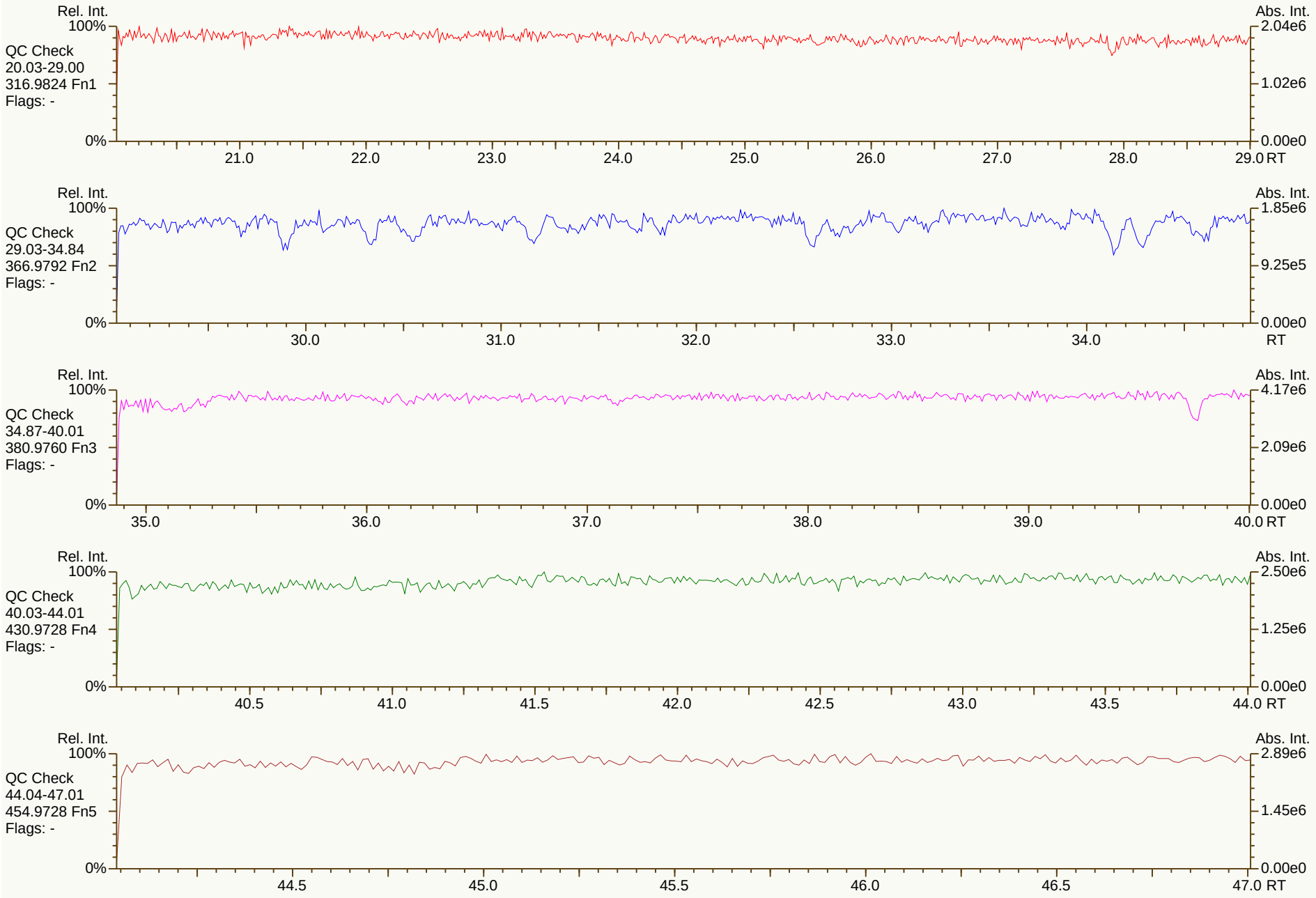
Lab ID: A5045_10493_DF_004 **Acq'd:** 05 Jan 2013 21:51 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: LCD/Run 03 **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 503-843-WYK

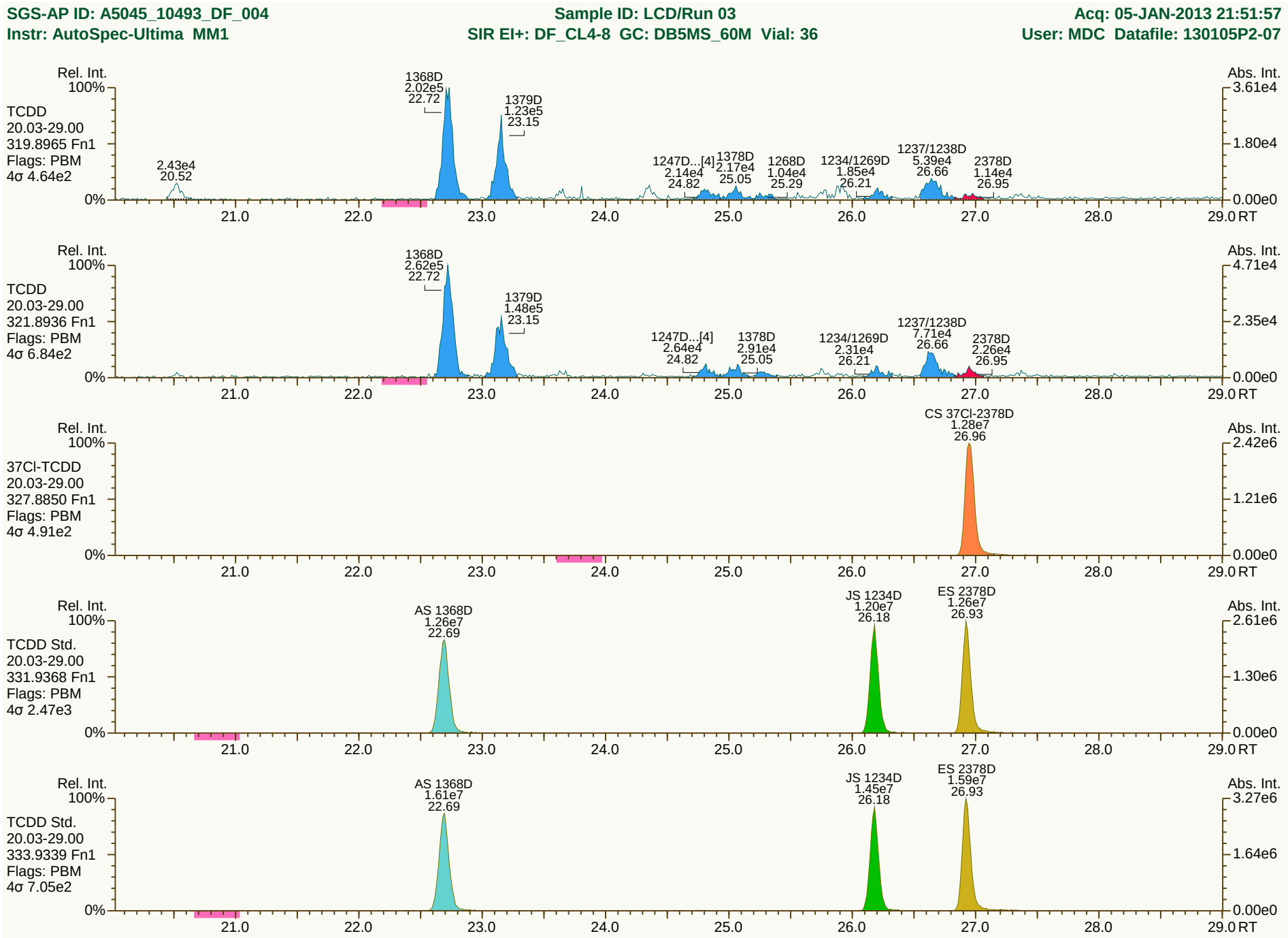
Datafile: 130105P2-07 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
23468/12469-PeCDF	31.07		0.9839	0.9838	-0.2	5.03E+05	1.56	Y	1.08	51	2242	2.56
12347-PeCDF	31.16		0.9868	0.9867	-0.2	3.57E+05	1.67	Y	1.08	36.2	2242	2.56
12348-PeCDF	31.35		0.9930	0.9928	-0.4	3.23E+05	1.62	Y	1.08	32.8	2242	2.56
12378-PeCDF	**31.60**		**1.0006**	**1.0006**	**0**	**4.34E+05**	**1.58**	**Y**	**1.07**	**45.5**	**2242**	**2.7**
12678/12367-PeCDF	31.94		1.0110	1.0113	+0.6	5.18E+05	1.46	Y	1.08	52.6	2242	2.56
12379-PeCDF	32.15		1.0173	1.0180	+1.3	5.85E+04	1.77	Y	1.08	5.94	2242	2.56
12679-PeCDF	32.63		0.9914	0.9915	+0.2	6.15E+04	1.58	Y	1.08	6.25	2242	2.56
23467/12369-PeCDF	32.78		0.9962	0.9963	+0.2	4.26E+05	1.48	Y	1.08	43.3	2242	2.56
23478-PeCDF	**32.93**		**1.0005**	**1.0008**	**+0.6**	**6.41E+05**	**1.53**	**Y**	**1.10**	**63**	**2242**	**2.42**
23478/12489-PeCDF	NotFnd		1.0006						1.10		2242	2.42
12489-PeCDF	NotFnd		1.0023						1.08		2242	2.56
12349-PeCDF	33.31		1.0123	1.0124	+0.2	6.21E+04	1.50	Y	1.08	6.31	2242	2.56
12389-PeCDF	34.23		1.0397	1.0400	+0.6	6.43E+04	1.58	Y	1.08	6.53	2242	2.56
123468-HxCDF	35.21		0.9556	0.9558	+0.4	4.93E+05	1.23	Y	1.23	60.8	2182	2.98
124678/134678-HxCDF	35.45		0.9621	0.9622	+0.2	1.13E+06	1.25	Y	1.23	140	2182	2.98
134679-HxCDF	35.72		0.9695	0.9697	+0.4	6.45E+04	1.30	Y	1.23	7.96	2182	2.98
124679-HxCDF	35.95		0.9759	0.9759	0	1.24E+05	1.53	N	1.23	15.3	2182	2.98
124689-HxCDF	36.22		0.9830	0.9831	+0.2	1.06E+05	1.24	Y	1.23	13.1	2182	2.98
123467-HxCDF	36.72		0.9966	0.9967	+0.2	3.67E+05	1.16	Y	1.23	45.2	2182	2.98
123478-HxCDF	**36.86**		**1.0005**	**1.0005**	**0**	**6.29E+05**	**1.31**	**Y**	**1.28**	**79.2**	**2182**	**2.82**
123678-HxCDF	**37.02**		**1.0005**	**1.0003**	**-0.4**	**5.49E+05**	**1.27**	**Y**	**1.19**	**62.4**	**2182**	**2.73**
123479-HxCDF	37.21		1.0056	1.0053	-0.7	1.14E+05	1.15	Y	1.23	14	2182	2.98
123469-HxCDF	37.38		1.0103	1.0099	-0.9	1.02E+05	1.21	Y	1.23	12.6	2182	2.98
123679-HxCDF	37.54		0.9933	0.9932	-0.2	9.58E+04	1.30	Y	1.23	11.8	2182	2.98
234678-HxCDF	**37.81**		**1.0005**	**1.0004**	**-0.2**	**4.51E+05**	**1.27**	**Y**	**1.23**	**54.3**	**2182**	**2.85**
234678/123689-HxCDF	NotFnd		1.0004						1.23		2182	2.85
123689-HxCDF	NotFnd		1.0009						1.23		2182	2.98
123789-HxCDF	**NotFnd**		**1.0005**						**1.23**		**2182**	**3.6**
123789/123489-HxCDF	NotFnd		0.9869						1.23		2182	3.6
123489-HxCDF	38.96		1.0013	1.0012	-0.2	1.36E+05	1.36	Y	1.23	16.8	2182	2.98
1234678-HpCDF	**40.91**		**1.0004**	**1.0004**	**0**	**1.28E+06**	**1.01**	**Y**	**1.49**	**168**	**1507**	**2.28**
1234679-HpCDF	41.33		1.0104	1.0105	+0.2	2.41E+05	1.07	Y	1.45	35.5	1507	2.51
1234689-HpCDF	41.52		1.0152	1.0152	0	2.97E+05	1.06	Y	1.45	43.7	1507	2.51
1234789-HpCDF	**42.82**		**1.0003**	**1.0002**	**-0.3**	**1.95E+05**	**1.02**	**Y**	**1.40**	**32.7**	**1507**	**2.79**
OCDF	**46.10**		**1.0004**	**1.0003**	**-0.3**	**1.66E+06**	**0.86**	**Y**	**1.15**	**302**	**1242**	**2.63**
OCDF-a	NotFnd		1.0002						0.07		1422	51.2

SGS-AP ID: A5045_10493_DF_004 **Sample ID: LCD/Run 03** **Acq: 05-JAN-2013 21:51:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36** **User: MDC Datafile: 130105P2-07**



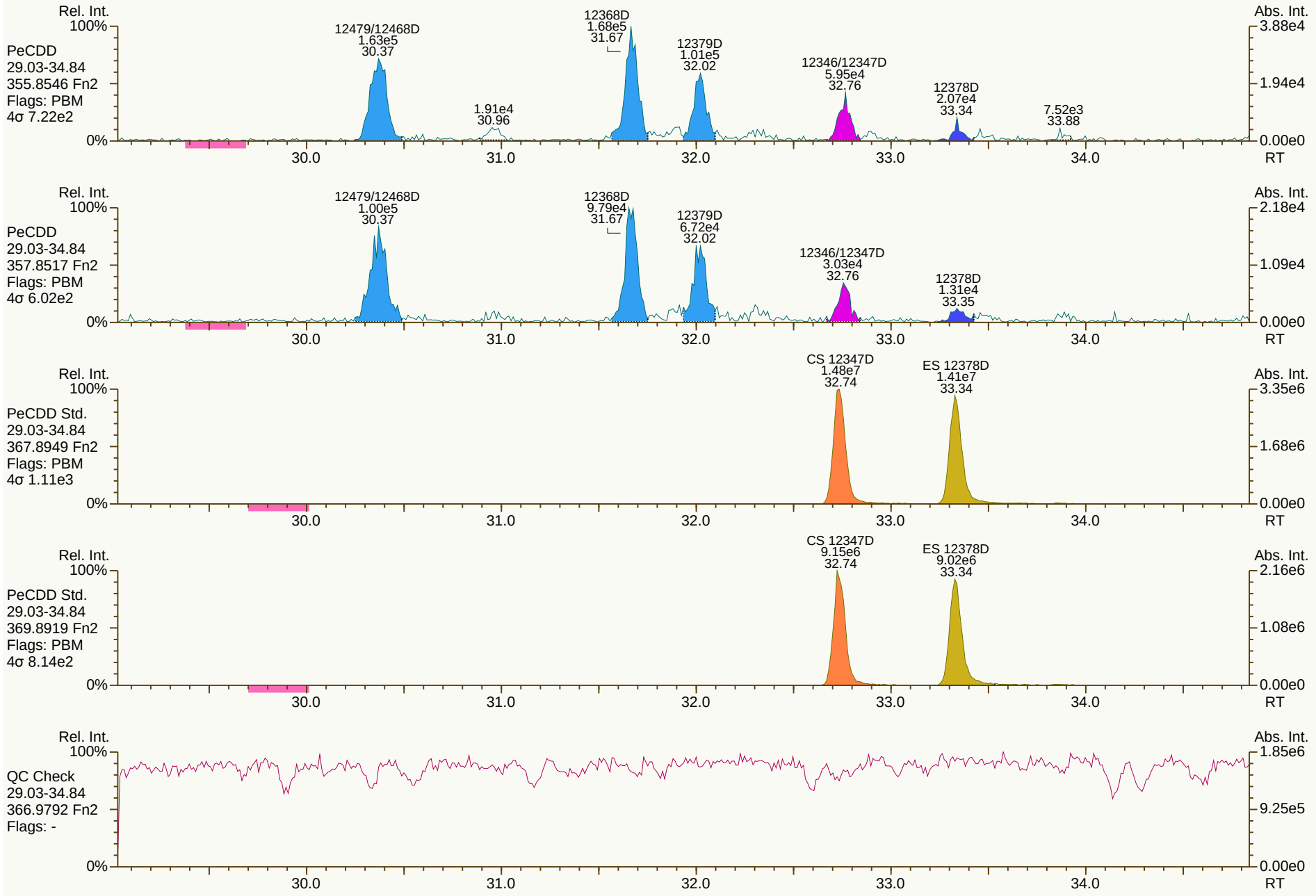
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 scc: 503-843 *PKD: n/a Printed: 06-Jan-2013 09:51 Page 1 of 12*



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_004.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*

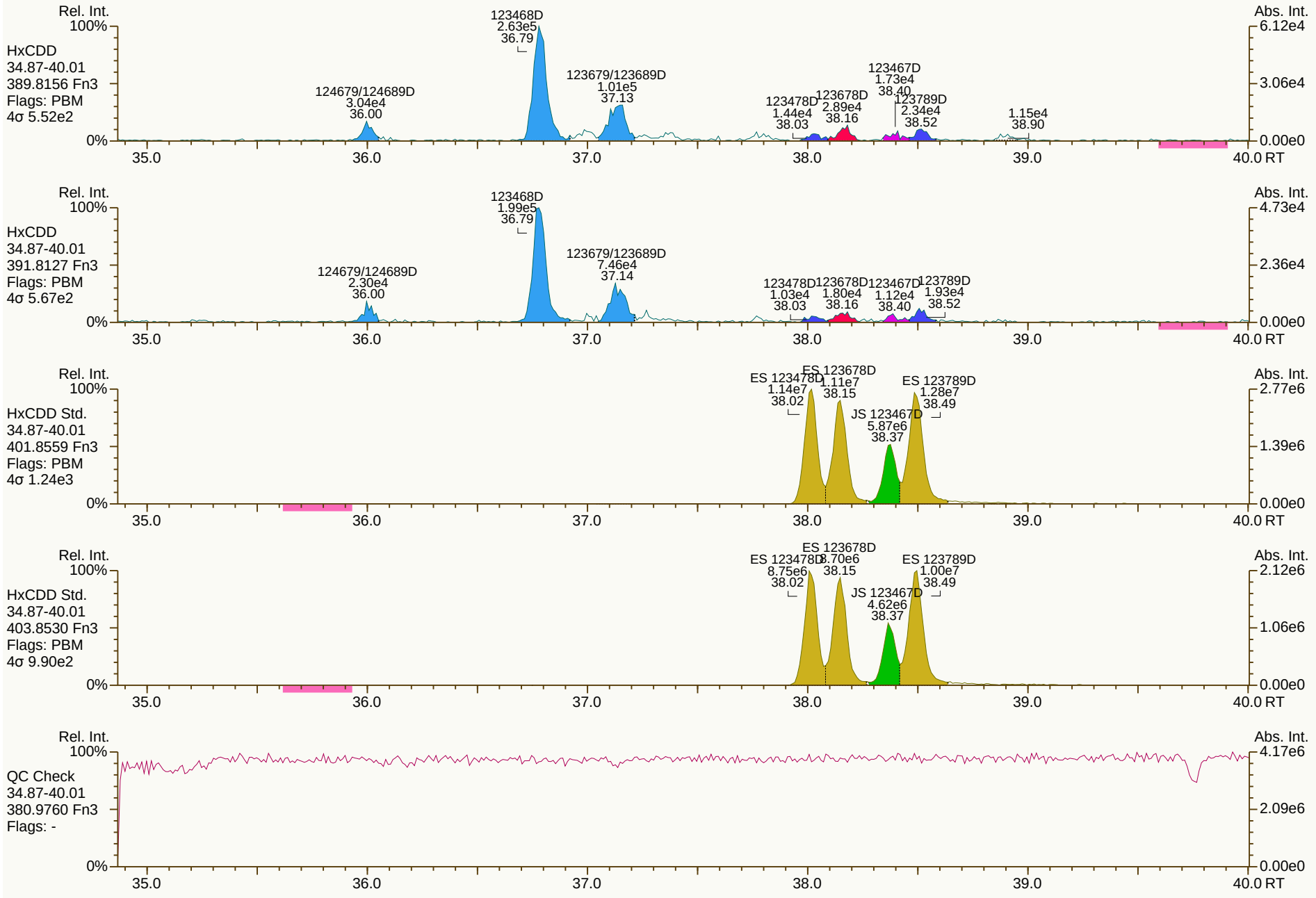
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0466, 0174, 6413 scc: 503-843 *Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:51 Page 2 of 12*

SGS-AP ID: A5045_10493_DF_004 **Sample ID: LCD/Run 03** **Acq: 05-JAN-2013 21:51:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36** **User: MDC Datafile: 130105P2-07**



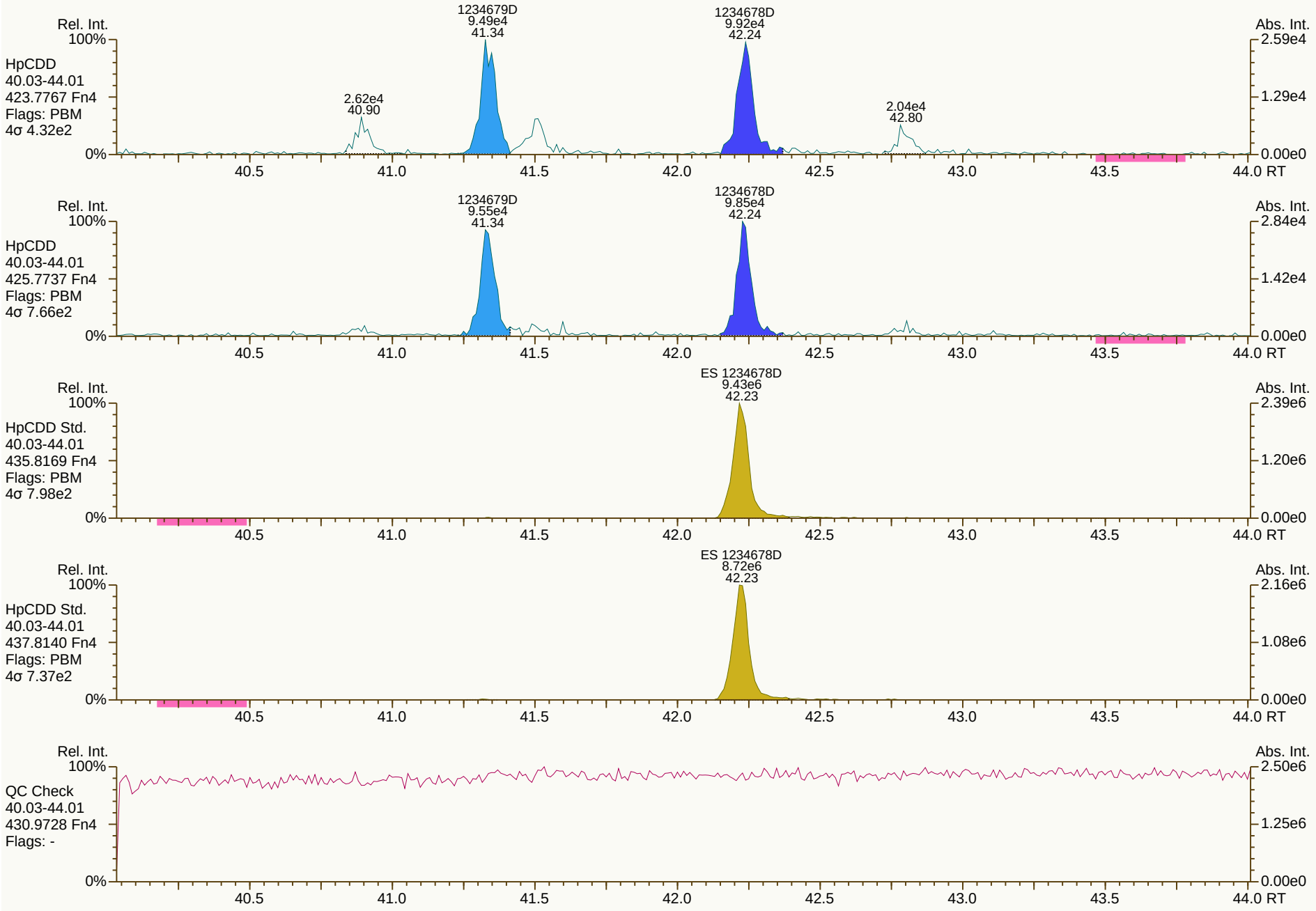
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3206, 4610 scc: 503-843 *Revised: 06-Jan-2013 09:32 (MDC) Printed: 06-Jan-2013 09:51 Page 3 of 12*

SGS-AP ID: A5045_10493_DF_004 **Sample ID: LCD/Run 03** **Acq: 05-JAN-2013 21:51:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36** **User: MDC Datafile: 130105P2-07**



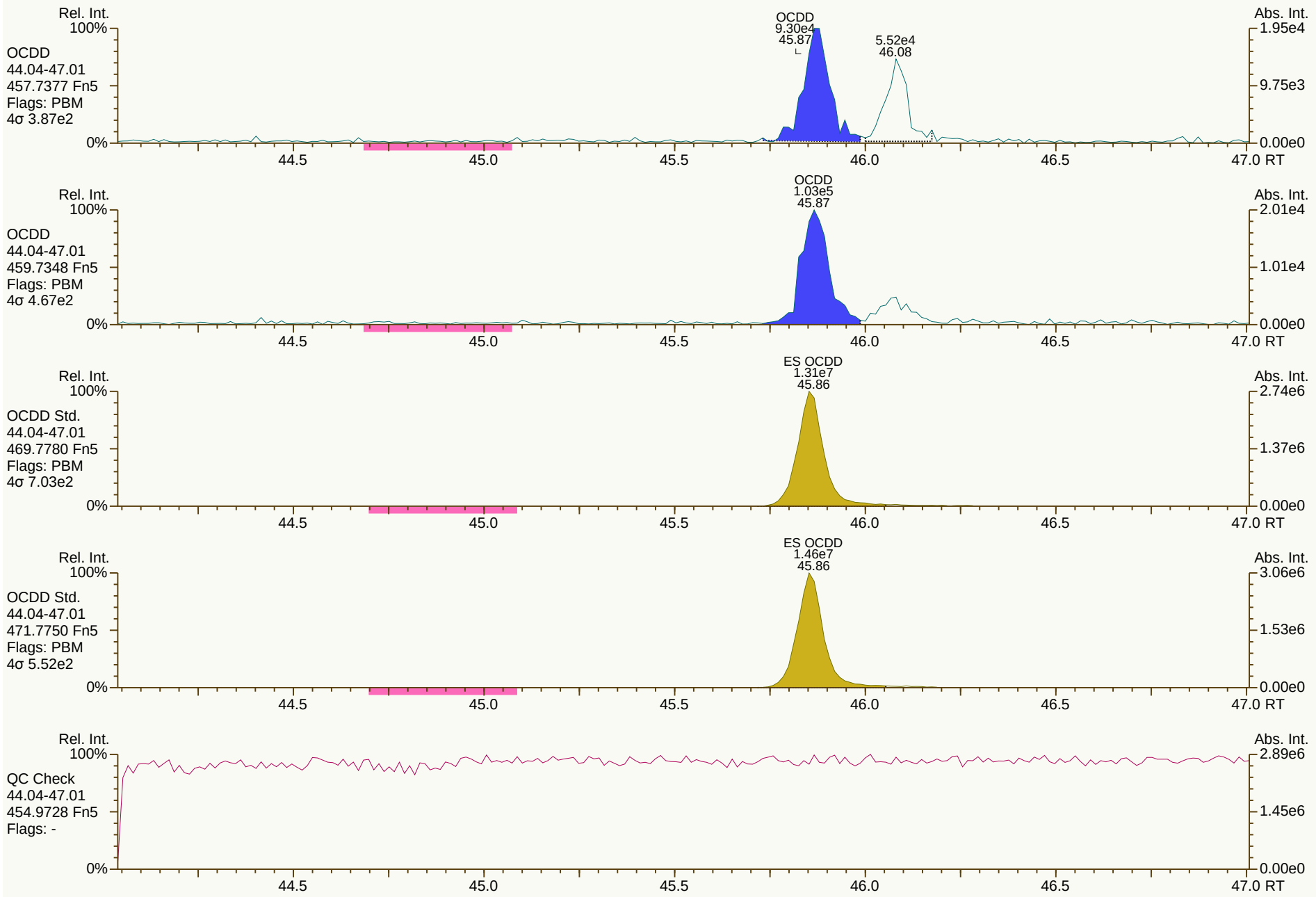
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1613, 1210 scc: 503-843 *Revised: 06-Jan-2013 09:32 (MDC) Printed: 06-Jan-2013 09:51 Page 4 of 12*

SGS-AP ID: A5045_10493_DF_004 **Sample ID: LCD/Run 03** **Acq: 05-JAN-2013 21:51:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36** **User: MDC Datafile: 130105P2-07**

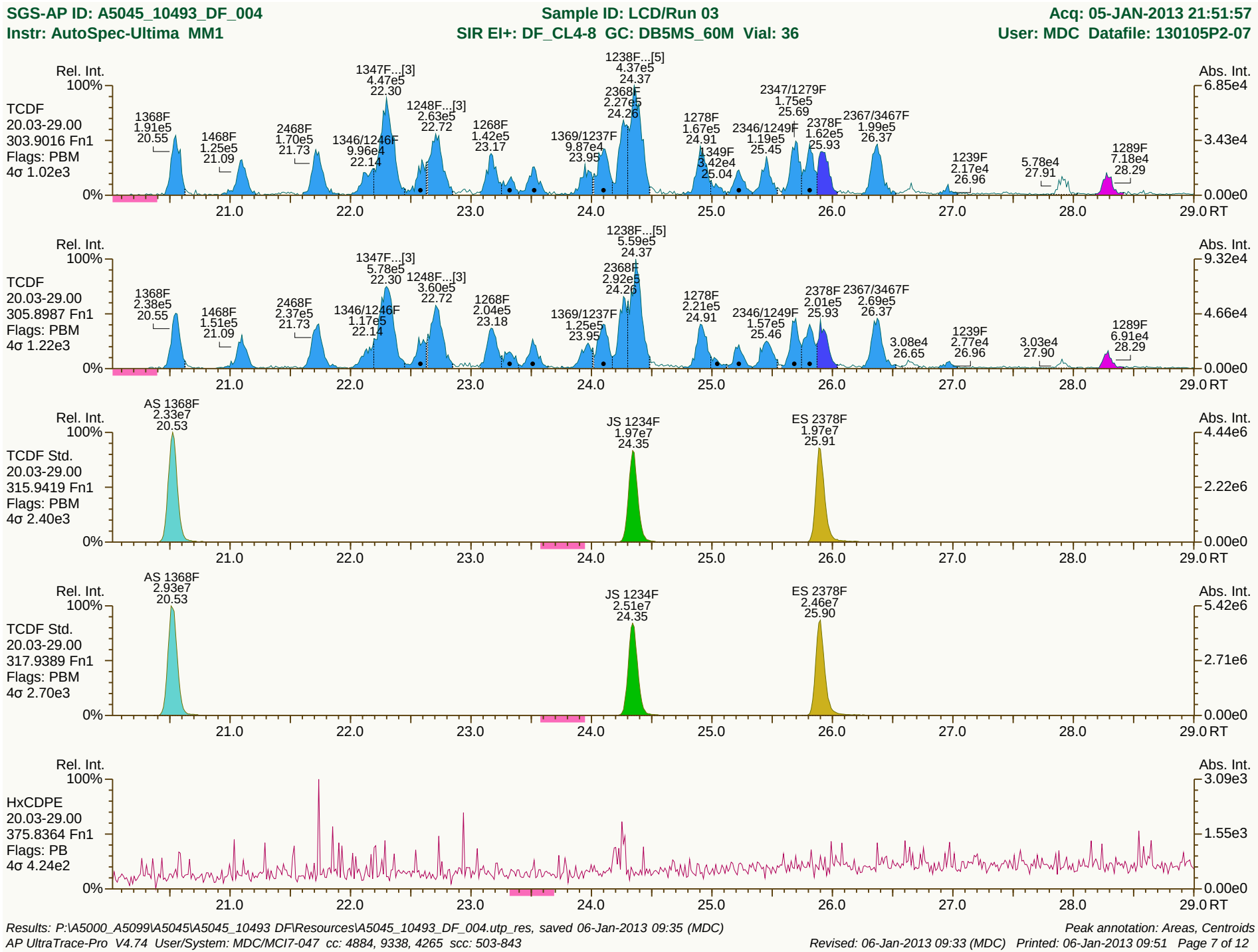


Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_004.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5543, 8147 scc: 503-843 *Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:51 Page 5 of 12*

SGS-AP ID: A5045_10493_DF_004 **Sample ID: LCD/Run 03** **Acq: 05-JAN-2013 21:51:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36** **User: MDC Datafile: 130105P2-07**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_004.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4058, 5178 scc: 503-843 *Revised: 06-Jan-2013 09:32 (MDC) Printed: 06-Jan-2013 09:51 Page 6 of 12*

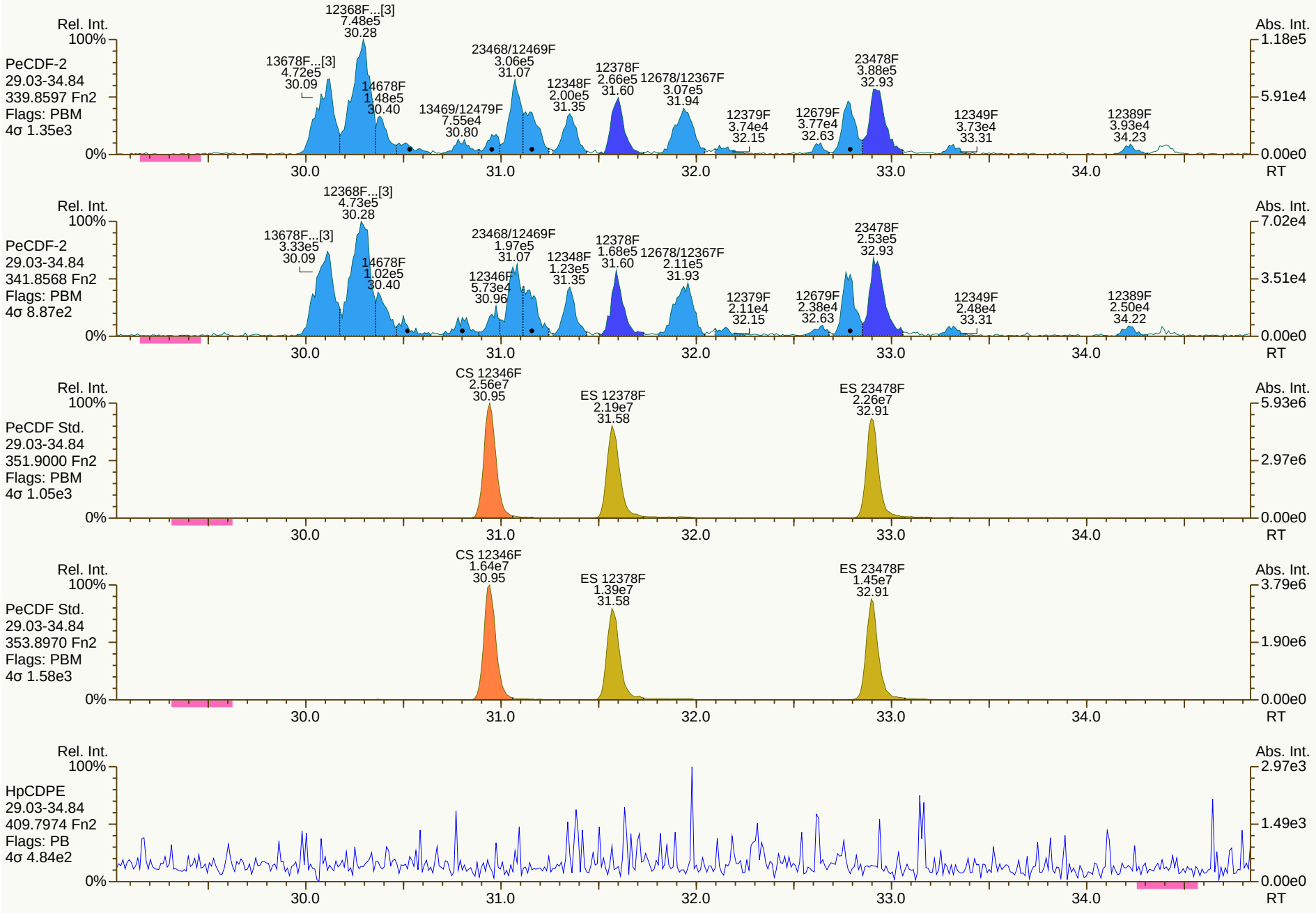

SGS-AP ID: A5045_10493_DF_004
Sample ID: LCD/Run 03
Acq: 05-JAN-2013 21:51:57
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36
User: MDC Datafile: 130105P2-07
Rel. Int.
Abs. Int.
TCDF
20.03-29.00
303.9016 Fn1
Flags: PBM
4σ 1.02e3
1368F 1.91e5 20.55
1468F 1.25e5 21.09
2468F 1.70e5 21.73
1346/1246F 9.96e4 22.14
1347F...[3] 4.47e5 22.30
1248F...[3] 2.63e5 22.72
1268F 1.42e5 23.17
1369/1237F 9.87e4 23.95
1238F...[5] 4.37e5 24.37
2368F 2.27e5 24.26
1278F 1.67e5 24.91
1349F 3.42e4 25.04
2346/1249F 1.19e5 25.45
2347/1279F 1.75e5 25.69
2378F 1.62e5 25.93
2367/3467F 1.99e5 26.37
1239F 2.17e4 26.96
5.78e4 27.91
1289F 7.18e4 28.29
TCDF
20.03-29.00
305.8987 Fn1
Flags: PBM
4σ 1.22e3
1368F 2.38e5 20.55
1468F 1.51e5 21.09
2468F 2.37e5 21.73
1346/1246F 1.17e5 22.14
1347F...[3] 5.78e5 22.30
1248F...[3] 3.60e5 22.72
1268F 2.04e5 23.18
1369/1237F 1.25e5 23.95
1238F...[5] 5.59e5 24.37
2368F 2.92e5 24.26
1278F 2.21e5 24.91
2346/1249F 1.57e5 25.46
2378F 2.01e5 25.93
2367/3467F 2.69e5 26.37
3.08e4 26.65
1239F 2.77e4 26.96
3.03e4 27.90
1289F 6.91e4 28.29
TCDF Std.
20.03-29.00
315.9419 Fn1
Flags: PBM
4σ 2.40e3
AS 1368F 2.33e7 20.53
JS 1234F 1.97e7 24.35
ES 2378F 1.97e7 25.91
TCDF Std.
20.03-29.00
317.9389 Fn1
Flags: PBM
4σ 2.70e3
AS 1368F 2.93e7 20.53
JS 1234F 2.51e7 24.35
ES 2378F 2.46e7 25.90
HxCDPE
20.03-29.00
375.8364 Fn1
Flags: PB
4σ 4.24e2
100%
0%
6.85e4
3.43e4
0.00e0
9.32e4
4.66e4
4.44e6
2.22e6
5.42e6
2.71e6
3.09e3
1.55e3
21.0
22.0
23.0
24.0
25.0
26.0
27.0
28.0
29.0 RT
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_004.utp_res, saved 06-Jan-2013 09:35 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4884, 9338, 4265 scc: 503-843
Revised: 06-Jan-2013 09:33 (MDC) Printed: 06-Jan-2013 09:51 Page 7 of 12

SGS-AP ID: A5045_10493_DF_004 **Sample ID: LCD/Run 03** **Acq: 05-JAN-2013 21:51:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36** **User: MDC Datafile: 130105P2-07**

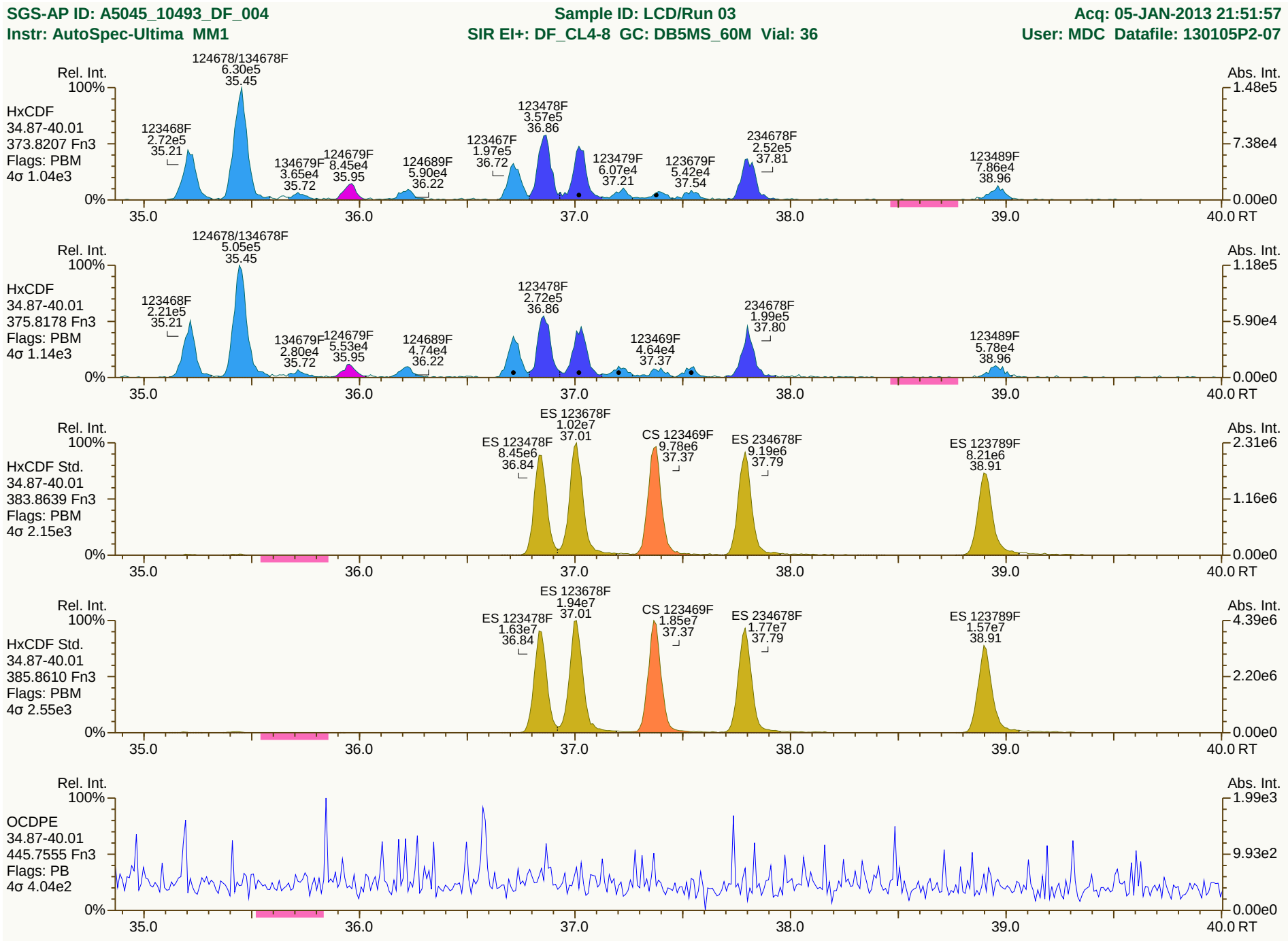


Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_004.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0919 scc: 503-843 *Revised: 06-Jan-2013 09:32 (MDC) Printed: 06-Jan-2013 09:51 Page 8 of 12*

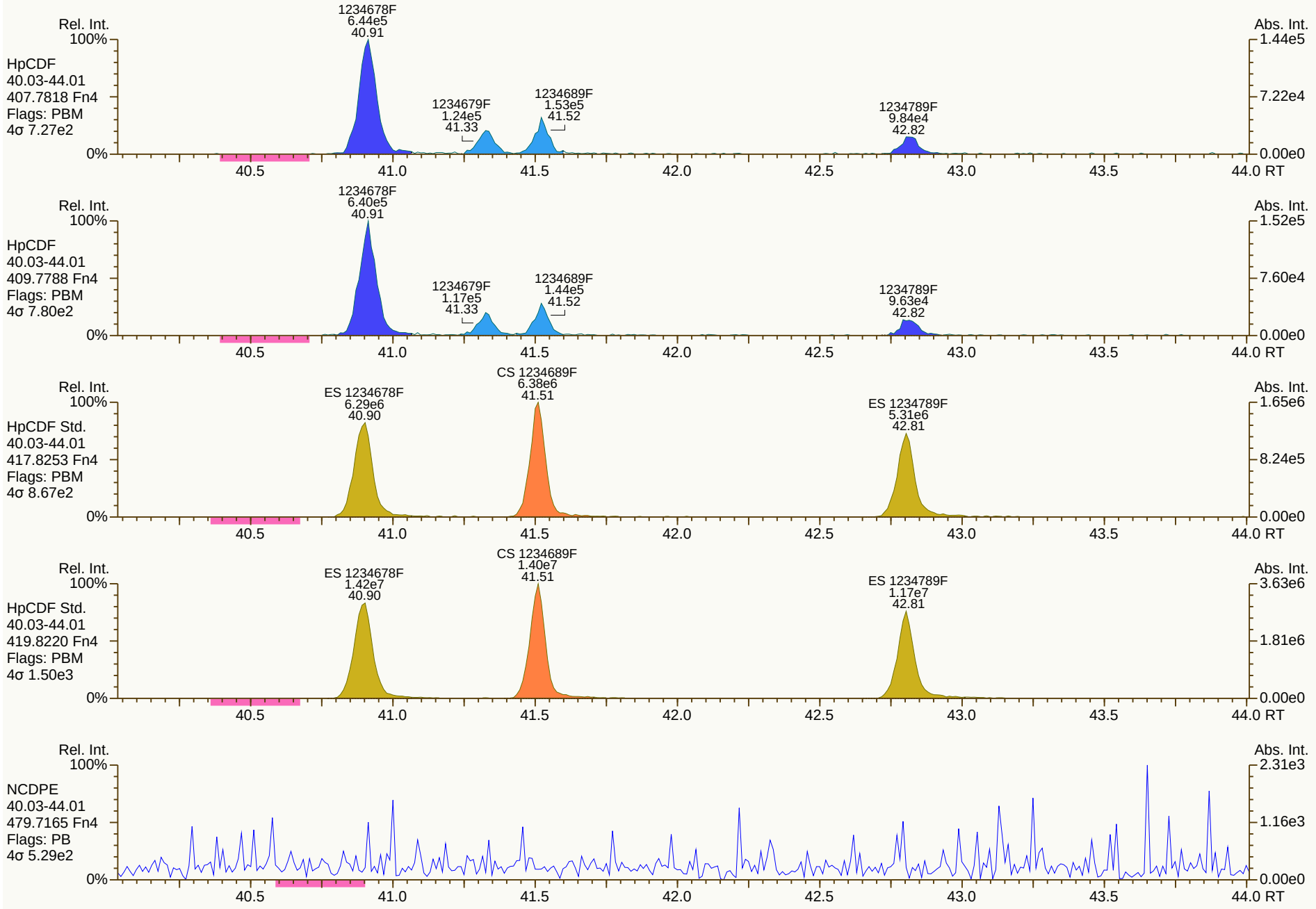
SGS-AP ID: A5045_10493_DF_004 Sample ID: LCD/Run 03 Acq: 05-JAN-2013 21:51:57
Instr: AutoSpec-Ultima MM1 SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36 User: MDC Datafile: 130105P2-07



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_004.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0852, 9558, 6660 scc: 503-843 *Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:51 Page 9 of 12*

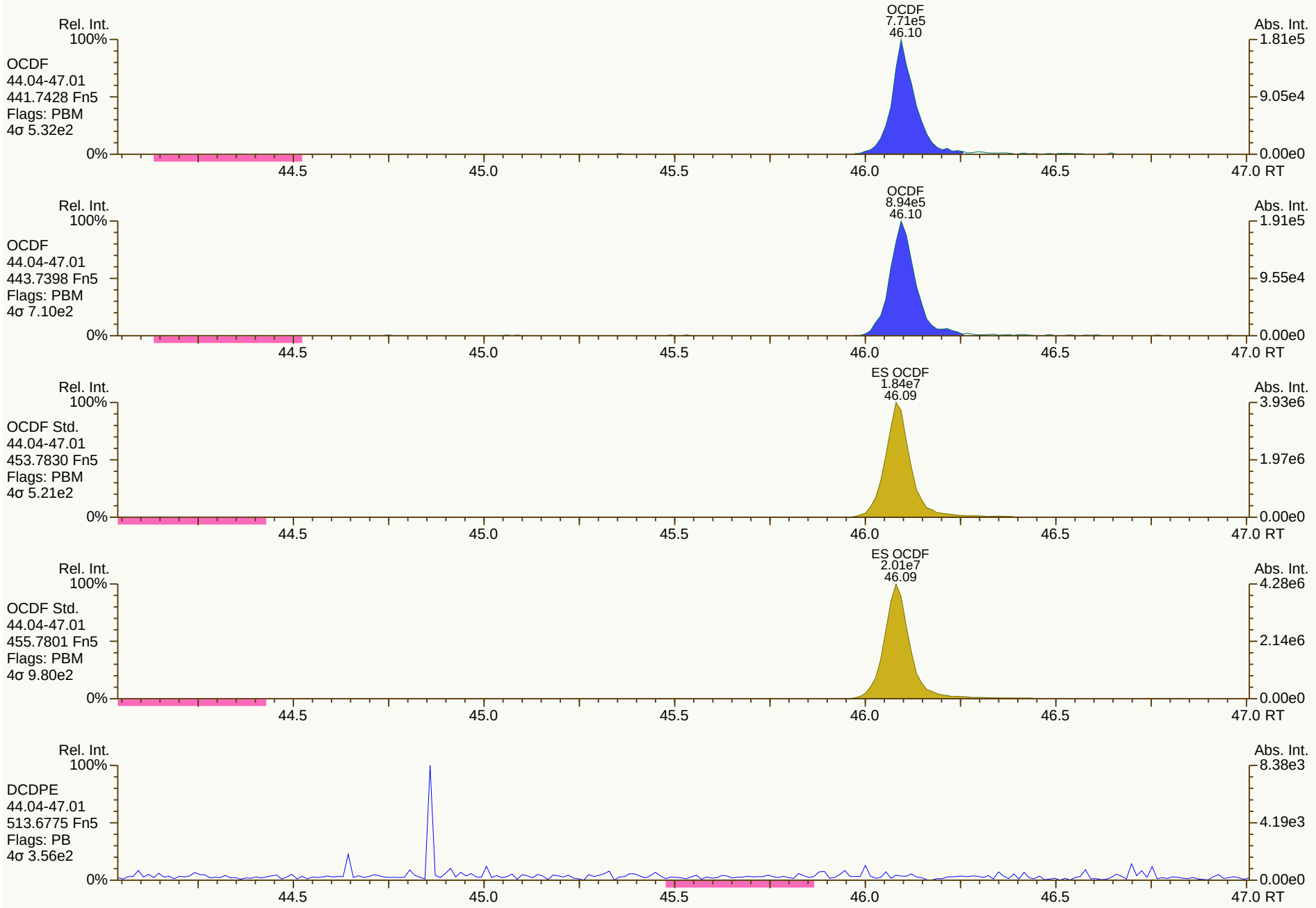

SGS-AP ID: A5045_10493_DF_004
Sample ID: LCD/Run 03
Acq: 05-JAN-2013 21:51:57
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36
User: MDC Datafile: 130105P2-07
Rel. Int.
Abs. Int.
HxCDF
34.87-40.01
373.8207 Fn3
Flags: PBM
4σ 1.04e3
124678/134678F 6.30e5 35.45
123468F 2.72e5 35.21
134679F 3.65e4 35.72
124679F 8.45e4 35.95
124689F 5.90e4 36.22
123467F 1.97e5 36.72
123478F 3.57e5 36.86
123479F 6.07e4 37.21
123679F 5.42e4 37.54
234678F 2.52e5 37.81
123489F 7.86e4 38.96
HxCDF
34.87-40.01
375.8178 Fn3
Flags: PBM
4σ 1.14e3
124678/134678F 5.05e5 35.45
123468F 2.21e5 35.21
134679F 2.80e4 35.72
124679F 5.53e4 35.95
124689F 4.74e4 36.22
123478F 2.72e5 36.86
123469F 4.64e4 37.37
234678F 1.99e5 37.80
123489F 5.78e4 38.96
HxCDF Std.
34.87-40.01
383.8639 Fn3
Flags: PBM
4σ 2.15e3
ES 123678F 1.02e7 37.01
ES 123478F 8.45e6 36.84
CS 123469F 9.78e6 37.37
ES 234678F 9.19e6 37.79
ES 123789F 8.21e6 38.91
HxCDF Std.
34.87-40.01
385.8610 Fn3
Flags: PBM
4σ 2.55e3
ES 123678F 1.94e7 37.01
ES 123478F 1.63e7 36.84
CS 123469F 1.85e7 37.37
ES 234678F 1.77e7 37.79
ES 123789F 1.57e7 38.91
OCDPE
34.87-40.01
445.7555 Fn3
Flags: PB
4σ 4.04e2
100%
0%
35.0
36.0
37.0
38.0
39.0
40.0 RT
1.48e5
7.38e4
0.00e0
1.18e5
5.90e4
2.31e6
1.16e6
4.39e6
2.20e6
1.99e3
9.93e2
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_004.utp_res, saved 06-Jan-2013 09:35 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1148, 4986, 5409 scc: 503-843
Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:51 Page 10 of 12

SGS-AP ID: A5045_10493_DF_004 **Sample ID: LCD/Run 03** **Acq: 05-JAN-2013 21:51:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36** **User: MDC Datafile: 130105P2-07**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_004.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1340, 1495, 1569 scc: 503-843 *Revised: 06-Jan-2013 09:32 (MDC) Printed: 06-Jan-2013 09:51 Page 11 of 12*

SGS-AP ID: A5045_10493_DF_004 **Sample ID: LCD/Run 03** **Acq: 05-JAN-2013 21:51:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 36** **User: MDC Datafile: 130105P2-07**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_004.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4487, 8884, 5415 scc: 503-843 *Revised: 06-Jan-2013 09:32 (MDC) Printed: 06-Jan-2013 09:51 Page 12 of 12*

Lab ID: A5045_10493_DF_005 **Acq'd:** 05 Jan 2013 22:43 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: Reagent Blank **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 777-690-WLZ

Datafile: 130105P2-08 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
2378-TCDD	NotFnd		1.0010	-		-	-	-	1.15	-	1117	2.36
12378-PeCDD	NotFnd		1.0006	-		-	-	-	1.06	-	1097	2.88
123478-HxCDD	NotFnd		1.0004	-		-	-	-	1.13	-	1160	2.68
123678-HxCDD	NotFnd		1.0040	-		-	-	-	1.17	-	1160	2.79
123789-HxCDD	NotFnd		1.0130	-		-	-	-	1.01	-	1160	3.07
1234678-HpCDD	NotFnd		1.0003	-		-	-	-	1.09	-	1073	2.65
OCDD	45.87		1.0004	1.0001	-0.8	1.96E+04	0.69	N	1.19	5.8	1179	4.33
2378-TCDF	NotFnd		1.0009	-		-	-	-	1.15	-	1111	1.53
12378-PeCDF	NotFnd		1.0006	-		-	-	-	1.07	-	1198	1.92
23478-PeCDF	NotFnd		1.0005	-		-	-	-	1.10	-	1198	1.88
123478-HxCDF	NotFnd		1.0005	-		-	-	-	1.28	-	1330	2.33
123678-HxCDF	NotFnd		1.0005	-		-	-	-	1.19	-	1330	2.11
234678-HxCDF	NotFnd		1.0005	-		-	-	-	1.23	-	1330	2.22
123789-HxCDF	NotFnd		1.0005	-		-	-	-	1.23	-	1330	2.67
1234678-HpCDF	40.91		1.0004	1.0002	-0.5	4.55E+04	1.04	Y	1.49	7.76	1548	2.94
1234789-HpCDF	NotFnd		1.0003	-		-	-	-	1.40	-	1548	3.85
OCDF	46.11		1.0004	1.0003	-0.3	7.13E+05	0.90	Y	1.15	164	1434	4.05

Name	Act RT	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
ES 2378-TCDD	26.93	1.0286	1.0289	+0.5	2.08E+07	0.80	Y	1.05	82.7
ES 12378-PeCDD	33.34	1.2729	1.2737	+1.3	1.63E+07	1.58	Y	0.84	81
ES 123478-HxCDD	38.02	0.9907	0.9908	+0.2	1.48E+07	1.26	Y	1.00	77.8
ES 123678-HxCDD	38.15	0.9941	0.9942	+0.2	1.53E+07	1.25	Y	1.04	77.3
ES 123789-HxCDD	38.49	1.0031	1.0032	+0.2	1.77E+07	1.31	Y	1.20	77.6
ES 1234678-HpCDD	42.23	1.1005	1.1006	+0.2	1.42E+07	1.09	Y	0.97	77.3
ES OCDD	45.87	1.1953	1.1954	+0.2	2.27E+07	0.90	Y	0.78	76
ES 2378-TCDF	25.90	1.0637	1.0645	+1.2	3.36E+07	0.80	Y	1.01	84.6
ES 12378-PeCDF	31.58	1.2966	1.2977	+1.6	2.62E+07	1.60	Y	0.88	75.2
ES 23478-PeCDF	32.91	1.3512	1.3523	+1.6	2.69E+07	1.57	Y	0.84	81.2
ES 123478-HxCDF	36.84	0.9601	0.9601	0	1.83E+07	0.53	Y	1.28	75.2
ES 123678-HxCDF	37.01	0.9644	0.9645	+0.2	2.14E+07	0.53	Y	1.50	74.8
ES 234678-HxCDF	37.79	0.9848	0.9849	+0.2	2.06E+07	0.51	Y	1.39	77.8
ES 123789-HxCDF	38.91	1.0138	1.0141	+0.7	1.79E+07	0.53	Y	1.34	69.9
ES 1234678-HpCDF	40.90	1.0659	1.0659	0	1.57E+07	0.46	Y	1.10	74.6
ES 1234789-HpCDF	42.81	1.1155	1.1157	+0.5	1.30E+07	0.45	Y	0.92	74.2
ES OCDF	46.09	1.2013	1.2013	0	3.03E+07	0.91	Y	1.04	76.7

Lab ID: A5045_10493_DF_005 **Acq'd:** 05 Jan 2013 22:43 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: Reagent Blank **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 777-690-WLZ

Datafile: 130105P2-08 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Rec. %
JS 1234-TCDD	26.17		-	-	-	2.39E+07	0.82	Y	-	-
JS 1234-TCDF	24.34		-	-	-	3.95E+07	0.79	Y	-	-
JS 123467-HxCDD	38.37		-	-	-	9.53E+06	1.25	Y	-	-
CS 37Cl-2378-TCDD	26.95		1.0296	1.0297	+0.2	9.06E+06	n/a	-	1.24	76.3
CS 12347-PeCDD	32.74		1.2501	1.2507	+0.9	1.78E+07	1.64	Y	0.88	84.7
CS 12346-PeCDF	30.95		1.2711	1.2717	+0.9	2.99E+07	1.56	Y	1.05	71.9
CS 123469-HxCDF	37.37		0.9739	0.9740	+0.2	2.09E+07	0.52	Y	1.38	79.3
CS 1234689-HpCDF	41.51		1.0818	1.0820	+0.5	1.63E+07	0.47	Y	1.07	79.8
SS 37Cl-2378-TCDD	26.95		1.0296	1.0297	+0.2	9.06E+06	n/a	-	1.18	92.3
SS 12347-PeCDD	32.74		1.2501	1.2507	+0.9	1.78E+07	1.64	Y	1.04	105
SS 12346-PeCDF	30.95		1.2711	1.2717	+0.9	2.99E+07	1.56	Y	1.20	95.7
SS 123469-HxCDF	37.37		0.9739	0.9740	+0.2	2.09E+07	0.52	Y	0.92	106
SS 1234689-HpCDF	41.51		1.0818	1.0820	+0.5	1.63E+07	0.47	Y	0.97	107
AS 1368-TCDD	22.68		0.8666	0.8664	-0.3	2.08E+07	0.81	Y	1.05	83.1
AS 1368-TCDF	20.51		0.8431	0.8426	-0.7	3.93E+07	0.79	Y	1.25	79.7
FS 1278-TCDD	NotFnd		1.0144							
FS 12478-PeCDD	NotFnd		0.9559							
FS 123468-HxCDD	NotFnd		0.9672							
FS 1234679-HpCDD	NotFnd		0.9785							
TS 1378-TCDD	NotFnd		0.9285							

Totals	Conc	EMPC
Total TCDD	0	3.67
Total PeCDD	0	0
Total HxCDD	0	0
Total HpCDD	0	0
Total Tetra-Octa Dioxins	0	9.47
Total TCDF	0	0
Total PeCDF	0	0
Total HxCDF	0	0
Total HpCDF	7.76	7.76
Total Tetra-Octa Furans	172	172
Total Tetra-Octa Dioxins & Furans	172	182

Lab ID: A5045_10493_DF_005 **Acq'd:** 05 Jan 2013 22:43 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: Reagent Blank **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 777-690-WLZ

Datafile: 130105P2-08 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1368-TCDD	22.71		0.8437	0.8431	-1.0	2.20E+04	0.60	N	1.15	3.67	1117	2.36
1379-TCDD	NotFnd		0.8592						1.15		1117	2.36
1369-TCDD	NotFnd		0.8775						1.15		1117	2.36
1469-TCDD	NotFnd		0.9109						1.15		1117	2.36
1247/1246/1248/1249-TCDD	NotFnd		0.9212						1.15		1117	2.36
1378-TCDD	NotFnd		0.9294						1.15		1117	2.36
1268-TCDD	NotFnd		0.9380						1.15		1117	2.36
1478-TCDD	NotFnd		0.9486						1.15		1117	2.36
1279-TCDD	NotFnd		0.9561						1.15		1117	2.36
1234/1269-TCDD	NotFnd		0.9718						1.15		1117	2.36
1236-TCDD	NotFnd		0.9776						1.15		1117	2.36
1237/1238-TCDD	NotFnd		0.9886						1.15		1117	2.36
1239-TCDD	NotFnd		0.9946						1.15		1117	2.36
2378-TCDD	**NotFnd**		**1.0010**						**1.15**		**1117**	**2.36**
1278-TCDD	NotFnd		1.0153						1.15		1117	2.36
1267-TCDD	NotFnd		1.0213						1.15		1117	2.36
1289-TCDD	NotFnd		1.0439						1.15		1117	2.36
12479/12468-PeCDD	NotFnd		0.9111						1.06		1097	2.88
12469-PeCDD	NotFnd		0.9301						1.06		1097	2.88
12368-PeCDD	NotFnd		0.9498						1.06		1097	2.88
12478-PeCDD	NotFnd		0.9565						1.06		1097	2.88
12379-PeCDD	NotFnd		0.9601						1.06		1097	2.88
12369/12467/12489-PeCDD	NotFnd		0.9695						1.06		1097	2.88
12346/12347-PeCDD	NotFnd		0.9828						1.06		1097	2.88
12378-PeCDD	**NotFnd**		**1.0006**						**1.06**		**1097**	**2.88**
12367-PeCDD	NotFnd		1.0040						1.06		1097	2.88
12389-PeCDD	NotFnd		1.0164						1.06		1097	2.88
124679/124689-HxCDD	NotFnd		0.9471						1.10		1160	2.84
123468-HxCDD	NotFnd		0.9676						1.10		1160	2.84
123679/123689-HxCDD	NotFnd		0.9768						1.10		1160	2.84
123469-HxCDD	NotFnd		0.9809						1.10		1160	2.84
123478-HxCDD	**NotFnd**		**1.0004**						**1.13**		**1160**	**2.68**
123678-HxCDD	**NotFnd**		**1.0040**						**1.17**		**1160**	**2.79**
123467-HxCDD	NotFnd		1.0099						1.10		1160	2.84
123789-HxCDD	**NotFnd**		**1.0130**						**1.01**		**1160**	**3.07**

Lab ID: A5045_10493_DF_005 **Acq'd: 05 Jan 2013 22:43 MDC** **Wt/Vol: 1** **Cal: BCS3_10493_DF_PAB**

Client ID: Reagent Blank **UTP: 06-Jan-2013 09:35 MDC** **J-level: 10 pg** **Split: 2** **Checkcode: 777-690-WLZ**

Datafile: 130105P2-08 **Report: 06 Jan 2013 09:40 MC** **Stds (pg): JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)**

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
1234679-HpCDD	NotFnd		0.9789						1.09		1073	2.65
1234678-HpCDD	**NotFnd**		**1.0003**						**1.09**		**1073**	**2.65**
OCDD	**45.87**		**1.0004**	**1.0001**	**-0.8**	**1.96E+04**	**0.69**	**N**	**1.19**	**5.8**	**1179**	**4.33**
OCDD-a	NotFnd		1.0003						0.07		1762	112
1368-TCDF	NotFnd		0.7936						1.15		1111	1.53
1468-TCDF	NotFnd		0.8144						1.15		1111	1.53
2468-TCDF	NotFnd		0.8382						1.15		1111	1.53
1346/1246-TCDF	NotFnd		0.8546						1.15		1111	1.53
1347/1378/1247-TCDF	NotFnd		0.8602						1.15		1111	1.53
1348-TCDF	NotFnd		0.8716						1.15		1111	1.53
1248/1367/1379-TCDF	NotFnd		0.8774						1.15		1111	1.53
1268-TCDF	NotFnd		0.8944						1.15		1111	1.53
1467-TCDF	NotFnd		0.9003						1.15		1111	1.53
1478-TCDF	NotFnd		0.9077						1.15		1111	1.53
1369/1237-TCDF	NotFnd		0.9241						1.15		1111	1.53
2467-TCDF	NotFnd		0.9299						1.15		1111	1.53
2368-TCDF	NotFnd		0.9363						1.15		1111	1.53
1238/1234/1678/1469/1236-TCDF	NotFnd		0.9413						1.15		1111	1.53
1278-TCDF	NotFnd		0.9611						1.15		1111	1.53
1349-TCDF	NotFnd		0.9656						1.15		1111	1.53
1267-TCDF	NotFnd		0.9734						1.15		1111	1.53
2346/1249-TCDF	NotFnd		0.9823						1.15		1111	1.53
2347/1279-TCDF	NotFnd		0.9913						1.15		1111	1.53
2348-TCDF	NotFnd		0.9961						1.15		1111	1.53
2378-TCDF	**NotFnd**		**1.0009**						**1.15**		**1111**	**1.53**
2367/3467-TCDF	NotFnd		1.0175						1.15		1111	1.53
1269-TCDF	NotFnd		1.0287						1.15		1111	1.53
1239-TCDF	NotFnd		1.0411						1.15		1111	1.53
1289-TCDF	NotFnd		1.0924						1.15		1111	1.53
13468/12468-PeCDF	NotFnd		0.8956						1.08		1230	1.95
13678/13467/12467-PeCDF	NotFnd		0.9530						1.08		1198	1.9
12368/13478/12478-PeCDF	NotFnd		0.9590						1.08		1198	1.9
14678-PeCDF	NotFnd		0.9629						1.08		1198	1.9
13479-PeCDF	NotFnd		0.9662						1.08		1198	1.9
13469/12479-PeCDF	NotFnd		0.9753						1.08		1198	1.9
12346-PeCDF	NotFnd		0.9806						1.08		1198	1.9

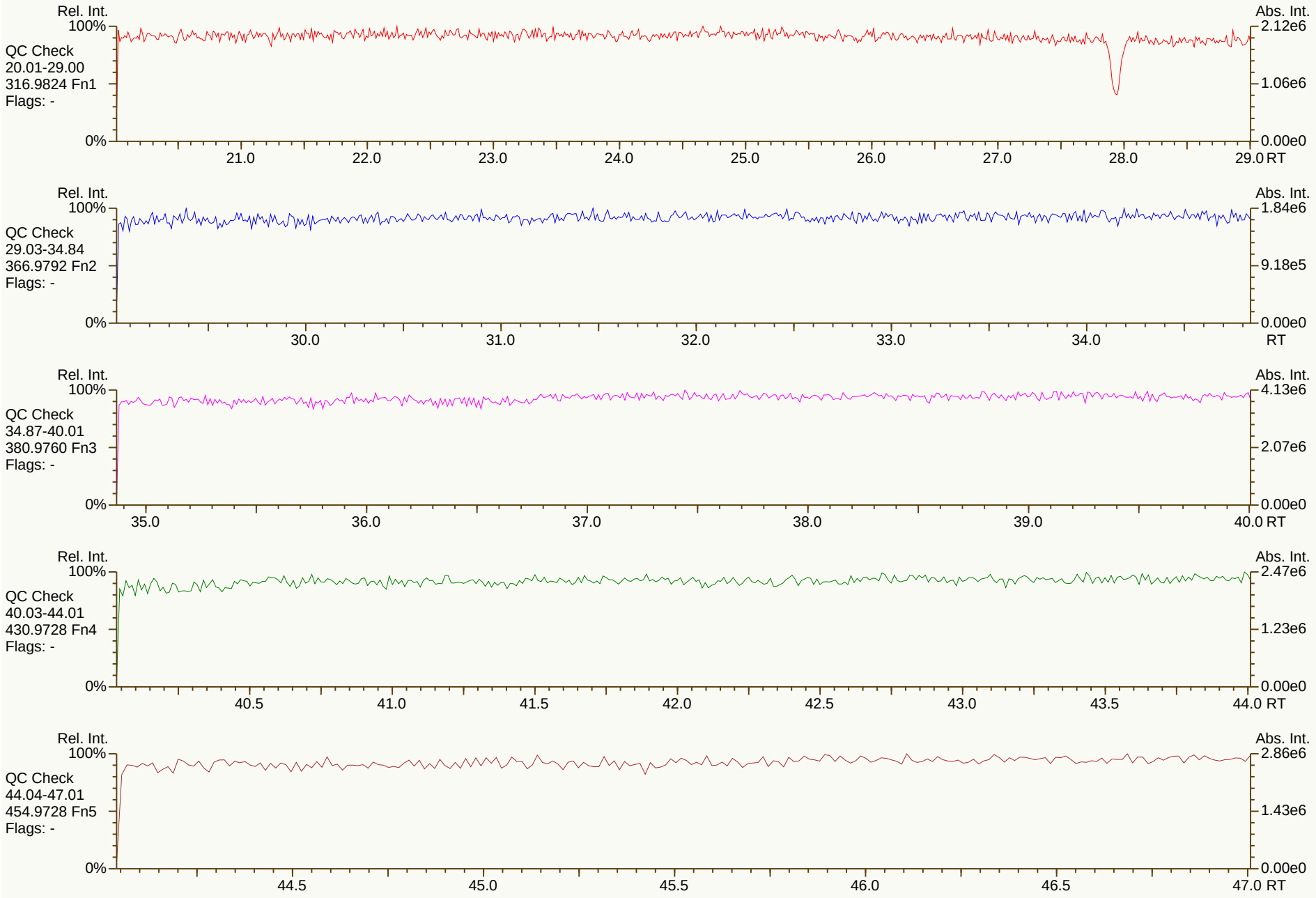
Lab ID: A5045_10493_DF_005 **Acq'd:** 05 Jan 2013 22:43 MDC **Wt/Vol:** 1 **Cal:** BCS3_10493_DF_PAB

Client ID: Reagent Blank **UTP:** 06-Jan-2013 09:35 MDC **J-level:** 10 pg **Split:** 2 **Checkcode:** 777-690-WLZ

Datafile: 130105P2-08 **Report:** 06 Jan 2013 09:40 MC **Stds (pg):** JS: 2000 ES: 4000 CS/SS: 4000, 1600 (37Cl)

Name	Act RT	QC	Pred. RRT	Act. RRT	ΔSecs	Response	Ra	OK	RRF	Conc.	Noise	DL
23468/12469-PeCDF	NotFnd		0.9839						1.08		1198	1.9
12347-PeCDF	NotFnd		0.9868						1.08		1198	1.9
12348-PeCDF	NotFnd		0.9930						1.08		1198	1.9
12378-PeCDF	**NotFnd**		**1.0006**						**1.07**		**1198**	**1.92**
12678/12367-PeCDF	NotFnd		1.0110						1.08		1198	1.9
12379-PeCDF	NotFnd		1.0173						1.08		1198	1.9
12679-PeCDF	NotFnd		0.9914						1.08		1198	1.9
23467/12369-PeCDF	NotFnd		0.9962						1.08		1198	1.9
23478-PeCDF	**NotFnd**		**1.0005**						**1.10**		**1198**	**1.88**
23478/12489-PeCDF	NotFnd		1.0006						1.10		1198	1.88
12489-PeCDF	NotFnd		1.0023						1.08		1198	1.9
12349-PeCDF	NotFnd		1.0123						1.08		1198	1.9
12389-PeCDF	NotFnd		1.0397						1.08		1198	1.9
123468-HxCDF	NotFnd		0.9556						1.23		1330	2.31
124678/134678-HxCDF	NotFnd		0.9621						1.23		1330	2.31
134679-HxCDF	NotFnd		0.9695						1.23		1330	2.31
124679-HxCDF	NotFnd		0.9759						1.23		1330	2.31
124689-HxCDF	NotFnd		0.9830						1.23		1330	2.31
123467-HxCDF	NotFnd		0.9966						1.23		1330	2.31
123478-HxCDF	**NotFnd**		**1.0005**						**1.28**		**1330**	**2.33**
123678-HxCDF	**NotFnd**		**1.0005**						**1.19**		**1330**	**2.11**
123479-HxCDF	NotFnd		1.0056						1.23		1330	2.31
123469-HxCDF	NotFnd		1.0103						1.23		1330	2.31
123679-HxCDF	NotFnd		0.9933						1.23		1330	2.31
234678-HxCDF	**NotFnd**		**1.0005**						**1.23**		**1330**	**2.22**
234678/123689-HxCDF	NotFnd		1.0004						1.23		1330	2.22
123689-HxCDF	NotFnd		1.0009						1.23		1330	2.31
123789-HxCDF	**NotFnd**		**1.0005**						**1.23**		**1330**	**2.67**
123789/123489-HxCDF	NotFnd		0.9869						1.23		1330	2.67
123489-HxCDF	NotFnd		1.0013						1.23		1330	2.31
1234678-HpCDF	**40.91**		**1.0004**	**1.0002**	**-0.5**	**4.55E+04**	**1.04**	**Y**	**1.49**	**7.76**	**1548**	**2.94**
1234679-HpCDF	NotFnd		1.0104						1.45		1548	3.35
1234689-HpCDF	NotFnd		1.0152						1.45		1548	3.35
1234789-HpCDF	**NotFnd**		**1.0003**						**1.40**		**1548**	**3.85**
OCDF	**46.11**		**1.0004**	**1.0003**	**-0.3**	**7.13E+05**	**0.90**	**Y**	**1.15**	**164**	**1434**	**4.05**
OCDF-a	46.10		1.0002	1.0001	-0.3	2.24E+04	1.46	N	0.07	87.9	1778	85.5

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_005.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 scc: 777-690 *PKD: n/a Printed: 06-Jan-2013 09:52 Page 1 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



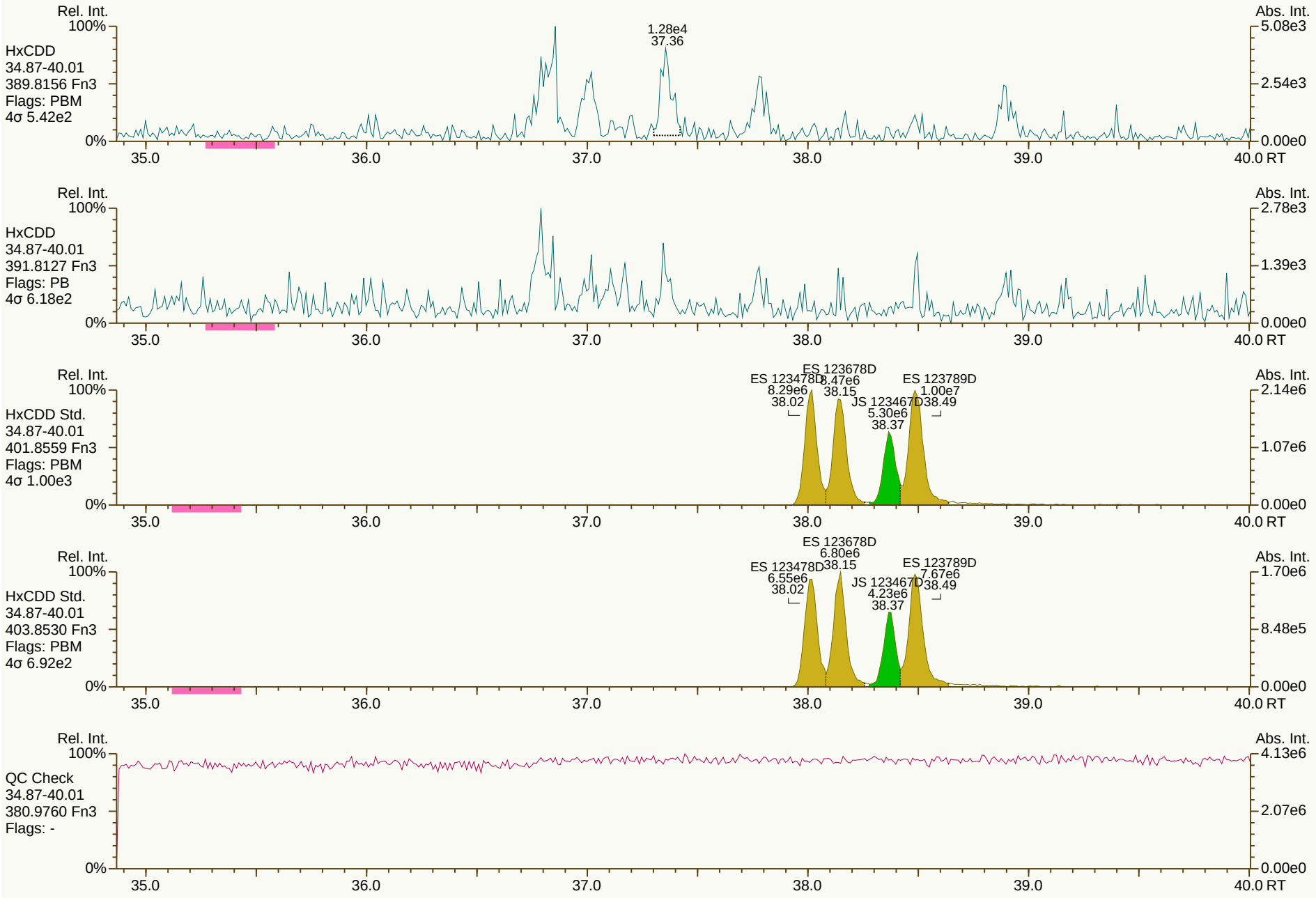
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7395, 5341, 2202 scc: 777-690 *Revised: 06-Jan-2013 09:35 (MDC) Printed: 06-Jan-2013 09:52 Page 2 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



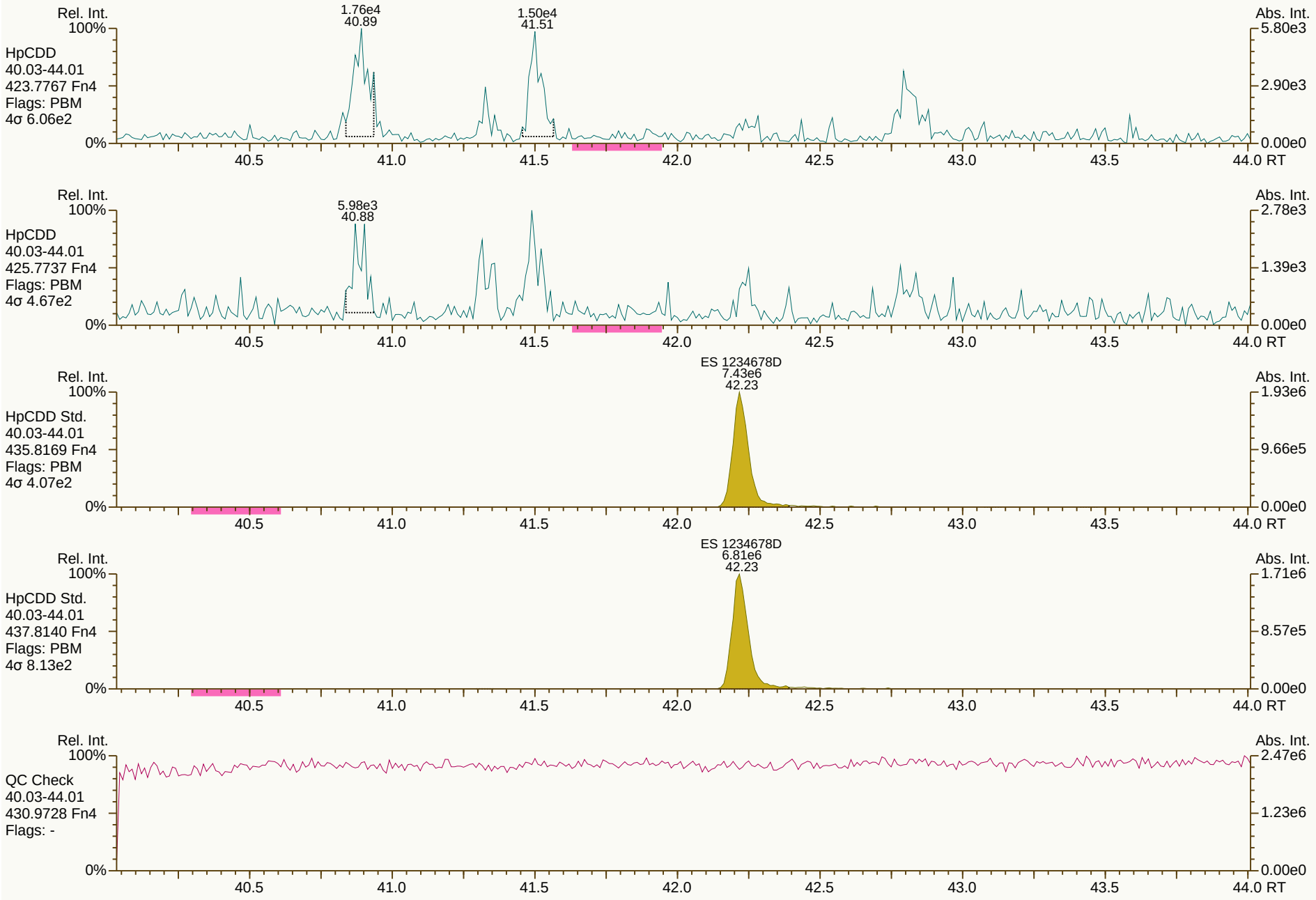
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5996, 0411 scc: 777-690 *Revised: 06-Jan-2013 09:35 (MDC) Printed: 06-Jan-2013 09:52 Page 3 of 12*

SGS-AP ID: A5045_10493_DF_005 | **Sample ID: Reagent Blank** | **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 | **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** | **User: MDC Datafile: 130105P2-08**



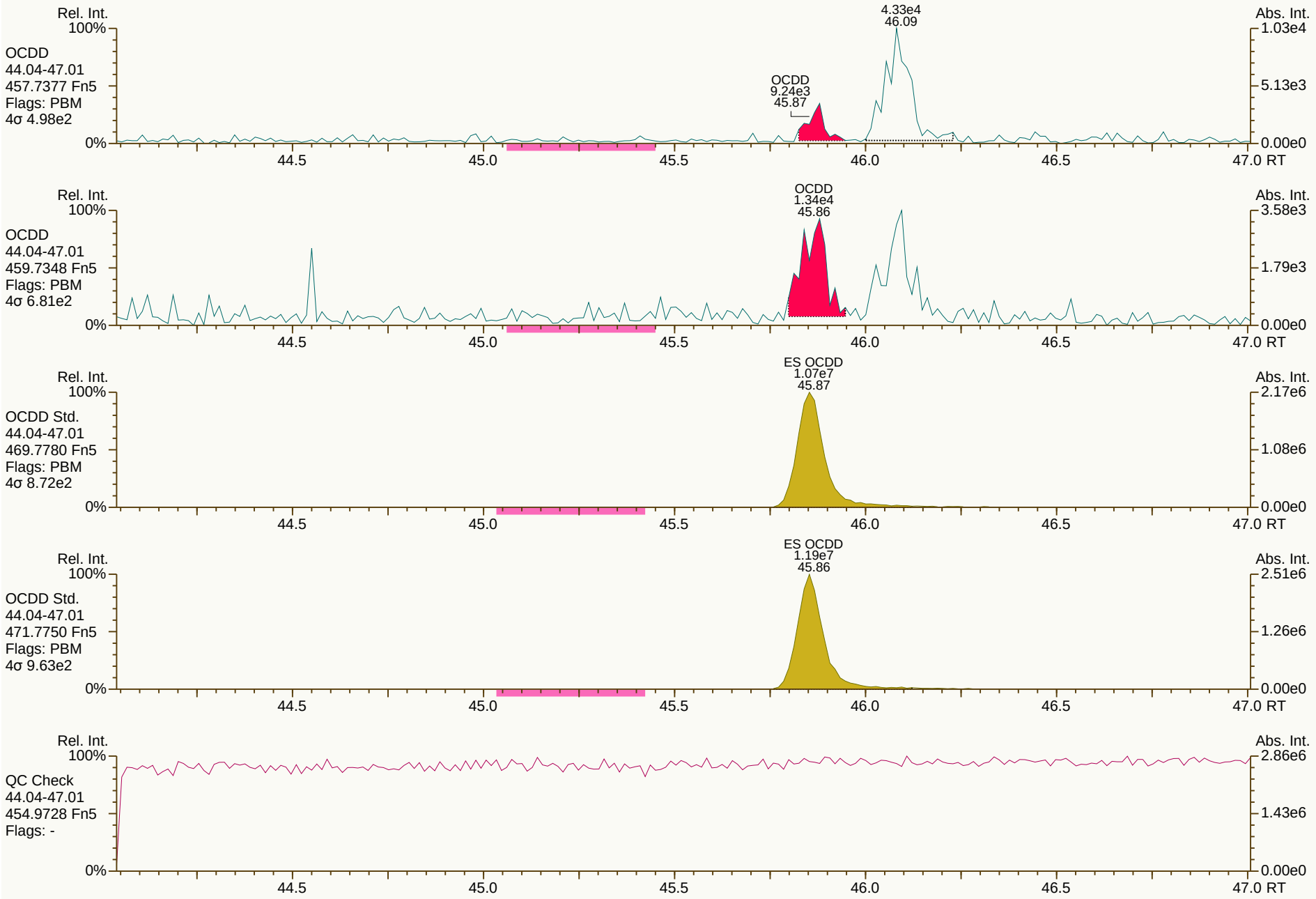
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1319, 5793 scc: 777-690 *Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:52 Page 4 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



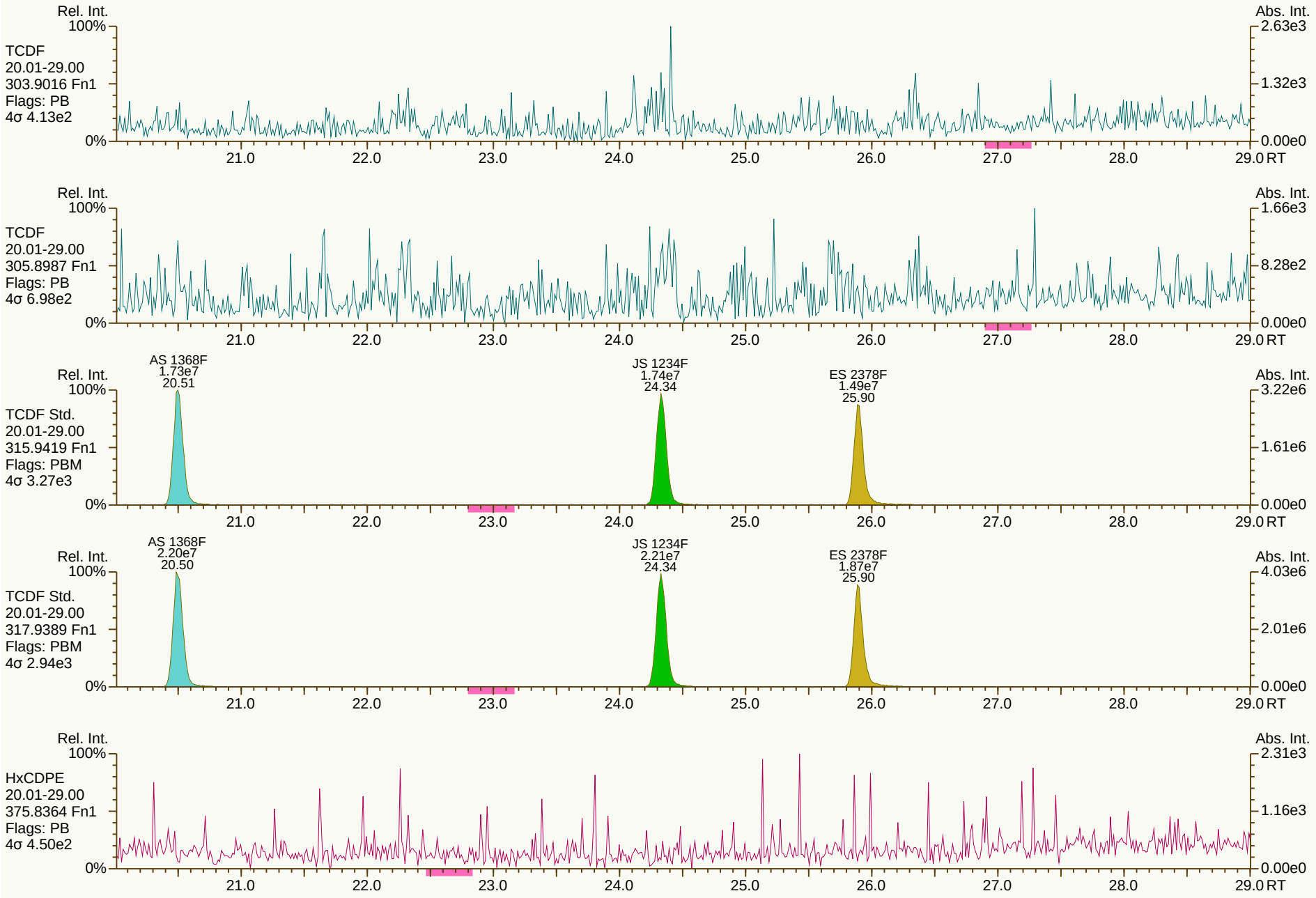
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 6216, 9451 scc: 777-690 *Revised: 06-Jan-2013 09:35 (MDC) Printed: 06-Jan-2013 09:52 Page 5 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_005.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4945, 8144 scc: 777-690 *Revised: 06-Jan-2013 09:35 (MDC) Printed: 06-Jan-2013 09:52 Page 6 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_005.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 2430, 6371, 7248 scc: 777-690 *Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:52 Page 7 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



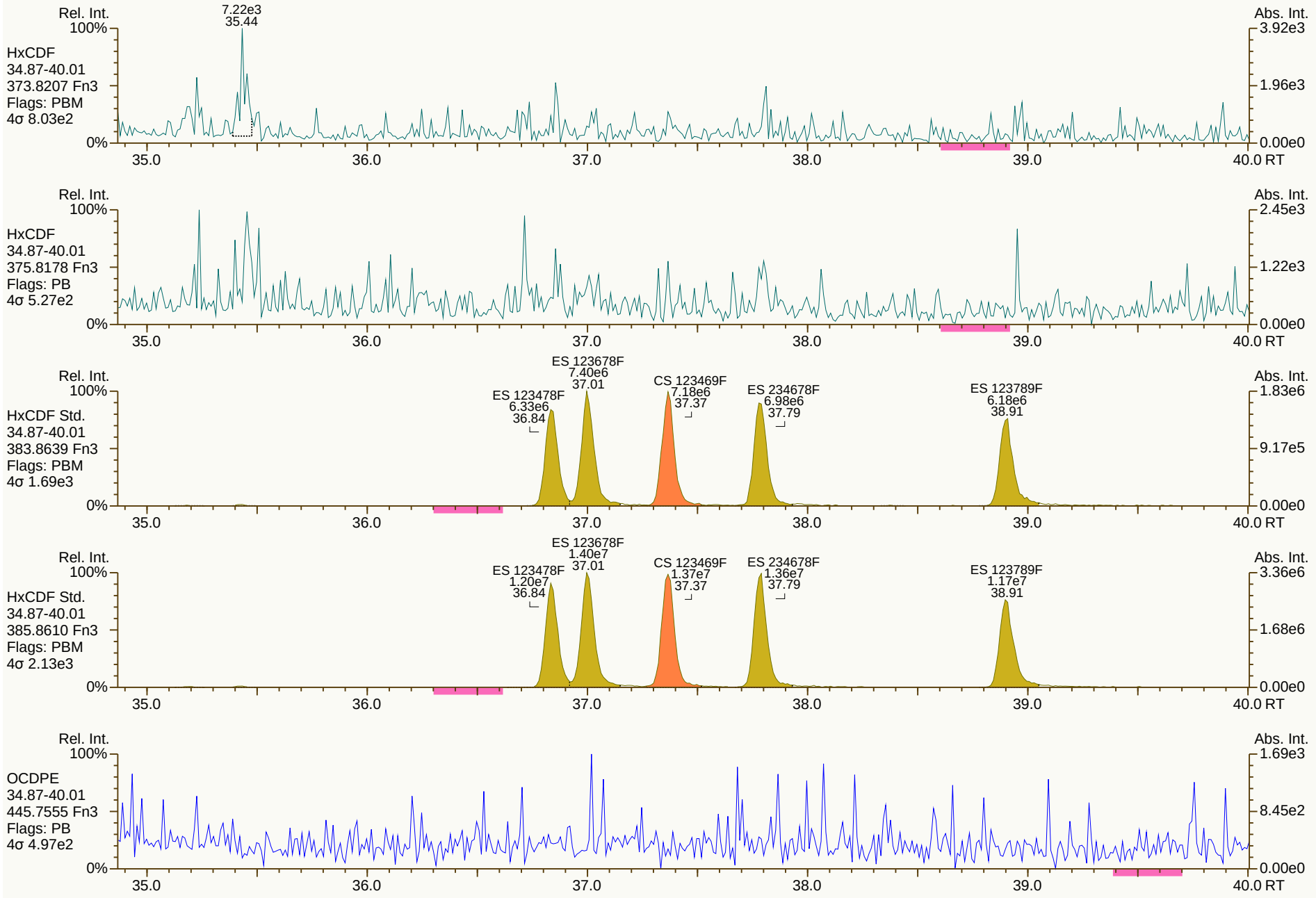
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_005.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4528 scc: 777-690 *Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:52 Page 8 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



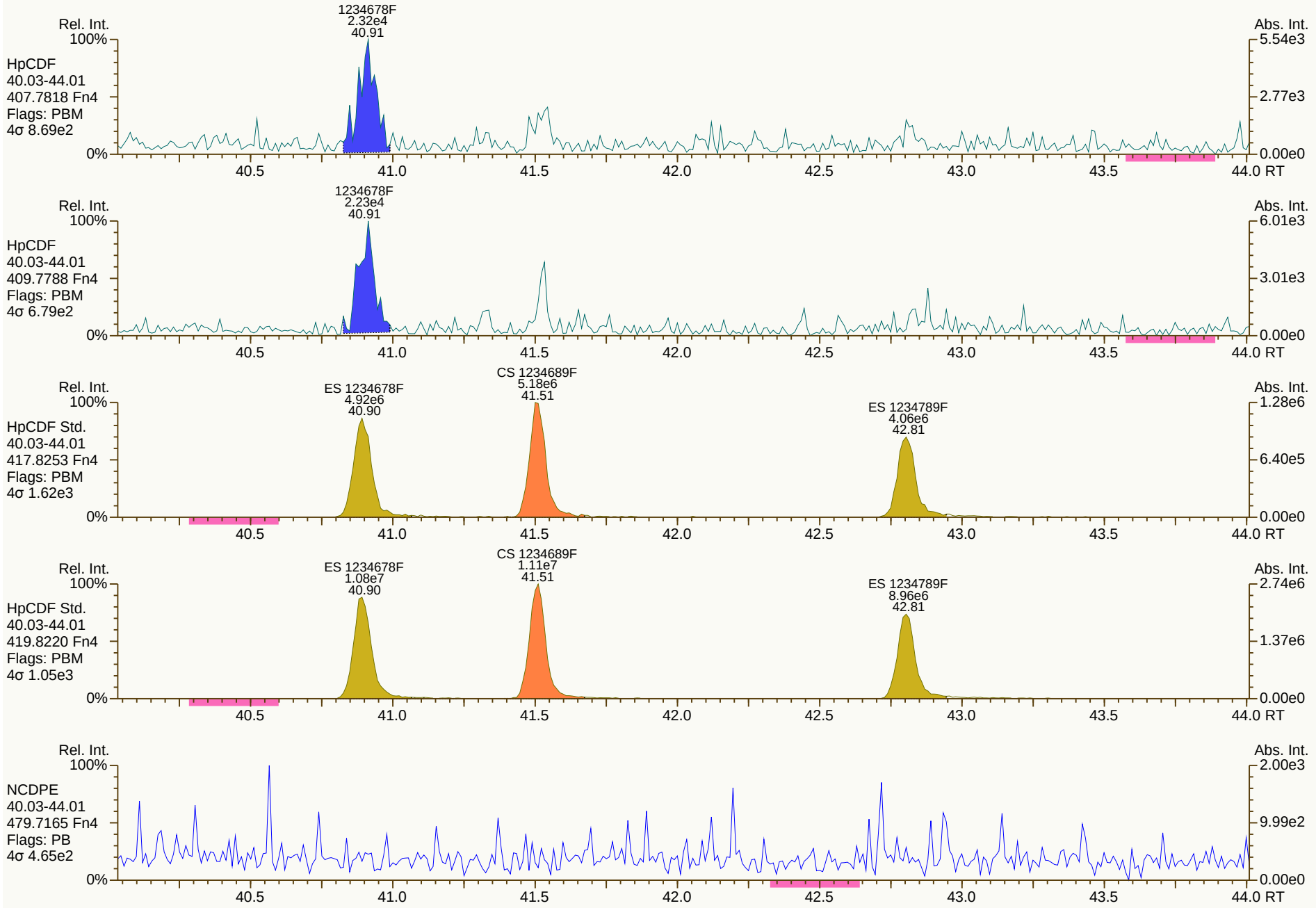
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_005.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 9954, 1734, 2038 scc: 777-690 *Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:52 Page 9 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



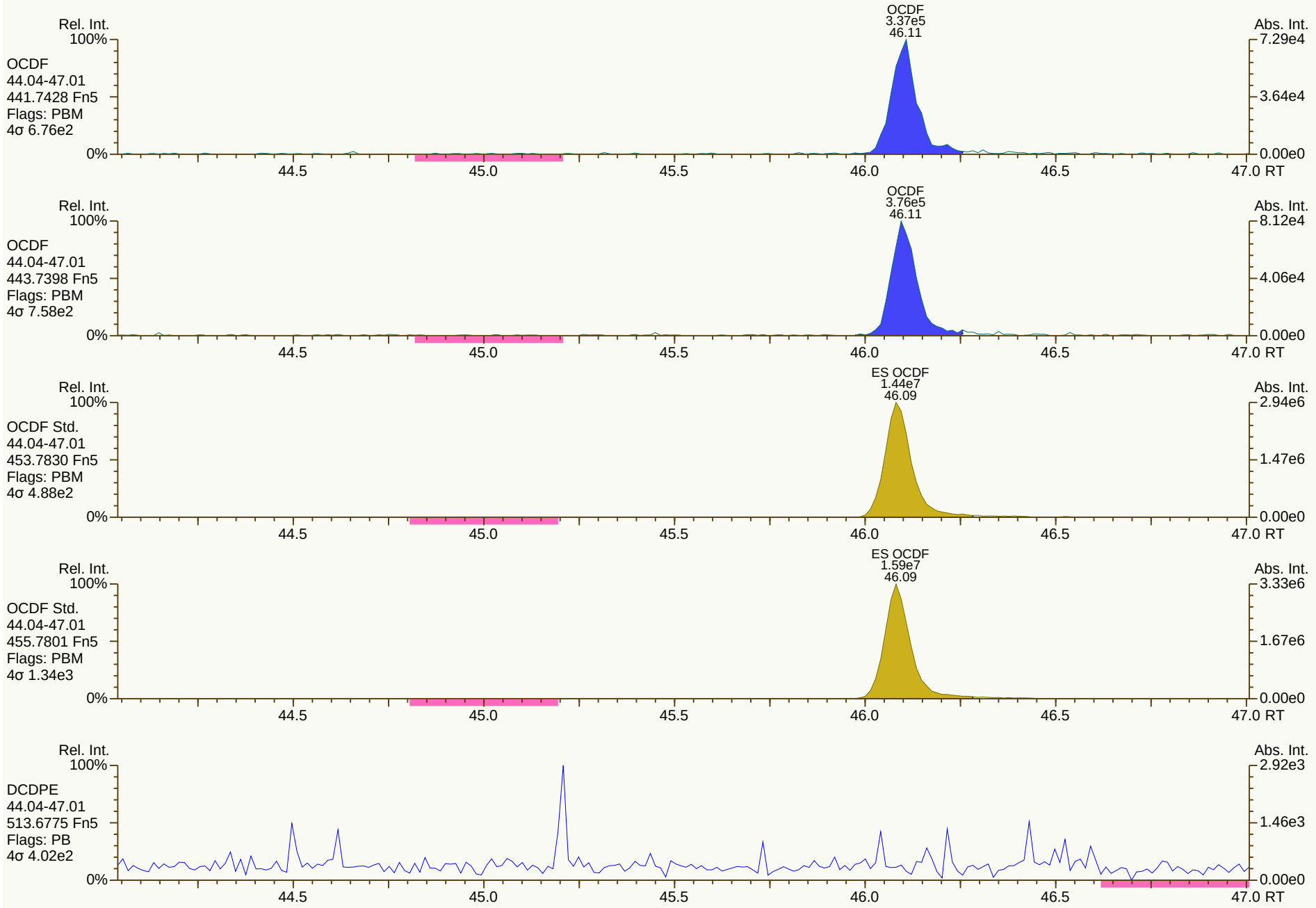
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_005.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7946, 9690, 3868 scc: 777-690 *Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:52 Page 10 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_005.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1794, 7530, 5274 scc: 777-690 *Revised: 06-Jan-2013 09:35 (MDC) Printed: 06-Jan-2013 09:52 Page 11 of 12*

SGS-AP ID: A5045_10493_DF_005 **Sample ID: Reagent Blank** **Acq: 05-JAN-2013 22:43:26**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 37** **User: MDC Datafile: 130105P2-08**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\A5045_10493_DF_005.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1086, 4855, 1508 scc: 777-690 *Revised: 06-Jan-2013 09:34 (MDC) Printed: 06-Jan-2013 09:52 Page 12 of 12*

SGS Analytical Perspectives — Run Log **Project: A5045_10493_DF**

Instrument: MM1 (AutoSpec-Ultima) MS Experiment: DF_CL4-8B GC Program: DB5MS_60M

#	Datafile	Vial#	Lab ID	Wt/Vol	Client/Sample ID	Analyst(s)	Checkcode	Acq Date	Acq Time
1	130105P2-01	31	BCS3_10493_DF_PA	1.00	BCS3_10493_DF_PA	MDC	424-138	05-JAN-2013	16:43:15
2	130105P2-02	15	SBS_130105_DF_PB	1.00	solvent blank	MDC	935-834	05-JAN-2013	17:34:41
3	130105P2-03	32	MB1_10493_DF_SDS	1.00	MB1_10493_DF_SDS	MDC	148-498	05-JAN-2013	18:26:11
4	130105P2-04	33	A5045_10493_DF_001	1.00	Field Blank	MDC	436-219	05-JAN-2013	19:17:37
5	130105P2-05	34	A5045_10493_DF_002	1.00	LCD/Run 01	MDC	879-504	05-JAN-2013	20:09:02
6	130105P2-06	35	A5045_10493_DF_003	1.00	LCD/Run 02	MDC	127-600	05-JAN-2013	21:00:28
7	130105P2-07	36	A5045_10493_DF_004	1.00	LCD/Run 03	MDC	503-843	05-JAN-2013	21:51:57
8	130105P2-08	37	A5045_10493_DF_005	1.00	Reagent Blank	MDC	777-690	05-JAN-2013	22:43:26
9	130105P2-09	31	BCS3_10493_DF_PB	1.00	BCS3_10493_DF_PB	MDC	997-611	05-JAN-2013	23:34:57

REVIEWED
By Michael D H Chu at 9:59 am, Jan 06, 2013

REVIEWED
By Heather Steele at 5:02 pm, Jan 12, 2013

Dioxin/Furan BCS3 Summary — **Report Created: 06-Jan-2013 09:37 MC**

	BCS3_10493_DF_PA 05-JAN-2013 16:43 130105P2-01			BCS3_10493_DF_PB 05-JAN-2013 23:34 130105P2-09			BCS3_10493_DF_PAB ICAL: MM1_DF_03312020A_19SEPT2012						
Name	**RT**	**Response**	**Ra**	**RT**	**Response**	**Ra**	**ICAL**	**RRF(A)**	**RRF(B)**	**AB Avg**	**A-I**	**B-I**	**AB RPD**
2378-TCDD	26.95	3.23E+06	0.81 Y	26.94	3.52E+06	0.78 Y	1.15	1.16	1.15	1.15	2%	0%	2%
12378-PeCDD	33.34	1.16E+07	1.62 Y	33.34	1.31E+07	1.62 Y	1.08	1.06	1.06	1.06	-2%	-2%	0%
123478-HxCDD	38.02	1.15E+07	1.24 Y	38.01	1.28E+07	1.26 Y	1.20	1.13	1.14	1.13	-6%	-6%	1%
123678-HxCDD	38.15	1.21E+07	1.26 Y	38.15	1.39E+07	1.27 Y	1.10	1.15	1.19	1.17	5%	8%	3%
123789-HxCDD	38.50	1.21E+07	1.23 Y	38.50	1.38E+07	1.26 Y	1.12	1.00	1.02	1.01	-11%	-9%	2%
1234678-HpCDD	42.22	1.05E+07	1.04 Y	42.23	1.22E+07	1.05 Y	1.08	1.08	1.11	1.09	0%	2%	3%
OCDD	45.86	1.90E+07	0.91 Y	45.86	2.10E+07	0.90 Y	1.11	1.20	1.19	1.19	8%	7%	1%
2378-TCDF	25.92	4.81E+06	0.77 Y	25.91	5.61E+06	0.79 Y	1.10	1.11	1.18	1.15	1%	8%	7%
12378-PeCDF	31.59	1.97E+07	1.49 Y	31.58	2.27E+07	1.55 Y	1.07	1.05	1.08	1.07	-1%	1%	3%
23478-PeCDF	32.91	1.94E+07	1.51 Y	32.91	2.22E+07	1.56 Y	1.14	1.09	1.10	1.10	-4%	-4%	0%
123478-HxCDF	36.85	1.65E+07	1.25 Y	36.84	1.86E+07	1.24 Y	1.30	1.28	1.28	1.28	-1%	-1%	0%
123678-HxCDF	37.01	1.81E+07	1.25 Y	37.01	2.02E+07	1.26 Y	1.27	1.19	1.19	1.19	-6%	-6%	0%
234678-HxCDF	37.80	1.73E+07	1.24 Y	37.79	1.94E+07	1.24 Y	1.27	1.24	1.23	1.23	-2%	-3%	1%
123789-HxCDF	38.92	1.67E+07	1.26 Y	38.91	1.87E+07	1.24 Y	1.25	1.24	1.22	1.23	-1%	-3%	2%
1234678-HpCDF	40.90	1.66E+07	1.02 Y	40.90	1.87E+07	1.05 Y	1.44	1.48	1.51	1.49	3%	5%	2%
1234789-HpCDF	42.80	1.29E+07	1.04 Y	42.81	1.47E+07	1.03 Y	1.50	1.40	1.40	1.40	-6%	-7%	1%
OCDF	46.09	2.35E+07	0.90 Y	46.09	2.74E+07	0.90 Y	1.06	1.15	1.15	1.15	9%	8%	0%
ES 2378-TCDD	26.92	2.78E+07	0.81 Y	26.92	3.08E+07	0.81 Y	1.05	1.06	1.05	1.05	0%	0%	0%
ES 12378-PeCDD	33.32	2.20E+07	1.61 Y	33.32	2.48E+07	1.66 Y	0.81	0.84	0.85	0.84	4%	5%	1%
ES 123478-HxCDD	38.00	2.03E+07	1.30 Y	38.00	2.26E+07	1.25 Y	1.03	1.02	0.98	1.00	-1%	-5%	4%
ES 123678-HxCDD	38.13	2.10E+07	1.26 Y	38.13	2.34E+07	1.27 Y	1.17	1.06	1.02	1.04	-9%	-13%	4%
ES 123789-HxCDD	38.48	2.42E+07	1.27 Y	38.47	2.71E+07	1.28 Y	1.17	1.22	1.18	1.20	4%	0%	3%
ES 1234678-HpCDD	42.21	1.94E+07	1.07 Y	42.21	2.21E+07	1.07 Y	1.00	0.97	0.96	0.97	-3%	-4%	2%
ES OCDD	45.84	3.17E+07	0.89 Y	45.85	3.54E+07	0.90 Y	0.80	0.80	0.77	0.78	-1%	-4%	4%
ES 2378-TCDF	25.90	4.34E+07	0.78 Y	25.89	4.74E+07	0.78 Y	1.02	1.01	1.00	1.01	-1%	-1%	1%
ES 12378-PeCDF	31.57	3.74E+07	1.52 Y	31.56	4.21E+07	1.57 Y	0.85	0.87	0.89	0.88	2%	5%	2%
ES 23478-PeCDF	32.89	3.54E+07	1.55 Y	32.89	4.03E+07	1.60 Y	0.81	0.83	0.85	0.84	2%	5%	3%
ES 123478-HxCDF	36.83	2.57E+07	0.52 Y	36.82	2.91E+07	0.53 Y	1.44	1.29	1.26	1.28	-10%	-12%	2%
ES 123678-HxCDF	37.00	3.03E+07	0.54 Y	36.99	3.41E+07	0.51 Y	1.61	1.53	1.48	1.50	-6%	-8%	3%
ES 234678-HxCDF	37.78	2.79E+07	0.52 Y	37.77	3.16E+07	0.52 Y	1.67	1.40	1.37	1.39	-16%	-18%	2%
ES 123789-HxCDF	38.90	2.70E+07	0.53 Y	38.89	3.07E+07	0.52 Y	1.32	1.36	1.33	1.34	3%	1%	2%
ES 1234678-HpCDF	40.88	2.25E+07	0.44 Y	40.88	2.48E+07	0.46 Y	1.16	1.13	1.08	1.10	-3%	-7%	5%
ES 1234789-HpCDF	42.79	1.84E+07	0.45 Y	42.79	2.11E+07	0.45 Y	1.02	0.93	0.92	0.92	-9%	-10%	1%
ES OCDF	46.07	4.10E+07	0.90 Y	46.08	4.79E+07	0.91 Y	1.17	1.03	1.04	1.04	-12%	-11%	1%

Dioxin/Furan BCS3 Summary — **Report Created: 06-Jan-2013 09:37 MC**

	BCS3_10493_DF_PA 05-JAN-2013 16:43 130105P2-01			BCS3_10493_DF_PB 05-JAN-2013 23:34 130105P2-09			BCS3_10493_DF_PAB ICAL: MM1_DF_03312020A_19SEPT2012						
Name	**RT**	**Response**	**Ra**	**RT**	**Response**	**Ra**	**ICAL**	**RRF(A)**	**RRF(B)**	**AB Avg**	**A-I**	**B-I**	**AB RPD**
JS 1234-TCDD	26.18	1.32E+07	0.78 Y	26.17	1.46E+07	0.83 Y	-						
JS 1234-TCDF	24.35	2.15E+07	0.78 Y	24.34	2.36E+07	0.80 Y	-						
JS 123467-HxCDD	38.35	4.97E+06	1.27 Y	38.35	5.75E+06	1.27 Y	-						
CS 37Cl-2378-TCDD	26.95	1.31E+07	-	26.95	1.45E+07	-	1.22	1.25	1.24	1.24	2%	1%	0%
CS 12347-PeCDD	32.73	2.31E+07	1.61 Y	32.72	2.58E+07	1.69 Y	0.81	0.88	0.88	0.88	8%	9%	1%
CS 12346-PeCDF	30.94	4.54E+07	1.54 Y	30.93	4.96E+07	1.55 Y	0.91	1.06	1.05	1.05	16%	15%	1%
CS 123469-HxCDF	37.36	2.78E+07	0.54 Y	37.36	3.14E+07	0.53 Y	1.44	1.40	1.36	1.38	-3%	-5%	2%
CS 1234689-HpCDF	41.50	2.15E+07	0.44 Y	41.50	2.44E+07	0.44 Y	1.14	1.08	1.06	1.07	-5%	-7%	2%
SS 37Cl-2378-TCDD	26.95	1.31E+07	-	26.95	1.45E+07	-	1.16	1.18	1.18	1.18	2%	2%	0%
SS 12347-PeCDD	32.73	2.31E+07	1.61 Y	32.72	2.58E+07	1.69 Y	1.01	1.05	1.04	1.04	3%	3%	0%
SS 12346-PeCDF	30.94	4.54E+07	1.54 Y	30.93	4.96E+07	1.55 Y	1.08	1.21	1.18	1.20	12%	9%	3%
SS 123469-HxCDF	37.36	2.78E+07	0.54 Y	37.36	3.14E+07	0.53 Y	0.90	0.92	0.92	0.92	2%	2%	1%
SS 1234689-HpCDF	41.50	2.15E+07	0.44 Y	41.50	2.44E+07	0.44 Y	0.98	0.95	0.98	0.97	-3%	0%	3%
AS 1368-TCDD	22.69	2.77E+07	0.79 Y	22.68	3.05E+07	0.79 Y	1.11	1.05	1.04	1.05	-5%	-6%	1%
AS 1368-TCDF	20.52	5.39E+07	0.78 Y	20.51	5.85E+07	0.79 Y	1.23	1.26	1.24	1.25	3%	1%	1%
FS 1278-TCDD	NotFnd	-	-	NotFnd	-	-	-						
FS 12478-PeCDD	NotFnd	-	-	NotFnd	-	-	-						
FS 123468-HxCDD	NotFnd	-	-	NotFnd	-	-	-						
FS 1234679-HpCDD	NotFnd	-	-	NotFnd	-	-	-						
TS 1378-TCDD	NotFnd	-	-	NotFnd	-	-	-						
OCDD-a	45.85	1.05E+06	2.61 Y	45.85	1.27E+06	2.39 Y	0.07	0.07	0.07	0.07	1%	9%	8%
OCDF-a	46.09	1.40E+06	2.63 Y	46.09	1.59E+06	2.40 Y	0.06	0.07	0.07	0.07	10%	7%	3%
Total TCDD	-	-	-	-	-	-	1.15	1.16	1.15	1.15	2%	0%	2%
Total PeCDD	-	-	-	-	-	-	1.08	1.06	1.06	1.06	-2%	-2%	0%
Total HxCDD	-	-	-	-	-	-	1.14	1.09	1.11	1.10	-4%	-2%	2%
Total HpCDD	-	-	-	-	-	-	1.08	1.08	1.11	1.09	0%	2%	3%
Total TCDF	-	-	-	-	-	-	1.10	1.11	1.18	1.15	1%	8%	7%
Total PeCDF	-	-	-	-	-	-	1.10	1.07	1.09	1.08	-3%	-1%	1%
Total HxCDF	-	-	-	-	-	-	1.27	1.24	1.23	1.23	-3%	-3%	1%
Total HpCDF	-	-	-	-	-	-	1.47	1.44	1.45	1.45	-2%	-1%	1%

PCDD/PCDF RT Window & Isomer Specificity Standards

	BCS3_10493_DF_PA 05-JAN-2013 16:43 130105P2-01	BCS3_10493_DF_PB 05-JAN-2013 23:34 130105P2-09	BCS3_10493_DF_PAB ICAL: MM1_DF_03312020A_19SEPT2012
Name	**RT**		
Window Defining Standards Results			
First Eluting Isomer			
1368-TCDD	22.72	22.71	
12479/12468-PeCDD	30.37	30.36	
124679/124689-HxCDD	35.99	35.99	
1234679-HpCDD	41.33	41.33	
1368-TCDF	20.55	20.54	
13468/12468-PeCDF	28.25	28.25	
123468-HxCDF	35.19	35.19	
1234678-HpCDF	40.90	40.90	
Last Eluting Isomer			
1289-TCDD	28.11	28.11	
12389-PeCDD	33.88	33.87	
123789-HxCDD	38.50	38.50	
1234678-HpCDD	42.22	42.23	
1289-TCDF	28.29	28.29	
12389-PeCDF	34.21	34.21	
123789-HxCDF	38.92	38.91	
1234789-HpCDF	42.80	42.81	
Isomer Specificity Test Standard Results			
1239-TCDD	26.78	26.78	
2378-TCDD	26.95	26.94	
2348-TCDF	25.80	25.79	
2378-TCDF	25.92	25.91	

METHOD 23 **PCDD/F CALIBRATION VERIFICATION** **FORM 4A**

Lab Name: SGS Analytical Perspectives

Initial Calibration: ICAL: MM1_DF_03312020A_19SEPT2012

Instrument ID: MM1 GC Column ID: ZB-5ms

VER Data Filename: 130105P2-01 Analysis Date: 05-JAN-2013 16:43:15

NATIVE ANALYTES	M/Z's FORMING RATIO	ION ABUND. RATIO	QC LIMITS			OK	CONC. FOUND	RANGE (ng/mL)			OK
2,3,7,8-TCDD	M/M+2	0.81	0.65	-	0.89	Y	10.2	8	-	12	Y
1,2,3,7,8-PeCDD	M+2/M+4	1.62	1.32	-	1.78	Y	48.8	40	-	60	Y
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05	-	1.43	Y	46.9	40	-	60	Y
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05	-	1.43	Y	52.4	40	-	60	Y
1,2,3,7,8,9-HxCDD	M+2/M+4	1.23	1.05	-	1.43	Y	44.3	40	-	60	Y
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.04	0.88	-	1.20	Y	49.9	40	-	60	Y
OCDD	M+2/M+4	0.91	0.76	-	1.02	Y	108	80	-	120	Y
2,3,7,8-TCDF	M/M+2	0.77	0.65	-	0.89	Y	10.1	8	-	12	Y
1,2,3,7,8-PeCDF	M+2/M+4	1.49	1.32	-	1.78	Y	49.3	40	-	60	Y
2,3,4,7,8-PeCDF	M+2/M+4	1.51	1.32	-	1.78	Y	48	40	-	60	Y
1,2,3,4,7,8-HxCDF	M+2/M+4	1.25	1.05	-	1.43	Y	49.4	40	-	60	Y
1,2,3,6,7,8-HxCDF	M+2/M+4	1.25	1.05	-	1.43	Y	47	40	-	60	Y
2,3,4,6,7,8-HxCDF	M+2/M+4	1.24	1.05	-	1.43	Y	48.9	40	-	60	Y
1,2,3,7,8,9-HxCDF	M+2/M+4	1.26	1.05	-	1.43	Y	49.5	40	-	60	Y
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.02	0.88	-	1.20	Y	51.5	40	-	60	Y
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.04	0.88	-	1.20	Y	46.8	40	-	60	Y
OCDF	M+2/M+4	0.90	0.76	-	1.02	Y	109	80	-	120	Y

Processed: 06 Jan 2013 09:38 Analyst: MC

METHOD 23 **PCDD/F CALIBRATION VERIFICATION** **FORM 4B**

Lab Name: SGS Analytical Perspectives

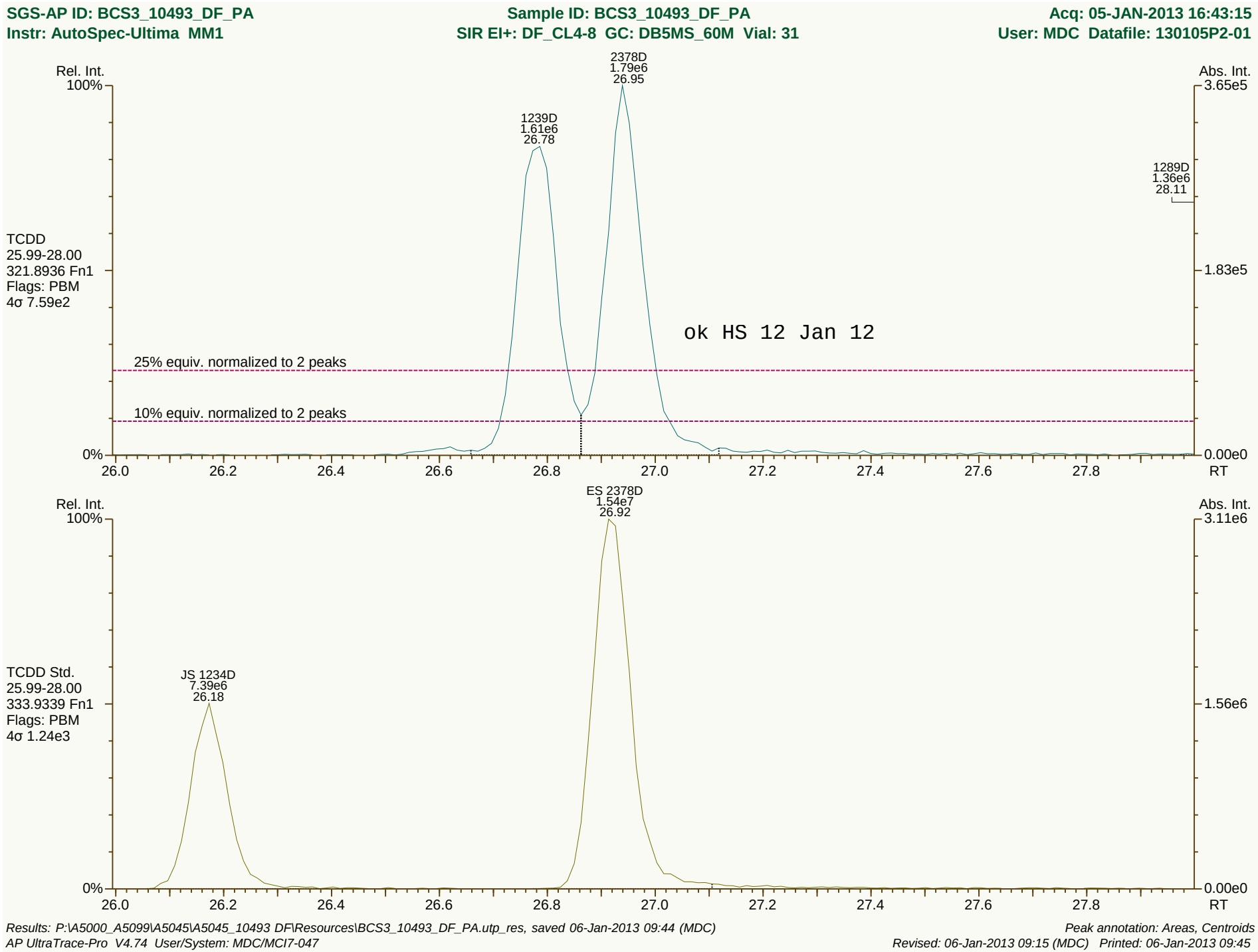
Initial Calibration: ICAL: MM1_DF_03312020A_19SEPT2012

Instrument ID: MM1 GC Column ID: ZB-5ms

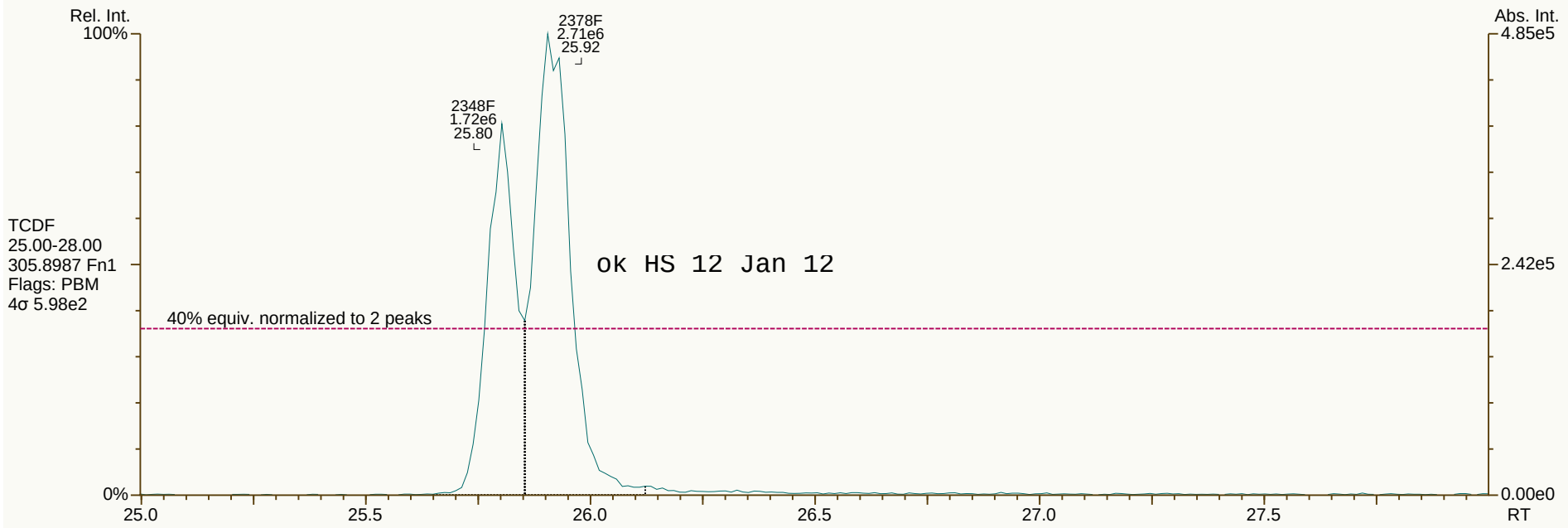
VER Data Filename: 130105P2-01 Analysis Date: 05-JAN-2013 16:43:15

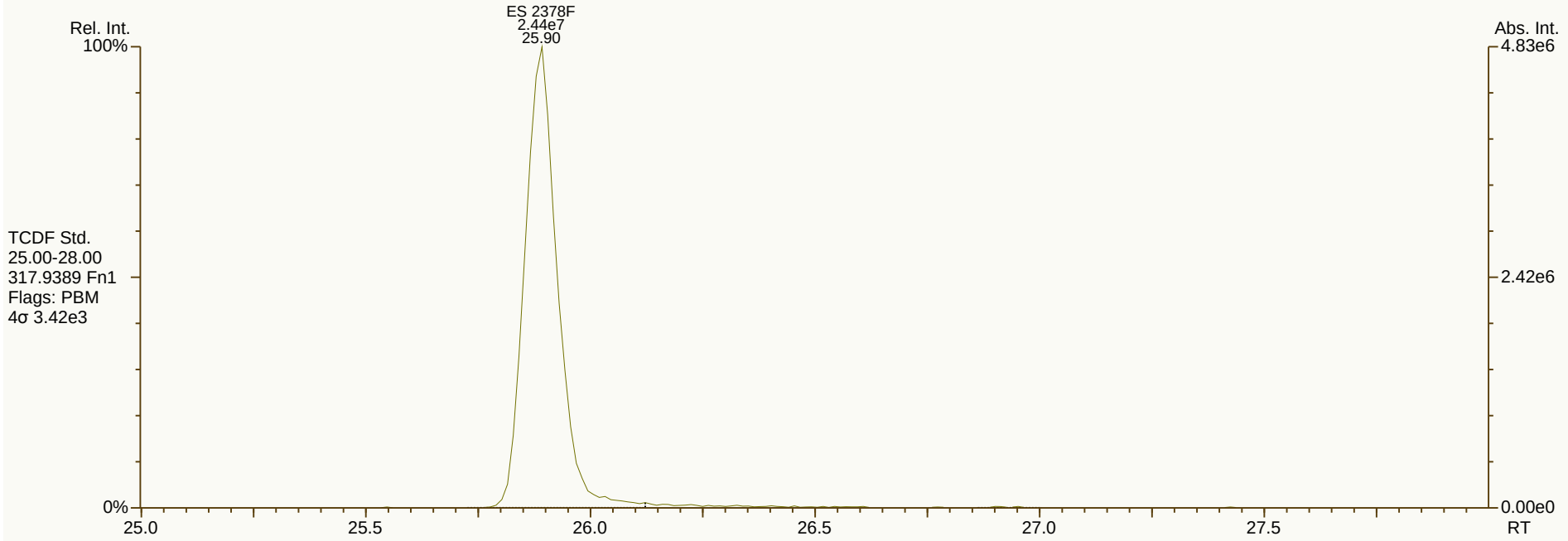
LABELED ANALYTES	M/Z's FORMING RATIO	ION ABUND. RATIO	QC LIMITS			OK	CONC. FOUND	RANGE (ng/mL)			OK
13C-2,3,7,8-TCDD	M/M+2	0.81	0.65	-	0.89	Y	100	70	-	130	Y
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.61	1.32	-	1.78	Y	104	70	-	130	Y
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.30	1.05	-	1.43	Y	98.7	70	-	130	Y
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05	-	1.43	Y	90.7	70	-	130	Y
13C-1,2,3,7,8,9-HxCDD	M+2/M+4	1.27	1.05	-	1.43	Y	104	70	-	130	Y
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88	-	1.20	Y	97.2	70	-	130	Y
13C-OCDD	M+2/M+4	0.89	0.76	-	1.02	Y	198	140	-	260	Y
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65	-	0.89	Y	99.3	70	-	130	Y
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32	-	1.78	Y	102	70	-	130	Y
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.55	1.32	-	1.78	Y	102	70	-	130	Y
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.52	0.43	-	0.59	Y	89.5	70	-	130	Y
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.54	0.43	-	0.59	Y	94.5	70	-	130	Y
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43	-	0.59	Y	84.1	70	-	130	Y
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43	-	0.59	Y	103	70	-	130	Y
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37	-	0.51	Y	97.2	70	-	130	Y
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37	-	0.51	Y	91.1	70	-	130	Y
13C-OCDF	M+2/M+4	0.90	0.76	-	1.02	Y	177	140	-	260	Y
SURROGATE STANDARDS											
37Cl-2,3,7,8-TCDD	n/a						40.7	28	-	52	Y
13C-1,2,3,4,7-PeCDD	M+2/M+4	1.61	1.32	-	1.78	Y	103	70	-	130	Y
13C-1,2,3,4,6-PeCDF	M+2/M+4	1.54	1.32	-	1.78	Y	112	70	-	130	Y
13C-1,2,3,4,6,9-HxCDF	M/M+2	0.54	0.43	-	0.59	Y	102	70	-	130	Y
13C-1,2,3,4,6,8,9-HpCDF	M/M+2	0.44	0.37	-	0.51	Y	96.9	70	-	130	Y

Processed: 06 Jan 2013 09:38 Analyst: MC


SGS-AP ID: BCS3_10493_DF_PA
Sample ID: BCS3_10493_DF_PA
Acq: 05-JAN-2013 16:43:15
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31
User: MDC Datafile: 130105P2-01
Rel. Int.
100%
0%
Abs. Int.
3.65e5
1.83e5
0.00e0
2378D
1.79e6
26.95
1239D
1.61e6
26.78
1289D
1.36e6
28.11
TCDD
25.99-28.00
321.8936 Fn1
Flags: PBM
4σ 7.59e2
ok HS 12 Jan 12
25% equiv. normalized to 2 peaks
10% equiv. normalized to 2 peaks
26.0
26.2
26.4
26.6
26.8
27.0
27.2
27.4
27.6
27.8
RT
ES 2378D
1.54e7
26.92
JS 1234D
7.39e6
26.18
TCDD Std.
25.99-28.00
333.9339 Fn1
Flags: PBM
4σ 1.24e3
3.11e6
1.56e6
0.00e0
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047
Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:45

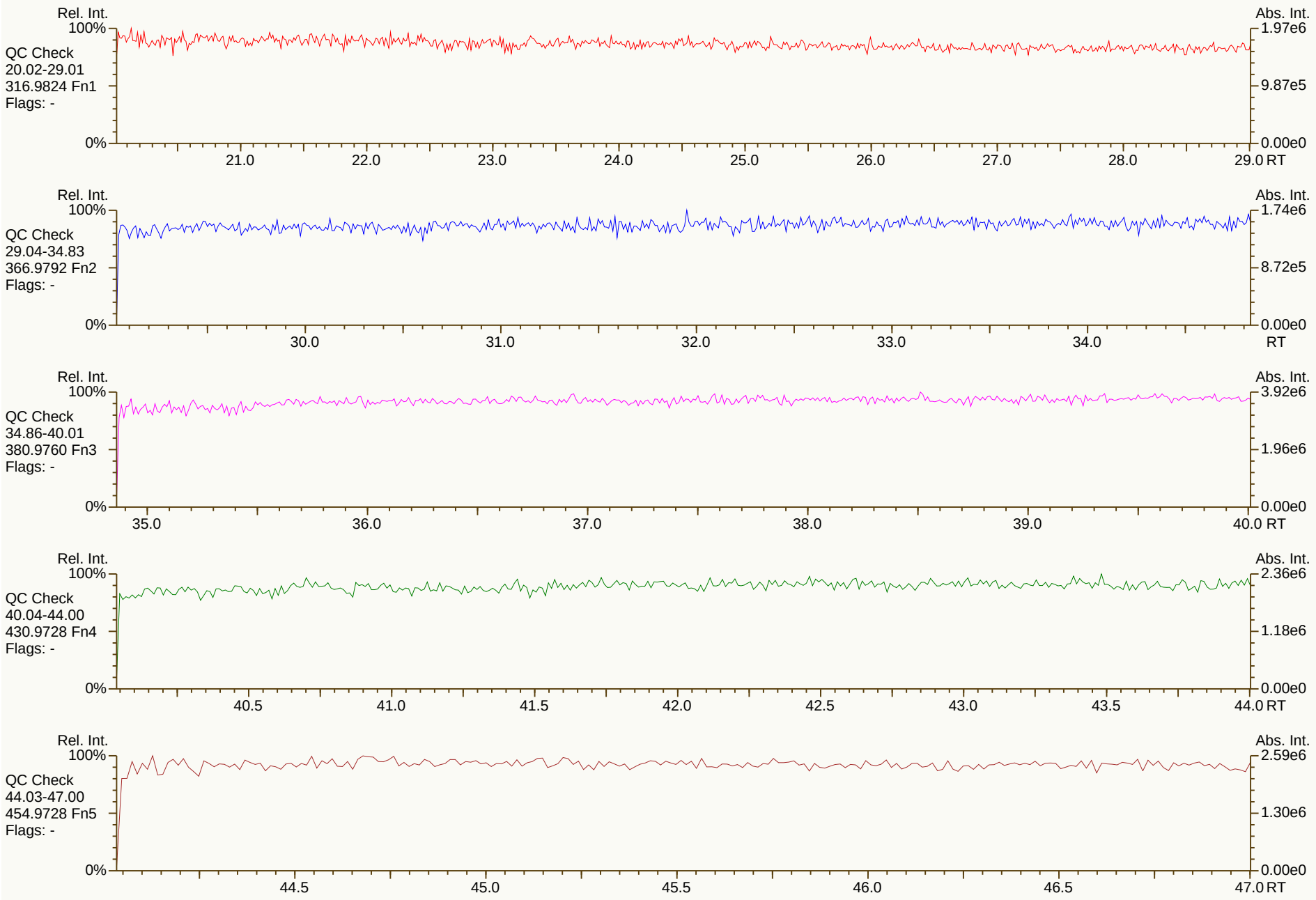
SGS-AP ID: BCS3_10493_DF_PA **Sample ID: BCS3_10493_DF_PA** **Acq: 05-JAN-2013 16:43:15**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-01**





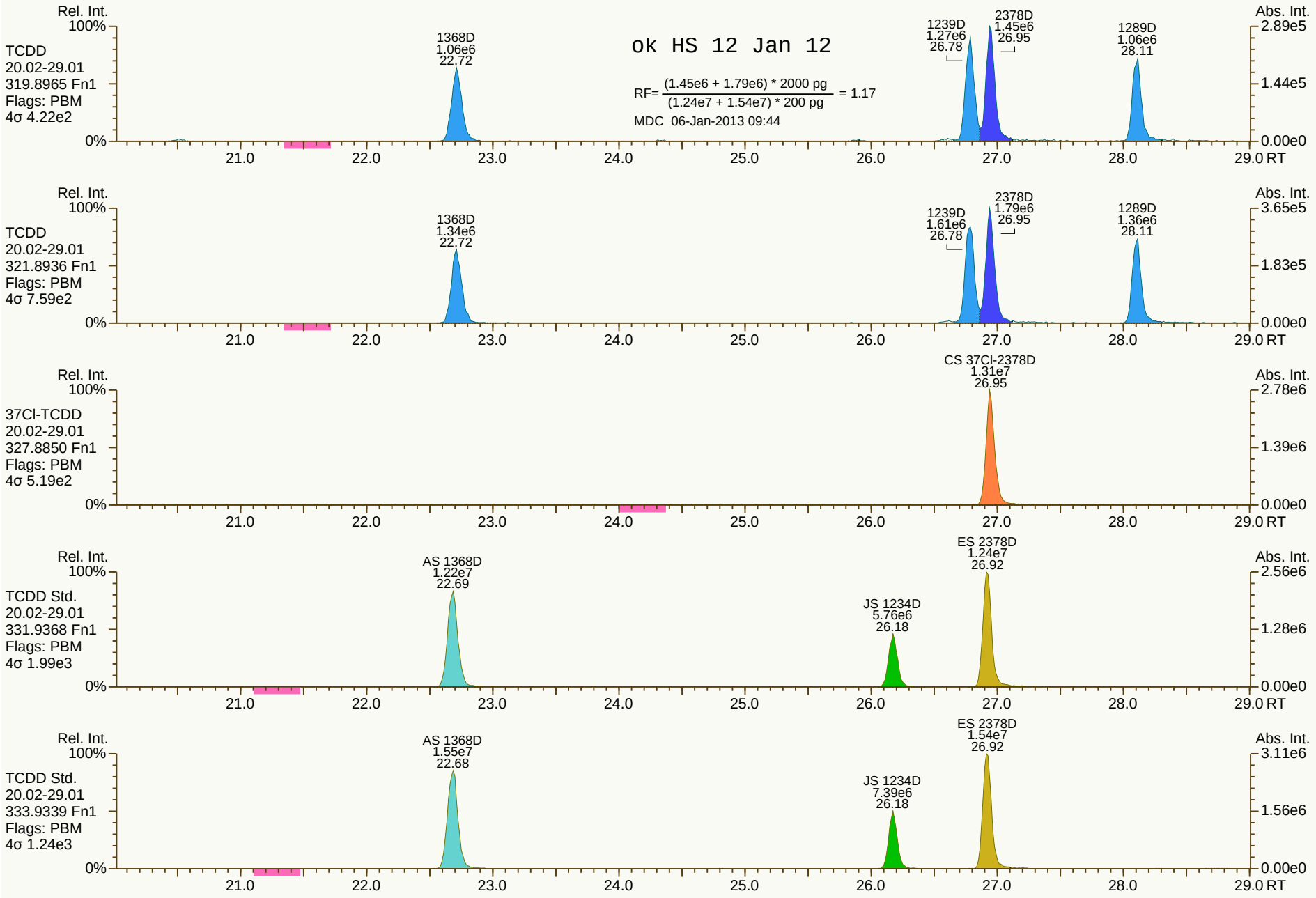
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 *Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:45*

SGS-AP ID: BCS3_10493_DF_PA **Sample ID: BCS3_10493_DF_PA** **Acq: 05-JAN-2013 16:43:15**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-01**

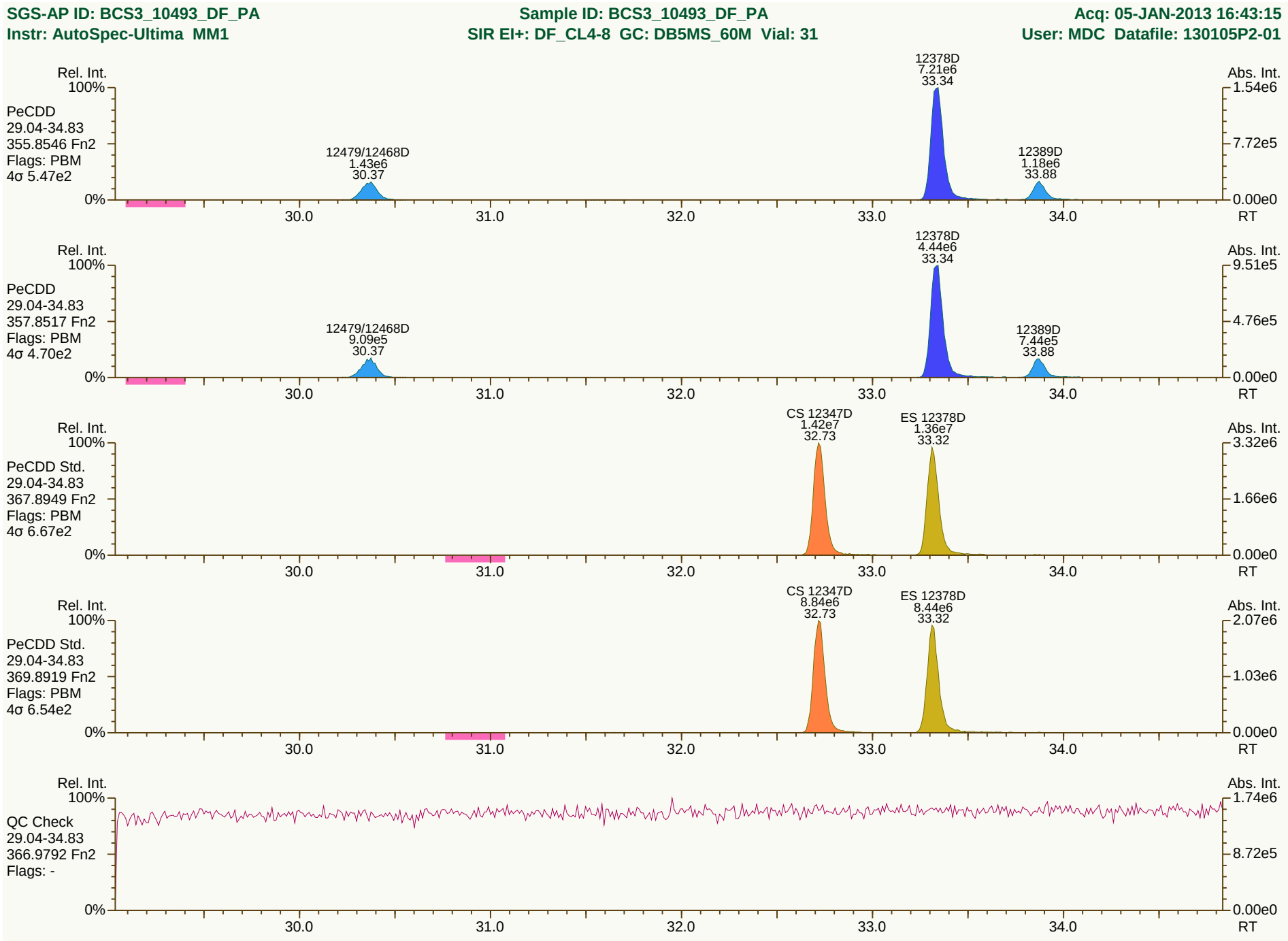


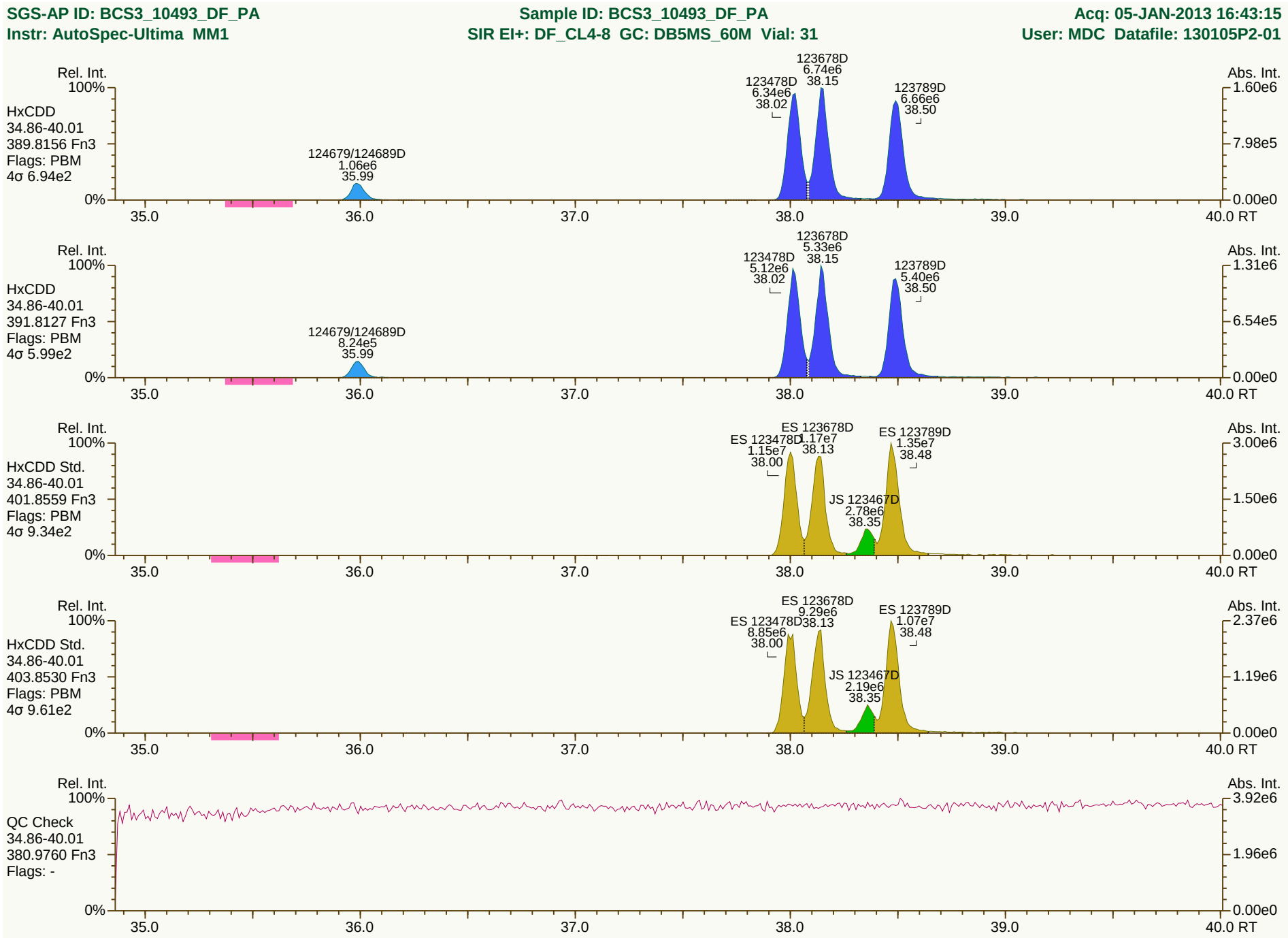
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 scc: 424-138 *PKD: n/a Printed: 06-Jan-2013 09:47 Page 1 of 12*

SGS-AP ID: BCS3_10493_DF_PA **Sample ID: BCS3_10493_DF_PA** **Acq: 05-JAN-2013 16:43:15**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-01**

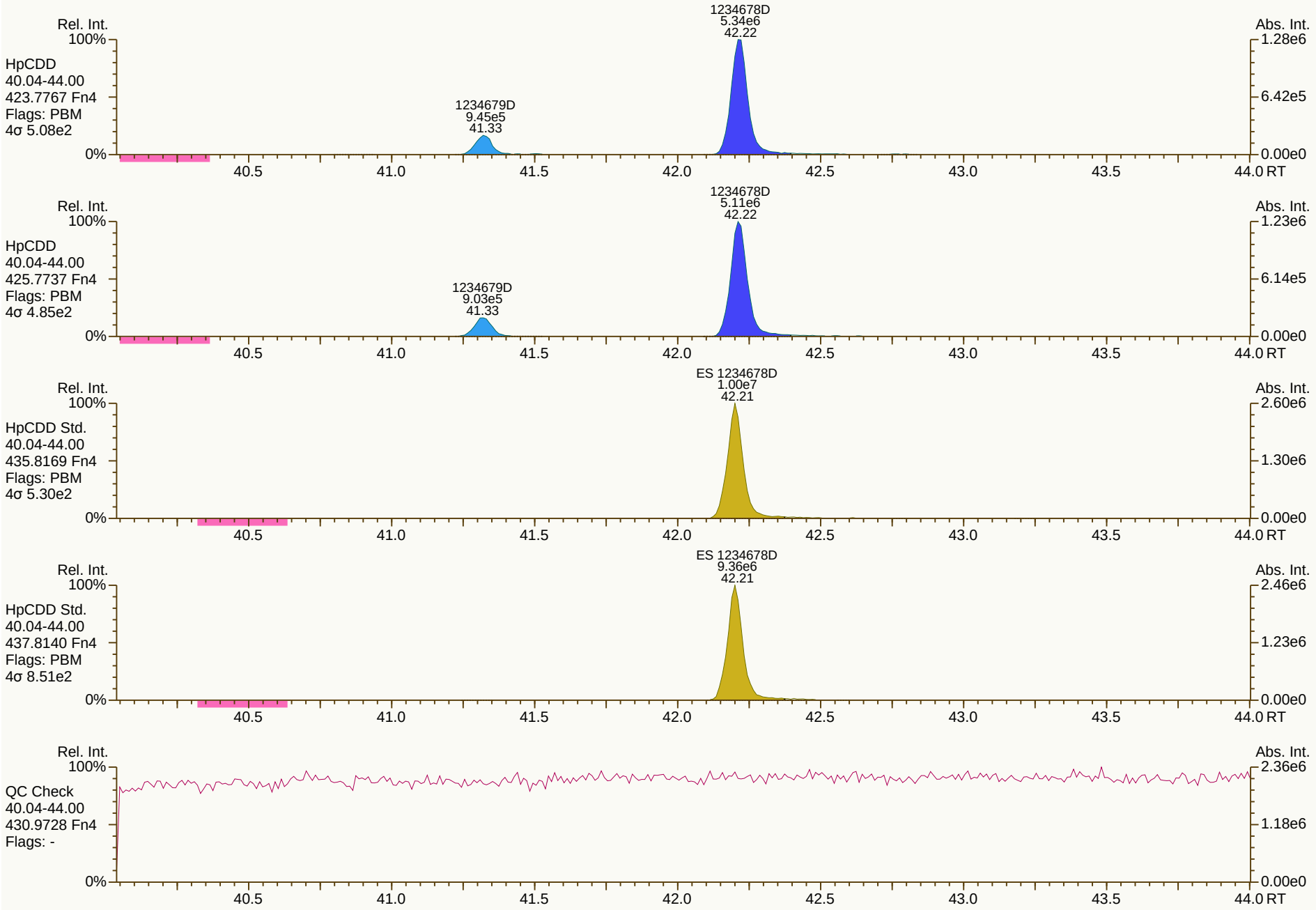


Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 8828, 6010, 9110 scc: 424-138 *Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 2 of 12*


SGS-AP ID: BCS3_10493_DF_PA
Sample ID: BCS3_10493_DF_PA
Acq: 05-JAN-2013 16:43:15
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31
User: MDC Datafile: 130105P2-01
Rel. Int.
Abs. Int.
PeCDD
29.04-34.83
355.8546 Fn2
Flags: PBM
4σ 5.47e2
12378D
7.21e6
33.34
12479/12468D
1.43e6
30.37
12389D
1.18e6
33.88
1.54e6
7.72e5
0.00e0
PeCDD
29.04-34.83
357.8517 Fn2
Flags: PBM
4σ 4.70e2
12378D
4.44e6
33.34
12479/12468D
9.09e5
30.37
12389D
7.44e5
33.88
9.51e5
4.76e5
0.00e0
PeCDD Std.
29.04-34.83
367.8949 Fn2
Flags: PBM
4σ 6.67e2
CS 12347D
1.42e7
32.73
ES 12378D
1.36e7
33.32
3.32e6
1.66e6
0.00e0
PeCDD Std.
29.04-34.83
369.8919 Fn2
Flags: PBM
4σ 6.54e2
CS 12347D
8.84e6
32.73
ES 12378D
8.44e6
33.32
2.07e6
1.03e6
0.00e0
QC Check
29.04-34.83
366.9792 Fn2
Flags: -
1.74e6
8.72e5
0.00e0
100%
0%
30.0
31.0
32.0
33.0
34.0
RT
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 1729, 0614 scc: 424-138
Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 3 of 12

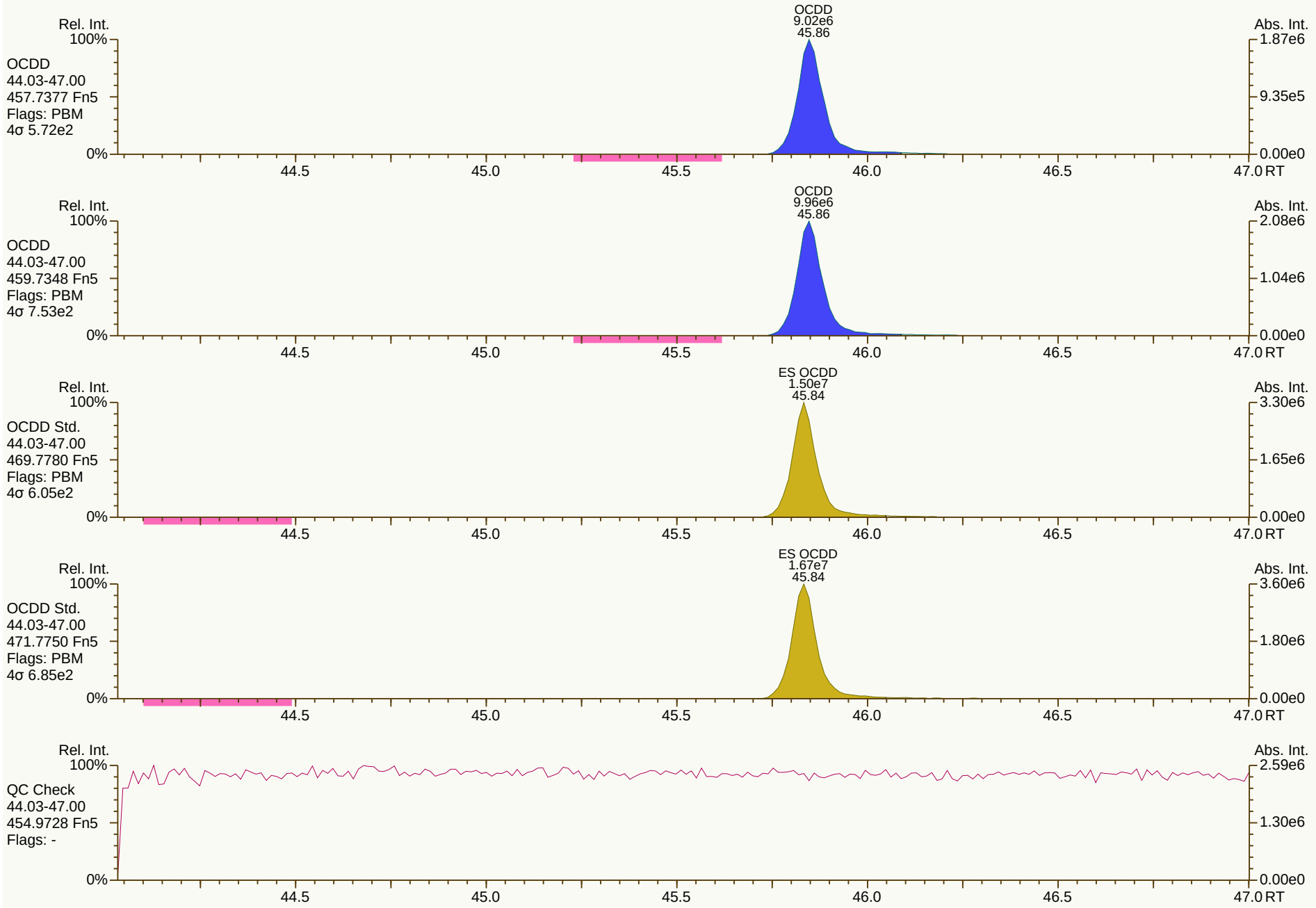

SGS-AP ID: BCS3_10493_DF_PA
Sample ID: BCS3_10493_DF_PA
Acq: 05-JAN-2013 16:43:15
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31
User: MDC Datafile: 130105P2-01
Rel. Int.
Abs. Int.
HxCDD
34.86-40.01
389.8156 Fn3
Flags: PBM
4σ 6.94e2
123678D 6.74e6 38.15
123478D 6.34e6 38.02
123789D 6.66e6 38.50
124679/124689D 1.06e6 35.99
HxCDD
34.86-40.01
391.8127 Fn3
Flags: PBM
4σ 5.99e2
123678D 5.33e6 38.15
123478D 5.12e6 38.02
123789D 5.40e6 38.50
124679/124689D 8.24e5 35.99
HxCDD Std.
34.86-40.01
401.8559 Fn3
Flags: PBM
4σ 9.34e2
ES 123678D 1.17e7 38.13
ES 123478D 1.15e7 38.00
ES 123789D 1.35e7 38.48
JS 123467D 2.78e6 38.35
HxCDD Std.
34.86-40.01
403.8530 Fn3
Flags: PBM
4σ 9.61e2
ES 123678D 9.29e6 38.13
ES 123478D 8.85e6 38.00
ES 123789D 1.07e7 38.48
JS 123467D 2.19e6 38.35
QC Check
34.86-40.01
380.9760 Fn3
Flags: -
0%
100%
35.0
36.0
37.0
38.0
39.0
40.0 RT
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4667, 5390 scc: 424-138
Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 4 of 12

SGS-AP ID: BCS3_10493_DF_PA **Sample ID: BCS3_10493_DF_PA** **Acq: 05-JAN-2013 16:43:15**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-01**

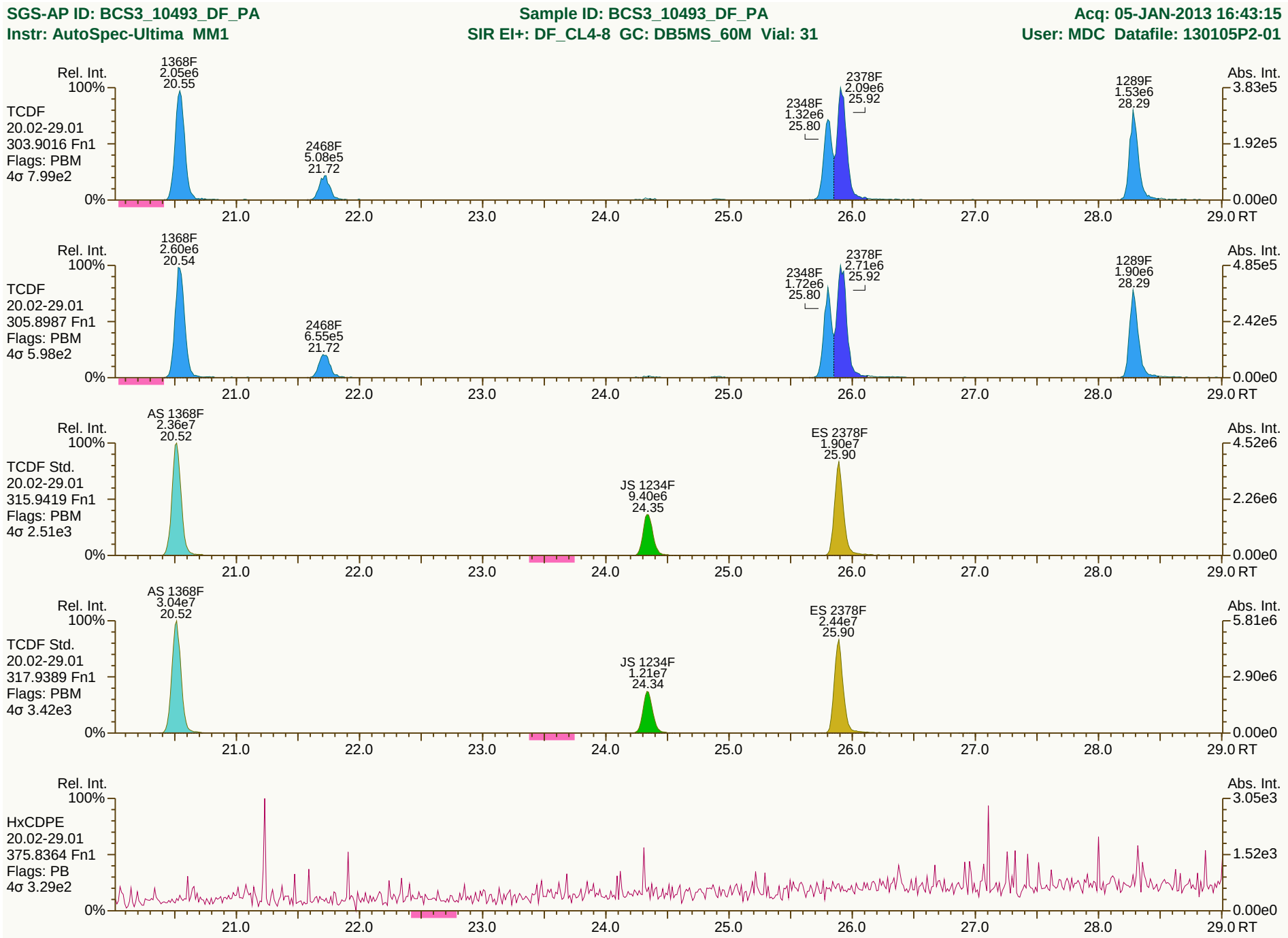


Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 4824, 7775 scc: 424-138 *Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 5 of 12*

SGS-AP ID: BCS3_10493_DF_PA **Sample ID: BCS3_10493_DF_PA** **Acq: 05-JAN-2013 16:43:15**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-01**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0476, 8144 scc: 424-138 *Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 6 of 12*

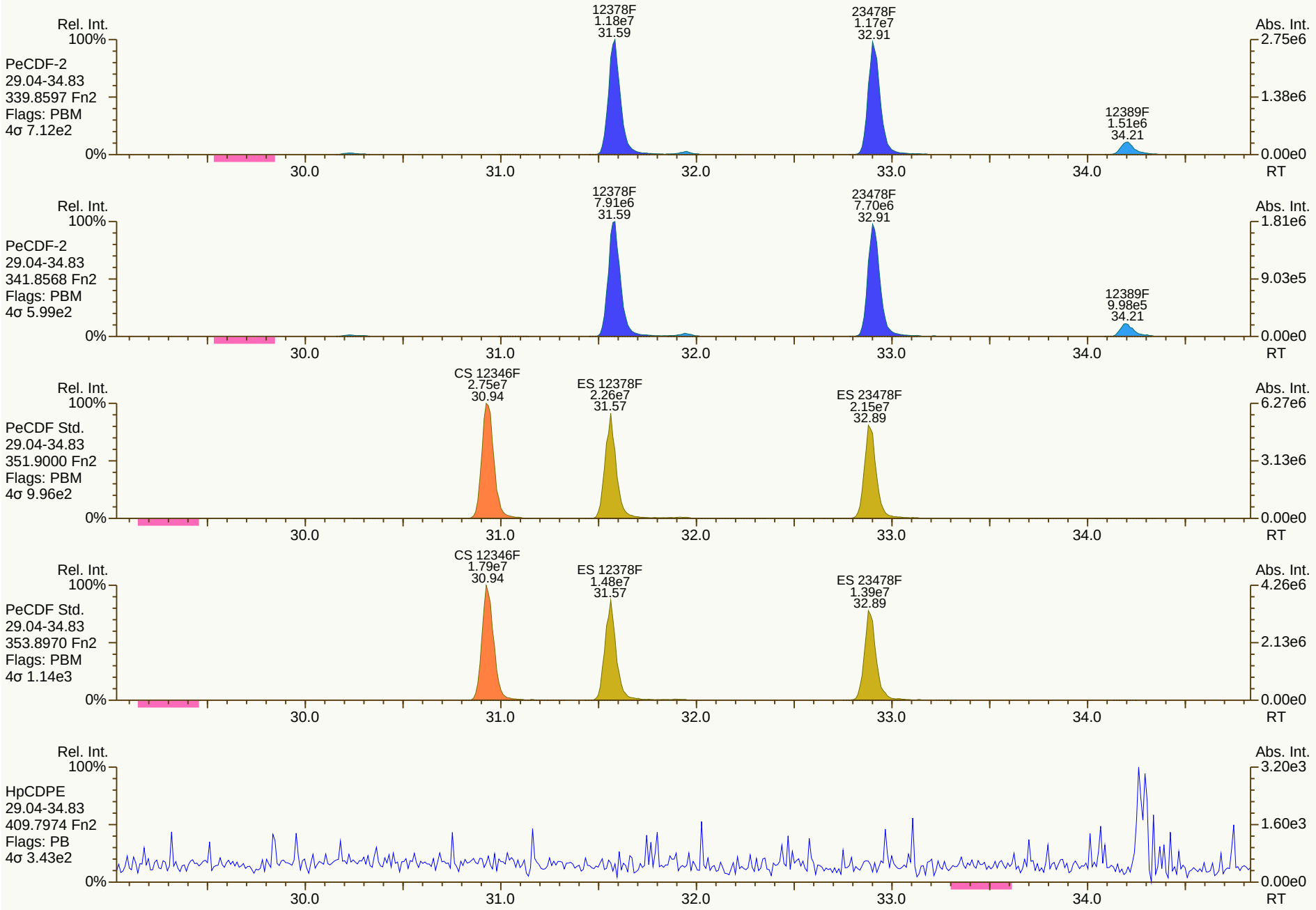

SGS-AP ID: BCS3_10493_DF_PA
Sample ID: BCS3_10493_DF_PA
Acq: 05-JAN-2013 16:43:15
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31
User: MDC Datafile: 130105P2-01
Rel. Int.
Abs. Int.
TCDF
20.02-29.01
303.9016 Fn1
Flags: PBM
4σ 7.99e2
1368F 2.05e6 20.55
2468F 5.08e5 21.72
2348F 1.32e6 25.80
2378F 2.09e6 25.92
1289F 1.53e6 28.29
TCDF
20.02-29.01
305.8987 Fn1
Flags: PBM
4σ 5.98e2
1368F 2.60e6 20.54
2468F 6.55e5 21.72
2348F 1.72e6 25.80
2378F 2.71e6 25.92
1289F 1.90e6 28.29
TCDF Std.
20.02-29.01
315.9419 Fn1
Flags: PBM
4σ 2.51e3
AS 1368F 2.36e7 20.52
JS 1234F 9.40e6 24.35
ES 2378F 1.90e7 25.90
TCDF Std.
20.02-29.01
317.9389 Fn1
Flags: PBM
4σ 3.42e3
AS 1368F 3.04e7 20.52
JS 1234F 1.21e7 24.34
ES 2378F 2.44e7 25.90
HxCDPE
20.02-29.01
375.8364 Fn1
Flags: PB
4σ 3.29e2
21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 RT
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 9468, 9204, 6164 scc: 424-138
Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 7 of 12

SGS-AP ID: BCS3_10493_DF_PA **Sample ID: BCS3_10493_DF_PA** **Acq: 05-JAN-2013 16:43:15**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-01**

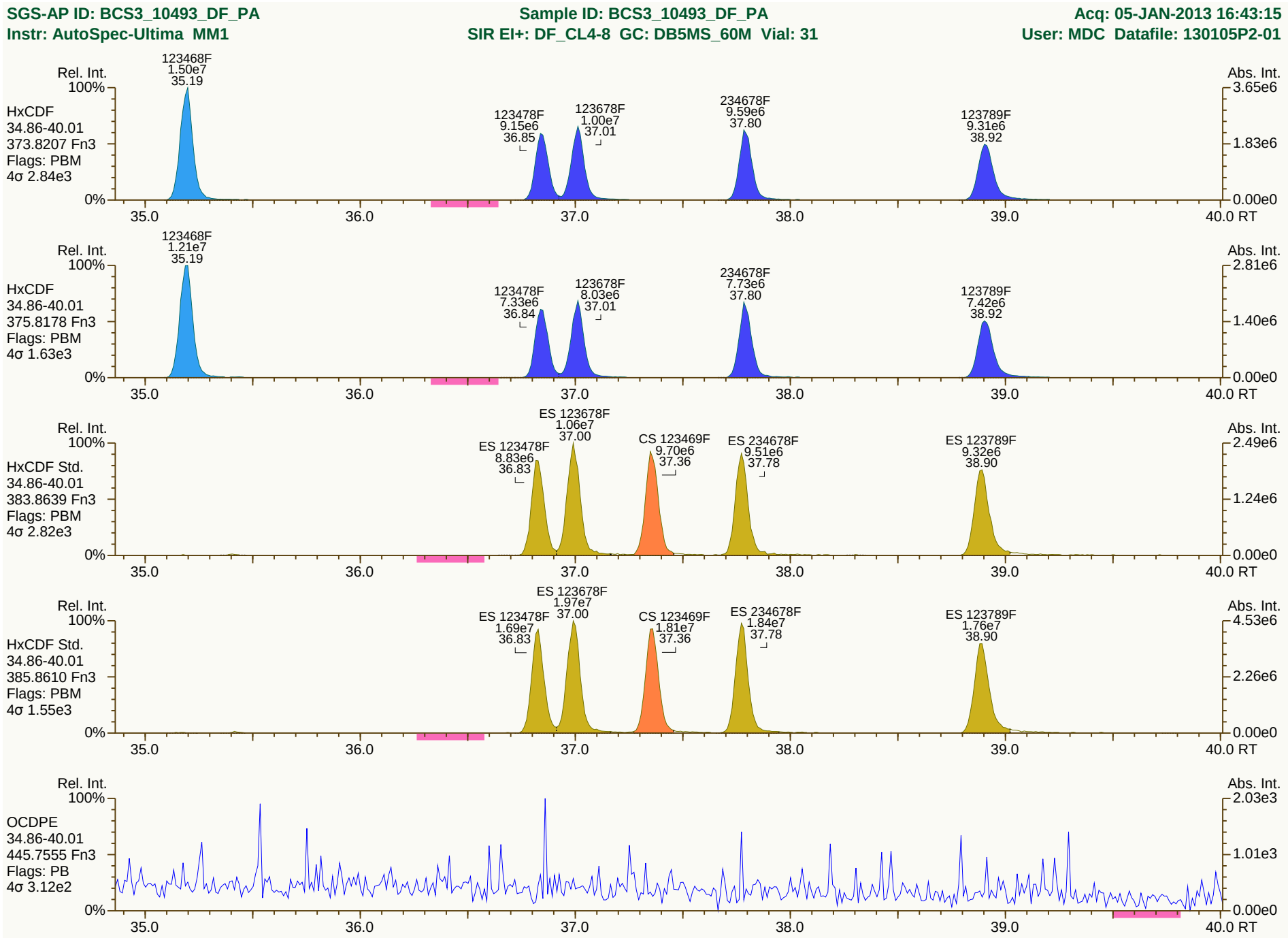


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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 2228 scc: 424-138 *Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 8 of 12*

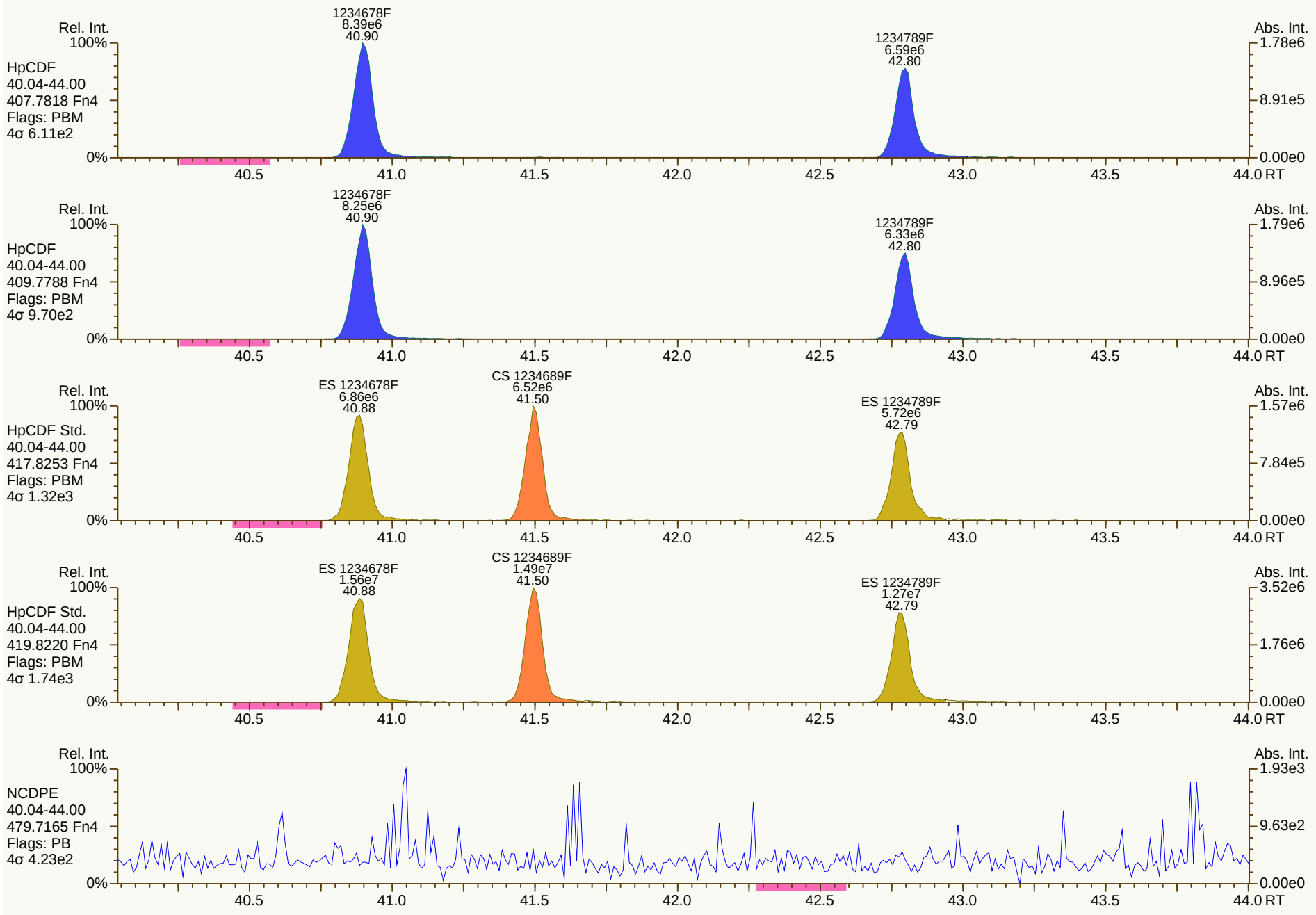
SGS-AP ID: BCS3_10493_DF_PA **Sample ID: BCS3_10493_DF_PA** **Acq: 05-JAN-2013 16:43:15**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-01**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7681, 3576, 6262 scc: 424-138 *Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 9 of 12*


SGS-AP ID: BCS3_10493_DF_PA
Sample ID: BCS3_10493_DF_PA
Acq: 05-JAN-2013 16:43:15
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31
User: MDC Datafile: 130105P2-01
Rel. Int.
Abs. Int.
HxCDF
34.86-40.01
373.8207 Fn3
Flags: PBM
4σ 2.84e3
123468F 1.50e7 35.19
123478F 9.15e6 36.85
123678F 1.00e7 37.01
234678F 9.59e6 37.80
123789F 9.31e6 38.92
HxCDF
34.86-40.01
375.8178 Fn3
Flags: PBM
4σ 1.63e3
123468F 1.21e7 35.19
123478F 7.33e6 36.84
123678F 8.03e6 37.01
234678F 7.73e6 37.80
123789F 7.42e6 38.92
HxCDF Std.
34.86-40.01
383.8639 Fn3
Flags: PBM
4σ 2.82e3
ES 123678F 1.06e7 37.00
ES 123478F 8.83e6 36.83
CS 123469F 9.70e6 37.36
ES 234678F 9.51e6 37.78
ES 123789F 9.32e6 38.90
HxCDF Std.
34.86-40.01
385.8610 Fn3
Flags: PBM
4σ 1.55e3
ES 123678F 1.97e7 37.00
ES 123478F 1.69e7 36.83
CS 123469F 1.81e7 37.36
ES 234678F 1.84e7 37.78
ES 123789F 1.76e7 38.90
OCDPE
34.86-40.01
445.7555 Fn3
Flags: PB
4σ 3.12e2
100%
0%
35.0
36.0
37.0
38.0
39.0
40.0 RT
3.65e6
1.83e6
0.00e0
2.81e6
1.40e6
2.49e6
1.24e6
4.53e6
2.26e6
2.03e3
1.01e3
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 6722, 1981, 1010 scc: 424-138
Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 10 of 12

SGS-AP ID: BCS3_10493_DF_PA **Sample ID: BCS3_10493_DF_PA** **Acq: 05-JAN-2013 16:43:15**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-01**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 9209, 8302, 9163 scc: 424-138 *Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 11 of 12*

SGS-AP ID: BCS3_10493_DF_PA **Sample ID: BCS3_10493_DF_PA** **Acq: 05-JAN-2013 16:43:15**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-01**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PA.utp_res, saved 06-Jan-2013 09:44 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3709, 7325, 2096 scc: 424-138 *Revised: 06-Jan-2013 09:15 (MDC) Printed: 06-Jan-2013 09:47 Page 12 of 12*

METHOD 23 **PCDD/F CALIBRATION VERIFICATION** **FORM 4A**

Lab Name: SGS Analytical Perspectives

Initial Calibration: ICAL: MM1_DF_03312020A_19SEPT2012

Instrument ID: MM1 GC Column ID: ZB-5ms

VER Data Filename: 130105P2-09 Analysis Date: 05-JAN-2013 23:34:57

NATIVE ANALYTES	M/Z's FORMING RATIO	ION ABUND. RATIO	QC LIMITS			OK	CONC. FOUND	RANGE (ng/mL)			OK
2,3,7,8-TCDD	M/M+2	0.78	0.65	-	0.89	Y	10	8	-	12	Y
1,2,3,7,8-PeCDD	M+2/M+4	1.62	1.32	-	1.78	Y	48.9	40	-	60	Y
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05	-	1.43	Y	47.2	40	-	60	Y
1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05	-	1.43	Y	54.2	40	-	60	Y
1,2,3,7,8,9-HxCDD	M+2/M+4	1.26	1.05	-	1.43	Y	45.3	40	-	60	Y
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88	-	1.20	Y	51.1	40	-	60	Y
OCDD	M+2/M+4	0.90	0.76	-	1.02	Y	107	80	-	120	Y
2,3,7,8-TCDF	M/M+2	0.79	0.65	-	0.89	Y	10.8	8	-	12	Y
1,2,3,7,8-PeCDF	M+2/M+4	1.55	1.32	-	1.78	Y	50.5	40	-	60	Y
2,3,4,7,8-PeCDF	M+2/M+4	1.56	1.32	-	1.78	Y	48.2	40	-	60	Y
1,2,3,4,7,8-HxCDF	M+2/M+4	1.24	1.05	-	1.43	Y	49.4	40	-	60	Y
1,2,3,6,7,8-HxCDF	M+2/M+4	1.26	1.05	-	1.43	Y	46.8	40	-	60	Y
2,3,4,6,7,8-HxCDF	M+2/M+4	1.24	1.05	-	1.43	Y	48.4	40	-	60	Y
1,2,3,7,8,9-HxCDF	M+2/M+4	1.24	1.05	-	1.43	Y	48.6	40	-	60	Y
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	0.88	-	1.20	Y	52.4	40	-	60	Y
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88	-	1.20	Y	46.6	40	-	60	Y
OCDF	M+2/M+4	0.90	0.76	-	1.02	Y	108	80	-	120	Y

Processed: 06 Jan 2013 09:38 Analyst: MC

METHOD 23 **PCDD/F CALIBRATION VERIFICATION** **FORM 4B**

Lab Name: SGS Analytical Perspectives

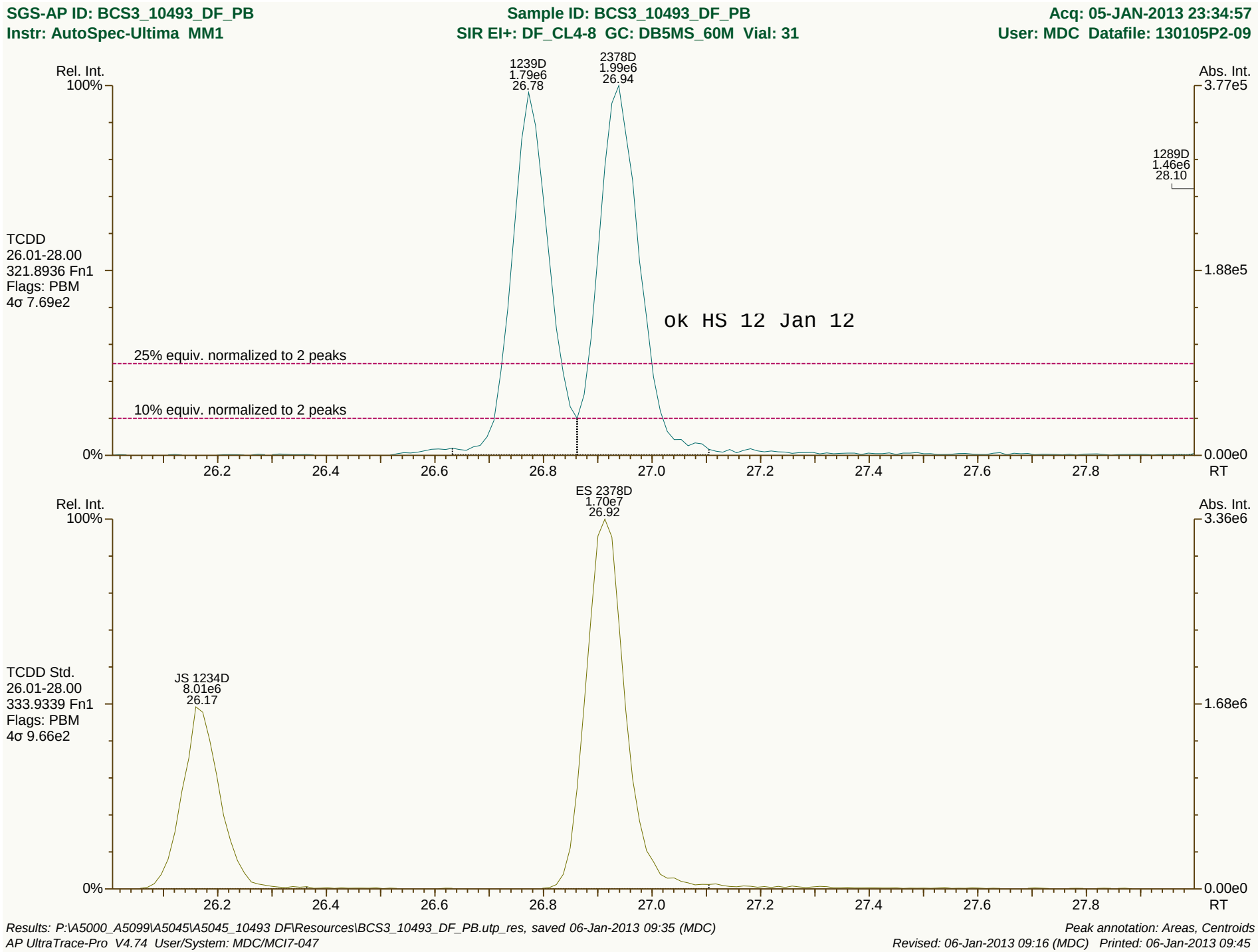
Initial Calibration: ICAL: MM1_DF_03312020A_19SEPT2012

Instrument ID: MM1 GC Column ID: ZB-5ms

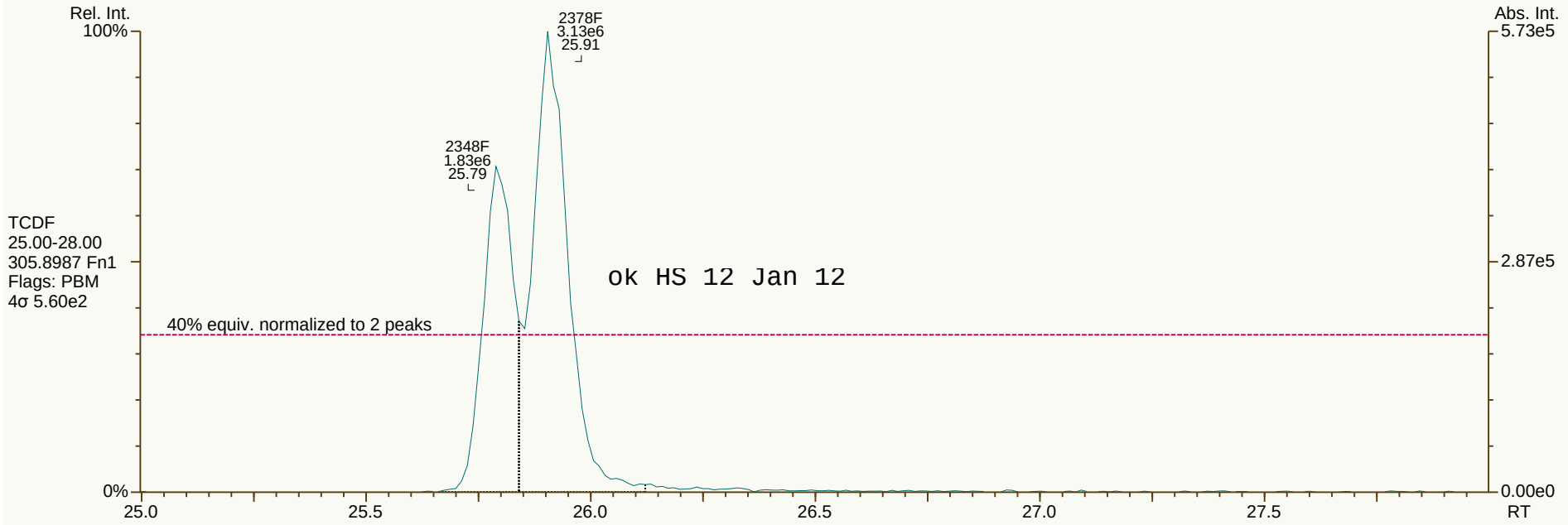
VER Data Filename: 130105P2-09 Analysis Date: 05-JAN-2013 23:34:57

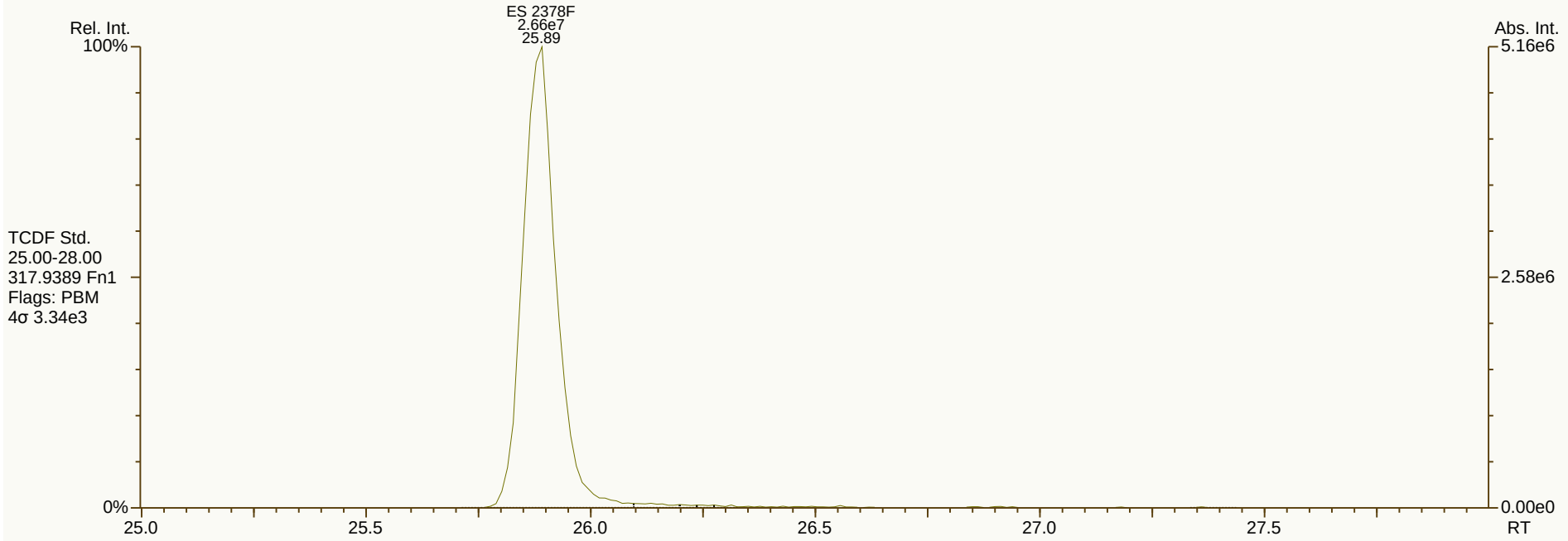
LABELED ANALYTES	M/Z's FORMING RATIO	ION ABUND. RATIO	QC LIMITS			OK	CONC. FOUND	RANGE (ng/mL)			OK
13C-2,3,7,8-TCDD	M/M+2	0.81	0.65	-	0.89	Y	99.8	70	-	130	Y
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.66	1.32	-	1.78	Y	105	70	-	130	Y
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05	-	1.43	Y	95	70	-	130	Y
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05	-	1.43	Y	87.2	70	-	130	Y
13C-1,2,3,7,8,9-HxCDD	M+2/M+4	1.28	1.05	-	1.43	Y	100	70	-	130	Y
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88	-	1.20	Y	95.6	70	-	130	Y
13C-OCDD	M+2/M+4	0.90	0.76	-	1.02	Y	191	140	-	260	Y
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65	-	0.89	Y	98.6	70	-	130	Y
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32	-	1.78	Y	105	70	-	130	Y
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.60	1.32	-	1.78	Y	105	70	-	130	Y
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43	-	0.59	Y	87.5	70	-	130	Y
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.51	0.43	-	0.59	Y	91.7	70	-	130	Y
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43	-	0.59	Y	82.3	70	-	130	Y
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.52	0.43	-	0.59	Y	101	70	-	130	Y
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.37	-	0.51	Y	92.7	70	-	130	Y
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37	-	0.51	Y	90.2	70	-	130	Y
13C-OCDF	M+2/M+4	0.91	0.76	-	1.02	Y	178	140	-	260	Y
SURROGATE STANDARDS											
37Cl-2,3,7,8-TCDD	n/a						40.8	28	-	52	Y
13C-1,2,3,4,7-PeCDD	M+2/M+4	1.69	1.32	-	1.78	Y	103	70	-	130	Y
13C-1,2,3,4,6-PeCDF	M+2/M+4	1.55	1.32	-	1.78	Y	109	70	-	130	Y
13C-1,2,3,4,6,9-HxCDF	M/M+2	0.53	0.43	-	0.59	Y	102	70	-	130	Y
13C-1,2,3,4,6,8,9-HpCDF	M/M+2	0.44	0.37	-	0.51	Y	99.9	70	-	130	Y

Processed: 06 Jan 2013 09:38 Analyst: MC


SGS-AP ID: BCS3_10493_DF_PB
Sample ID: BCS3_10493_DF_PB
Acq: 05-JAN-2013 23:34:57
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31
User: MDC Datafile: 130105P2-09
Rel. Int.
100%
0%
Abs. Int.
3.77e5
1.88e5
0.00e0
RT
1239D
1.79e6
26.78
2378D
1.99e6
26.94
1289D
1.46e6
28.10
TCDD
26.01-28.00
321.8936 Fn1
Flags: PBM
4σ 7.69e2
ok HS 12 Jan 12
25% equiv. normalized to 2 peaks
10% equiv. normalized to 2 peaks
26.2
26.4
26.6
26.8
27.0
27.2
27.4
27.6
27.8
ES 2378D
1.70e7
26.92
JS 1234D
8.01e6
26.17
TCDD Std.
26.01-28.00
333.9339 Fn1
Flags: PBM
4σ 9.66e2
3.36e6
1.68e6
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PB.utp_res, saved 06-Jan-2013 09:35 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047
Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:45

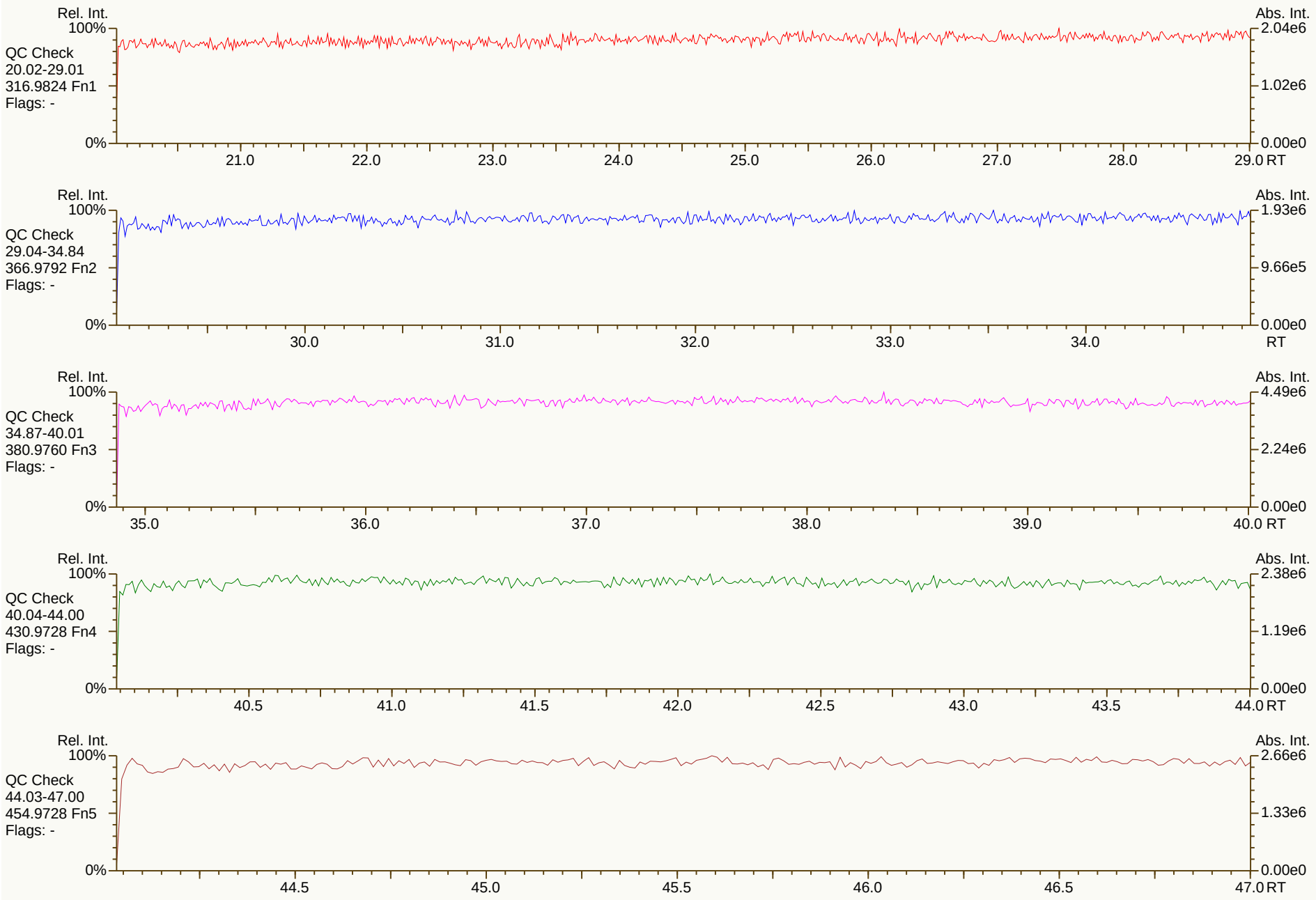
SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**





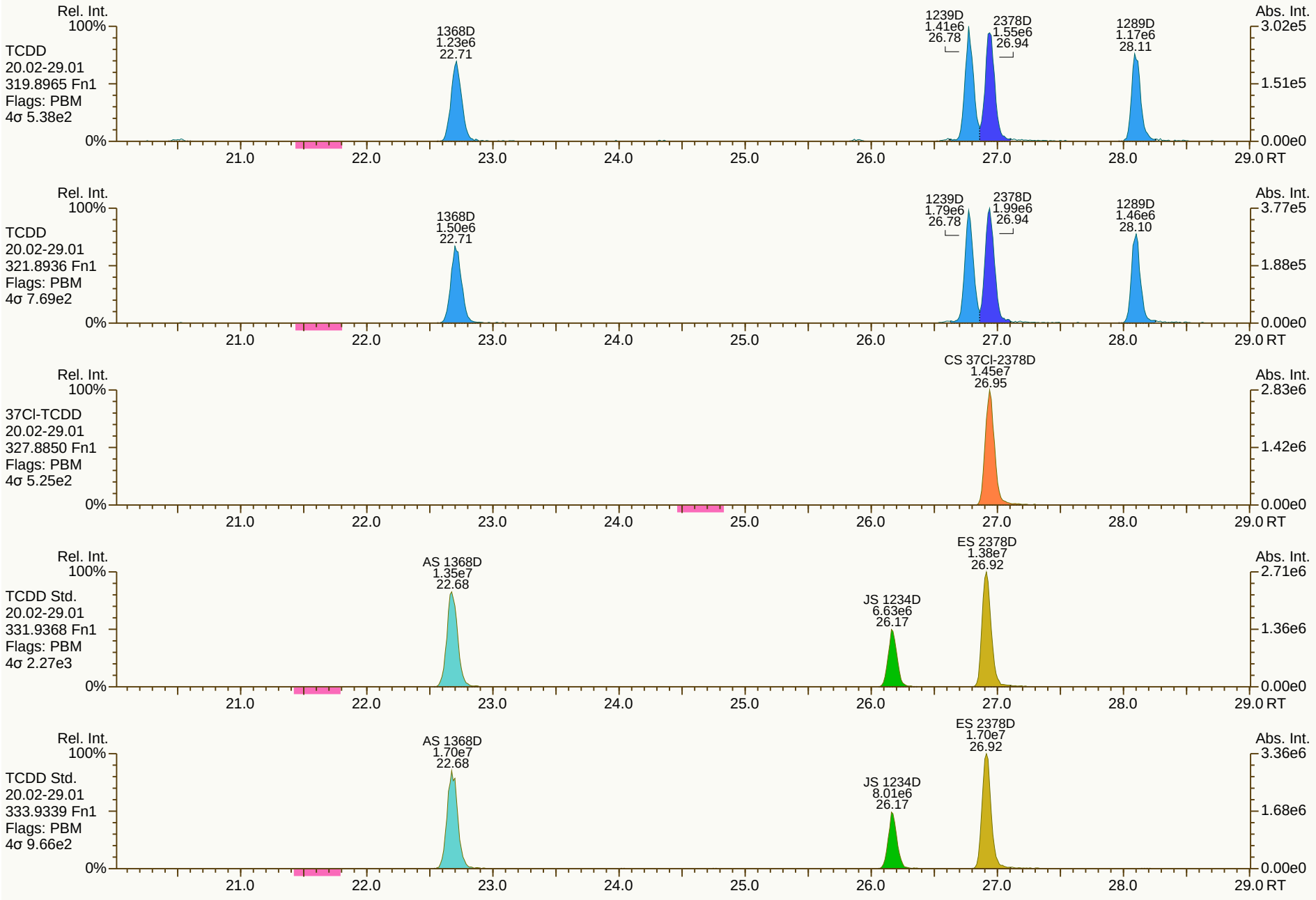
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:45*

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**



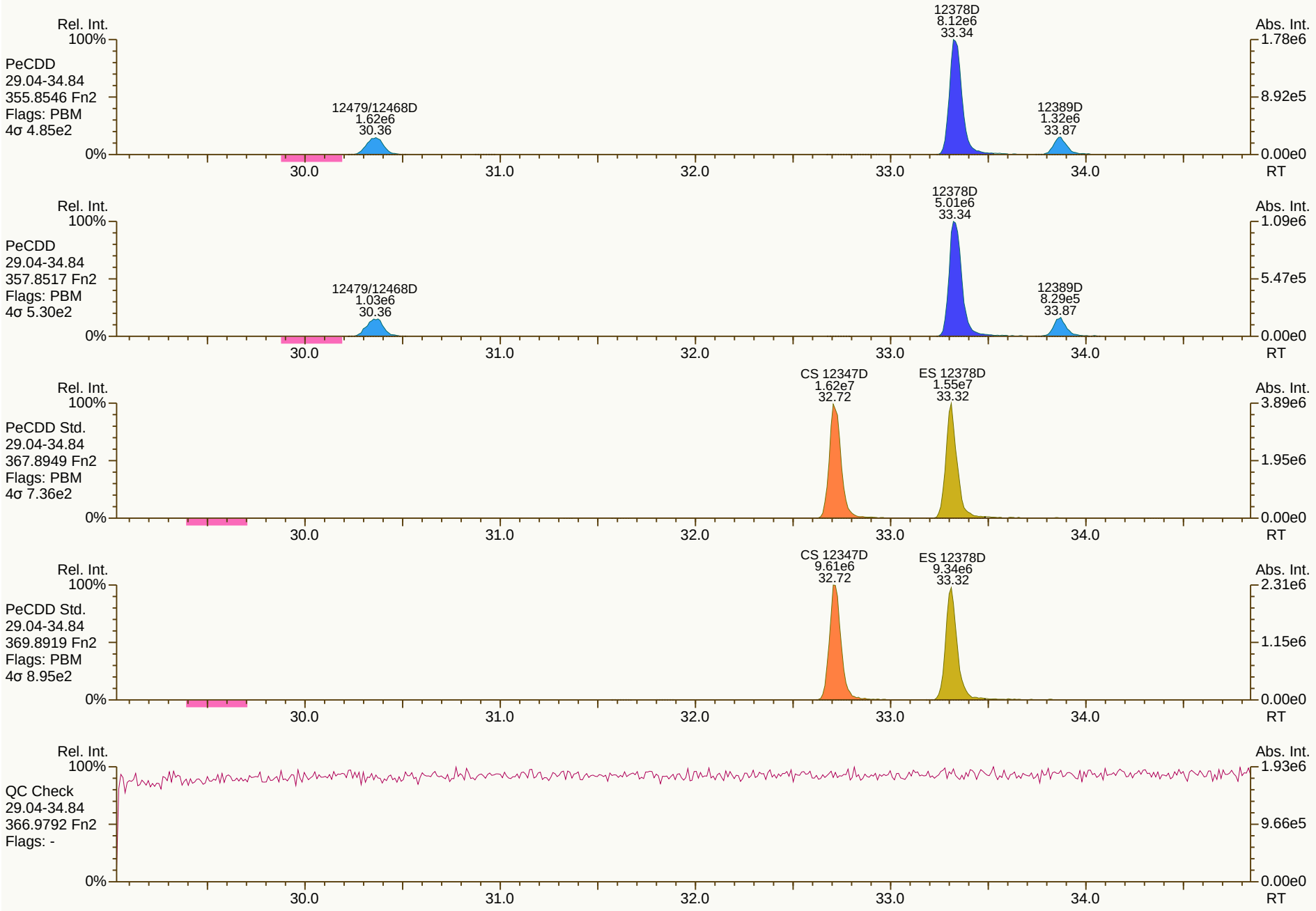
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 scc: 997-611 *PKD: n/a Printed: 06-Jan-2013 09:52 Page 1 of 12*

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**



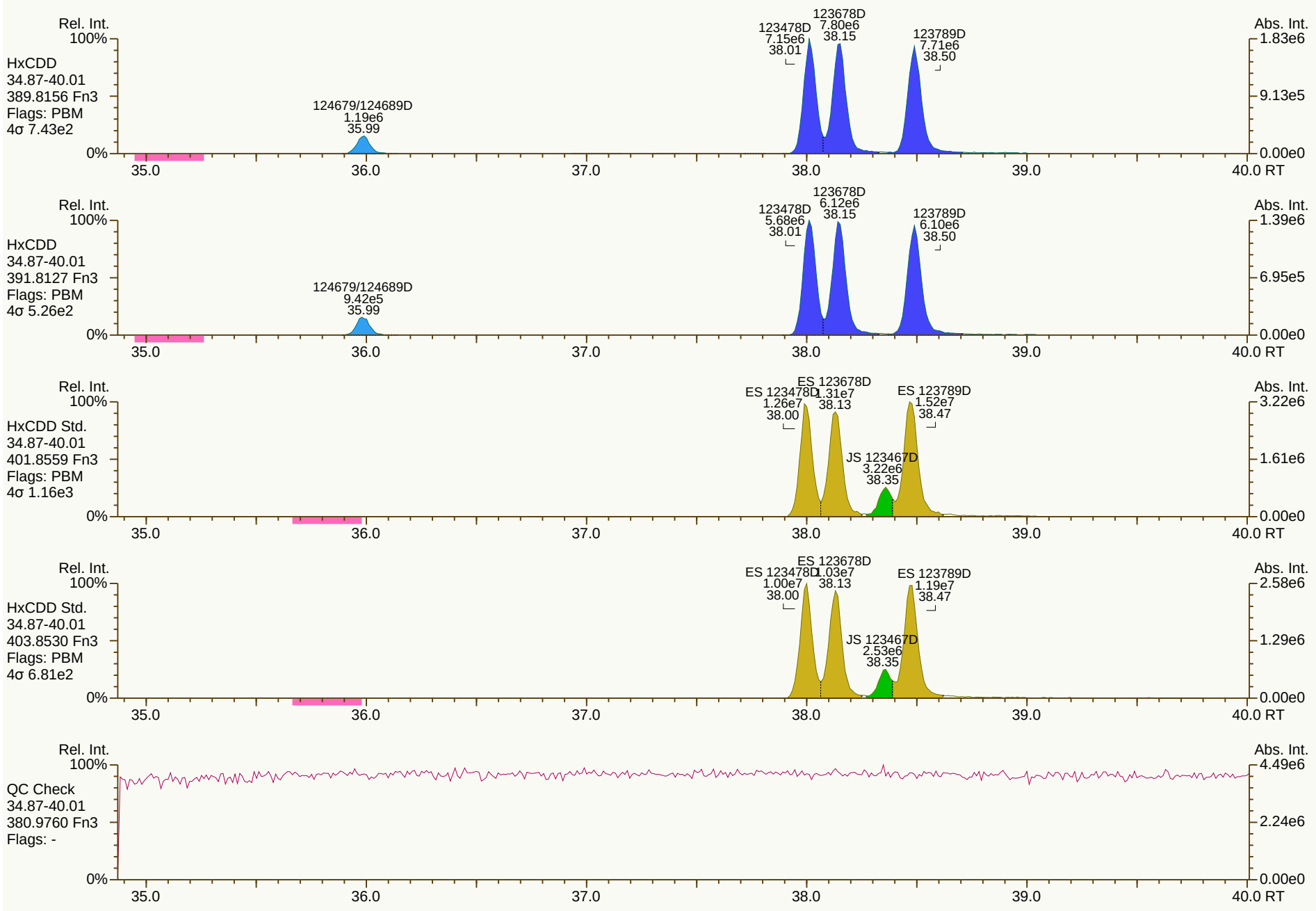
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3064, 9372, 2377 scc: 997-611 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:52 Page 2 of 12*

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**



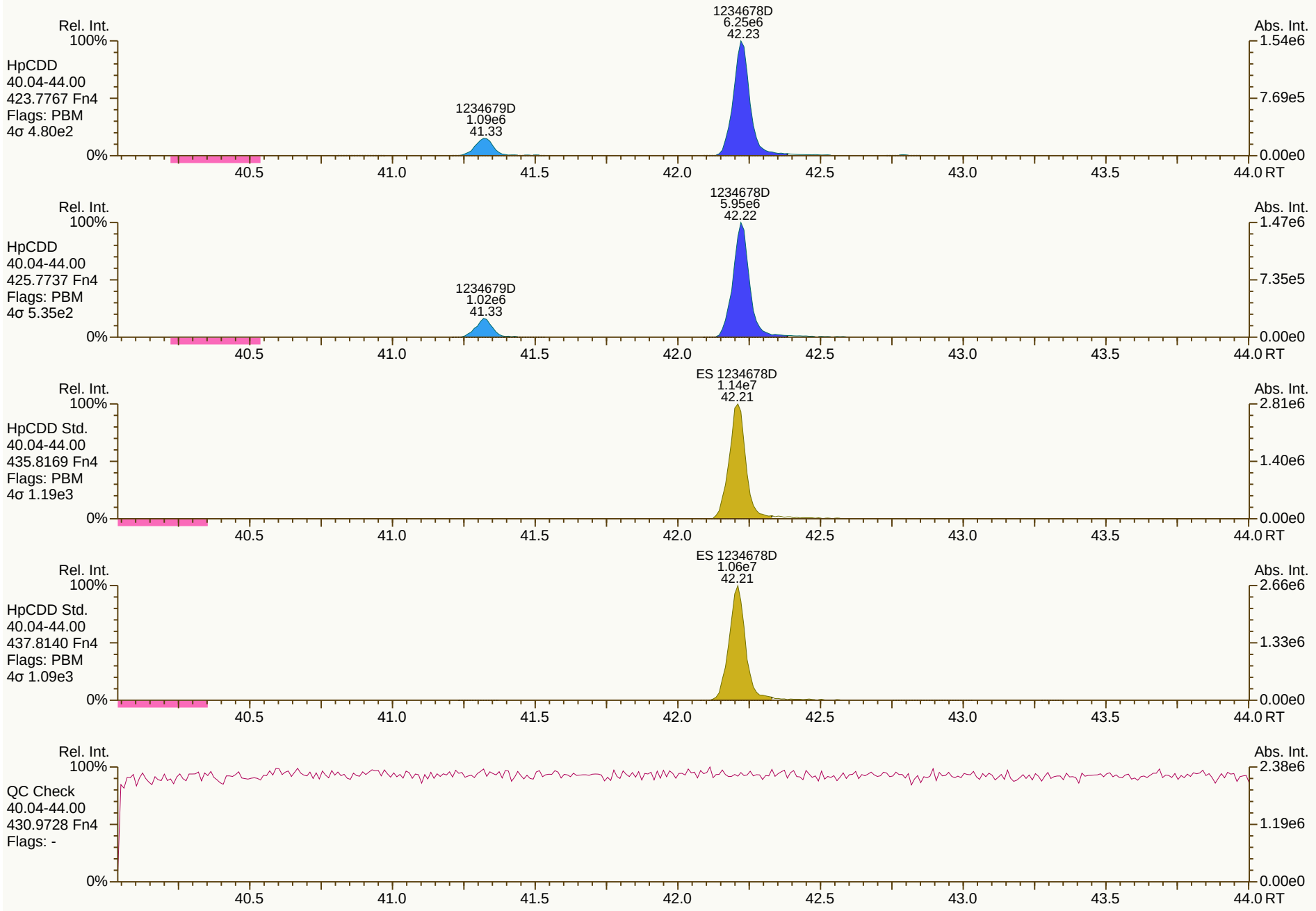
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7635, 4874 scc: 997-611 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:52 Page 3 of 12*

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**



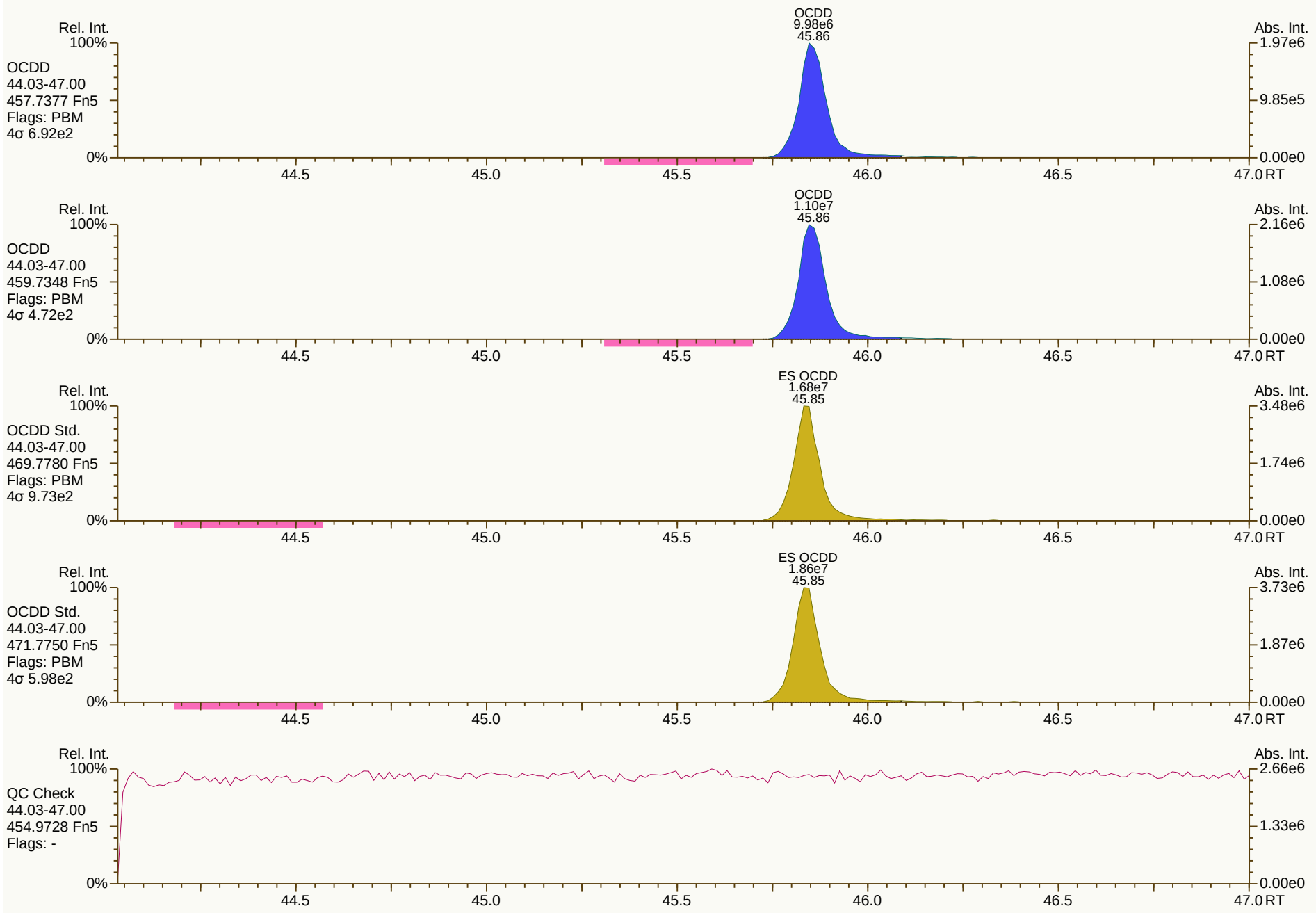
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 9722, 7659 scc: 997-611 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:52 Page 4 of 12*

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PB.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 6233, 4491 scc: 997-611 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:52 Page 5 of 12*

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PB.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3677, 3914 scc: 997-611 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:52 Page 6 of 12*

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**

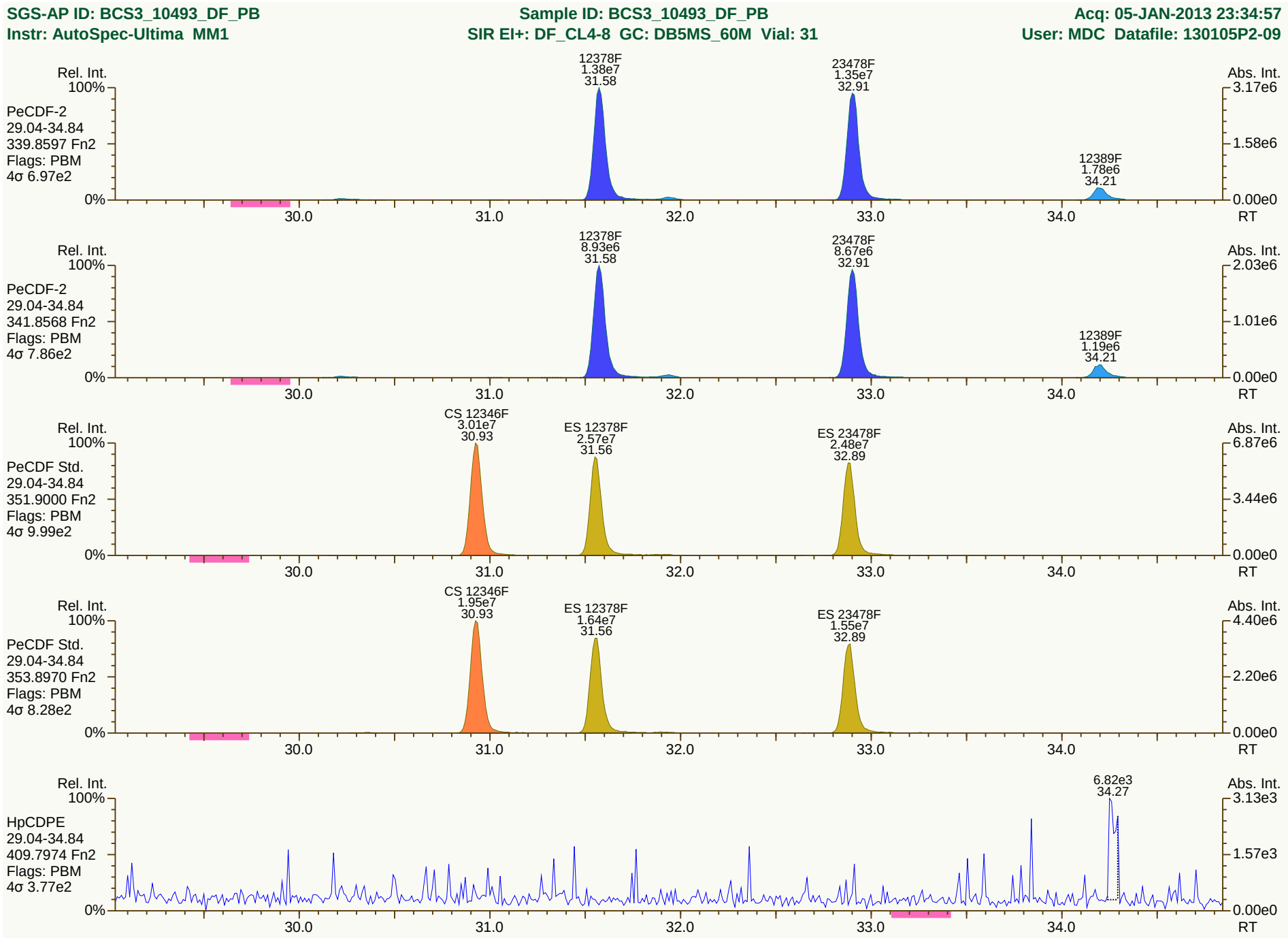


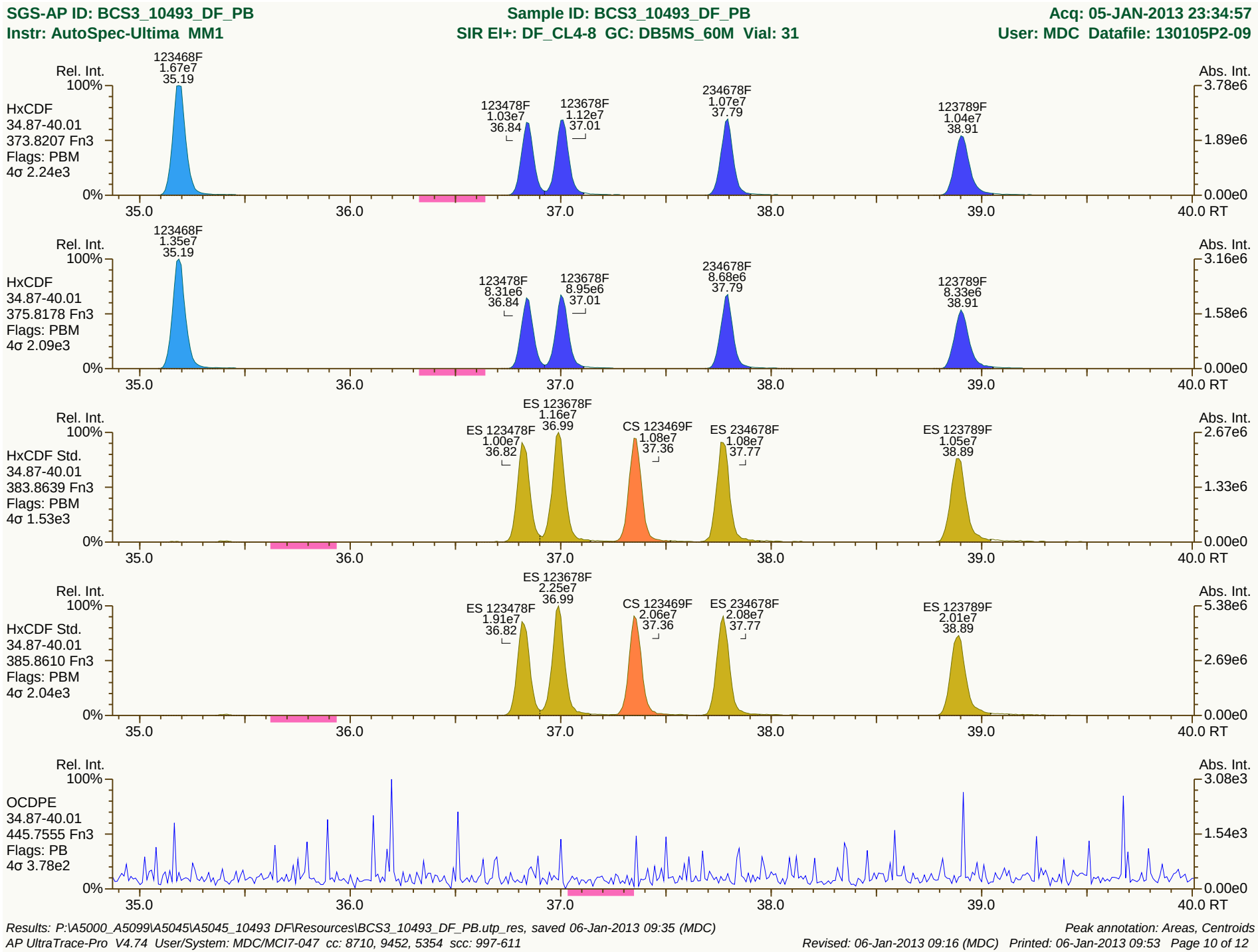
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5765, 9335, 2830 scc: 997-611 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:52 Page 7 of 12*

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**



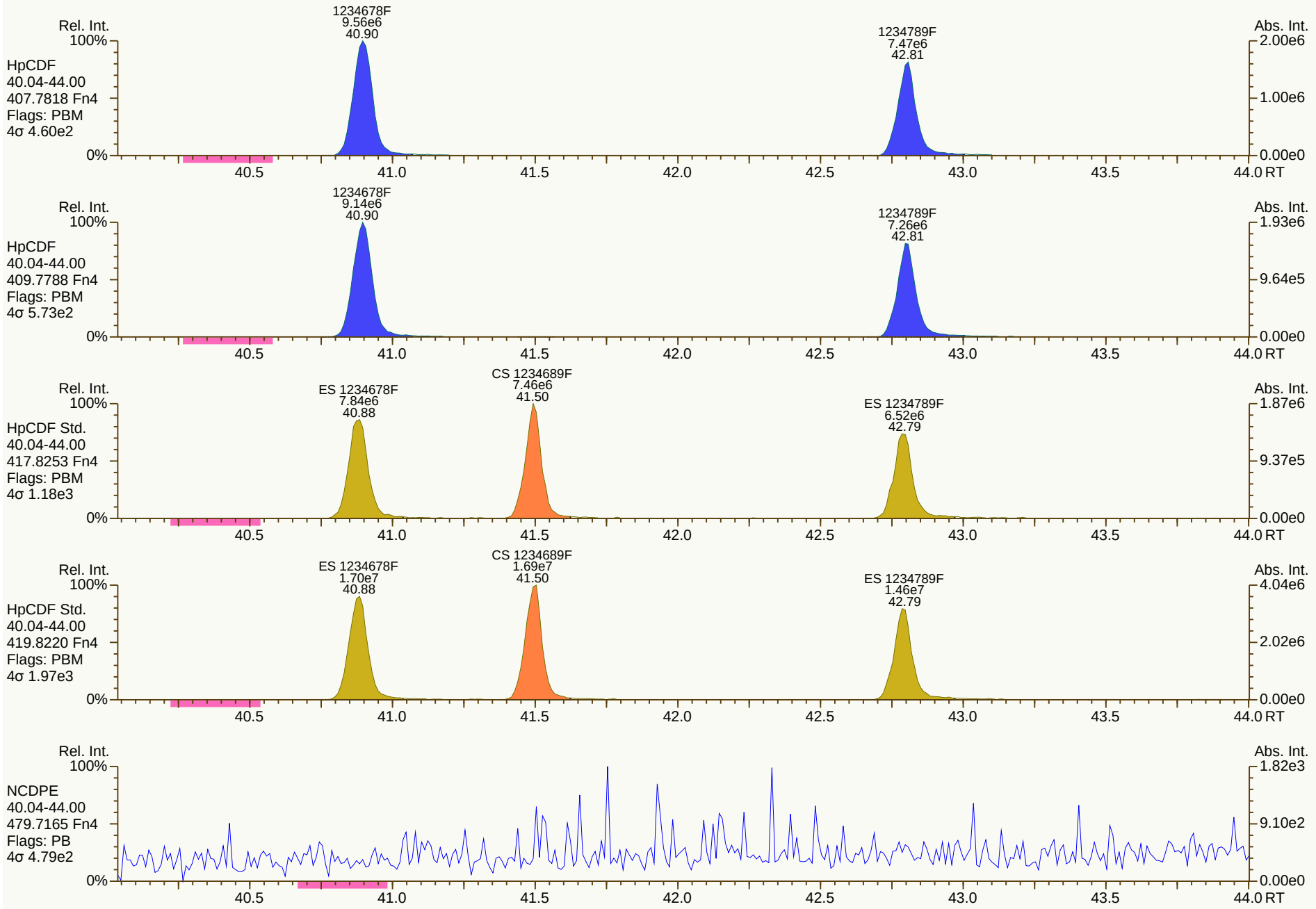
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 3493 scc: 997-611 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:53 Page 8 of 12*


SGS-AP ID: BCS3_10493_DF_PB
Sample ID: BCS3_10493_DF_PB
Acq: 05-JAN-2013 23:34:57
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31
User: MDC Datafile: 130105P2-09
Rel. Int.
Abs. Int.
PeCDF-2
29.04-34.84
339.8597 Fn2
Flags: PBM
4σ 6.97e2
12378F
1.38e7
31.58
23478F
1.35e7
32.91
12389F
1.78e6
34.21
3.17e6
1.58e6
0.00e0
PeCDF-2
29.04-34.84
341.8568 Fn2
Flags: PBM
4σ 7.86e2
12378F
8.93e6
31.58
23478F
8.67e6
32.91
12389F
1.19e6
34.21
2.03e6
1.01e6
0.00e0
PeCDF Std.
29.04-34.84
351.9000 Fn2
Flags: PBM
4σ 9.99e2
CS 12346F
3.01e7
30.93
ES 12378F
2.57e7
31.56
ES 23478F
2.48e7
32.89
6.87e6
3.44e6
0.00e0
PeCDF Std.
29.04-34.84
353.8970 Fn2
Flags: PBM
4σ 8.28e2
CS 12346F
1.95e7
30.93
ES 12378F
1.64e7
31.56
ES 23478F
1.55e7
32.89
4.40e6
2.20e6
0.00e0
HpCDPE
29.04-34.84
409.7974 Fn2
Flags: PBM
4σ 3.77e2
6.82e3
34.27
3.13e3
1.57e3
0.00e0
100%
0%
30.0
31.0
32.0
33.0
34.0
RT
Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PB.utp_res, saved 06-Jan-2013 09:35 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0380, 1712, 6139 scc: 997-611
Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:53 Page 9 of 12



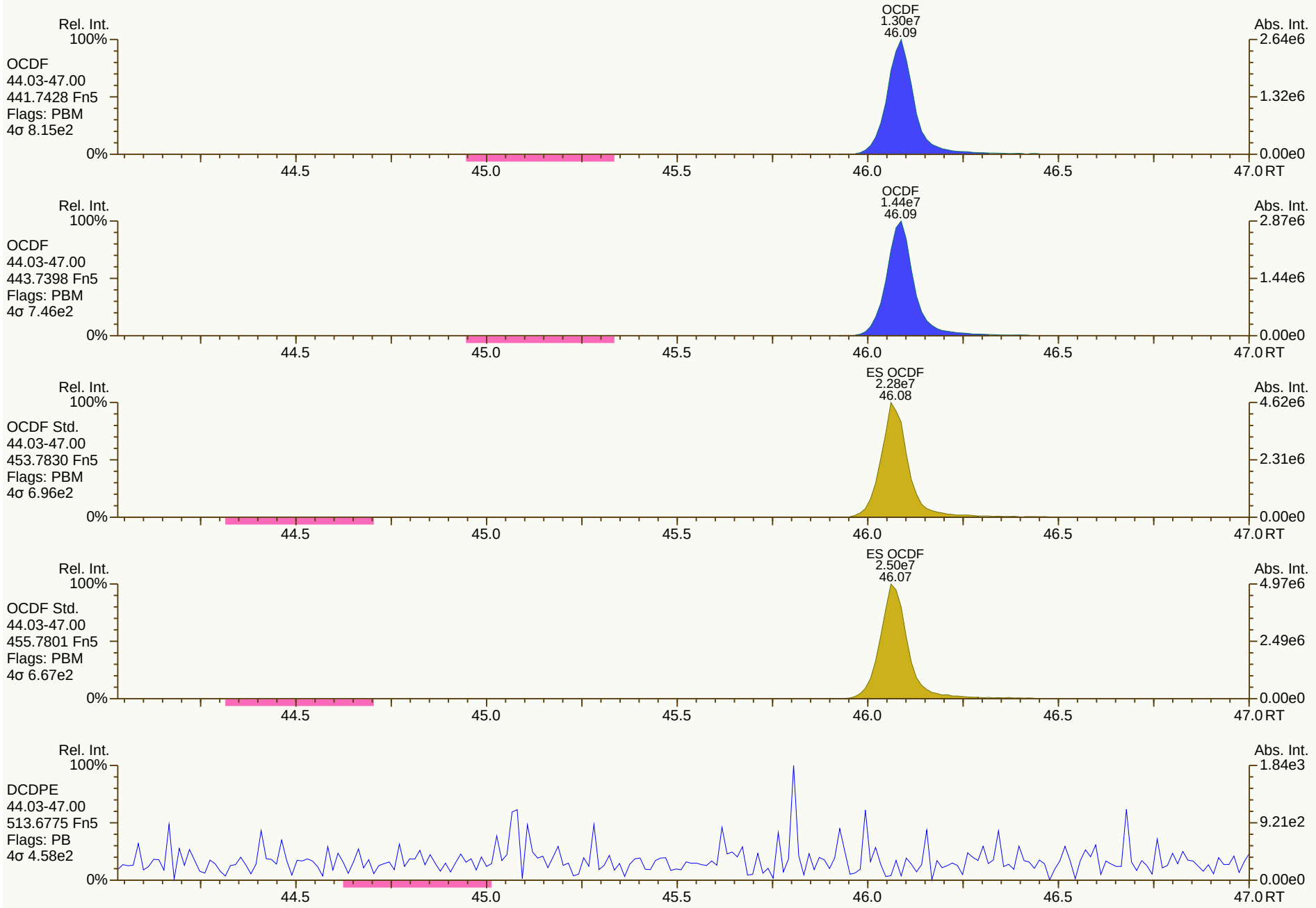
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Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 8710, 9452, 5354 scc: 997-611
Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:53 Page 10 of 12

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**



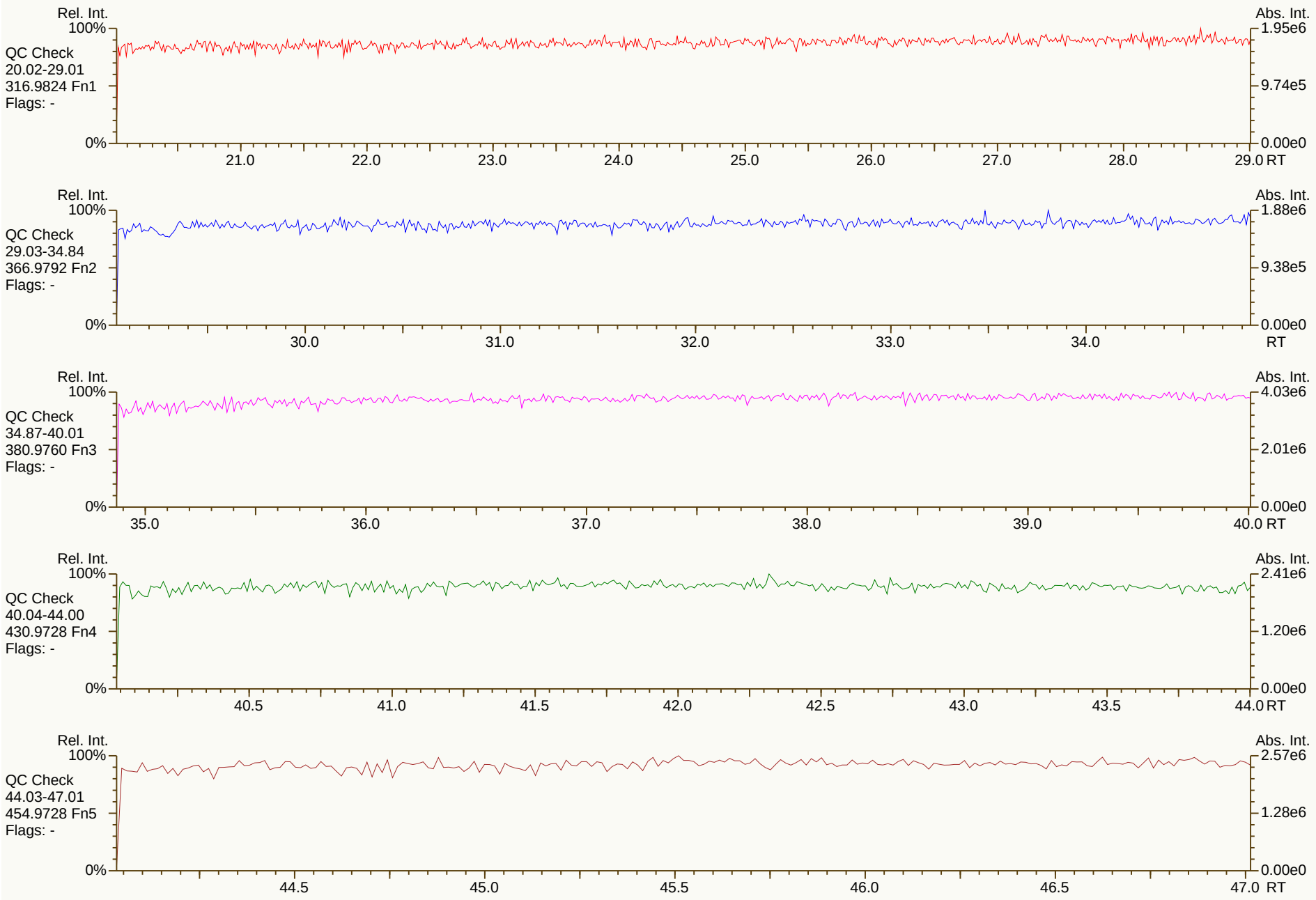
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 6369, 3759, 9653 scc: 997-611 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:53 Page 11 of 12*

SGS-AP ID: BCS3_10493_DF_PB **Sample ID: BCS3_10493_DF_PB** **Acq: 05-JAN-2013 23:34:57**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 31** **User: MDC Datafile: 130105P2-09**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\BCS3_10493_DF_PB.utp_res, saved 06-Jan-2013 09:35 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0588, 8118, 7979 scc: 997-611 *Revised: 06-Jan-2013 09:16 (MDC) Printed: 06-Jan-2013 09:53 Page 12 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 scc: 935-834 *PKD: n/a Printed: 06-Jan-2013 09:47 Page 1 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7196, 6268, 8672 scc: 935-834 *PKD: 06-Jan-2013 09:21 Printed: 06-Jan-2013 09:47 Page 2 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 8820, 6217 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 3 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0268, 4154 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 4 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 5328, 7883 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 5 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7320, 2998 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 6 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 6418, 8153, 2639 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 7 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 2566 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 8 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 9434, 5751, 6891 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 9 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



Results: P:\A5000_A5099\A5045\A5045_10493 DF\Resources\SBS_130105_DF_PB.utp_res, saved 06-Jan-2013 09:21 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 0874, 3832, 3424 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 10 of 12*

SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**



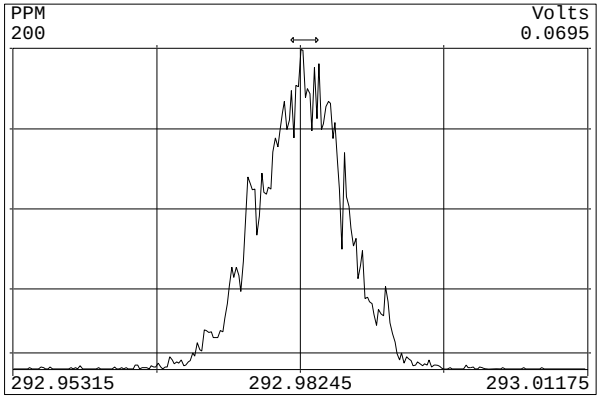
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 7312, 8136, 9088 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 11 of 12*

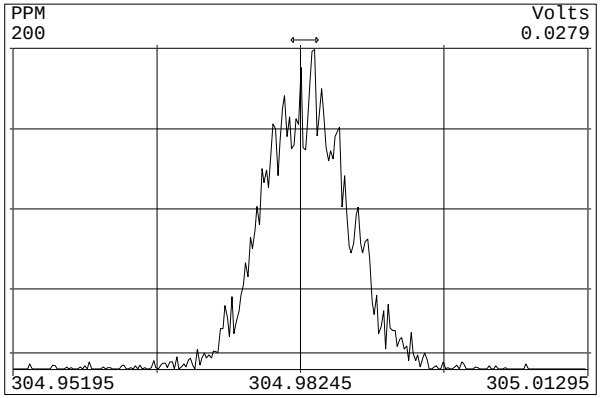
SGS-AP ID: SBS_130105_DF_PB **Sample ID: solvent blank** **Acq: 05-JAN-2013 17:34:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 15** **User: MDC Datafile: 130105P2-02**

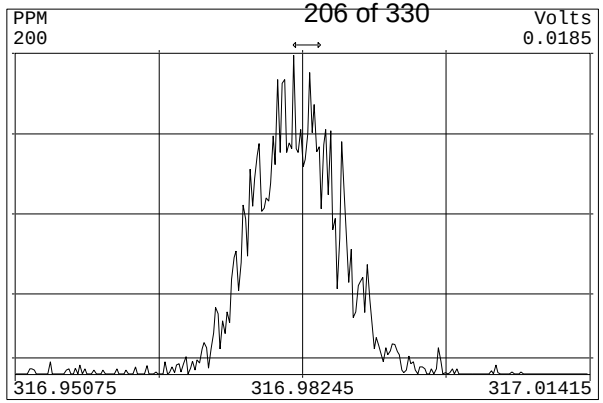


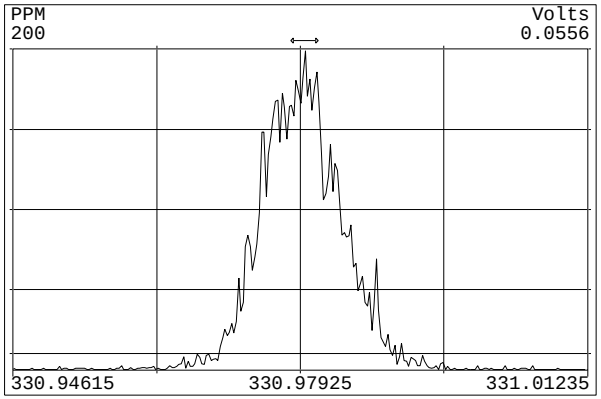
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AP UltraTrace-Pro V4.74 User/System: MDC/MCI7-047 cc: 6191, 4425, 1277 scc: 935-834 *Revised: 06-Jan-2013 09:21 (MDC) Printed: 06-Jan-2013 09:48 Page 12 of 12*

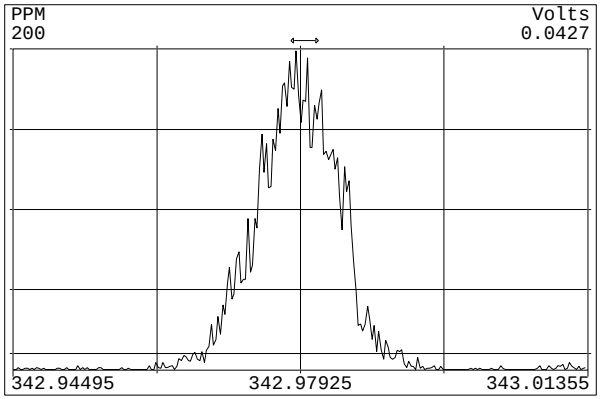
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Experiment:DF_CL4-8 Function:1 Reference:PFK2

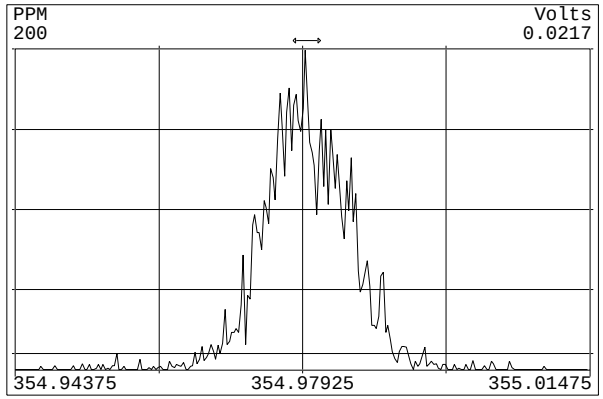


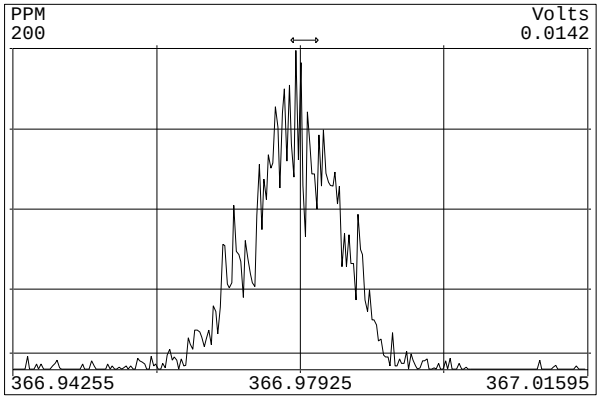


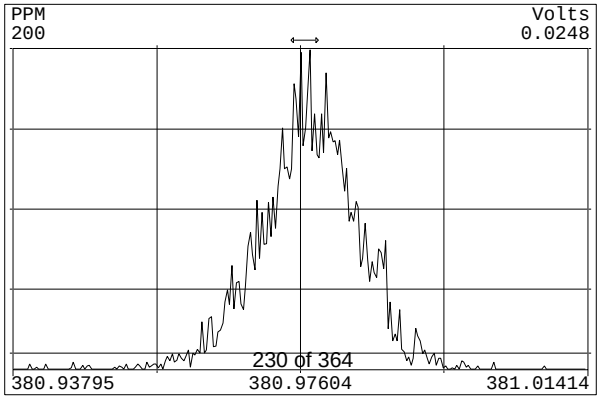




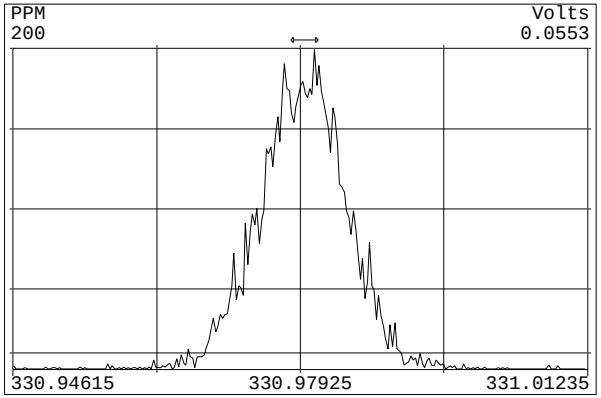


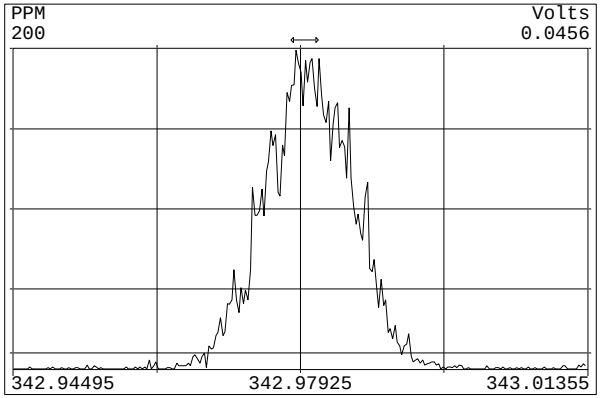


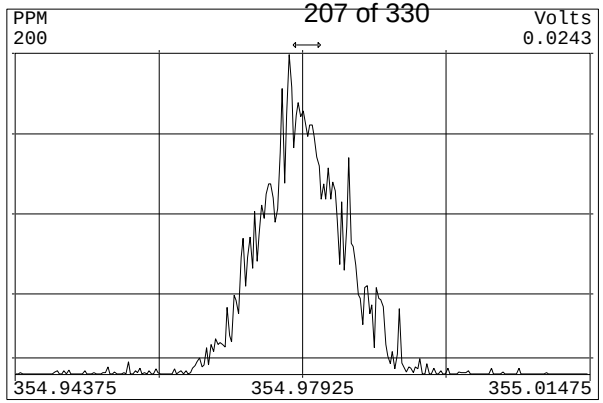


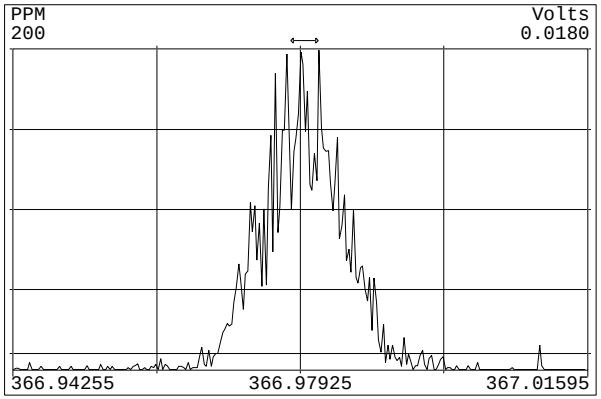


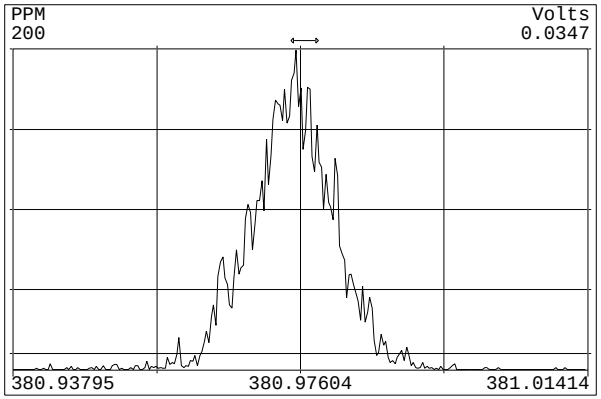
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Experiment:DF_CL4-8 Function:2 Reference:PFK2

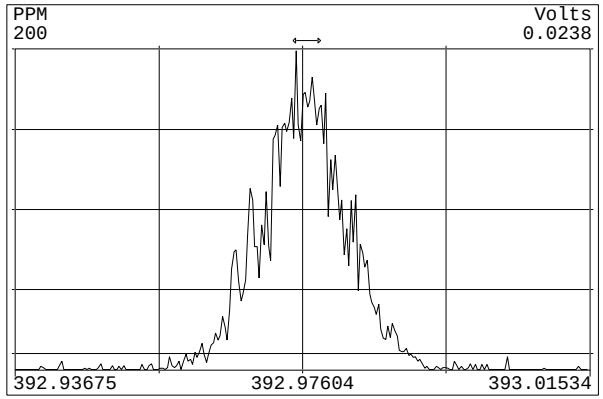


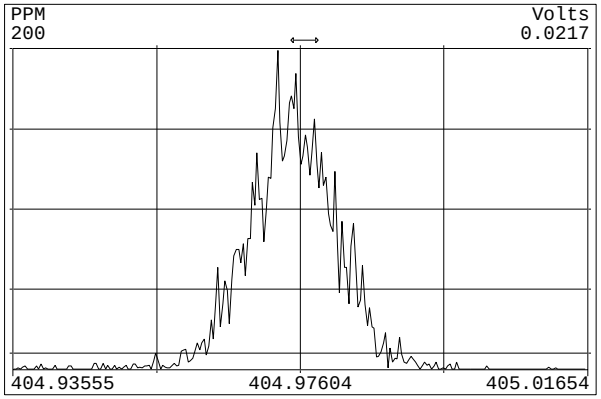


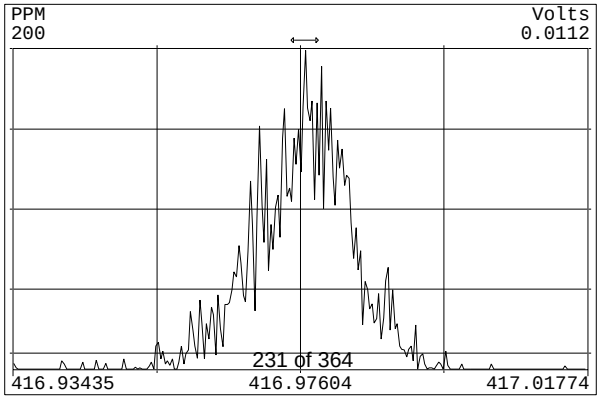




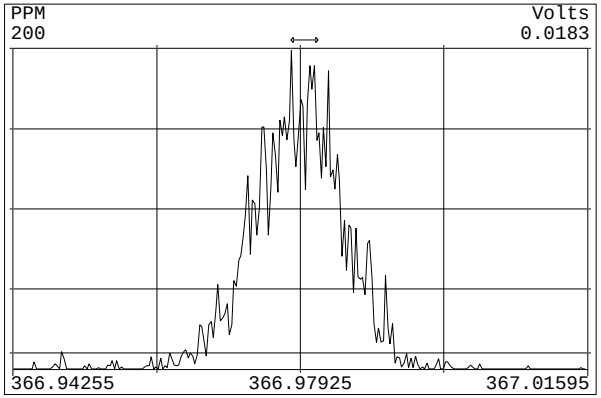


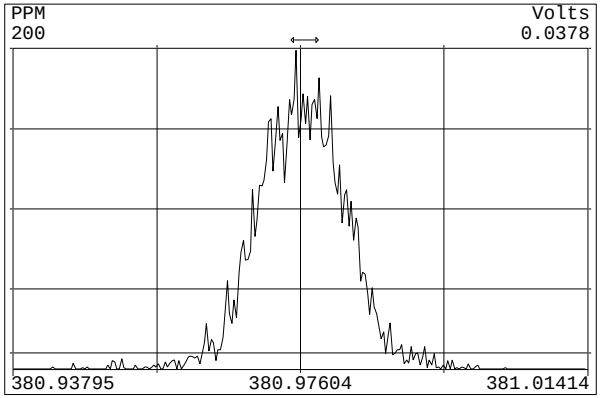


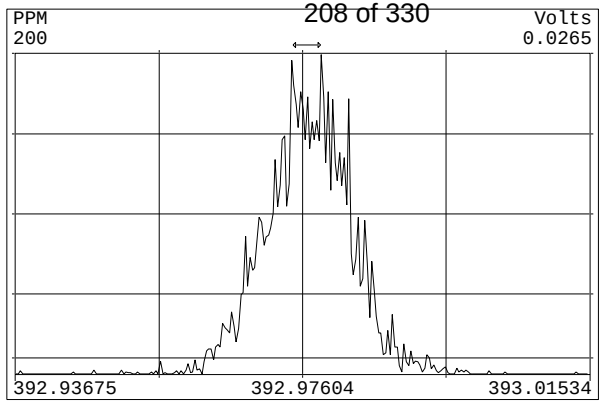


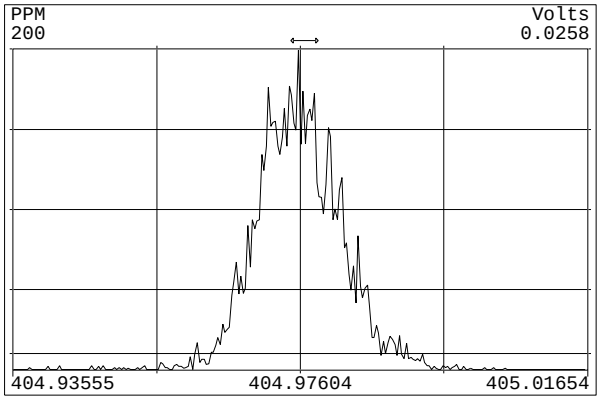


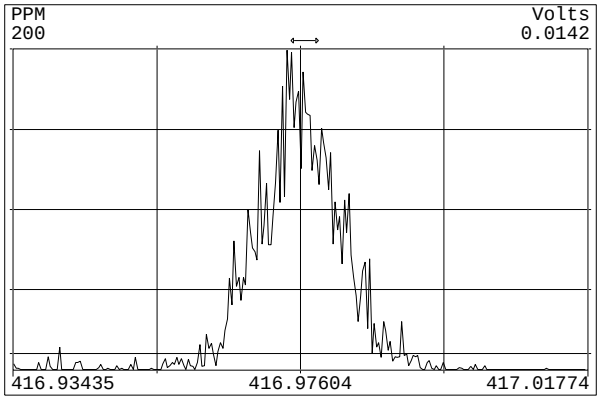
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Experiment:DF_CL4-8 Function:3 Reference:PFK2

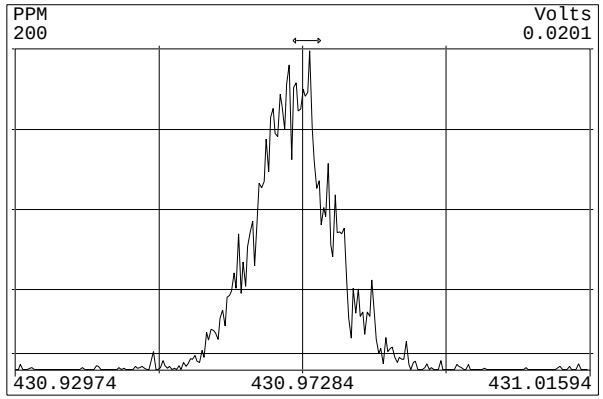


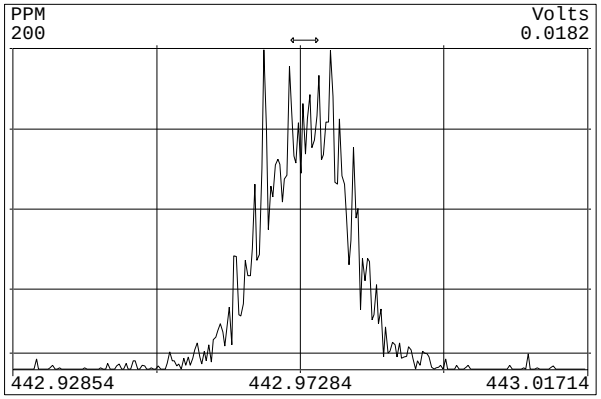


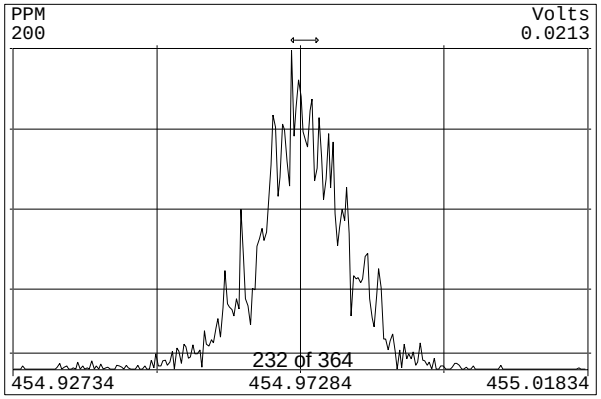




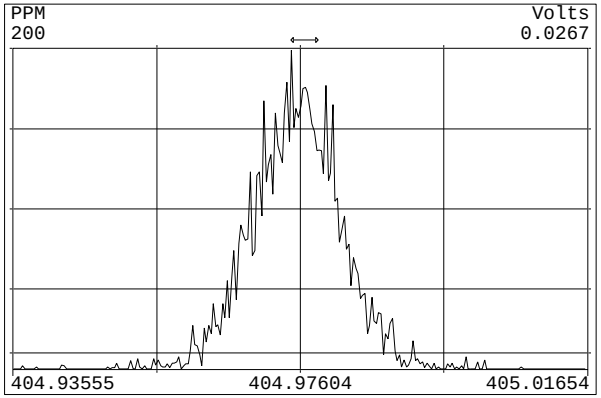


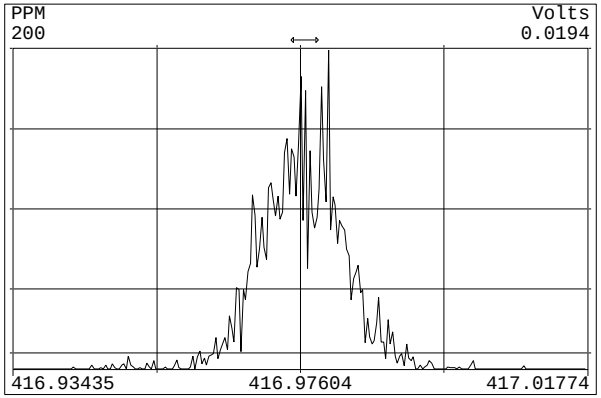


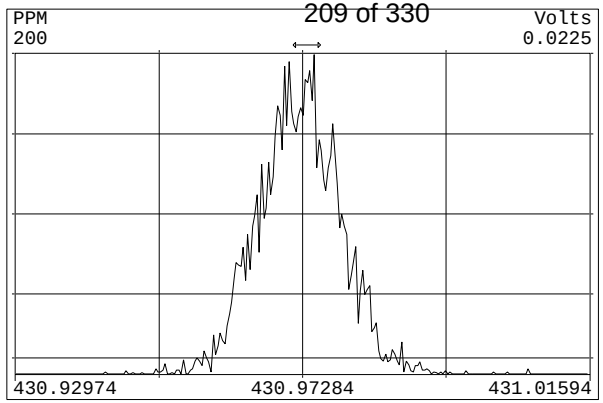


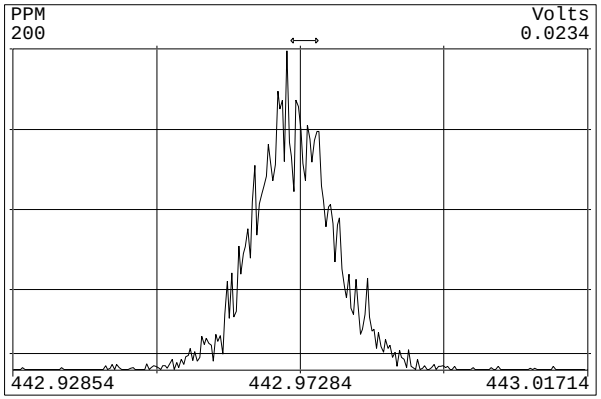


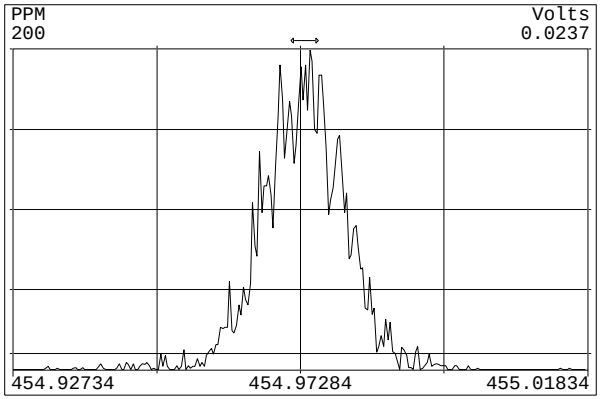
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Experiment:DF_CL4-8 Function:4 Reference:PFK2

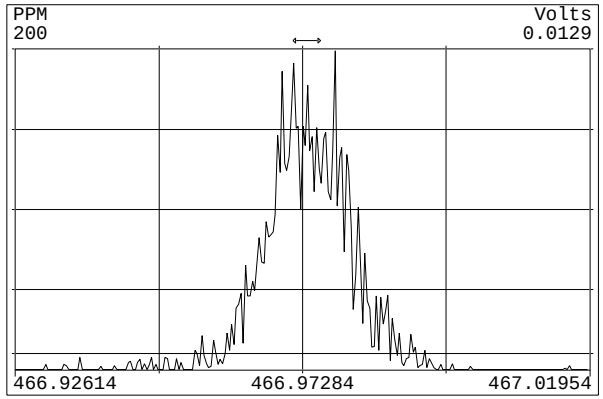


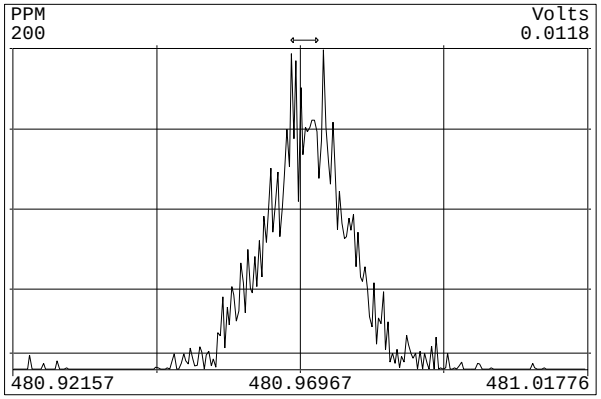




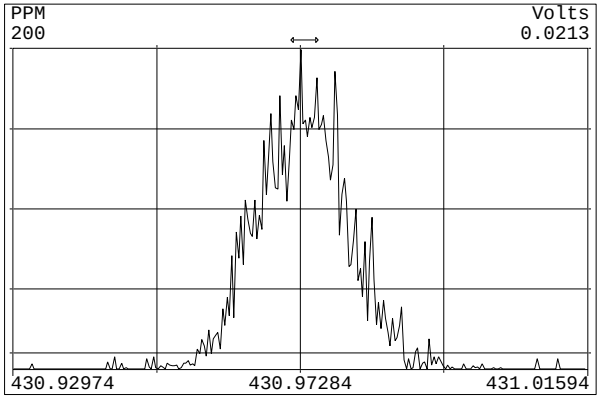


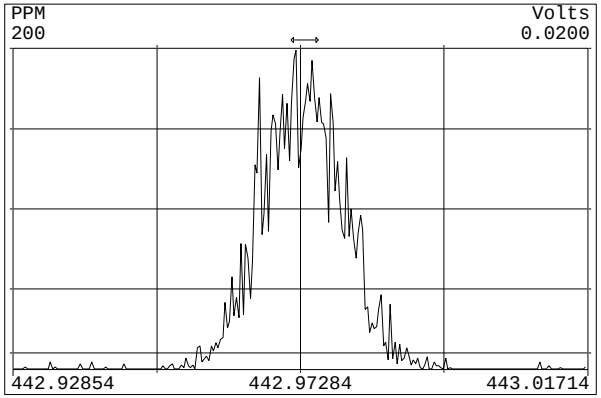


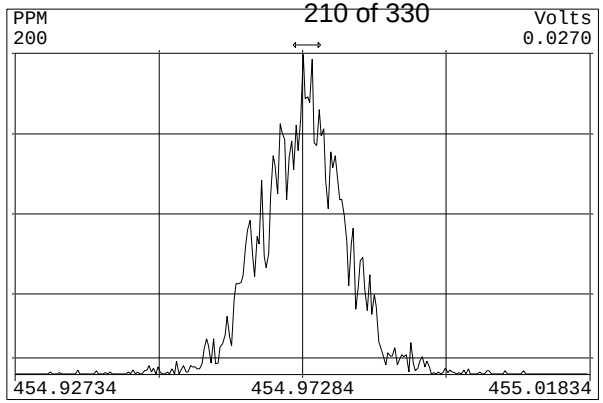


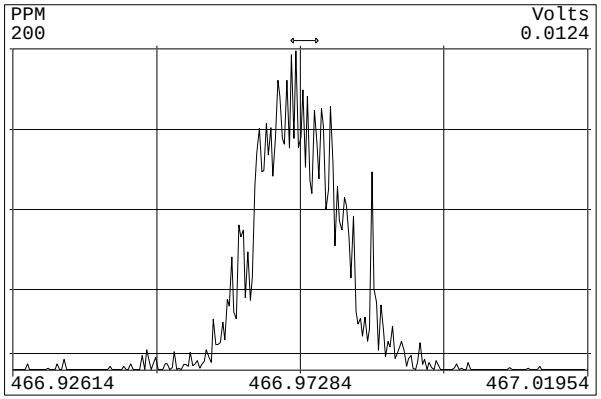


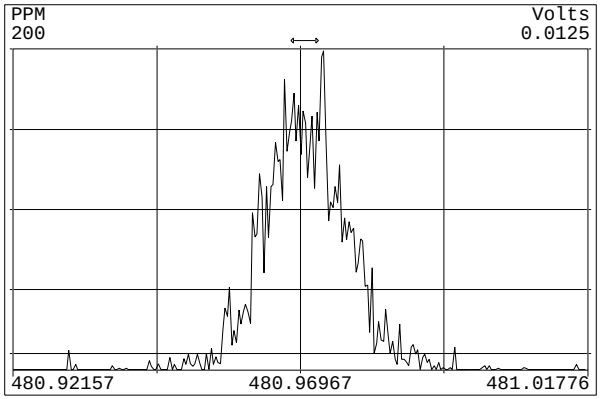
Peak Locate Examination: 5-JAN-2013:16:42 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:5 Reference:PFK2

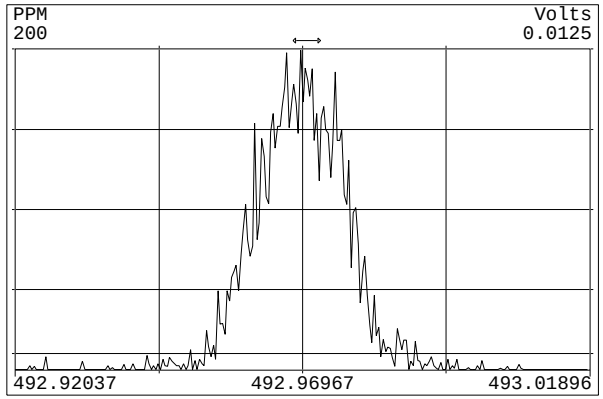


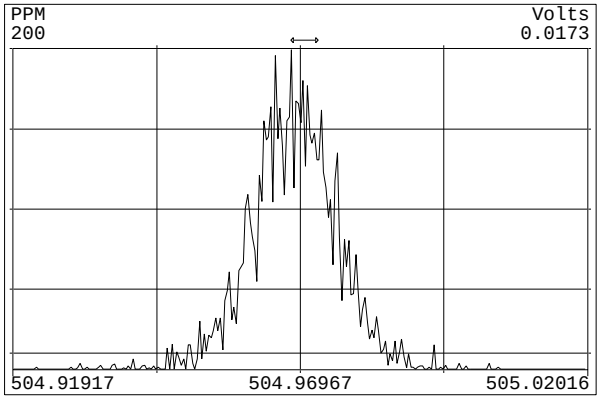


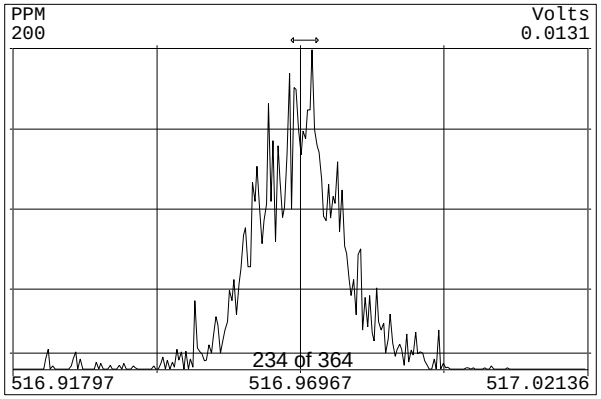




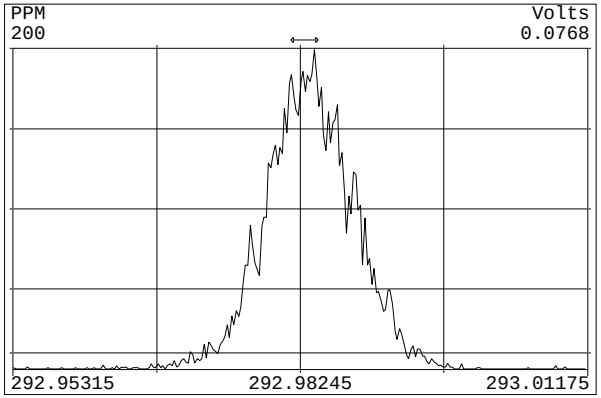


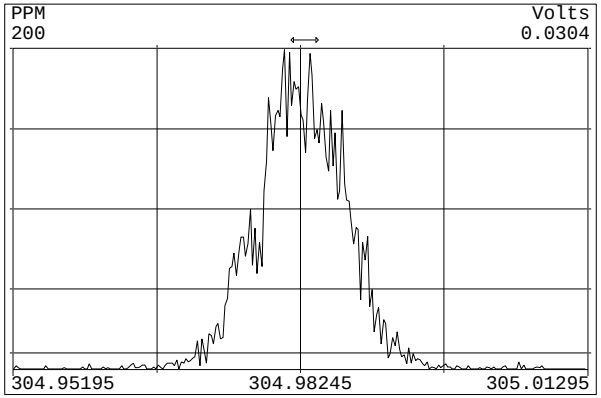


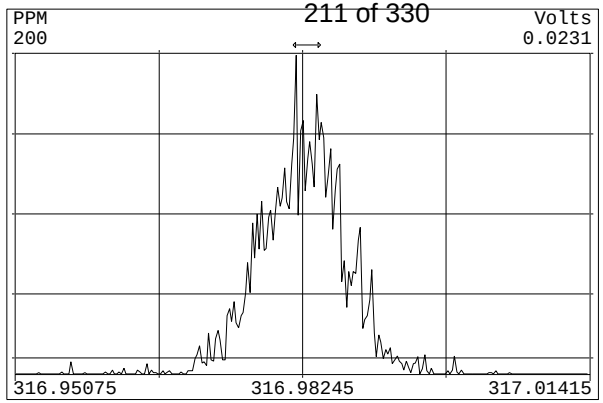


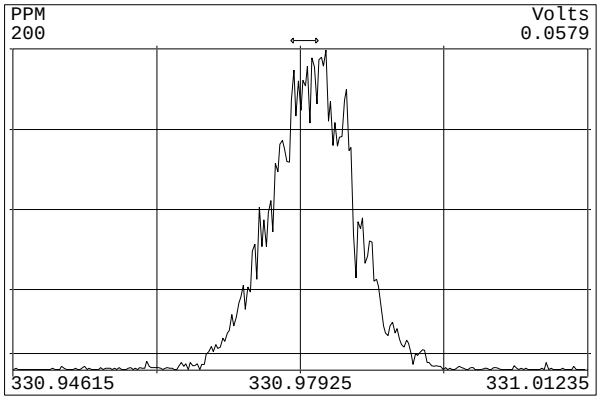


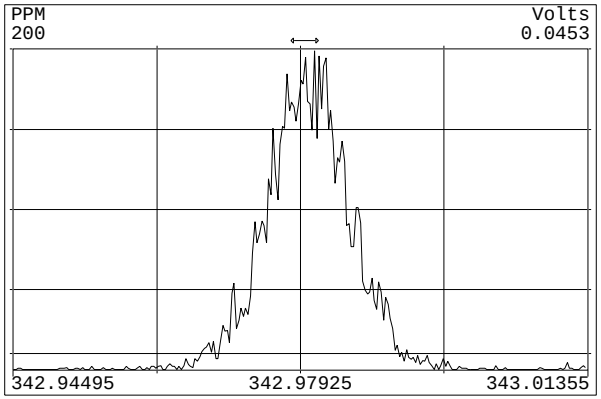
Peak Locate Examination: 6-JAN-2013:00:29 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:1 Reference:PFK2

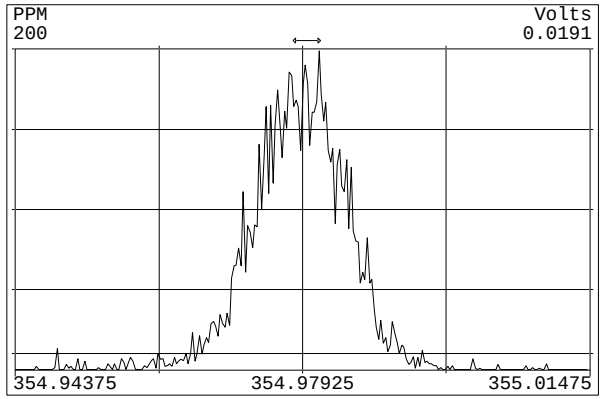


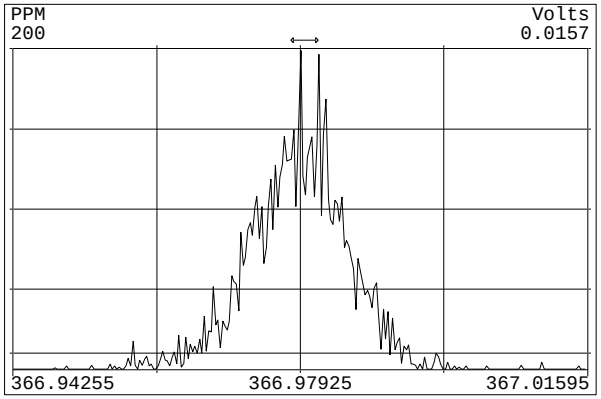


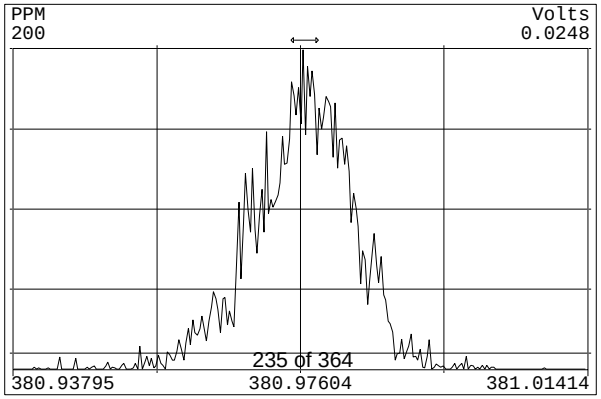




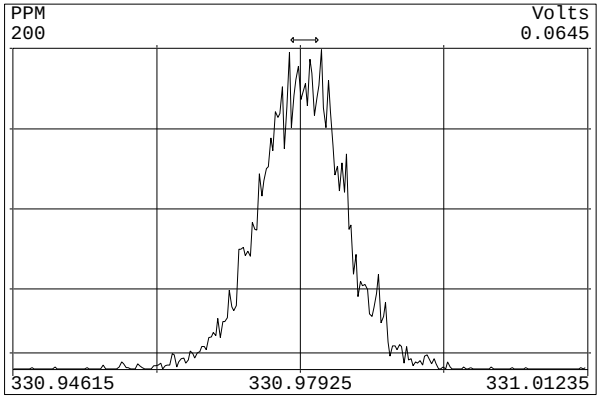


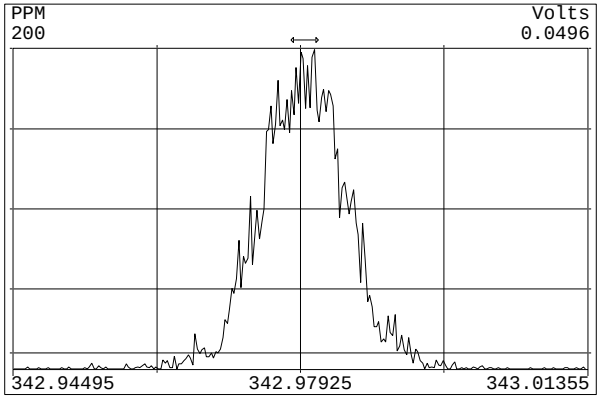


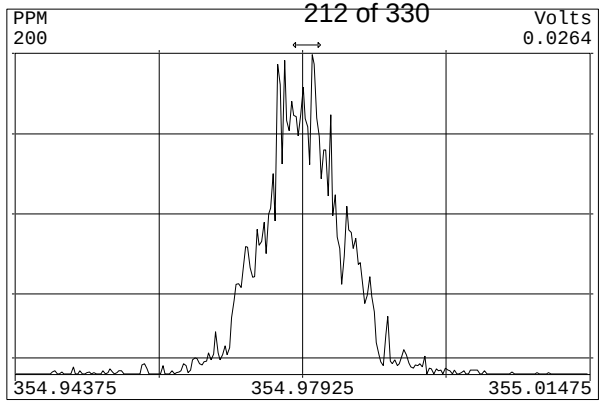


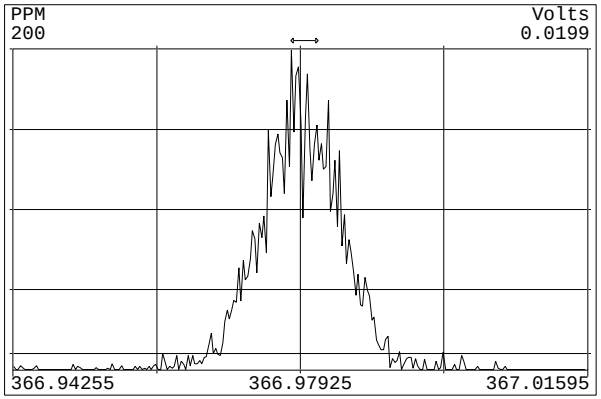


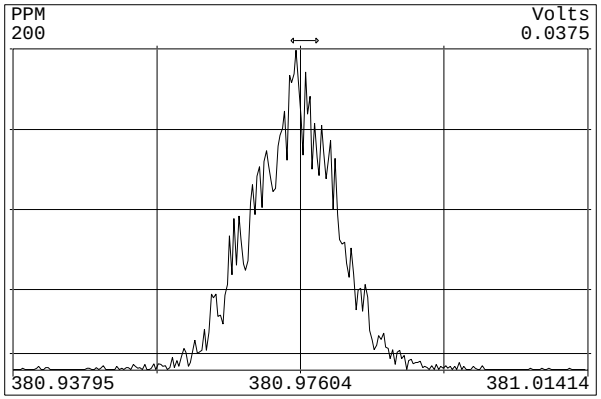
Peak Locate Examination: 6-JAN-2013:00:30 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:2 Reference:PFK2

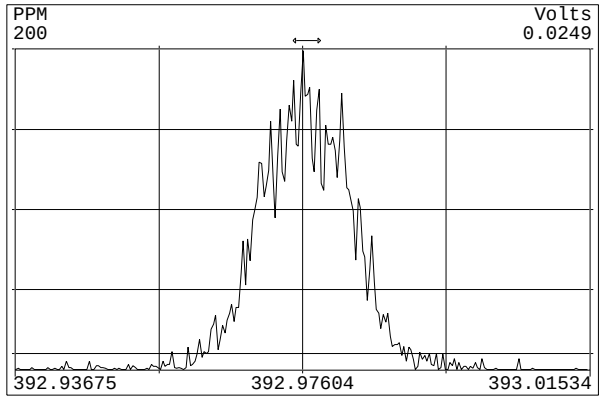


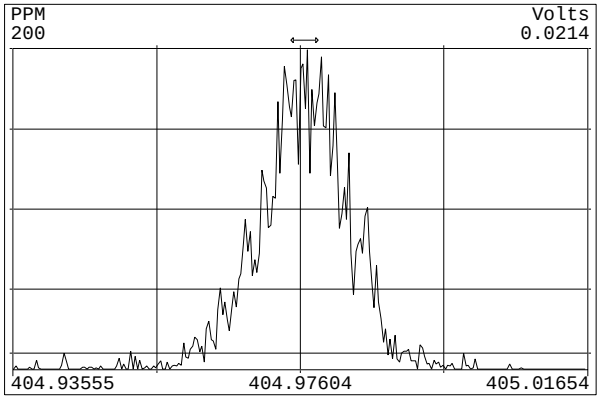


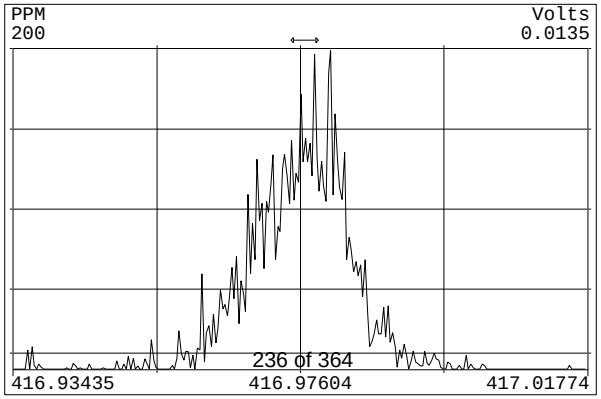




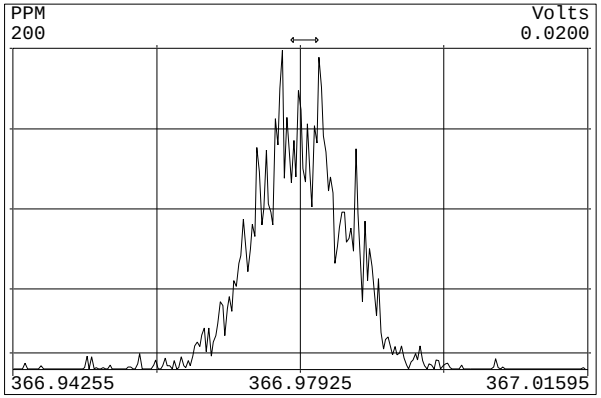


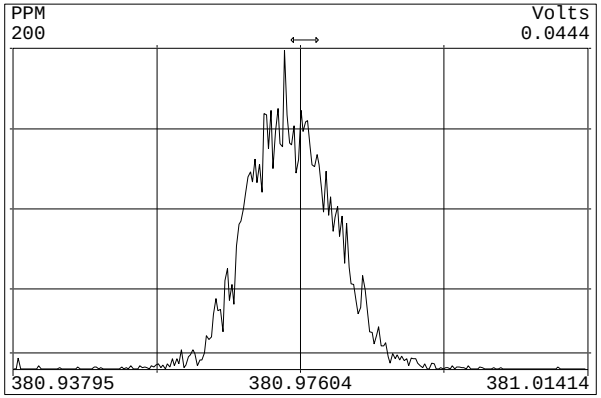


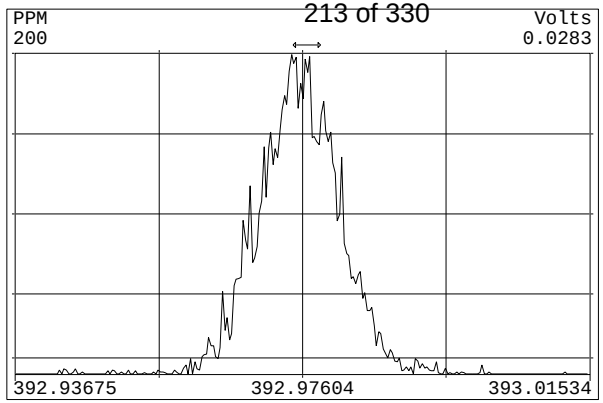


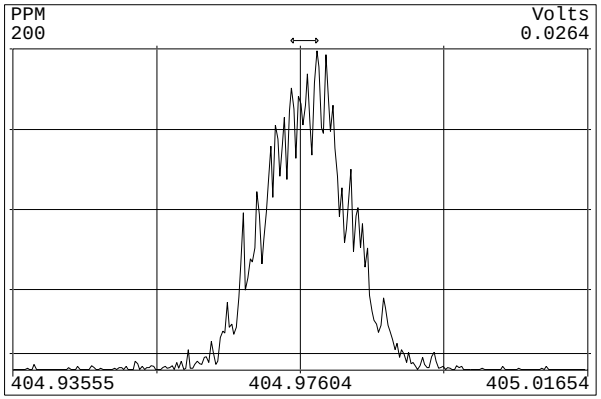


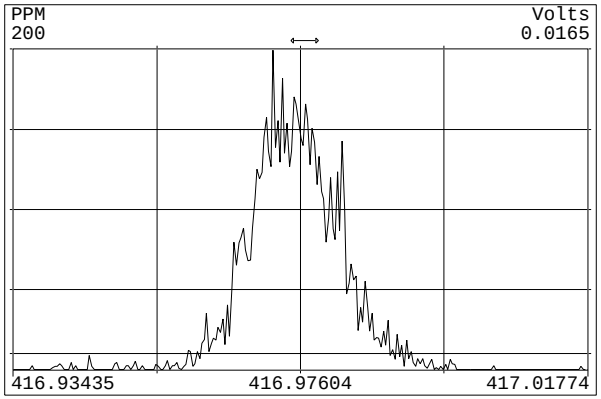
Peak Locate Examination: 6-JAN-2013:00:31 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:3 Reference:PFK2

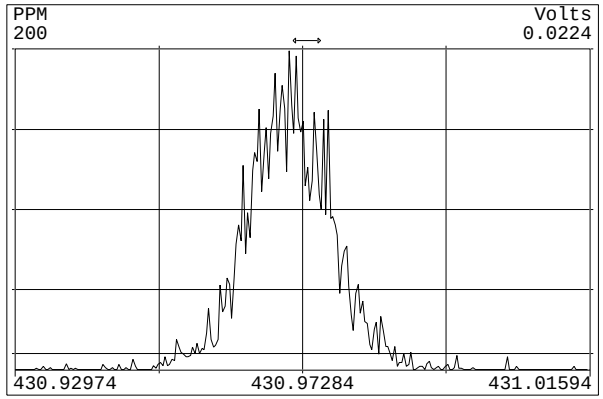


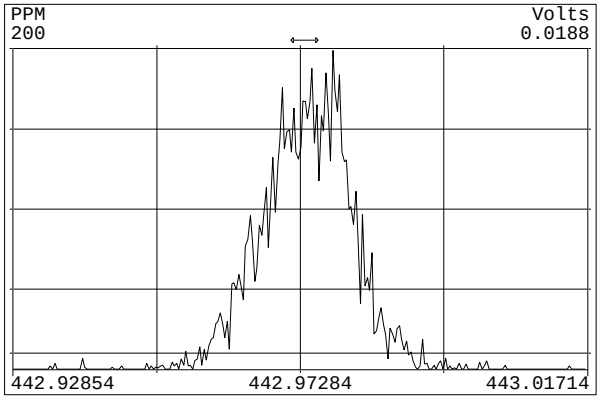


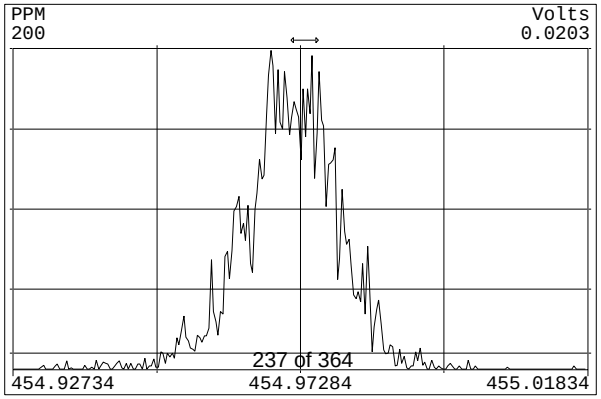




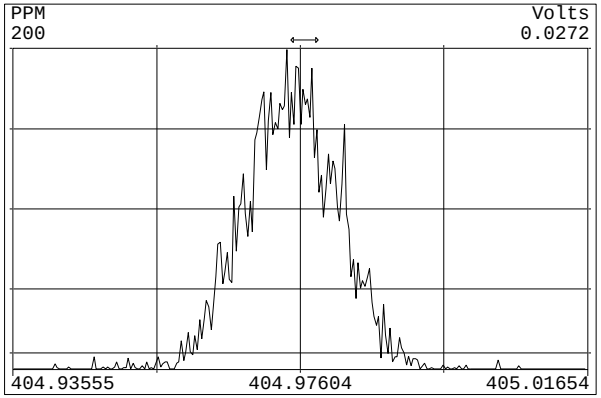


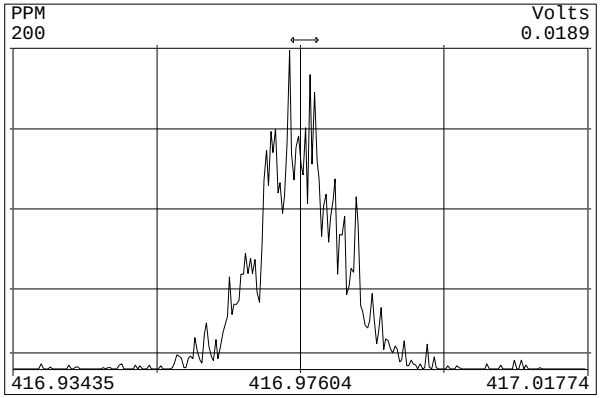


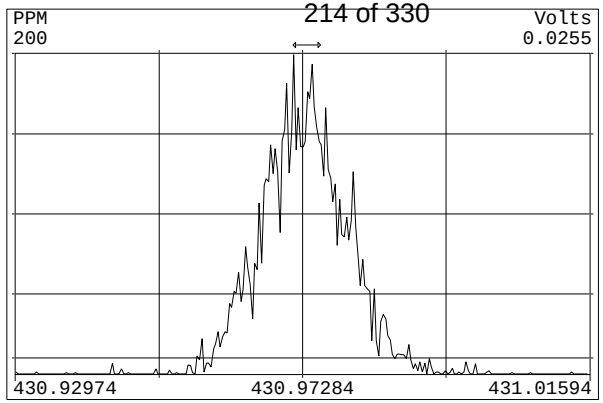


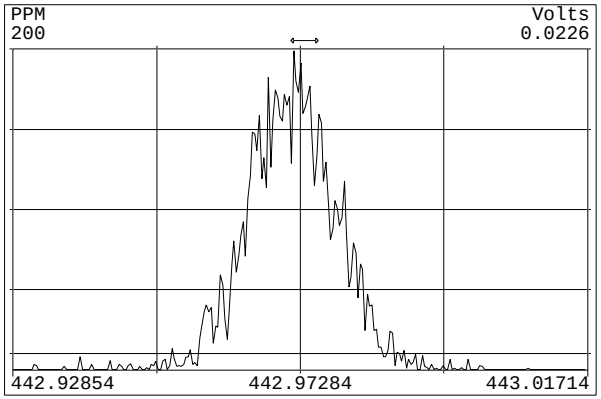


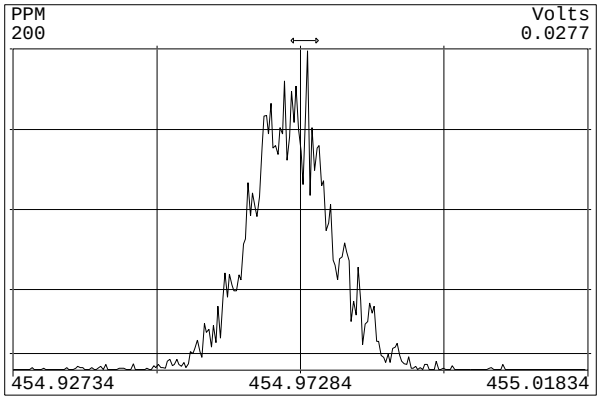
Peak Locate Examination: 6-JAN-2013:00:32 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:4 Reference:PFK2

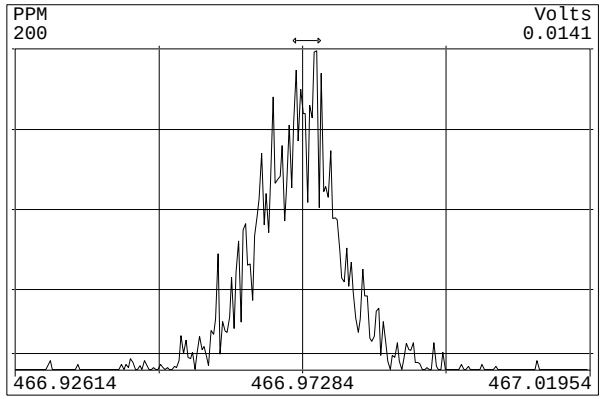


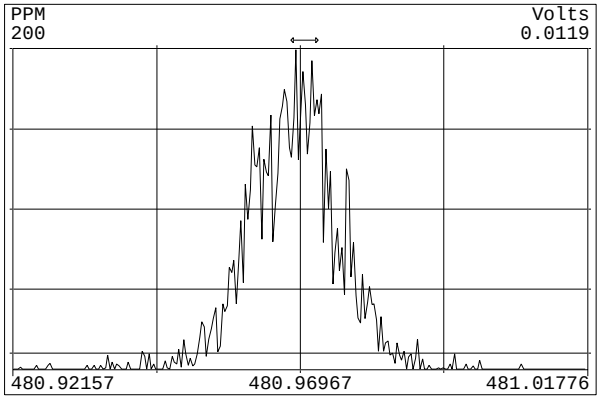




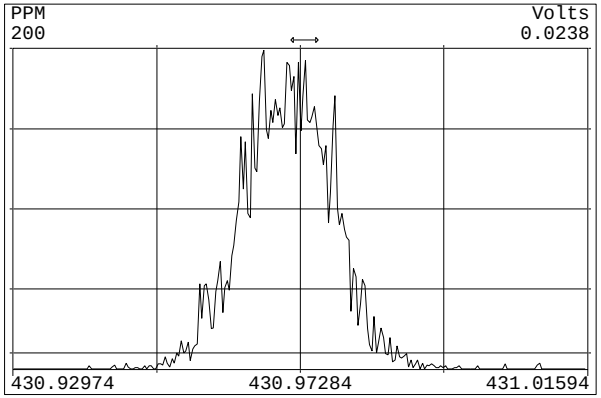


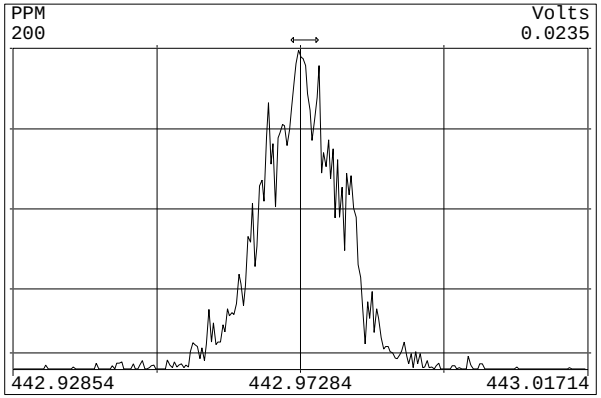


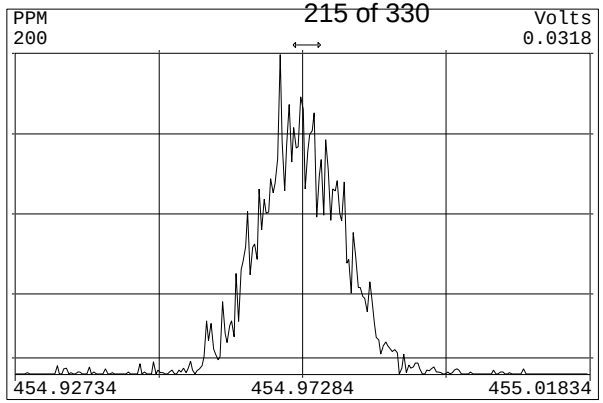


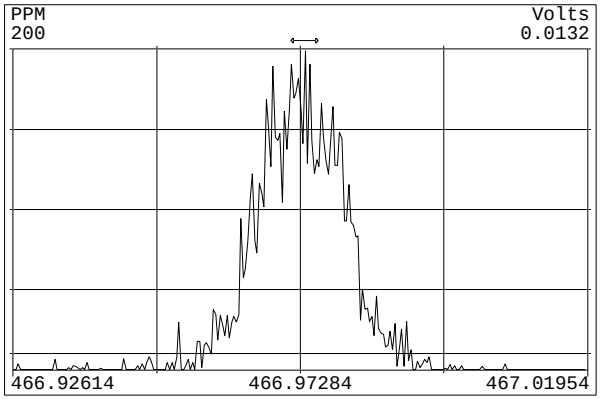


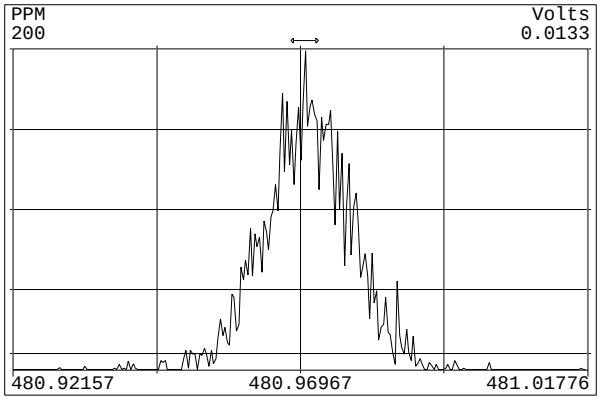
Peak Locate Examination: 6-JAN-2013:00:33 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:5 Reference:PFK2

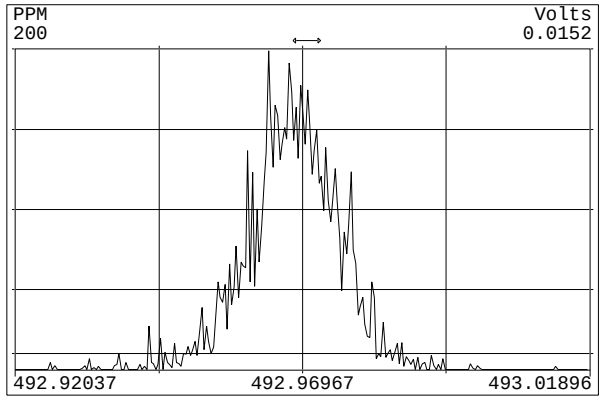


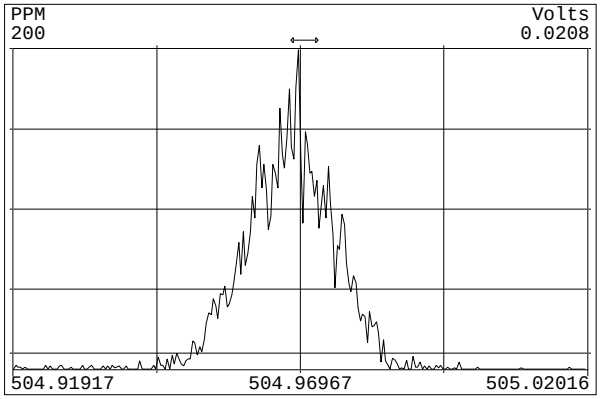


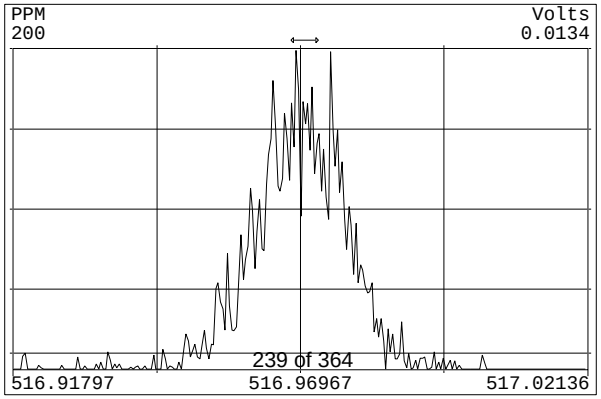












Dioxin/Furan ICAL Summary | **SGS Analytical Perspectives** | **Processed: 19 Sep 2012 18:02**

ICAL: MM1_DF_03312020A_19SEPT2012

Data Acquired: 19-Sep-2012

Name	Mean	% RSD	120919P2-01 0.25 CS0	120919P2-02 0.5 CS1	120919P2-03 2.0 CS2	120919P2-04 10 CS3	120919P2-05 40 CS4	120919P2-06 200 CS5	120919P2-07 500 CS6
2378-TCDD	1.15	7.0%	1.30	1.15	1.19	1.13	1.07	1.07	1.12
12378-PeCDD	1.08	3.6%	1.09	1.13	1.12	1.07	1.03	1.04	1.08
123478-HxCDD	1.20	5.3%	1.33	1.19	1.25	1.17	1.15	1.16	1.18
123678-HxCDD	1.10	3.5%	1.14	1.14	1.12	1.06	1.05	1.06	1.11
123789-HxCDD	1.12	3.9%	1.17	1.15	1.19	1.09	1.07	1.10	1.10
1234678-HpCDD	1.08	2.9%	1.06	1.07	1.13	1.05	1.07	1.08	1.12
OCDD	1.11	3.7%	1.17	1.12	1.15	1.11	1.06	1.06	1.10
2378-TCDF	1.10	4.7%	1.15	1.08	1.18	1.09	1.04	1.04	1.09
12378-PeCDF	1.07	2.2%	1.07	1.04	1.09	1.04	1.06	1.07	1.11
23478-PeCDF	1.14	3.8%	1.17	1.16	1.20	1.13	1.09	1.08	1.15
123478-HxCDF	1.30	2.9%	1.29	1.34	1.35	1.28	1.24	1.28	1.31
123678-HxCDF	1.27	3.1%	1.31	1.27	1.31	1.25	1.21	1.23	1.29
234678-HxCDF	1.27	2.8%	1.32	1.24	1.30	1.26	1.22	1.26	1.28
123789-HxCDF	1.25	3.1%	1.26	1.29	1.30	1.22	1.20	1.23	1.28
1234678-HpCDF	1.44	3.4%	1.48	1.44	1.50	1.40	1.38	1.39	1.48
1234789-HpCDF	1.50	2.7%	1.54	1.46	1.57	1.50	1.48	1.46	1.49
OCDF	1.06	3.2%	1.09	1.09	1.09	1.04	1.02	1.02	1.05
ES 2378-TCDD	1.05	3.0%	1.01	1.04	1.04	1.04	1.06	1.10	1.09
ES 12378-PeCDD	0.81	9.5%	0.78	0.77	0.76	0.73	0.80	0.84	0.96
ES 123478-HxCDD	1.03	8.7%	0.97	0.99	0.96	1.00	1.01	1.10	1.21
ES 123678-HxCDD	1.17	8.8%	1.10	1.08	1.10	1.11	1.17	1.25	1.36
ES 123789-HxCDD	1.17	10.3%	1.11	1.08	1.08	1.11	1.17	1.24	1.41
ES 1234678-HpCDD	1.00	10.3%	0.98	0.91	0.92	0.95	0.98	1.09	1.19
ES OCDD	0.80	15.5%	0.77	0.68	0.70	0.72	0.81	0.94	1.00
ES 2378-TCDF	1.02	3.5%	1.00	1.00	0.99	0.98	1.07	1.03	1.07
ES 12378-PeCDF	0.85	11.0%	0.80	0.79	0.79	0.75	0.90	0.89	1.02
ES 23478-PeCDF	0.81	10.7%	0.77	0.76	0.76	0.73	0.85	0.86	0.98
ES 123478-HxCDF	1.44	11.3%	1.19	1.34	1.39	1.42	1.49	1.57	1.70
ES 123678-HxCDF	1.61	8.0%	1.57	1.45	1.55	1.54	1.65	1.72	1.83
ES 234678-HxCDF	1.67	8.0%	1.48	1.54	1.67	1.77	1.62	1.76	1.85
ES 123789-HxCDF	1.32	10.4%	1.25	1.19	1.21	1.26	1.33	1.43	1.58
ES 1234678-HpCDF	1.16	9.8%	1.11	1.06	1.06	1.13	1.14	1.27	1.36
ES 1234789-HpCDF	1.02	10.9%	0.94	0.89	0.97	1.01	0.97	1.12	1.21
ES OCDF	1.17	17.5%	1.09	0.95	1.00	1.08	1.17	1.40	1.50

Dioxin/Furan ICAL Summary | **SGS Analytical Perspectives** | **Processed: 19 Sep 2012 18:02**

ICAL: MM1_DF_03312020A_19SEPT2012

Data Acquired: 18-Jun-2009

Name	Mean	% RSD	120919P2-01 0.25 CS0	120919P2-02 0.5 CS1	120919P2-03 2.0 CS2	120919P2-04 10 CS3	120919P2-05 40 CS4	120919P2-06 200 CS5	120919P2-07 500 CS6
CS 37Cl-2378-TCDD	1.22	9.3%	-	1.10	1.12	1.23	1.29	1.37	-
CS 12347-PeCDD	0.81	1.3%	0.82	0.81	0.82	0.80	0.82	0.80	0.82
CS 12346-PeCDF	0.91	1.6%	0.91	0.92	0.92	0.89	0.93	0.90	0.92
CS 123469-HxCDF	1.44	3.2%	1.51	1.42	1.43	1.48	1.46	1.43	1.37
CS 1234689-HpCDF	1.14	2.7%	1.18	1.12	1.11	1.16	1.09	1.15	1.14
SS 37Cl-2378-TCDD	1.16	7.6%	-	1.06	1.07	1.19	1.23	1.25	-
SS 12347-PeCDD	1.01	8.3%	1.06	1.05	1.08	1.09	1.02	0.95	0.86
SS 12346-PeCDF	1.08	9.8%	1.14	1.16	1.16	1.18	1.04	1.00	0.90
SS 123469-HxCDF	0.90	9.5%	0.96	0.98	0.93	0.96	0.89	0.83	0.75
SS 1234689-HpCDF	0.98	9.0%	1.06	1.06	1.05	1.03	0.95	0.90	0.84
AS 1368-TCDD	1.11	2.2%	1.10	1.11	1.14	1.13	1.07	1.13	1.09
AS 1368-TCDF	1.23	1.3%	1.21	1.23	1.23	1.21	1.25	1.22	1.24
OCDD-a	0.07	7.1%	0.06	0.08	0.06	0.06	0.06	0.06	0.07
OCDF-a	0.06	6.2%	-	-	0.07	0.06	0.06	0.06	0.06
Totals									
Total TCDD	1.15	7.0%	1.30	1.15	1.19	1.13	1.07	1.07	1.12
Total PeCDD	1.08	3.6%	1.09	1.13	1.12	1.07	1.03	1.04	1.08
Total HxCDD	1.14	4.0%	1.21	1.16	1.19	1.11	1.09	1.10	1.13
Total HpCDD	1.08	2.9%	1.06	1.07	1.13	1.05	1.07	1.08	1.12
Total TCDF	1.10	4.7%	1.15	1.08	1.18	1.09	1.04	1.04	1.09
Total PeCDF	1.10	2.4%	1.12	1.10	1.14	1.08	1.08	1.08	1.13
Total HxCDF	1.27	2.7%	1.29	1.28	1.31	1.25	1.22	1.25	1.29
Total HpCDF	1.47	2.9%	1.51	1.45	1.53	1.45	1.43	1.42	1.48

WHO-2 PCB ICAL Summary **SGS Analytical Perspectives** **Processed: 19 Sep 2012 18:02**

ICAL: MM1_DF_03312020A_19SEPT2012

			0.50	1.00	5.00	50	400	2000
Name	**Mean**	**% RSD**	**#REF!**	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
ES								
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
Alternate								
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						
#REF!	#DIV/0!	#DIV/0!						

8290B ICALs

Ax	MM1-DF-010606-25JAN06	MM1-DF-010606-16MAR06	MM1_SIL4181_20OCT06	MM1_DF_091806B_06NOV06	MM1_DF_091806B_14MAR07	MM1_DF_091806B_31MAR07	MM1_DF_091806B_16APR07	MM1_DF_07012007A_06Aug07
2,3,7,8-TCDD	1	1.06	1.12	1.13	1.03	1.18	1.1	1.13
1,2,3,7,8-PeCDD	0.88	0.93	1.1	0.94	0.9	0.93	0.97	0.99
1,2,3,4,7,8-HxCDD	0.92	1	1.2	1.1	0.98	1.1	1.13	1.12
1,2,3,6,7,8-HxCDD	0.93	1.03	1.06	1.03	0.94	1.03	1.04	1
1,2,3,7,8,9-HxCDD	0.91	0.99	1.07	1	0.9	1.03	1	1.08
1,2,3,4,6,7,8-HpCDD	0.83	0.9	1.08	0.87	0.75	0.94	0.91	0.98
OCDD	0.98	1.04	1.1	0.9	0.81	0.93	0.94	1.1
2,3,7,8-TCDF	0.86	0.99	1.09	1.05	0.97	1.07	1.03	1.04
1,2,3,7,8-PeCDF	0.79	0.89	1.18	0.9	0.83	0.97	0.96	0.96
2,3,4,7,8-PeCDF	0.94	1.08	1.15	0.94	0.87	1	0.99	1
1,2,3,4,7,8-HxCDF	1.02	1.17	1.30	1.03	0.96	1.11	1.13	1.22
1,2,3,6,7,8-HxCDF	0.99	1.12	1.27	1.02	0.94	1.12	1.12	1.17
2,3,4,6,7,8-HxCDF	0.95	1.1	1.24	0.99	0.9	1.07	1.06	1.14
1,2,3,7,8,9-HxCDF	1.03	1.19	1.24	1.03	0.94	1.12	1.12	1.14
1,2,3,4,6,7,8-HpCDF	1.17	1.32	1.46	1.15	0.99	1.18	1.2	1.39
1,2,3,4,7,8,9-HpCDF	1.22	1.37	1.51	1.16	1	1.21	1.2	1.37
OCDF	0.86	0.99	1.07	0.78	0.72	0.86	0.83	0.95
ES								
2,3,7,8-TCDD	1.03	1.03	1.05	1.11	1.1	1.12	1.09	1.05
1,2,3,7,8-PeCDD	0.77	0.83	0.95	1.05	1.02	1	1.02	0.92
1,2,3,4,7,8-HxCDD	1.06	1.09	1.19	1.06	1.04	1.1	1.06	1.09
1,2,3,6,7,8-HxCDD	1.22	1.2	1.3	1.16	1.19	1.16	1.2	1.13
1,2,3,7,8,9-HxCDD	1.26	1.22	1.35	1.24	1.25	1.23	1.25	1.17
1,2,3,4,6,7,8-HpCDD	0.92	0.94	1.11	1.17	1.04	1.01	1.09	1.03
OCDD	0.7	0.68	0.86	0.98	0.8	0.72	0.83	0.68
2,3,7,8-TCDF	0.94	0.96	1.02	1.04	0.97	1.04	1	0.99
1,2,3,7,8-PeCDF	0.73	0.8	0.96	1.05	1.01	0.91	0.9	0.91
2,3,4,7,8-PeCDF	0.67	0.73	0.96	1.05	1.04	0.94	1	0.89
1,2,3,4,7,8-HxCDF	1.24	1.4	1.58	1.65	1.39	1.73	1.64	1.57
1,2,3,6,7,8-HxCDF	1.43	1.55	1.79	1.89	1.65	1.86	1.88	1.71
2,3,4,6,7,8-HxCDF	1.32	1.44	1.66	1.71	1.5	1.75	1.74	1.61
1,2,3,7,8,9-HxCDF	1.16	1.29	1.5	1.52	1.26	1.58	1.53	1.45
1,2,3,4,6,7,8-HpCDF	0.86	1.06	1.28	1.3	1.03	1.28	1.32	1.23
1,2,3,4,7,8,9-HpCDF	0.7	0.83	1.04	1.12	0.85	1.04	1.11	1.01
OCDF	0.85	0.95	1.2	1.39	1.05	1.08	1.26	1.06

8290B ICALs

Ax	MM1_DF_07012007A_26 DEC07	MM1_DF_07012007A_25 DEC08	MM1_DF_SIL4-18-1_22NOV09	MM1_ical_122509	MM1_DF_03312010_25O CT10	MM1_DF_03312010A_25 DEC10	MM1_DF_7MAY11	MM1_DF_6JUN11
2,3,7,8-TCDD	1.14	1.08	1.11	1.23	1.27	1.21	1.12	1.22
1,2,3,7,8-PeCDD	1.03	1	1.04	1.14	1.16	1.06	0.99	1.03
1,2,3,4,7,8-HxCDD	1.16	1.08	1.19	1.19	1.22	1.17	1.21	1.16
1,2,3,6,7,8-HxCDD	1.04	0.94	1.06	1.09	1.09	1.04	1.05	1.02
1,2,3,7,8,9-HxCDD	1.1	0.99	1.08	1.08	1.12	1.09	1.08	1.06
1,2,3,4,6,7,8-HpCDD	1	0.97	1.05	1.04	1.09	1.03	0.98	1.02
OCDD	1.11	1.06	1.11	1.1	1.11	1.07	0.97	1.06
2,3,7,8-TCDF	1.15	1.05	1.06	1.13	1.24	1.14	1.00	1.09
1,2,3,7,8-PeCDF	1.05	0.98	1.14	1.16	1.10	1.01	0.95	1.00
2,3,4,7,8-PeCDF	1.09	1.01	1.1	1.13	1.20	1.10	1.02	1.08
1,2,3,4,7,8-HxCDF	1.28	1.22	1.26	1.26	1.34	1.27	1.18	1.25
1,2,3,6,7,8-HxCDF	1.2	1.15	1.24	1.25	1.33	1.24	1.15	1.22
2,3,4,6,7,8-HxCDF	1.18	1.13	1.19	1.18	1.27	1.18	1.09	1.16
1,2,3,7,8,9-HxCDF	1.19	1.12	1.23	1.2	1.32	1.22	1.13	1.20
1,2,3,4,6,7,8-HpCDF	1.42	1.37	1.41	1.39	1.44	1.39	1.29	1.44
1,2,3,4,7,8,9-HpCDF	1.4	1.32	1.46	1.42	1.52	1.43	1.34	1.48
OCDF	0.97	0.94	1.03	1.01	1.09	1.01	0.95	0.99
ES								
2,3,7,8-TCDD	1.02	0.99	1.04	1.04	1.04	1.05	1.01	1.02
1,2,3,7,8-PeCDD	0.96	0.83	0.91	0.96	1.11	0.98	0.78	0.94
1,2,3,4,7,8-HxCDD	1.12	1.08	1	1.01	1.02	1.05	1.00	1.02
1,2,3,6,7,8-HxCDD	1.23	1.23	1.14	1.14	1.18	1.20	1.30	1.21
1,2,3,7,8,9-HxCDD	1.23	1.21	1.14	1.14	1.18	1.19	1.25	1.18
1,2,3,4,6,7,8-HpCDD	1.14	0.98	0.99	0.98	0.99	0.94	0.96	0.88
OCDD	0.72	0.66	0.7	0.76	0.75	0.75	0.76	0.67
2,3,7,8-TCDF	0.94	0.96	1	0.94	1.00	1.00	0.98	1.02
1,2,3,7,8-PeCDF	0.97	0.85	0.93	0.95	1.12	0.92	0.78	0.93
2,3,4,7,8-PeCDF	0.97	0.88	0.94	0.9	1.10	0.90	0.76	0.89
1,2,3,4,7,8-HxCDF	1.66	1.47	1.35	1.5	1.59	1.60	1.55	1.52
1,2,3,6,7,8-HxCDF	1.99	1.78	1.53	1.63	1.76	1.80	1.85	1.80
2,3,4,6,7,8-HxCDF	1.77	1.61	1.45	1.5	1.67	1.67	1.72	1.65
1,2,3,7,8,9-HxCDF	1.57	1.4	1.25	1.32	1.39	1.39	1.37	1.38
1,2,3,4,6,7,8-HpCDF	1.35	1.16	1.17	1.11	1.21	1.20	1.14	1.12
1,2,3,4,7,8,9-HpCDF	1.09	0.92	0.93	0.92	1.03	0.96	0.89	0.90
OCDF	1.16	1.04	1.02	1.07	1.16	1.14	1.05	1.03

8290B ICALs

Ax	MM1_DF_03312010A_13S EP11	MM1_DF_03312010A_23S EP11	MM1_DF_03312010A_19S EPT2012	RSD	Mean	sd	PD from Mean
2,3,7,8-TCDD	1.19	1.14	1.15	**5.6**	**1.14**	0.06	0%
1,2,3,7,8-PeCDD	1.07	1.03	1.08	**6.5**	**1.01**	0.07	2%
1,2,3,4,7,8-HxCDD	1.16	1.09	1.20	**6.5**	**1.11**	0.07	-2%
1,2,3,6,7,8-HxCDD	1.00	1.00	1.10	**5.7**	**1.05**	0.06	-5%
1,2,3,7,8,9-HxCDD	1.07	1.04	1.12	**5.6**	**1.03**	0.06	2%
1,2,3,4,6,7,8-HpCDD	1.02	1.00	1.08	**7.6**	**0.97**	0.07	3%
OCDD	1.05	1.07	1.11	**7.4**	**1.02**	0.08	5%
2,3,7,8-TCDF	1.07	1.03	1.10	**7.4**	**1.04**	0.08	-1%
1,2,3,7,8-PeCDF	0.95	0.96	1.07	**9.2**	**1.00**	0.09	-3%
2,3,4,7,8-PeCDF	1.03	1.04	1.14	**7.1**	**1.03**	0.07	1%
1,2,3,4,7,8-HxCDF	1.21	1.20	1.30	**8.0**	**1.17**	0.09	3%
1,2,3,6,7,8-HxCDF	1.18	1.18	1.27	**7.2**	**1.16**	0.08	1%
2,3,4,6,7,8-HxCDF	1.12	1.12	1.27	**7.8**	**1.11**	0.09	0%
1,2,3,7,8,9-HxCDF	1.17	1.17	1.25	**6.7**	**1.14**	0.08	2%
1,2,3,4,6,7,8-HpCDF	1.34	1.34	1.44	**8.1**	**1.34**	0.11	0%
1,2,3,4,7,8,9-HpCDF	1.37	1.38	1.50	**8.5**	**1.35**	0.11	3%
OCDF	0.98	0.98	1.06	**8.5**	**0.95**	0.08	2%
ES							
2,3,7,8-TCDD	1.05	1.02	1.05	**5.0**	**1.08**	0.05	-6%
1,2,3,7,8-PeCDD	0.92	0.86	0.81	**8.5**	**0.94**	0.08	-9%
1,2,3,4,7,8-HxCDD	1.03	1.04	1.03	**4.0**	**1.05**	0.04	-1%
1,2,3,6,7,8-HxCDD	1.16	1.18	1.17	**5.5**	**1.16**	0.06	1%
1,2,3,7,8,9-HxCDD	1.17	1.16	1.17	**4.2**	**1.21**	0.05	-4%
1,2,3,4,6,7,8-HpCDD	1.00	0.94	1.00	**9.0**	**0.97**	0.09	-4%
OCDD	0.85	0.72	0.80	**11.5**	**0.76**	0.09	-6%
2,3,7,8-TCDF	1.00	1.01	1.02	**3.2**	**1.00**	0.03	1%
1,2,3,7,8-PeCDF	0.87	0.85	0.85	**10.5**	**0.88**	0.09	-3%
2,3,4,7,8-PeCDF	0.88	0.85	0.81	**10.5**	**0.90**	0.09	-5%
1,2,3,4,7,8-HxCDF	1.41	1.41	1.44	**8.4**	**1.51**	0.13	-7%
1,2,3,6,7,8-HxCDF	1.54	1.58	1.61	**9.3**	**1.68**	0.16	-6%
2,3,4,6,7,8-HxCDF	1.49	1.48	1.67	**8.0**	**1.57**	0.13	-6%
1,2,3,7,8,9-HxCDF	1.34	1.32	1.32	**9.0**	**1.35**	0.12	-2%
1,2,3,4,6,7,8-HpCDF	1.13	1.10	1.16	**11.0**	**1.13**	0.13	-3%
1,2,3,4,7,8,9-HpCDF	0.96	0.90	1.02	**12.9**	**0.92**	0.12	-2%
OCDF	1.22	1.09	1.17	**12.7**	**1.08**	0.14	1%

SGS Analytical Perspectives — Run Log **Project: MM1_DF_03312020A_19SEPT2012**

Instrument: MM1 (AutoSpec-Ultima) MS Experiment: DF_CL4-8B GC Program: DB5MS_60M

#	Datafile	Vial#	Lab ID	Wt/Vol	Client/Sample ID	Analyst(s)	Checkcode	Acq Date	Acq Time
1	120919P2-01	46	CS0	1.00	SIL12-32-2	MDC	510-190	19-SEP-2012	11:01:41
2	120919P2-02	47	CS1	1.00	SIL12-32-2	MDC	032-524	19-SEP-2012	11:52:51
3	120919P2-03	48	CS2	10.24	SIL12-32-1	MDC	932-183	19-SEP-2012	12:43:51
4	120919P2-04	49	CS3	10.10	SIL12-31-4	MDC	921-458	19-SEP-2012	13:34:55
5	120919P2-05	50	CS4	1.00	SIL12-31-3	MDC	441-834	19-SEP-2012	14:25:59
6	120919P2-06	51	CS5	1.00	SIL12-31-2	MDC	334-847	19-SEP-2012	15:17:01
7	120919P2-07	52	CS6	1.00	SIL12-31-1	MDC	243-871	19-SEP-2012	16:07:59

REVIEWED
By Michael D H Chu at 5:55 pm, Sep 19, 2012

APPROVED
By Jeremy Kadylak at 1:23 pm, Sep 20, 2012

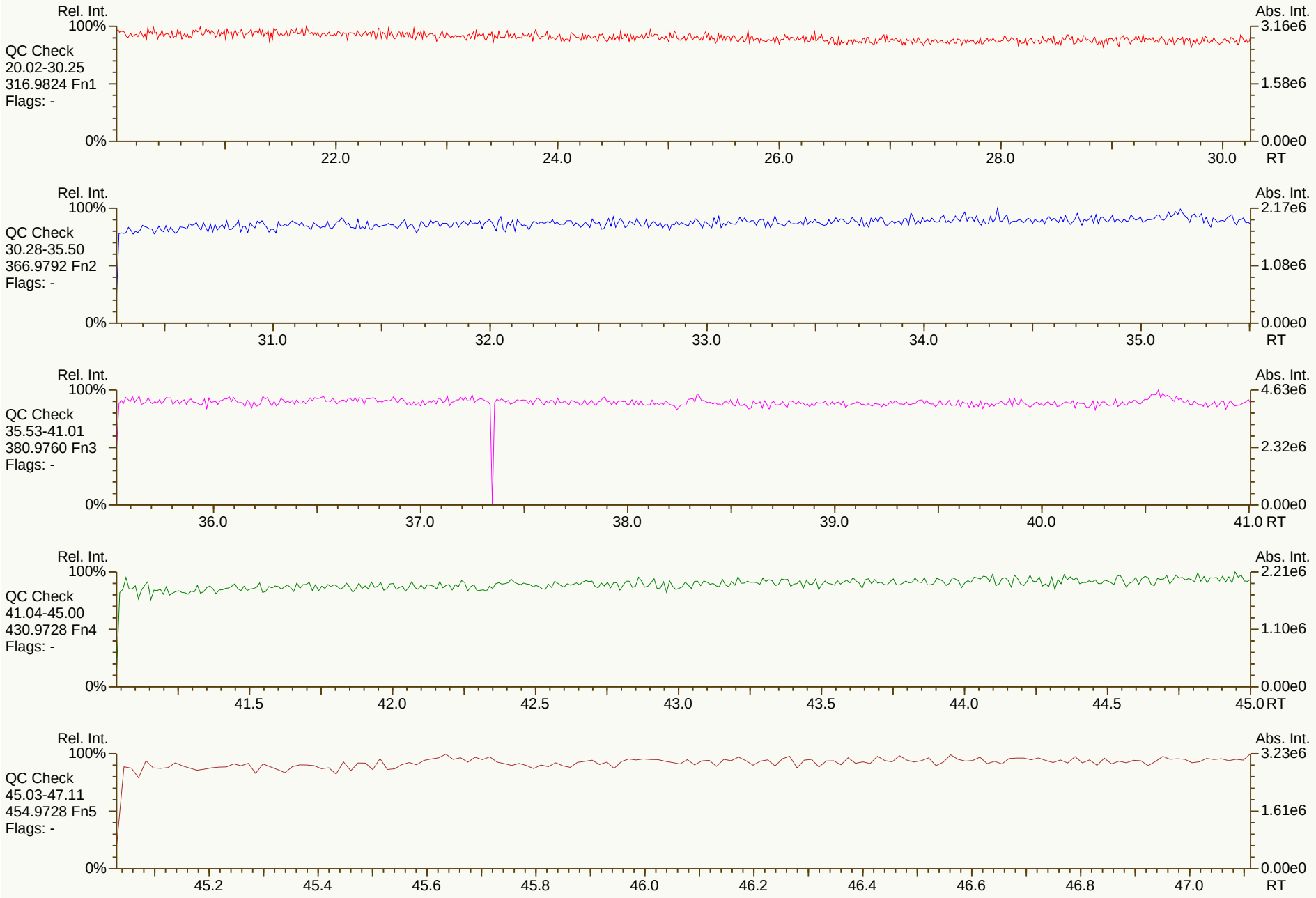
Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 11:01 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS0	UTP: 19-Sep-2012 12:01 MDC	Checkcode: 510-190-CWN
Sample ID: SIL12-32-2	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-01

Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
2378-TCDD	27.61	1.28E+05	0.79	Y	1.15	1.30	13%
12378-PeCDD	33.89	4.17E+05	1.52	Y	1.08	1.09	1%
123478-HxCDD	38.53	4.02E+05	1.14	Y	1.20	1.33	10%
123678-HxCDD	38.66	3.90E+05	1.36	Y	1.10	1.14	4%
123789-HxCDD	39.00	4.08E+05	1.22	Y	1.12	1.17	4%
1234678-HpCDD	42.67	3.25E+05	1.12	Y	1.08	1.06	-2%
OCDD	46.41	5.63E+05	0.91	Y	1.11	1.17	5%
2378-TCDF	26.61	1.74E+05	0.85	Y	1.10	1.15	5%
12378-PeCDF	32.16	6.51E+05	1.53	Y	1.07	1.07	0%
23478-PeCDF	33.47	6.83E+05	1.49	Y	1.14	1.17	3%
123478-HxCDF	37.36	4.82E+05	1.28	Y	1.30	1.29	-1%
123678-HxCDF	37.53	6.47E+05	1.15	Y	1.27	1.31	3%
234678-HxCDF	38.30	6.10E+05	1.26	Y	1.27	1.32	4%
123789-HxCDF	39.42	4.90E+05	1.35	Y	1.25	1.26	0%
1234678-HpCDF	41.40	5.17E+05	1.03	Y	1.44	1.48	3%
1234789-HpCDF	43.28	4.55E+05	0.99	Y	1.50	1.54	3%
OCDF	46.67	7.41E+05	0.81	Y	1.06	1.09	3%
ES 2378-TCDD	27.59	3.95E+07	0.79	Y	1.05	1.01	-4%
ES 12378-PeCDD	33.87	3.05E+07	1.58	Y	0.81	0.78	-3%
ES 123478-HxCDD	38.51	2.42E+07	1.29	Y	1.03	0.97	-7%
ES 123678-HxCDD	38.64	2.74E+07	1.28	Y	1.17	1.10	-6%
ES 123789-HxCDD	38.98	2.79E+07	1.26	Y	1.17	1.11	-5%
ES 1234678-HpCDD	42.66	2.46E+07	1.06	Y	1.00	0.98	-2%
ES OCDD	46.40	3.86E+07	0.91	Y	0.80	0.77	-4%
ES 2378-TCDF	26.59	6.05E+07	0.81	Y	1.02	1.00	-2%
ES 12378-PeCDF	32.14	4.87E+07	1.59	Y	0.85	0.80	-6%
ES 23478-PeCDF	33.45	4.65E+07	1.59	Y	0.81	0.77	-6%
ES 123478-HxCDF	37.34	2.99E+07	0.51	Y	1.44	1.19	-17%
ES 123678-HxCDF	37.51	3.94E+07	0.52	Y	1.61	1.57	-3%
ES 234678-HxCDF	38.28	3.70E+07	0.53	Y	1.67	1.48	-12%
ES 123789-HxCDF	39.40	3.12E+07	0.52	Y	1.32	1.25	-6%
ES 1234678-HpCDF	41.39	2.79E+07	0.44	Y	1.16	1.11	-4%
ES 1234789-HpCDF	43.26	2.36E+07	0.44	Y	1.02	0.94	-7%
ES OCDF	46.65	5.45E+07	0.92	Y	1.17	1.09	-7%

Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 11:01 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS0	UTP: 19-Sep-2012 12:01 MDC	Checkcode: 510-190
Sample ID: SIL12-32-2	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-01

Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
JS 1234-TCDD	26.85	3.92E+07	0.81	Y	-	-	-
JS 1234-TCDF	25.07	6.06E+07	0.80	Y	-	-	-
JS 123467-HxCDD	38.86	1.25E+07	1.28	Y	-	-	-
CS 37Cl-2378-TCDD	NotFnd		n/a	-			
CS 12347-PeCDD	33.28	3.22E+07	1.62	Y	0.81	0.82	1%
CS 12346-PeCDF	31.52	5.54E+07	1.56	Y	0.91	0.91	0%
CS 123469-HxCDF	37.87	3.78E+07	0.52	Y	1.44	1.51	5%
CS 1234689-HpCDF	41.93	2.96E+07	0.45	Y	1.14	1.18	4%
SS 37Cl-2378-TCDD	NotFnd		n/a	-			
SS 12347-PeCDD	33.28	3.22E+07	1.62	Y	1.01	1.06	4%
SS 12346-PeCDF	31.52	5.54E+07	1.56	Y	1.08	1.14	5%
SS 123469-HxCDF	37.87	3.78E+07	0.52	Y	0.90	0.96	7%
SS 1234689-HpCDF	41.93	2.96E+07	0.45	Y	0.98	1.06	8%
AS 1368-TCDD	23.47	4.32E+07	0.77	Y	1.11	1.10	-1%
AS 1368-TCDF	21.25	7.33E+07	0.80	Y	1.23	1.21	-1%
FS 1278-TCDD	NotFnd						
FS 12478-PeCDD	NotFnd						
FS 123468-HxCDD	NotFnd						
FS 1234679-HpCDD	NotFnd						
TS 1378-TCDD	NotFnd						
OCDD-a	46.40	3.08E+04	1.55	N	0.07	0.06	-3%
OCDF-a	NotFnd				0.06		

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**



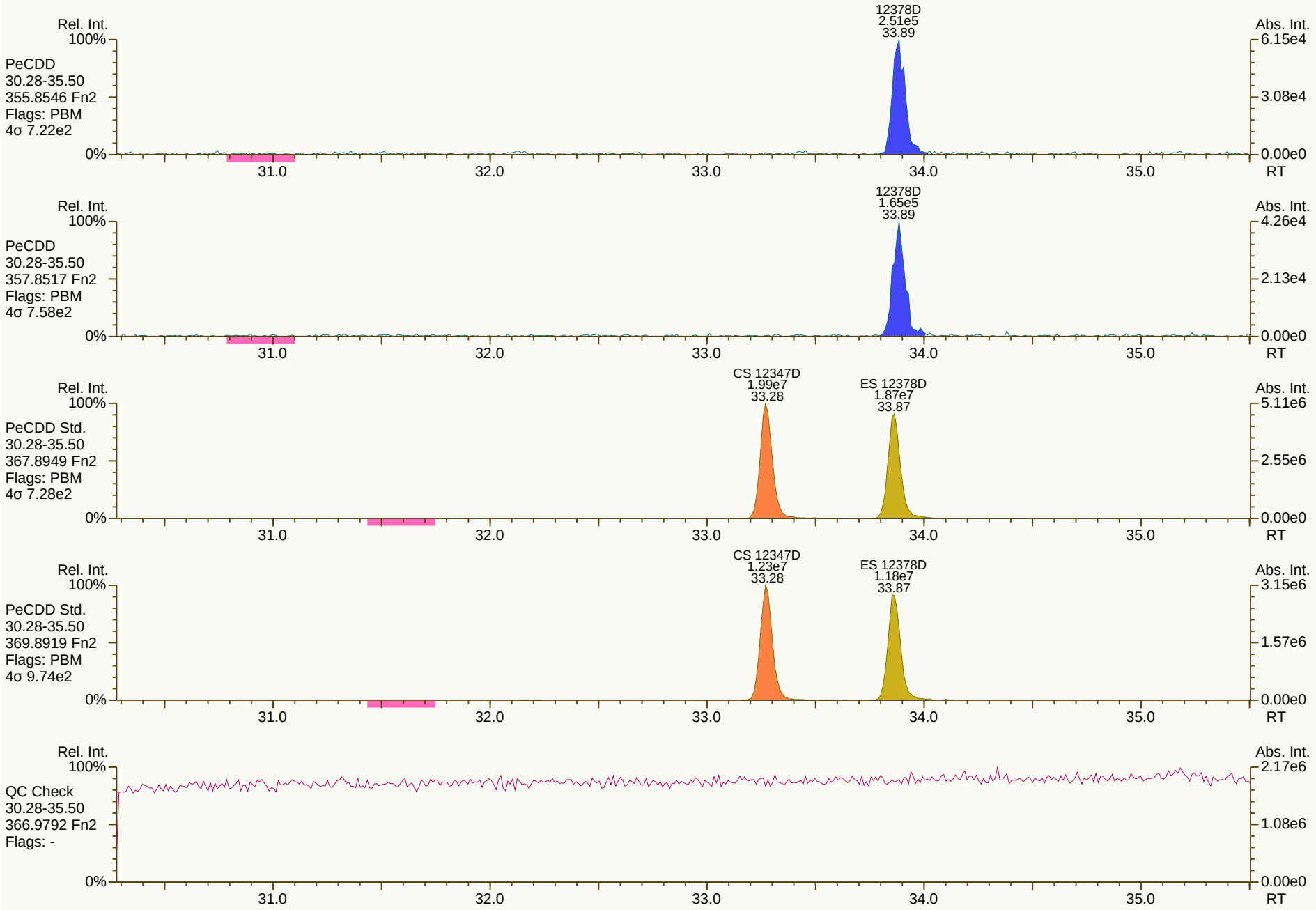
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 scc: 510-190 *PKD: n/a Printed: 19-Sep-2012 17:32 Page 1 of 12*

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**



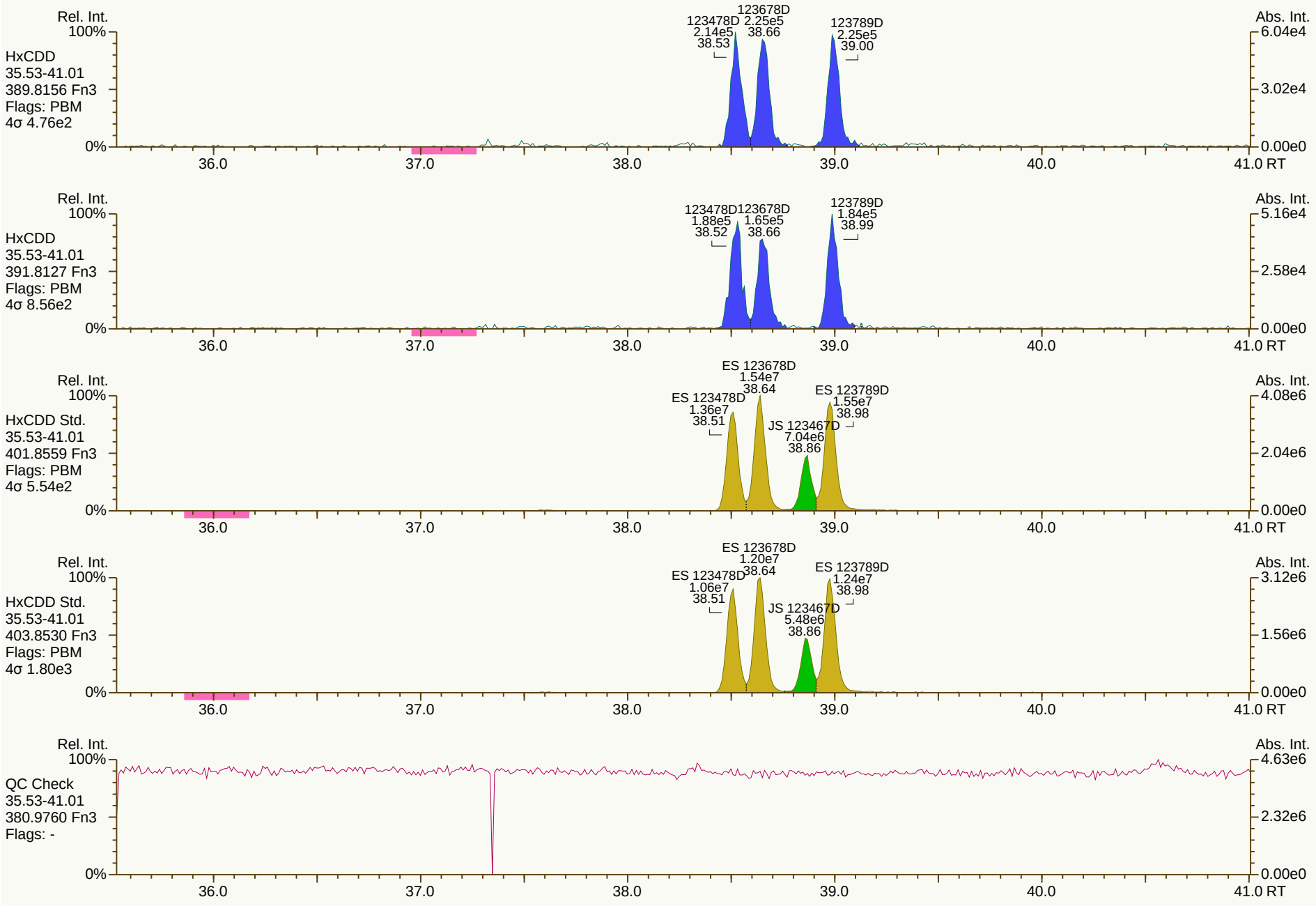
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 5675, 4747, 6421 scc: 510-190 *Revised: 19-Sep-2012 11:56 (MDC) Printed: 19-Sep-2012 17:33 Page 2 of 12*

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**



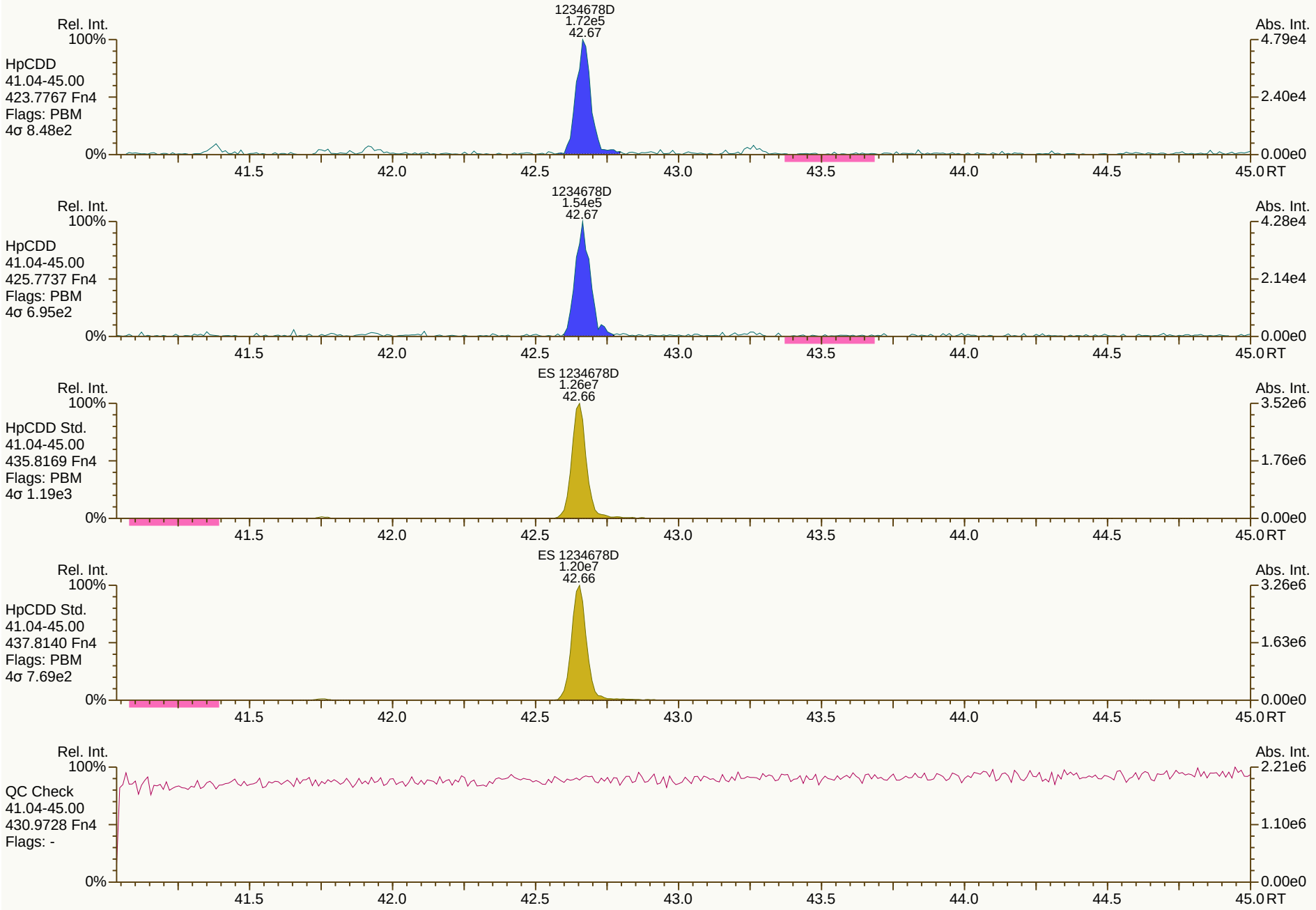
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 6619, 1837 scc: 510-190 *Revised: 19-Sep-2012 11:56 (MDC) Printed: 19-Sep-2012 17:33 Page 3 of 12*

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**



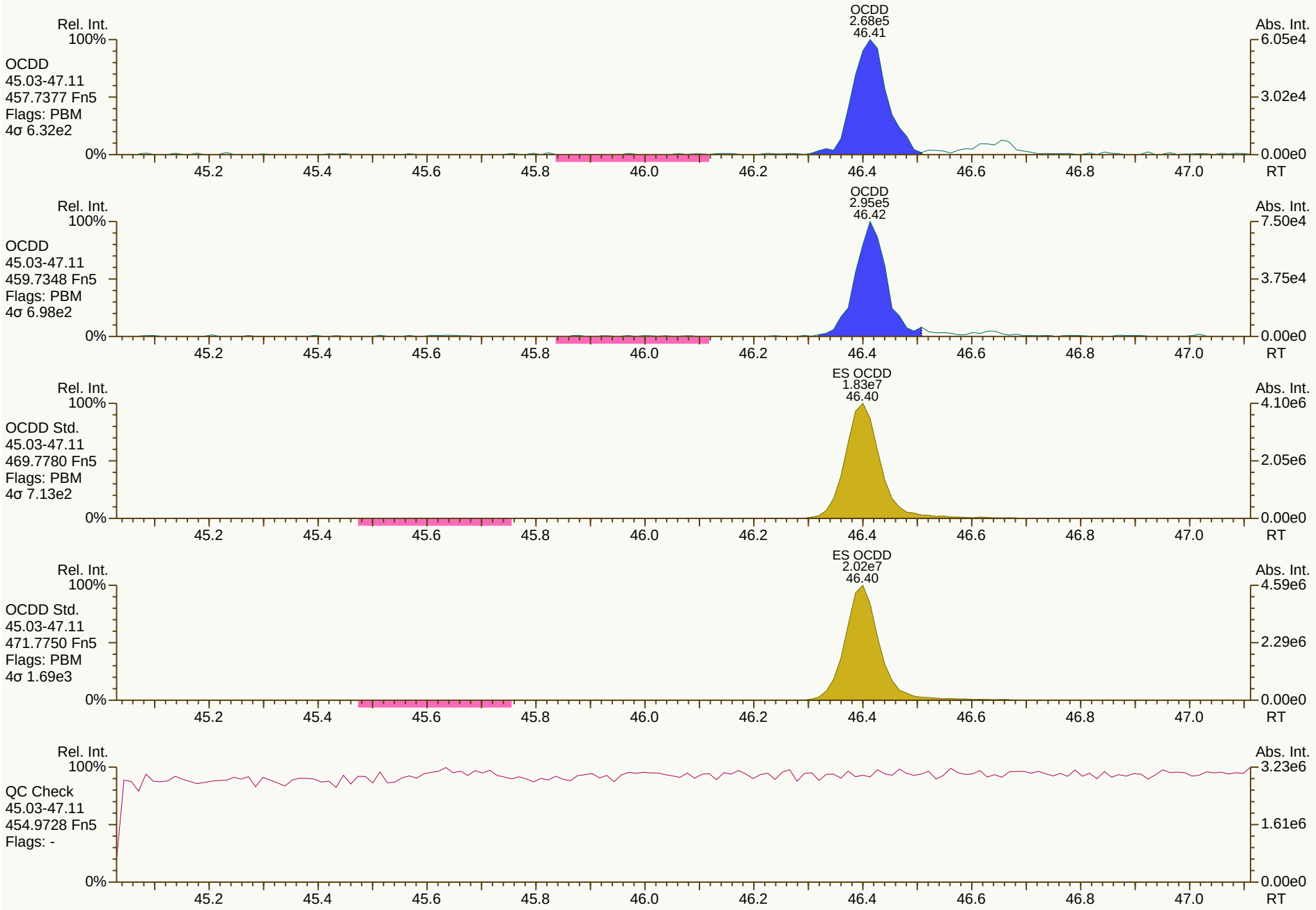
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 4931, 9438 scc: 510-190 *Revised: 19-Sep-2012 11:57 (MDC) Printed: 19-Sep-2012 17:33 Page 4 of 12*

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS0.utp_res, saved 19-Sep-2012 12:01 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 3871, 7605 scc: 510-190 *Revised: 19-Sep-2012 11:57 (MDC) Printed: 19-Sep-2012 17:33 Page 5 of 12*

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS0.utp_res, saved 19-Sep-2012 12:01 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 5292, 0079 scc: 510-190 *Revised: 19-Sep-2012 12:00 (MDC) Printed: 19-Sep-2012 17:33 Page 6 of 12*

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**

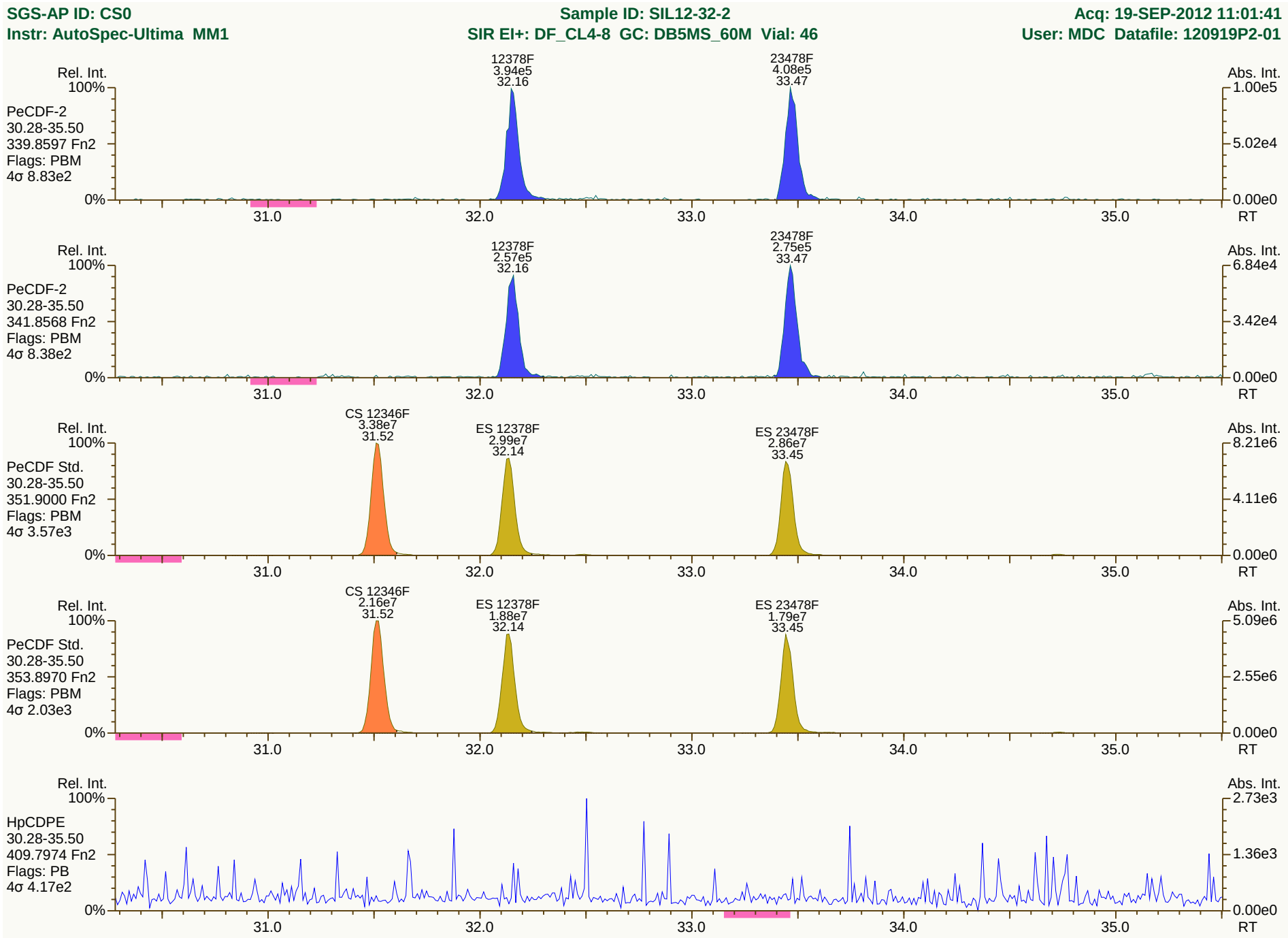


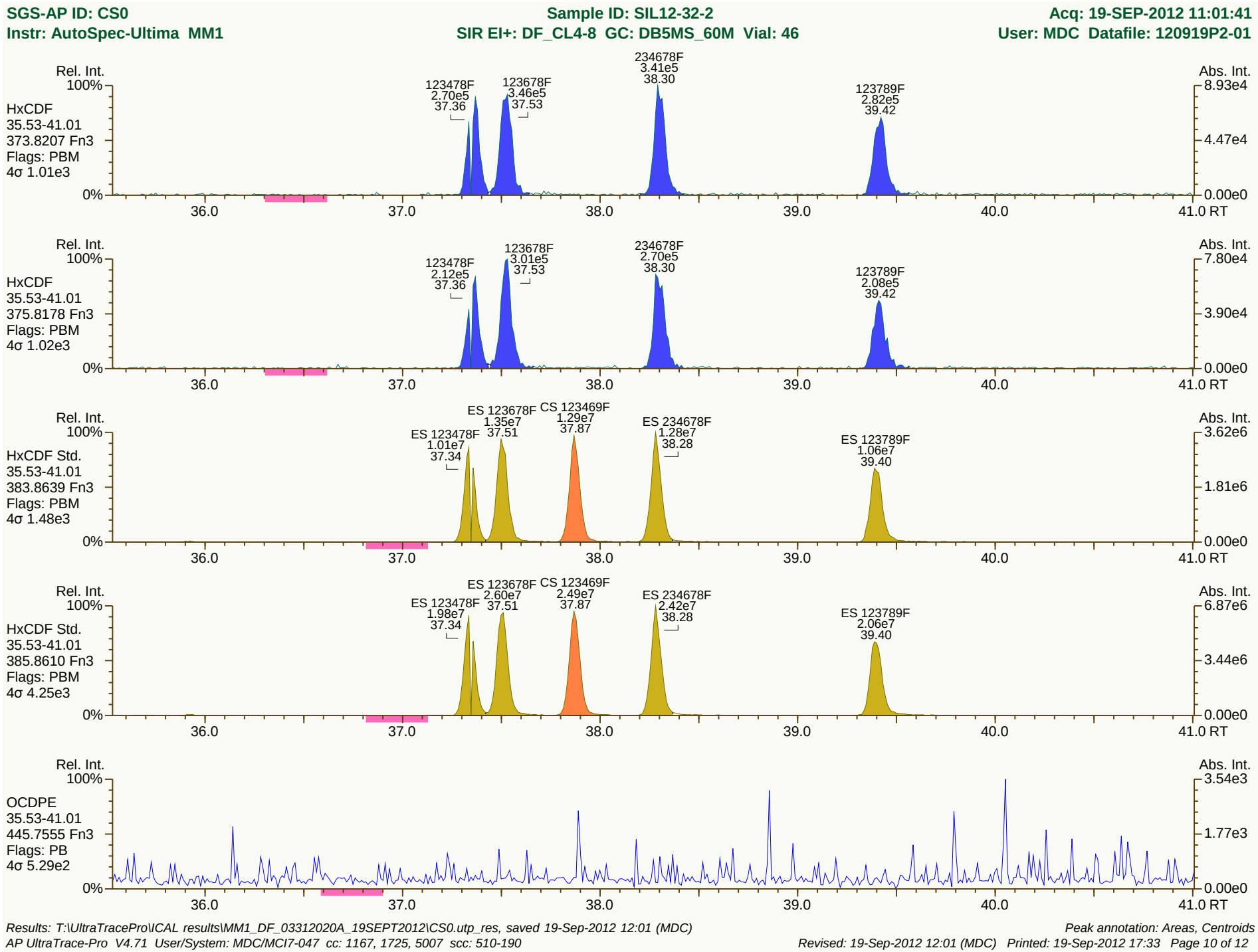
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 8224, 5254, 8481 scc: 510-190 *Revised: 19-Sep-2012 11:55 (MDC) Printed: 19-Sep-2012 17:33 Page 7 of 12*

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**

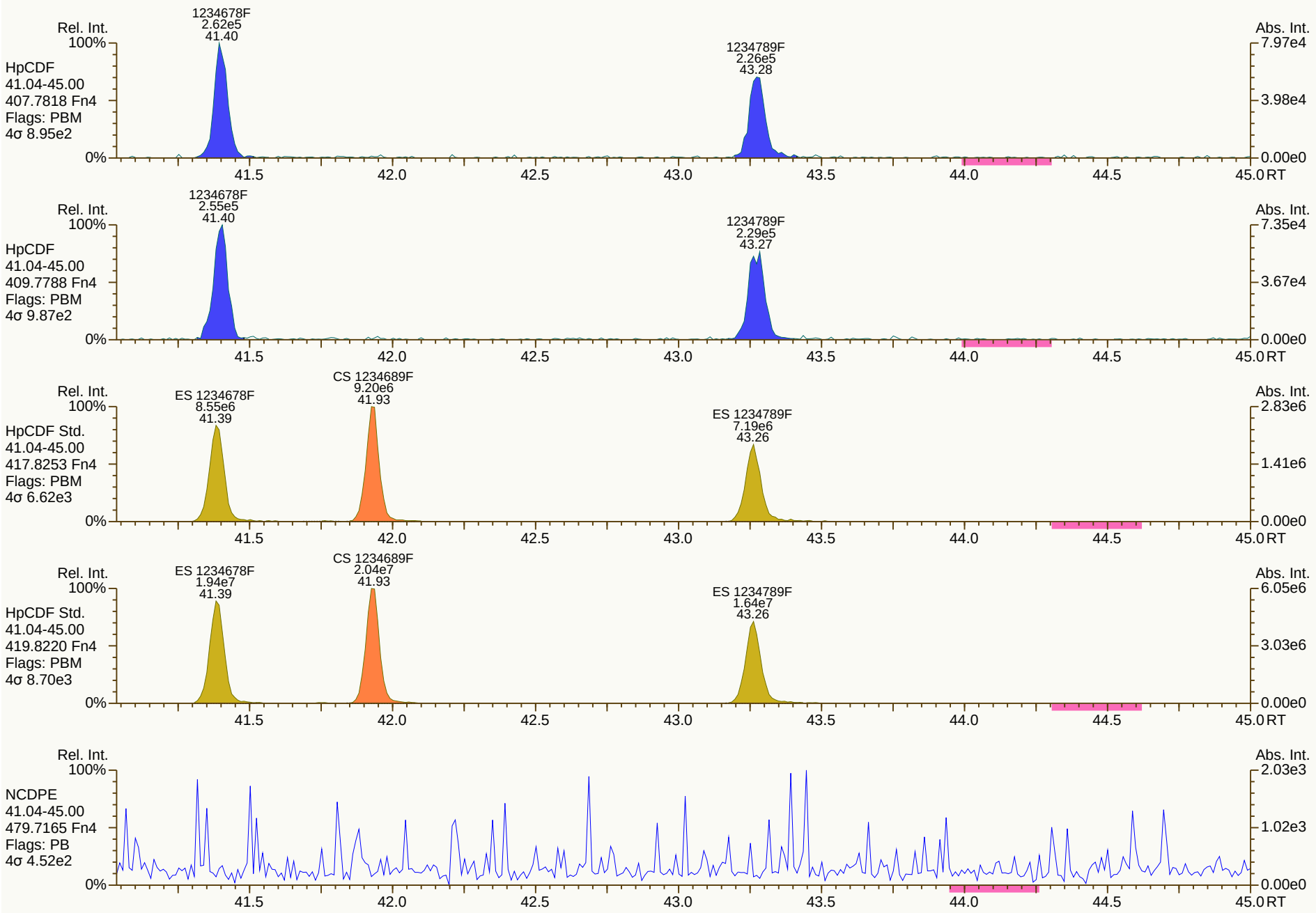


Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS0.utp_res, saved 19-Sep-2012 12:01 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 5910 scc: 510-190 *Revised: 19-Sep-2012 11:55 (MDC) Printed: 19-Sep-2012 17:33 Page 8 of 12*


SGS-AP ID: CS0
Sample ID: SIL12-32-2
Acq: 19-SEP-2012 11:01:41
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46
User: MDC Datafile: 120919P2-01
Rel. Int.
Abs. Int.
PeCDF-2
30.28-35.50
339.8597 Fn2
Flags: PBM
4σ 8.83e2
12378F
3.94e5
32.16
23478F
4.08e5
33.47
1.00e5
5.02e4
0.00e0
PeCDF-2
30.28-35.50
341.8568 Fn2
Flags: PBM
4σ 8.38e2
12378F
2.57e5
32.16
23478F
2.75e5
33.47
6.84e4
3.42e4
PeCDF Std.
30.28-35.50
351.9000 Fn2
Flags: PBM
4σ 3.57e3
CS 12346F
3.38e7
31.52
ES 12378F
2.99e7
32.14
ES 23478F
2.86e7
33.45
8.21e6
4.11e6
PeCDF Std.
30.28-35.50
353.8970 Fn2
Flags: PBM
4σ 2.03e3
CS 12346F
2.16e7
31.52
ES 12378F
1.88e7
32.14
ES 23478F
1.79e7
33.45
5.09e6
2.55e6
HpCDPE
30.28-35.50
409.7974 Fn2
Flags: PB
4σ 4.17e2
2.73e3
1.36e3
100%
0%
31.0
32.0
33.0
34.0
35.0
RT
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS0.utp_res, saved 19-Sep-2012 12:01 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 1965, 2511, 5922 scc: 510-190
Revised: 19-Sep-2012 12:00 (MDC) Printed: 19-Sep-2012 17:33 Page 9 of 12

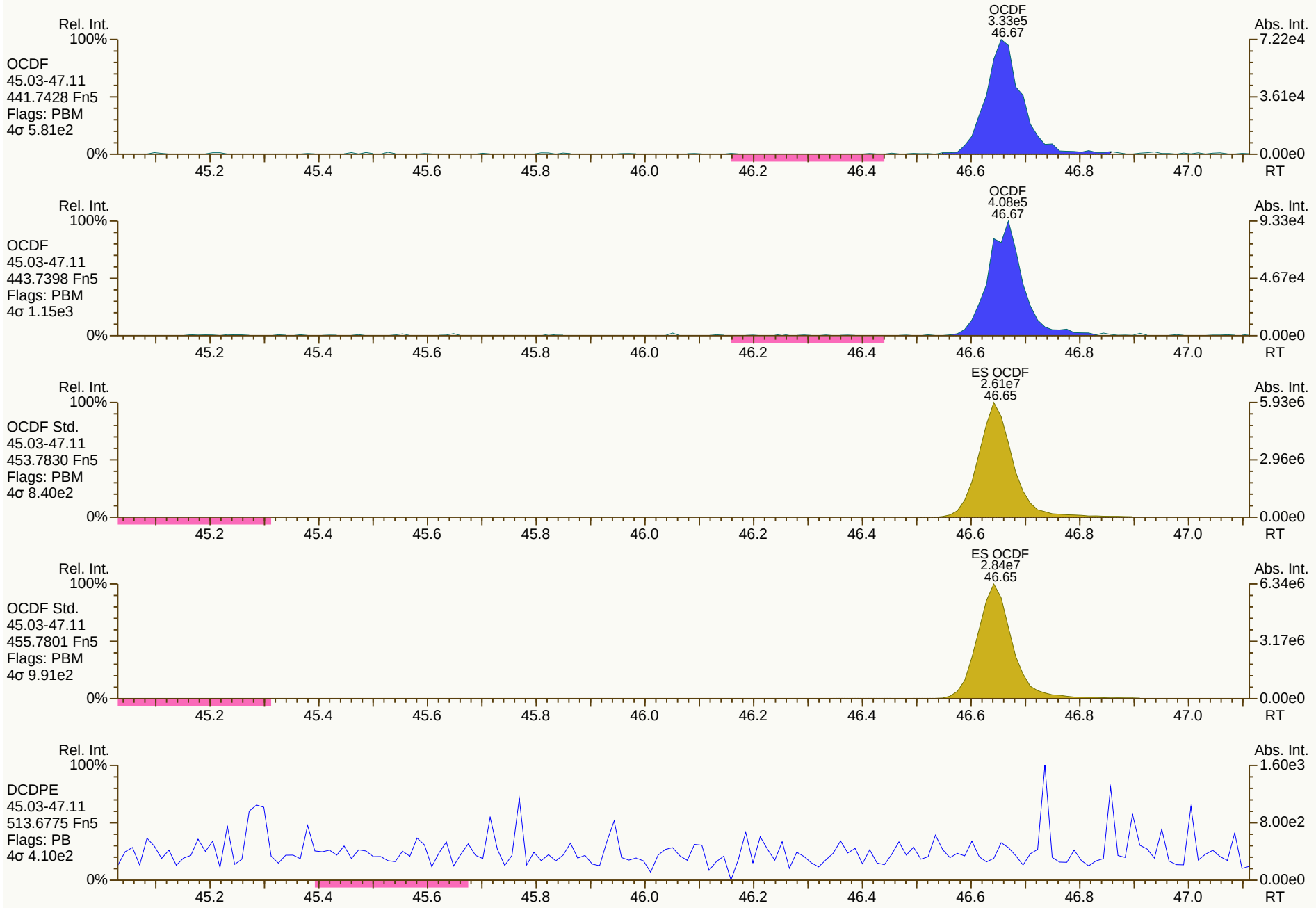

SGS-AP ID: CS0
Sample ID: SIL12-32-2
Acq: 19-SEP-2012 11:01:41
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46
User: MDC Datafile: 120919P2-01
Rel. Int.
Abs. Int.
HxCDF
35.53-41.01
373.8207 Fn3
Flags: PBM
4σ 1.01e3
123478F 2.70e5 37.36
123678F 3.46e5 37.53
234678F 3.41e5 38.30
123789F 2.82e5 39.42
8.93e4
4.47e4
0.00e0
HxCDF
35.53-41.01
375.8178 Fn3
Flags: PBM
4σ 1.02e3
123478F 2.12e5 37.36
123678F 3.01e5 37.53
234678F 2.70e5 38.30
123789F 2.08e5 39.42
7.80e4
3.90e4
0.00e0
HxCDF Std.
35.53-41.01
383.8639 Fn3
Flags: PBM
4σ 1.48e3
ES 123478F 1.01e7 37.34
ES 123678F 1.35e7 37.51
CS 123469F 1.29e7 37.87
ES 234678F 1.28e7 38.28
ES 123789F 1.06e7 39.40
3.62e6
1.81e6
0.00e0
HxCDF Std.
35.53-41.01
385.8610 Fn3
Flags: PBM
4σ 4.25e3
ES 123478F 1.98e7 37.34
ES 123678F 2.60e7 37.51
CS 123469F 2.49e7 37.87
ES 234678F 2.42e7 38.28
ES 123789F 2.06e7 39.40
6.87e6
3.44e6
0.00e0
OCDPE
35.53-41.01
445.7555 Fn3
Flags: PB
4σ 5.29e2
3.54e3
1.77e3
0.00e0
100%
0%
36.0
37.0
38.0
39.0
40.0
41.0 RT
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS0.utp_res, saved 19-Sep-2012 12:01 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 1167, 1725, 5007 scc: 510-190
Revised: 19-Sep-2012 12:01 (MDC) Printed: 19-Sep-2012 17:33 Page 10 of 12

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS0.utp_res, saved 19-Sep-2012 12:01 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 0163, 8728, 8544 scc: 510-190 *Revised: 19-Sep-2012 11:56 (MDC) Printed: 19-Sep-2012 17:33 Page 11 of 12*

SGS-AP ID: CS0 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:01:41**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 46** **User: MDC Datafile: 120919P2-01**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS0.utp_res, saved 19-Sep-2012 12:01 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 2406, 4047, 6229 scc: 510-190 *Revised: 19-Sep-2012 11:55 (MDC) Printed: 19-Sep-2012 17:33 Page 12 of 12*

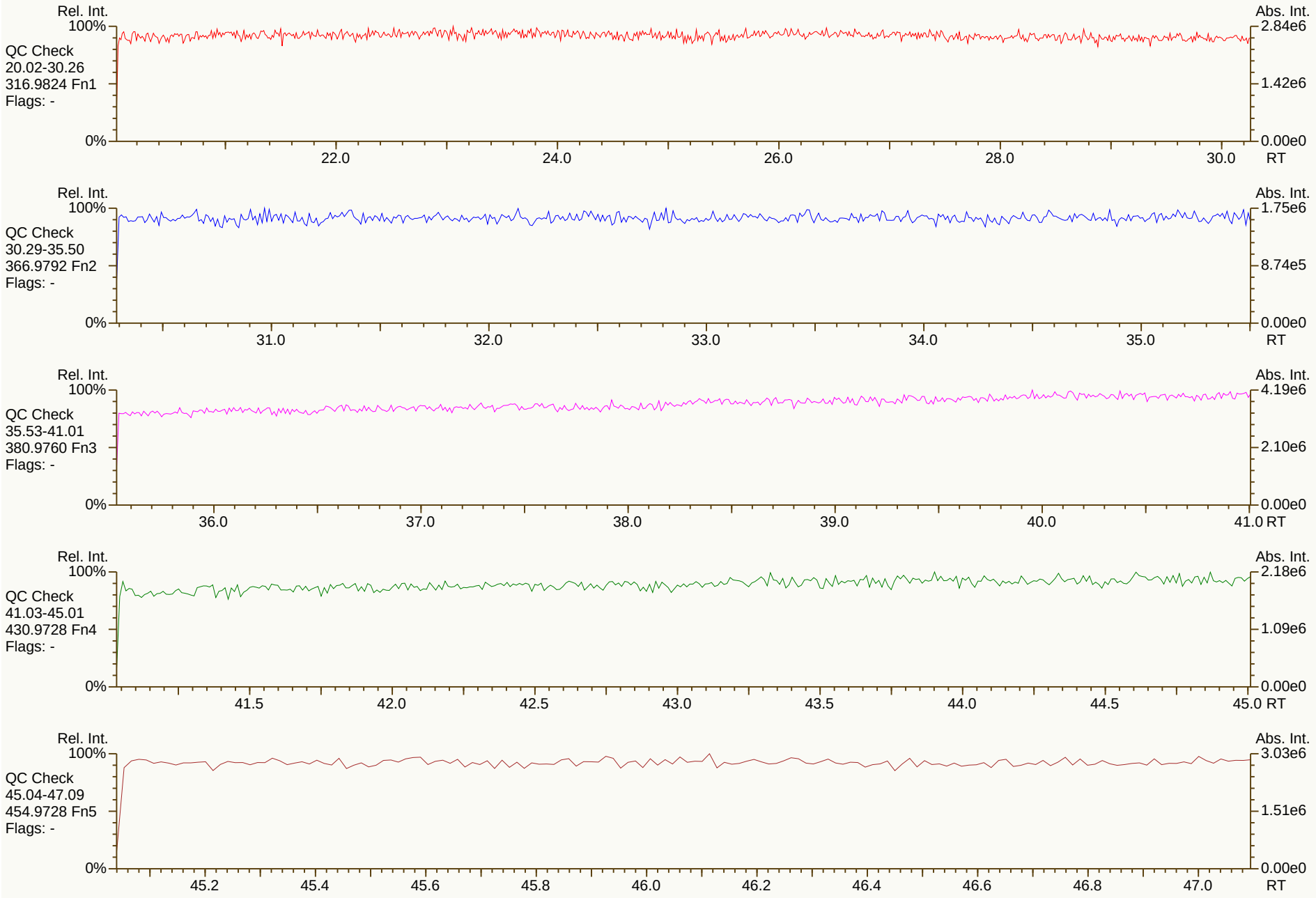
Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 11:52 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS1	UTP: 19-Sep-2012 12:52 MDC	Checkcode: 032-524-QNT
Sample ID: SIL12-32-2	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-02

Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
2378-TCDD	27.60	2.06E+05	0.86	Y	1.15	1.15	0%
12378-PeCDD	33.89	7.45E+05	1.59	Y	1.08	1.13	5%
123478-HxCDD	38.52	6.41E+05	1.30	Y	1.20	1.19	-1%
123678-HxCDD	38.65	6.68E+05	1.29	Y	1.10	1.14	4%
123789-HxCDD	38.99	6.69E+05	1.29	Y	1.12	1.15	2%
1234678-HpCDD	42.66	5.25E+05	1.13	Y	1.08	1.07	-1%
OCDD	46.41	8.28E+05	0.86	Y	1.11	1.12	1%
2378-TCDF	26.61	2.85E+05	0.85	Y	1.10	1.08	-2%
12378-PeCDF	32.15	1.09E+06	1.51	Y	1.07	1.04	-3%
23478-PeCDF	33.47	1.16E+06	1.51	Y	1.14	1.16	1%
123478-HxCDF	37.36	9.70E+05	1.21	Y	1.30	1.34	3%
123678-HxCDF	37.52	9.97E+05	1.31	Y	1.27	1.27	0%
234678-HxCDF	38.30	1.03E+06	1.13	Y	1.27	1.24	-2%
123789-HxCDF	39.41	8.33E+05	1.18	Y	1.25	1.29	3%
1234678-HpCDF	41.40	8.24E+05	1.03	Y	1.44	1.44	0%
1234789-HpCDF	43.27	7.03E+05	0.99	Y	1.50	1.46	-3%
OCDF	46.66	1.12E+06	0.90	Y	1.06	1.09	3%
ES 2378-TCDD	27.58	3.58E+07	0.79	Y	1.05	1.04	-1%
ES 12378-PeCDD	33.86	2.63E+07	1.59	Y	0.81	0.77	-5%
ES 123478-HxCDD	38.50	2.15E+07	1.30	Y	1.03	0.99	-4%
ES 123678-HxCDD	38.64	2.35E+07	1.27	Y	1.17	1.08	-7%
ES 123789-HxCDD	38.98	2.33E+07	1.27	Y	1.17	1.08	-8%
ES 1234678-HpCDD	42.65	1.96E+07	1.06	Y	1.00	0.91	-10%
ES OCDD	46.40	2.94E+07	0.94	Y	0.80	0.68	-16%
ES 2378-TCDF	26.58	5.29E+07	0.80	Y	1.02	1.00	-2%
ES 12378-PeCDF	32.13	4.20E+07	1.59	Y	0.85	0.79	-7%
ES 23478-PeCDF	33.45	4.01E+07	1.61	Y	0.81	0.76	-7%
ES 123478-HxCDF	37.34	2.90E+07	0.53	Y	1.44	1.34	-7%
ES 123678-HxCDF	37.50	3.13E+07	0.52	Y	1.61	1.45	-10%
ES 234678-HxCDF	38.28	3.33E+07	0.53	Y	1.67	1.54	-8%
ES 123789-HxCDF	39.40	2.59E+07	0.53	Y	1.32	1.19	-10%
ES 1234678-HpCDF	41.38	2.30E+07	0.46	Y	1.16	1.06	-9%
ES 1234789-HpCDF	43.26	1.93E+07	0.44	Y	1.02	0.89	-13%
ES OCDF	46.65	4.11E+07	0.93	Y	1.17	0.95	-19%

Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 11:52 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS1	UTP: 19-Sep-2012 12:52 MDC	Checkcode: 032-524
Sample ID: SIL12-32-2	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-02

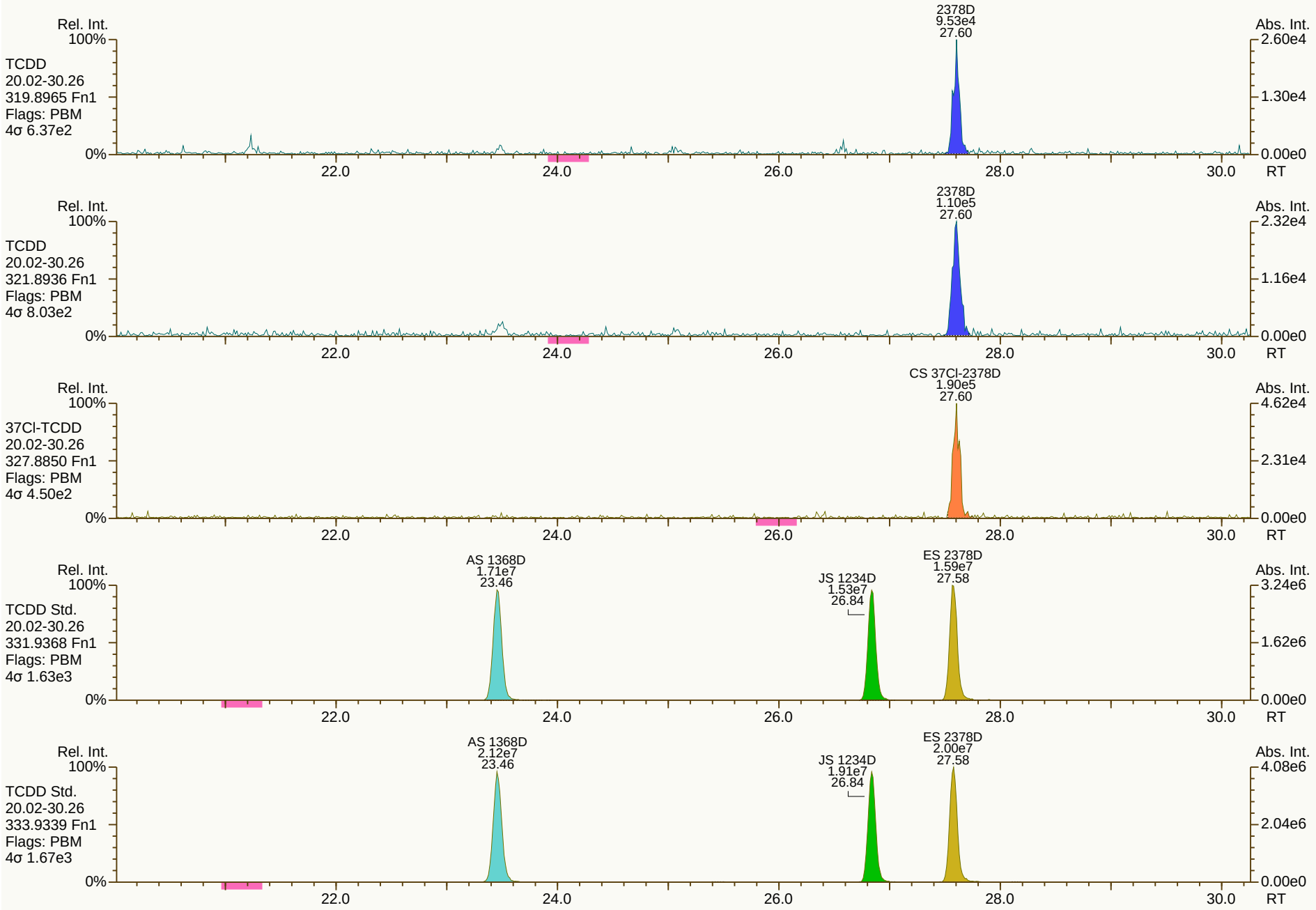
Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
JS 1234-TCDD	26.84	3.44E+07	0.80	Y	-	-	-
JS 1234-TCDF	25.06	5.29E+07	0.79	Y	-	-	-
JS 123467-HxCDD	38.86	1.08E+07	1.26	Y	-	-	-
CS 37Cl-2378-TCDD	27.60	1.90E+05	n/a	-	1.22	1.10	-10%
CS 12347-PeCDD	33.27	2.77E+07	1.64	Y	0.81	0.81	-1%
CS 12346-PeCDF	31.52	4.89E+07	1.58	Y	0.91	0.92	1%
CS 123469-HxCDF	37.87	3.08E+07	0.52	Y	1.44	1.42	-1%
CS 1234689-HpCDF	41.93	2.43E+07	0.44	Y	1.14	1.12	-1%
SS 37Cl-2378-TCDD	27.60	1.90E+05	n/a	-	1.16	1.06	-9%
SS 12347-PeCDD	33.27	2.77E+07	1.64	Y	1.01	1.05	4%
SS 12346-PeCDF	31.52	4.89E+07	1.58	Y	1.08	1.16	7%
SS 123469-HxCDF	37.87	3.08E+07	0.52	Y	0.90	0.98	9%
SS 1234689-HpCDF	41.93	2.43E+07	0.44	Y	0.98	1.06	7%
AS 1368-TCDD	23.46	3.82E+07	0.81	Y	1.11	1.11	0%
AS 1368-TCDF	21.25	6.53E+07	0.78	Y	1.23	1.23	1%
FS 1278-TCDD	NotFnd						
FS 12478-PeCDD	NotFnd						
FS 123468-HxCDD	NotFnd						
FS 1234679-HpCDD	NotFnd						
TS 1378-TCDD	NotFnd						
OCDD-a	46.41	5.57E+04	2.28	Y	0.07	0.08	15%
OCDF-a	NotFnd				0.06		

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



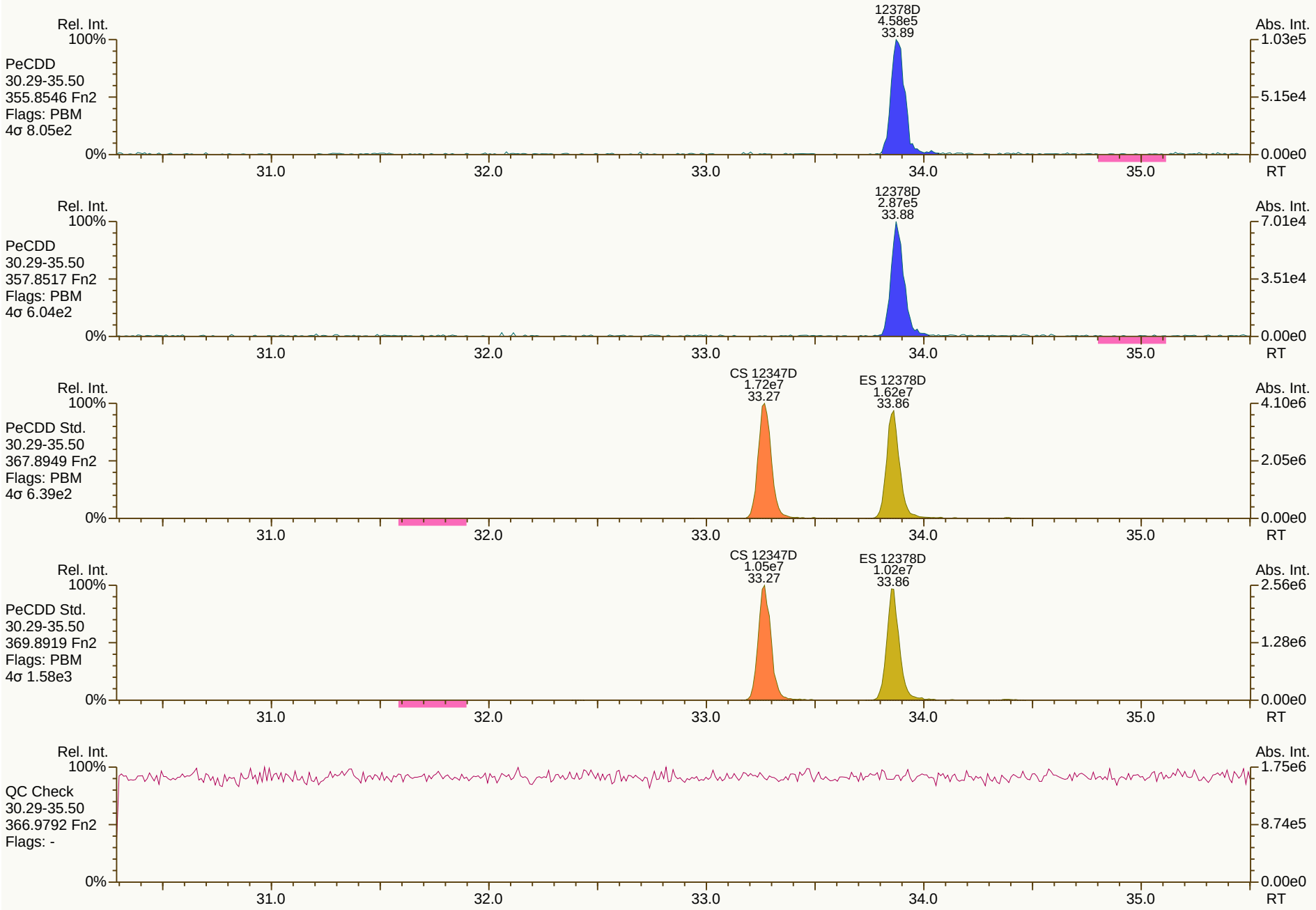
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 scc: 032-524 *PKD: n/a Printed: 19-Sep-2012 17:33 Page 1 of 12*

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



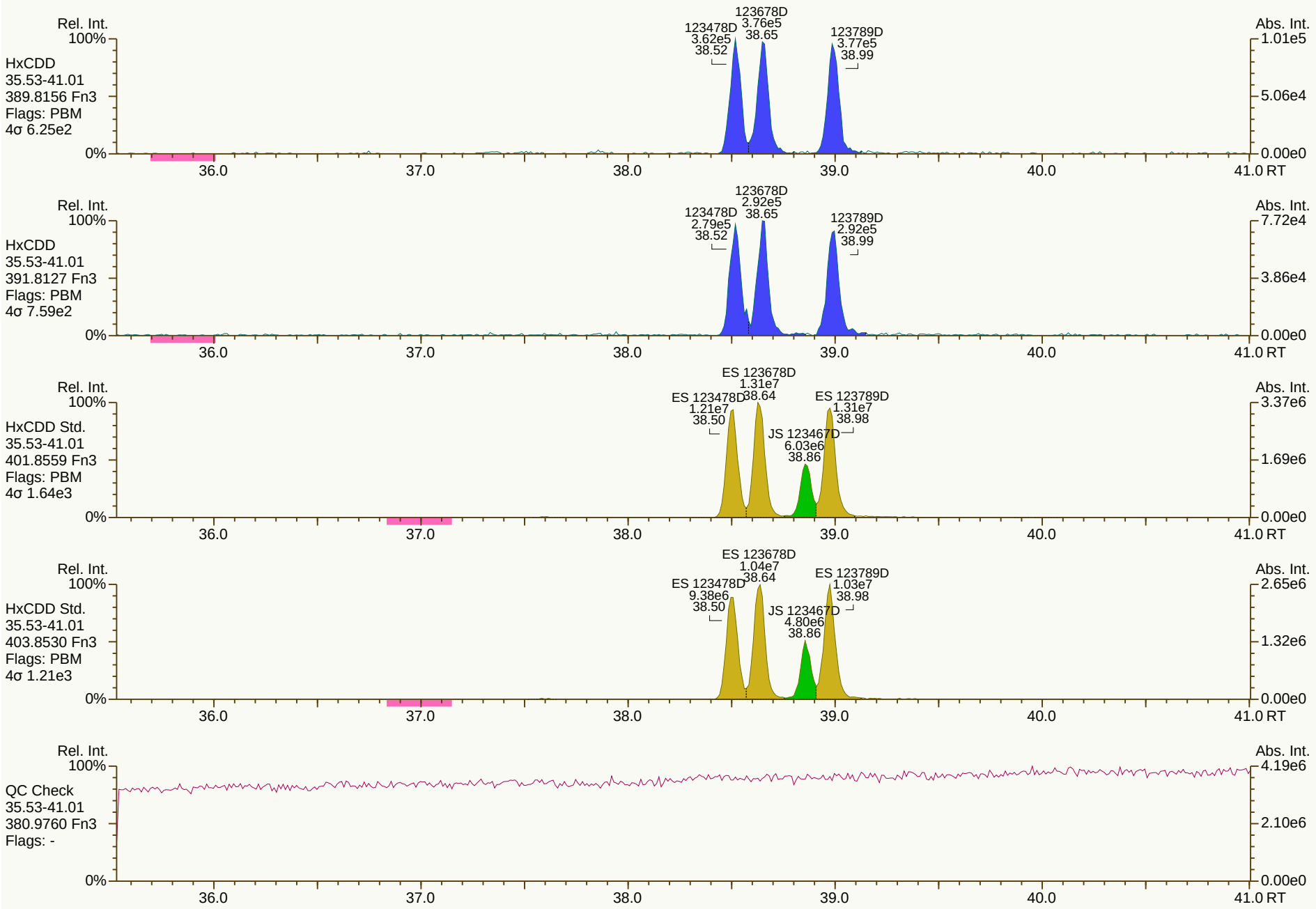
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 4447, 0233, 9341 scc: 032-524 *Revised: 19-Sep-2012 12:51 (MDC) Printed: 19-Sep-2012 17:33 Page 2 of 12*

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



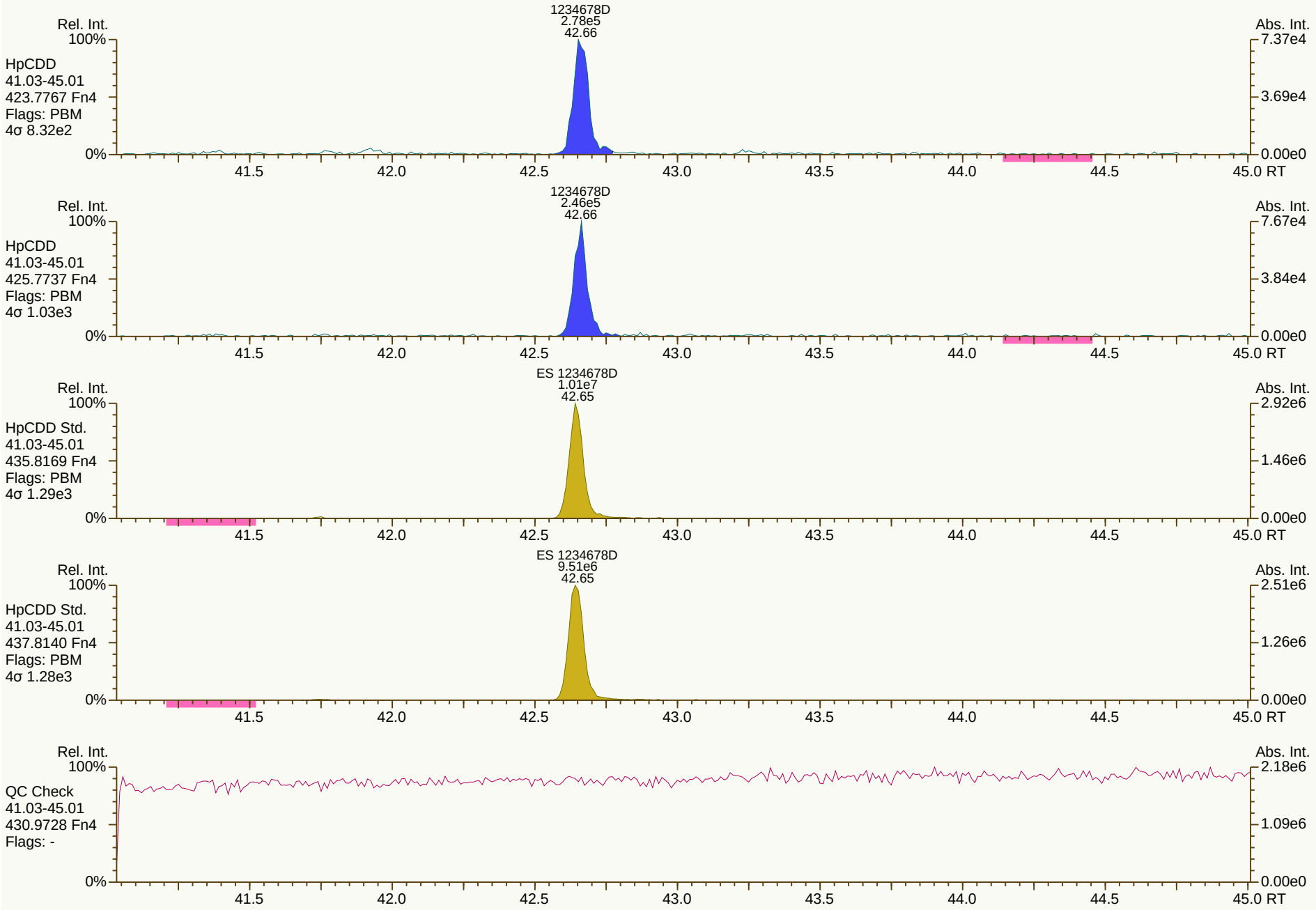
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 2589, 7071 scc: 032-524 *Revised: 19-Sep-2012 12:52 (MDC) Printed: 19-Sep-2012 17:33 Page 3 of 12*

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



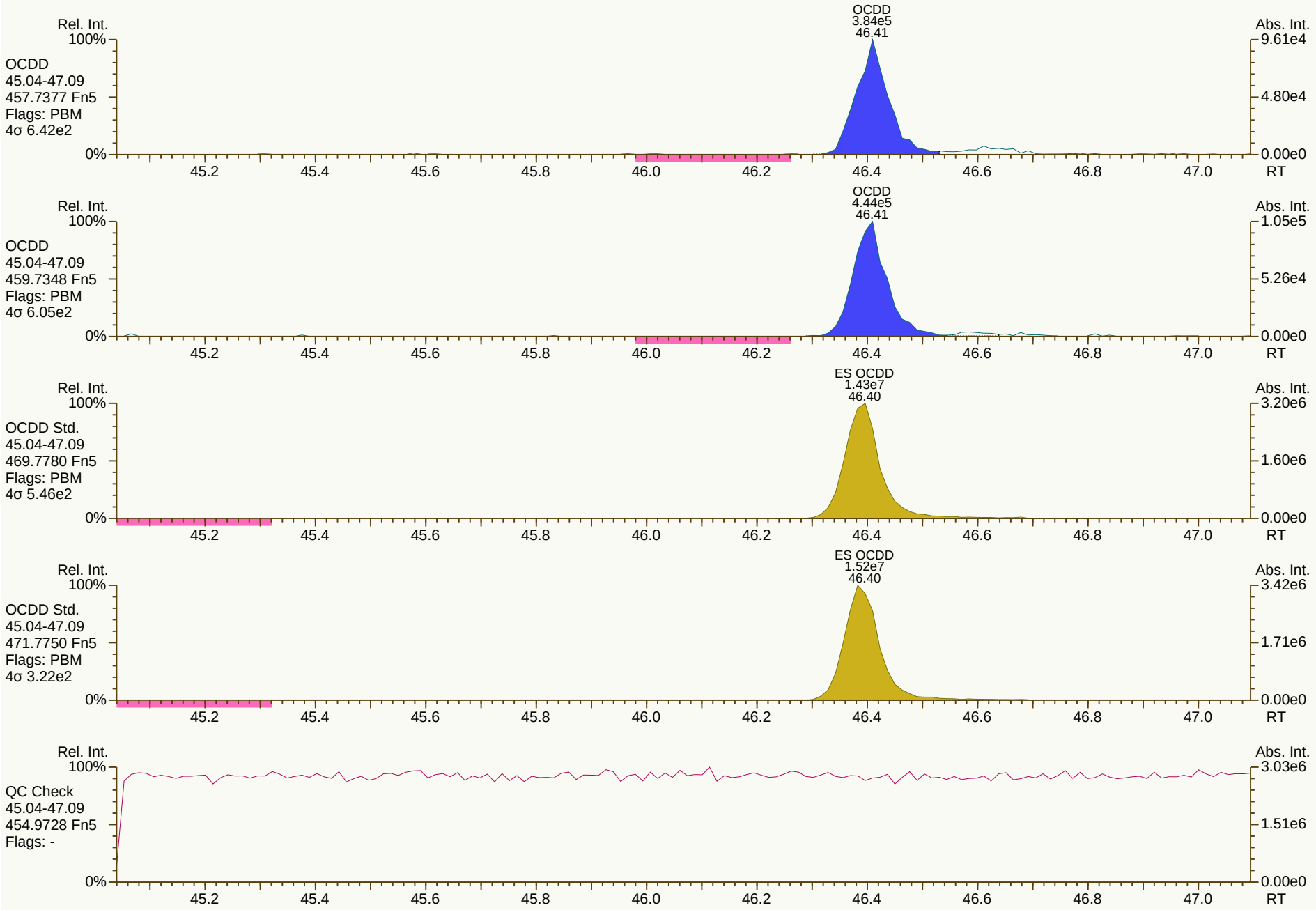
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 6521, 4621 scc: 032-524 *Revised: 19-Sep-2012 12:51 (MDC) Printed: 19-Sep-2012 17:33 Page 4 of 12*

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS1.utp_res, saved 19-Sep-2012 12:52 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 9576, 7837 scc: 032-524 *Revised: 19-Sep-2012 12:52 (MDC) Printed: 19-Sep-2012 17:33 Page 5 of 12*

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



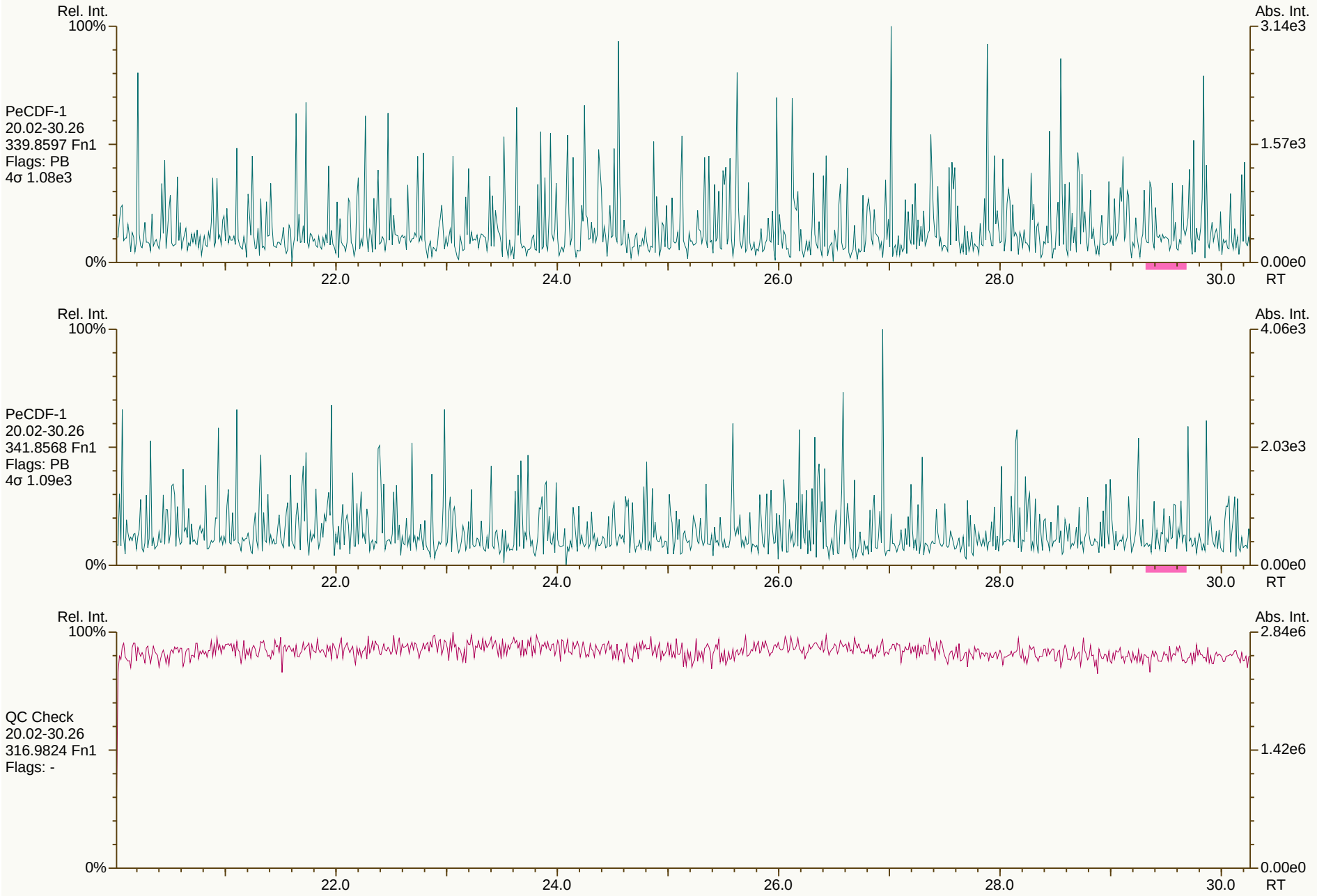
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 5282, 1531 scc: 032-524 *Revised: 19-Sep-2012 12:51 (MDC) Printed: 19-Sep-2012 17:33 Page 6 of 12*

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



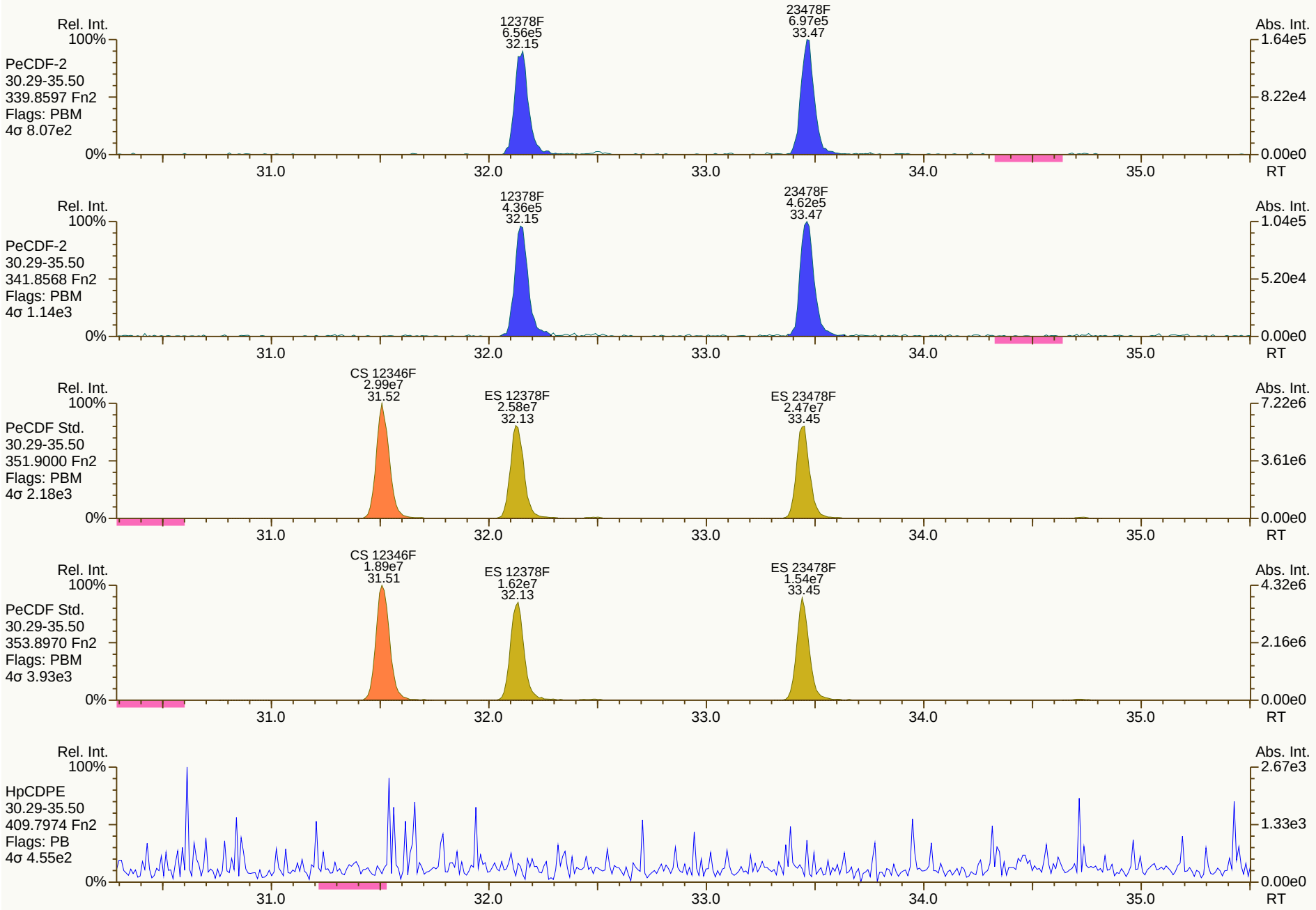
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 2337, 4456, 1998 scc: 032-524 *Revised: 19-Sep-2012 12:51 (MDC) Printed: 19-Sep-2012 17:33 Page 7 of 12*

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**

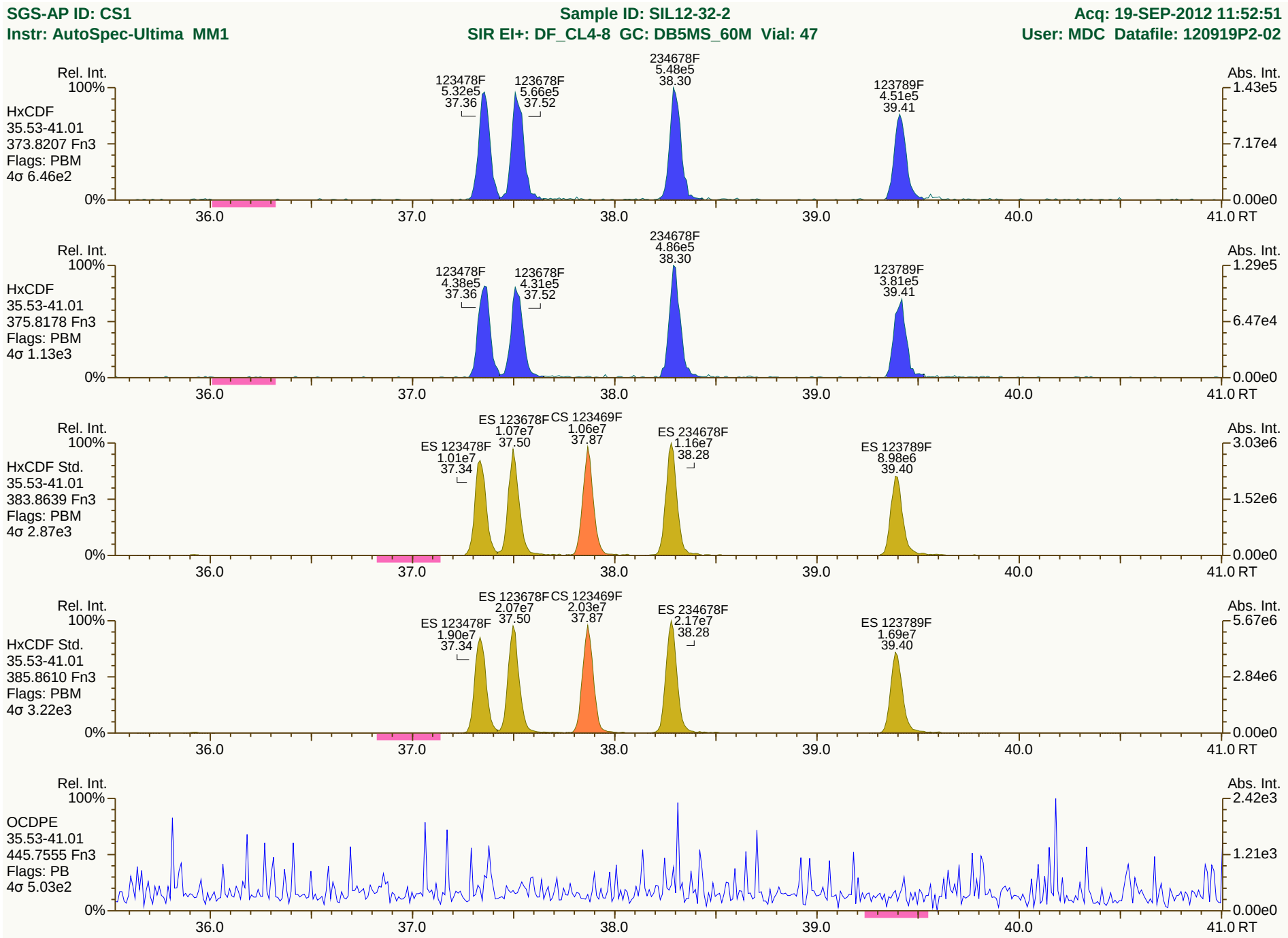


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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 3913 scc: 032-524 *Revised: 19-Sep-2012 12:51 (MDC) Printed: 19-Sep-2012 17:34 Page 8 of 12*

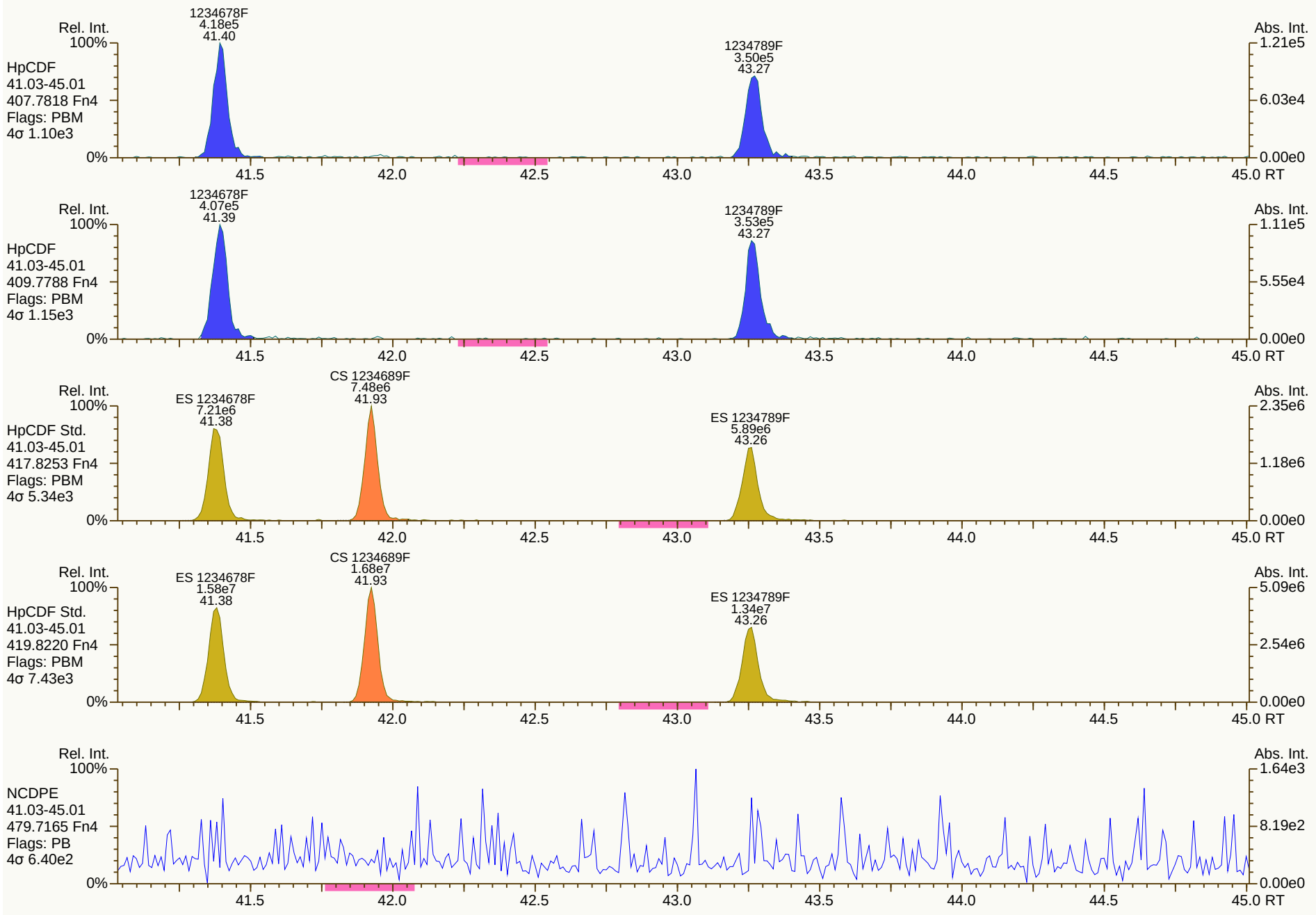
SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS1.utp_res, saved 19-Sep-2012 12:52 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 6339, 1654, 2575 scc: 032-524 *Revised: 19-Sep-2012 12:51 (MDC) Printed: 19-Sep-2012 17:34 Page 9 of 12*

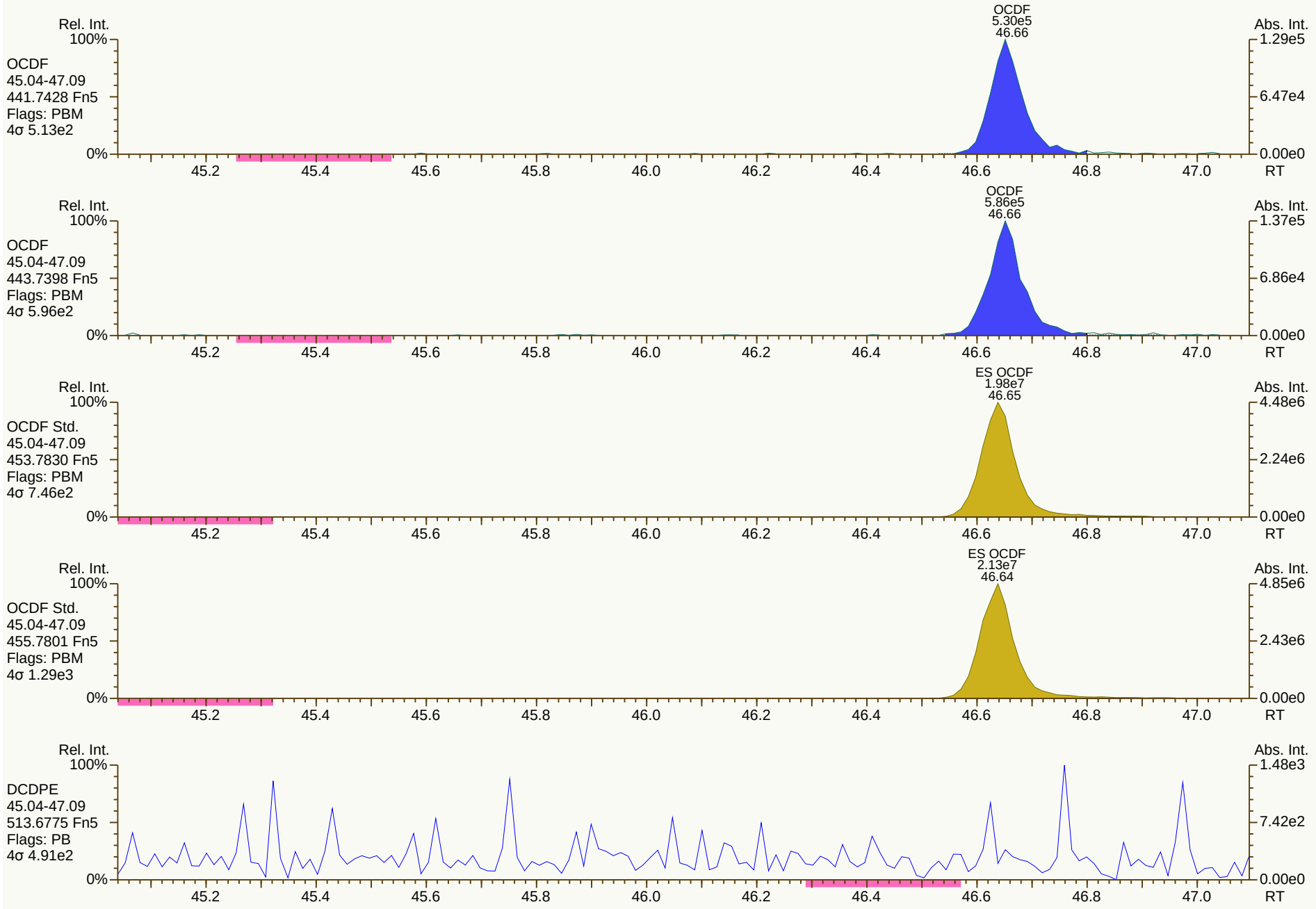

SGS-AP ID: CS1
Sample ID: SIL12-32-2
Acq: 19-SEP-2012 11:52:51
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47
User: MDC Datafile: 120919P2-02
Rel. Int.
Abs. Int.
HxCDF
35.53-41.01
373.8207 Fn3
Flags: PBM
4σ 6.46e2
123478F 5.32e5 37.36
123678F 5.66e5 37.52
234678F 5.48e5 38.30
123789F 4.51e5 39.41
1.43e5
7.17e4
0.00e0
HxCDF
35.53-41.01
375.8178 Fn3
Flags: PBM
4σ 1.13e3
123478F 4.38e5 37.36
123678F 4.31e5 37.52
234678F 4.86e5 38.30
123789F 3.81e5 39.41
1.29e5
6.47e4
0.00e0
HxCDF Std.
35.53-41.01
383.8639 Fn3
Flags: PBM
4σ 2.87e3
ES 123478F 1.01e7 37.34
ES 123678F 1.07e7 37.50
CS 123469F 1.06e7 37.87
ES 234678F 1.16e7 38.28
ES 123789F 8.98e6 39.40
3.03e6
1.52e6
0.00e0
HxCDF Std.
35.53-41.01
385.8610 Fn3
Flags: PBM
4σ 3.22e3
ES 123478F 1.90e7 37.34
ES 123678F 2.07e7 37.50
CS 123469F 2.03e7 37.87
ES 234678F 2.17e7 38.28
ES 123789F 1.69e7 39.40
5.67e6
2.84e6
0.00e0
OCDPE
35.53-41.01
445.7555 Fn3
Flags: PB
4σ 5.03e2
2.42e3
1.21e3
0.00e0
100%
0%
36.0
37.0
38.0
39.0
40.0
41.0 RT
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS1.utp_res, saved 19-Sep-2012 12:52 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 3527, 5852, 1714 scc: 032-524
Revised: 19-Sep-2012 12:52 (MDC) Printed: 19-Sep-2012 17:34 Page 10 of 12

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS1.utp_res, saved 19-Sep-2012 12:52 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 1528, 7244, 4371 scc: 032-524 *Revised: 19-Sep-2012 12:51 (MDC) Printed: 19-Sep-2012 17:34 Page 11 of 12*

SGS-AP ID: CS1 **Sample ID: SIL12-32-2** **Acq: 19-SEP-2012 11:52:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 47** **User: MDC Datafile: 120919P2-02**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS1.utp_res, saved 19-Sep-2012 12:52 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 0349, 8003, 2675 scc: 032-524 *Revised: 19-Sep-2012 12:51 (MDC) Printed: 19-Sep-2012 17:34 Page 12 of 12*

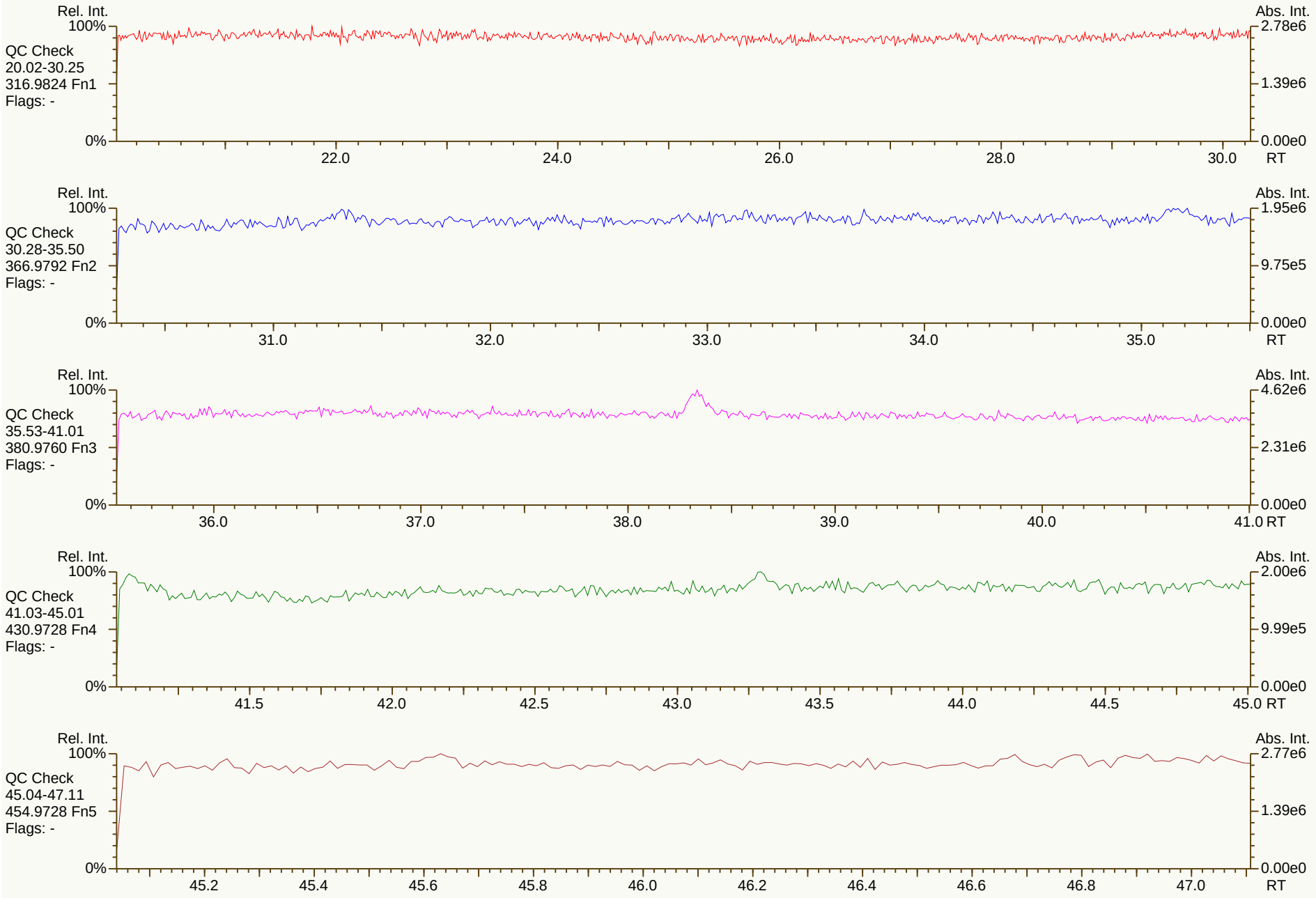
Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 12:43 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS2	UTP: 19-Sep-2012 13:38 MDC	Checkcode: 932-183-KDY
Sample ID: SIL12-32-1	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-03

Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
2378-TCDD	27.61	8.77E+05	0.80	Y	1.15	1.19	4%
12378-PeCDD	33.89	3.02E+06	1.62	Y	1.08	1.12	4%
123478-HxCDD	38.52	2.63E+06	1.27	Y	1.20	1.25	4%
123678-HxCDD	38.65	2.70E+06	1.26	Y	1.10	1.12	2%
123789-HxCDD	38.99	2.83E+06	1.22	Y	1.12	1.19	6%
1234678-HpCDD	42.66	2.29E+06	1.05	Y	1.08	1.13	4%
OCDD	46.42	3.55E+06	0.90	Y	1.11	1.15	4%
2378-TCDF	26.61	1.29E+06	0.78	Y	1.10	1.18	7%
12378-PeCDF	32.15	4.79E+06	1.54	Y	1.07	1.09	2%
23478-PeCDF	33.47	5.04E+06	1.49	Y	1.14	1.20	5%
123478-HxCDF	37.36	4.14E+06	1.25	Y	1.30	1.35	4%
123678-HxCDF	37.52	4.46E+06	1.27	Y	1.27	1.31	3%
234678-HxCDF	38.30	4.75E+06	1.22	Y	1.27	1.30	2%
123789-HxCDF	39.41	3.48E+06	1.25	Y	1.25	1.30	4%
1234678-HpCDF	41.39	3.50E+06	1.02	Y	1.44	1.50	4%
1234789-HpCDF	43.27	3.35E+06	1.01	Y	1.50	1.57	4%
OCDF	46.67	4.83E+06	0.91	Y	1.06	1.09	4%
ES 2378-TCDD	27.58	3.70E+07	0.80	Y	1.05	1.04	-1%
ES 12378-PeCDD	33.86	2.69E+07	1.58	Y	0.81	0.76	-6%
ES 123478-HxCDD	38.50	2.11E+07	1.26	Y	1.03	0.96	-7%
ES 123678-HxCDD	38.63	2.41E+07	1.28	Y	1.17	1.10	-6%
ES 123789-HxCDD	38.98	2.38E+07	1.30	Y	1.17	1.08	-8%
ES 1234678-HpCDD	42.65	2.03E+07	1.06	Y	1.00	0.92	-8%
ES OCDD	46.40	3.09E+07	0.90	Y	0.80	0.70	-13%
ES 2378-TCDF	26.59	5.49E+07	0.81	Y	1.02	0.99	-3%
ES 12378-PeCDF	32.13	4.40E+07	1.57	Y	0.85	0.79	-7%
ES 23478-PeCDF	33.45	4.20E+07	1.59	Y	0.81	0.76	-7%
ES 123478-HxCDF	37.34	3.07E+07	0.52	Y	1.44	1.39	-4%
ES 123678-HxCDF	37.50	3.40E+07	0.52	Y	1.61	1.55	-4%
ES 234678-HxCDF	38.28	3.66E+07	0.53	Y	1.67	1.67	0%
ES 123789-HxCDF	39.40	2.67E+07	0.53	Y	1.32	1.21	-8%
ES 1234678-HpCDF	41.38	2.33E+07	0.44	Y	1.16	1.06	-9%
ES 1234789-HpCDF	43.26	2.14E+07	0.45	Y	1.02	0.97	-4%
ES OCDF	46.65	4.41E+07	0.92	Y	1.17	1.00	-14%

Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 12:43 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS2	UTP: 19-Sep-2012 13:38 MDC	Checkcode: 932-183
Sample ID: SIL12-32-1	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-03

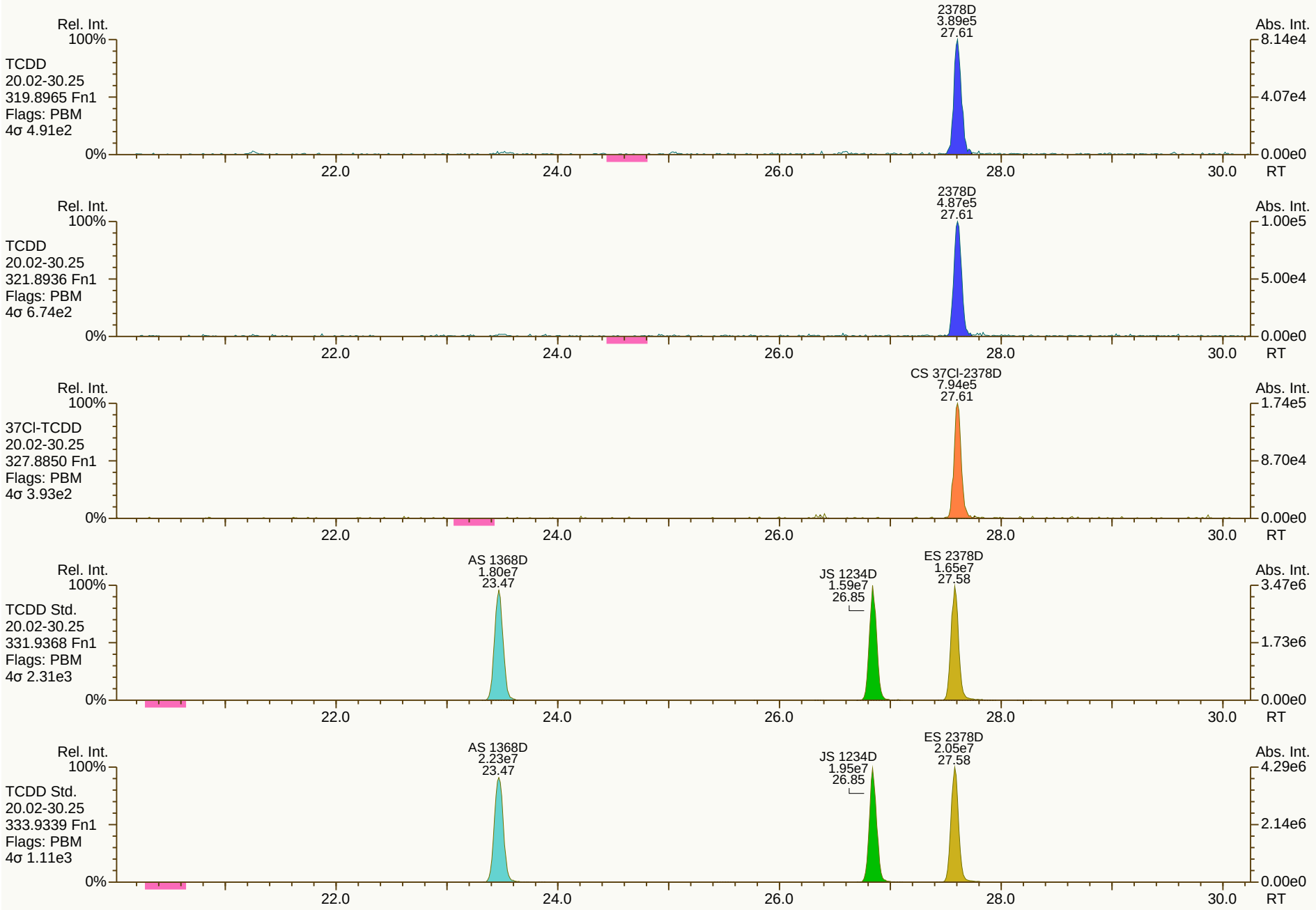
Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
JS 1234-TCDD	26.85	3.54E+07	0.82	Y	-	-	-
JS 1234-TCDF	25.07	5.55E+07	0.79	Y	-	-	-
JS 123467-HxCDD	38.86	1.10E+07	1.29	Y	-	-	-
CS 37Cl-2378-TCDD	27.61	7.94E+05	n/a	-	1.22	1.12	-8%
CS 12347-PeCDD	33.27	2.90E+07	1.67	Y	0.81	0.82	1%
CS 12346-PeCDF	31.52	5.09E+07	1.61	Y	0.91	0.92	0%
CS 123469-HxCDF	37.87	3.15E+07	0.52	Y	1.44	1.43	-1%
CS 1234689-HpCDF	41.92	2.45E+07	0.46	Y	1.14	1.11	-2%
SS 37Cl-2378-TCDD	27.61	7.94E+05	n/a	-	1.16	1.07	-7%
SS 12347-PeCDD	33.27	2.90E+07	1.67	Y	1.01	1.08	6%
SS 12346-PeCDF	31.52	5.09E+07	1.61	Y	1.08	1.16	7%
SS 123469-HxCDF	37.87	3.15E+07	0.52	Y	0.90	0.93	3%
SS 1234689-HpCDF	41.92	2.45E+07	0.46	Y	0.98	1.05	7%
AS 1368-TCDD	23.47	4.03E+07	0.80	Y	1.11	1.14	3%
AS 1368-TCDF	21.26	6.82E+07	0.78	Y	1.23	1.23	0%
FS 1278-TCDD	NotFnd						
FS 12478-PeCDD	NotFnd						
FS 123468-HxCDD	NotFnd						
FS 1234679-HpCDD	NotFnd						
TS 1378-TCDD	NotFnd						
OCDD-a	46.41	1.99E+05	2.55	Y	0.07	0.06	-2%
OCDF-a	46.65	3.01E+05	2.57	Y	0.06	0.07	10%

SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**



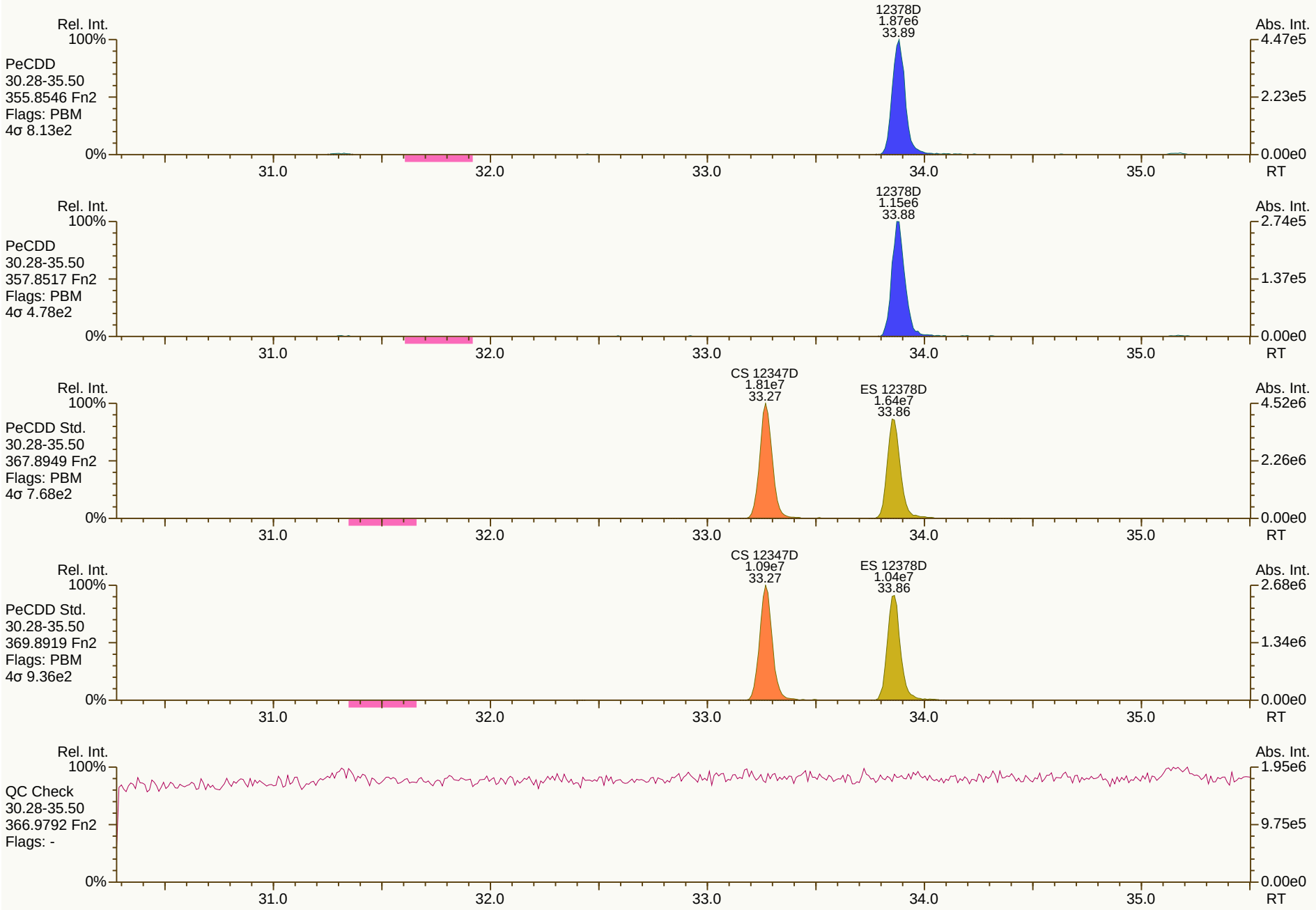
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS2.utp_res, saved 19-Sep-2012 13:38 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 scc: 932-183 *PKD: n/a Printed: 19-Sep-2012 17:42 Page 1 of 12*

SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**



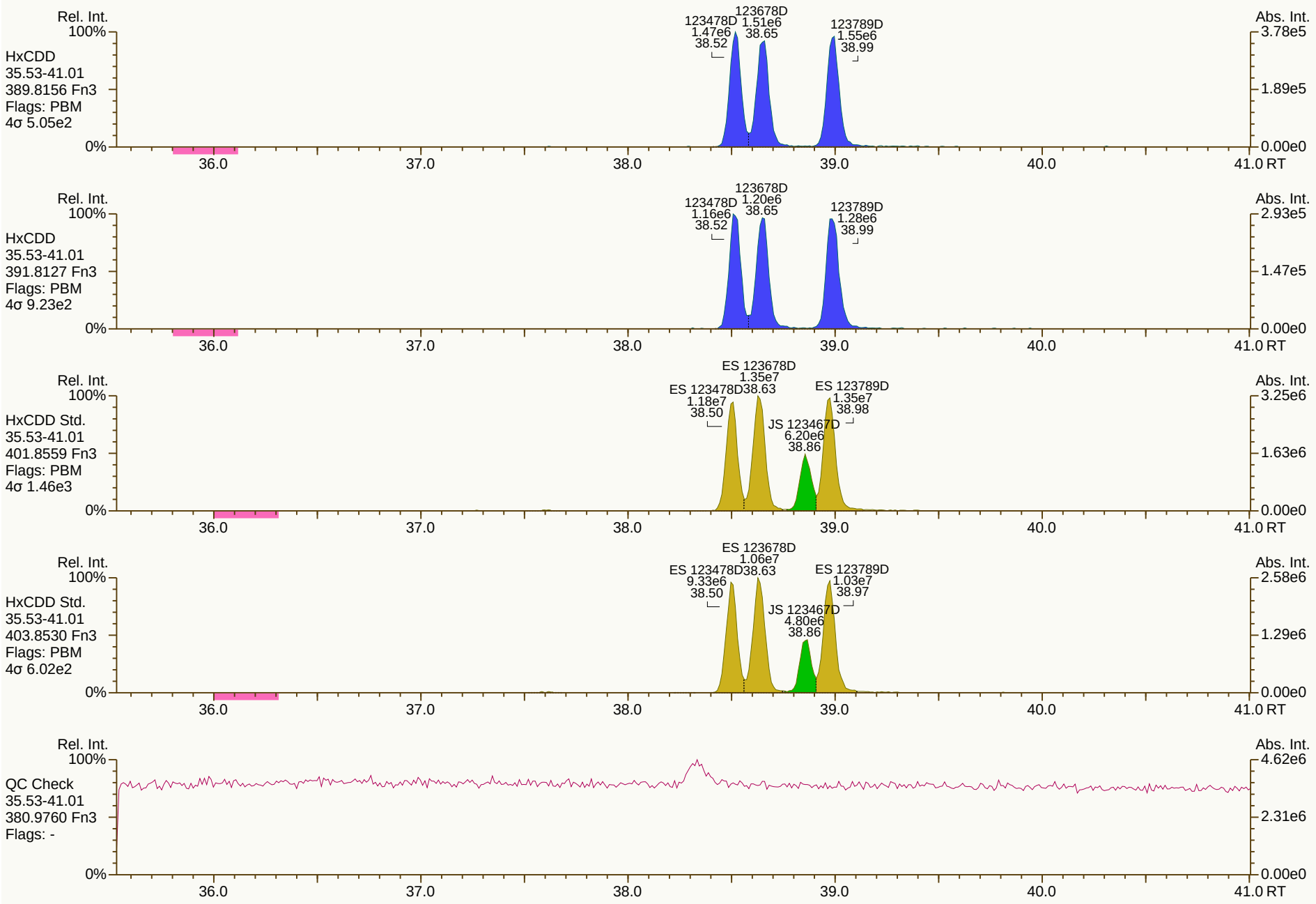
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS2.utp_res, saved 19-Sep-2012 13:38 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 5989, 6753, 6445 scc: 932-183 *Revised: 19-Sep-2012 13:37 (MDC) Printed: 19-Sep-2012 17:42 Page 2 of 12*

SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**



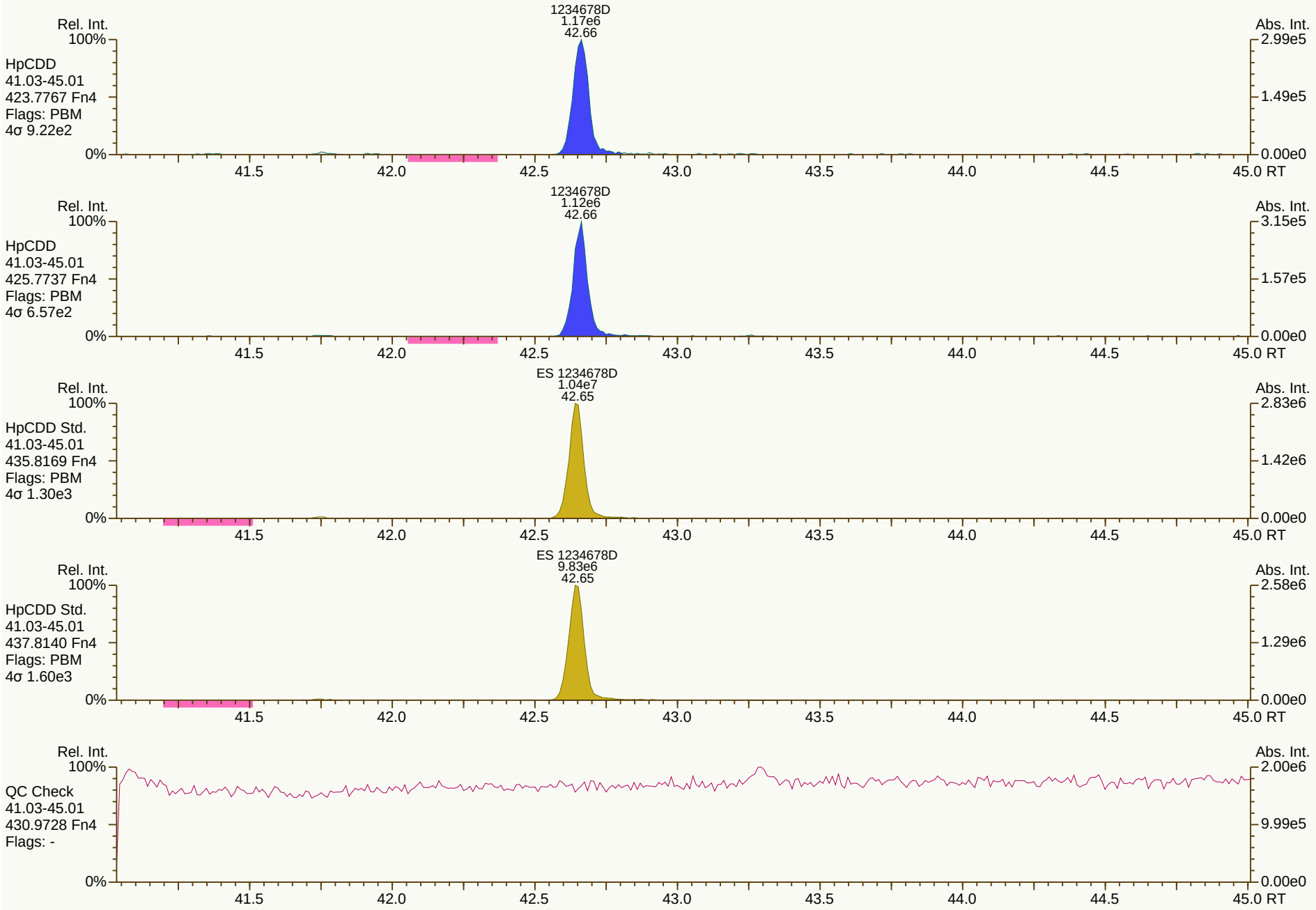
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 4175, 9770 scc: 932-183 *Revised: 19-Sep-2012 13:38 (MDC) Printed: 19-Sep-2012 17:42 Page 3 of 12*

SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**



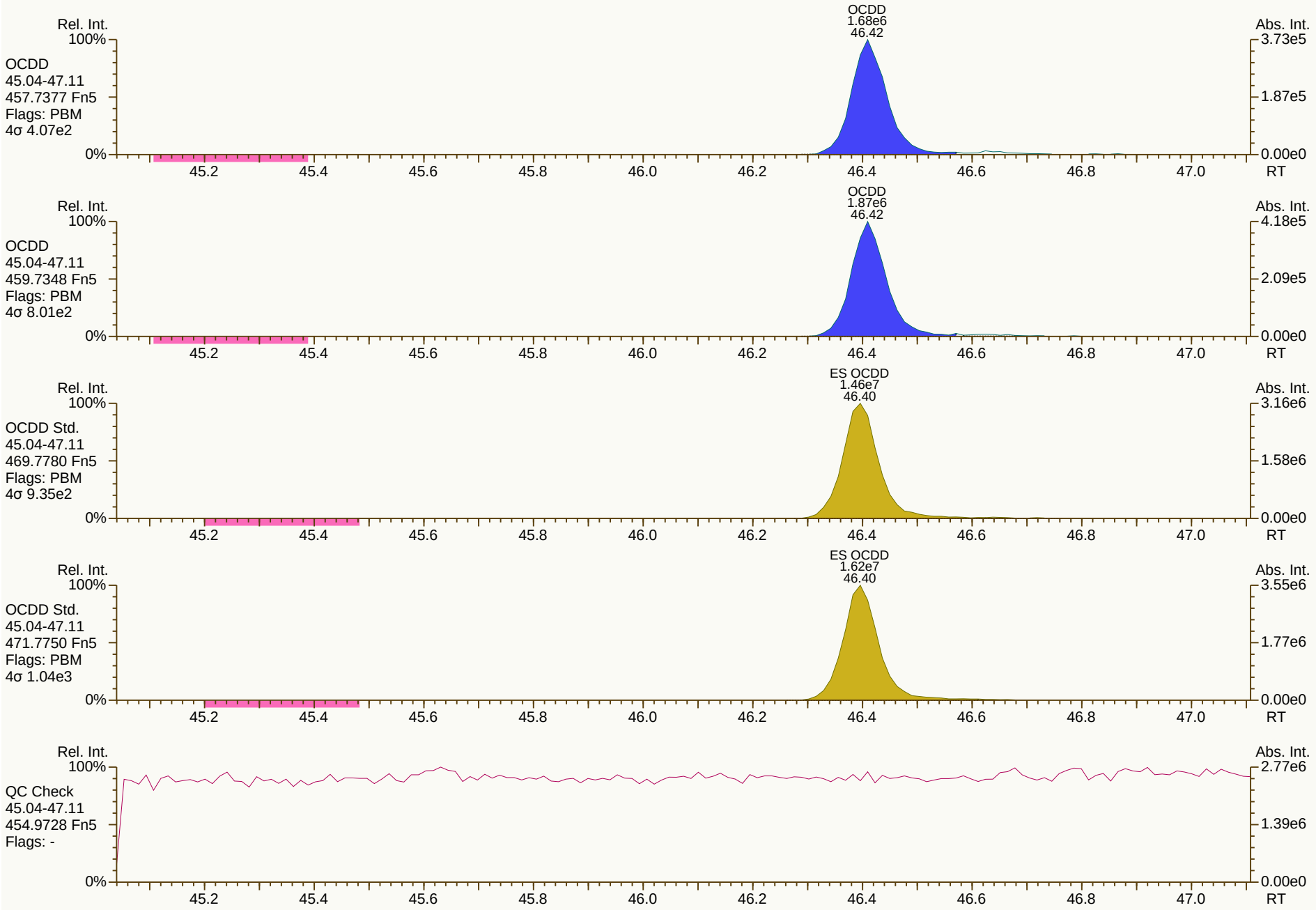
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 4618, 9146 scc: 932-183 *Revised: 19-Sep-2012 13:37 (MDC) Printed: 19-Sep-2012 17:42 Page 4 of 12*

SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS2.utp_res, saved 19-Sep-2012 13:38 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 8059, 0433 scc: 932-183 *Revised: 19-Sep-2012 13:37 (MDC) Printed: 19-Sep-2012 17:42 Page 5 of 12*

SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS2.utp_res, saved 19-Sep-2012 13:38 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 8608, 3075 scc: 932-183 *Revised: 19-Sep-2012 13:37 (MDC) Printed: 19-Sep-2012 17:42 Page 6 of 12*

SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**

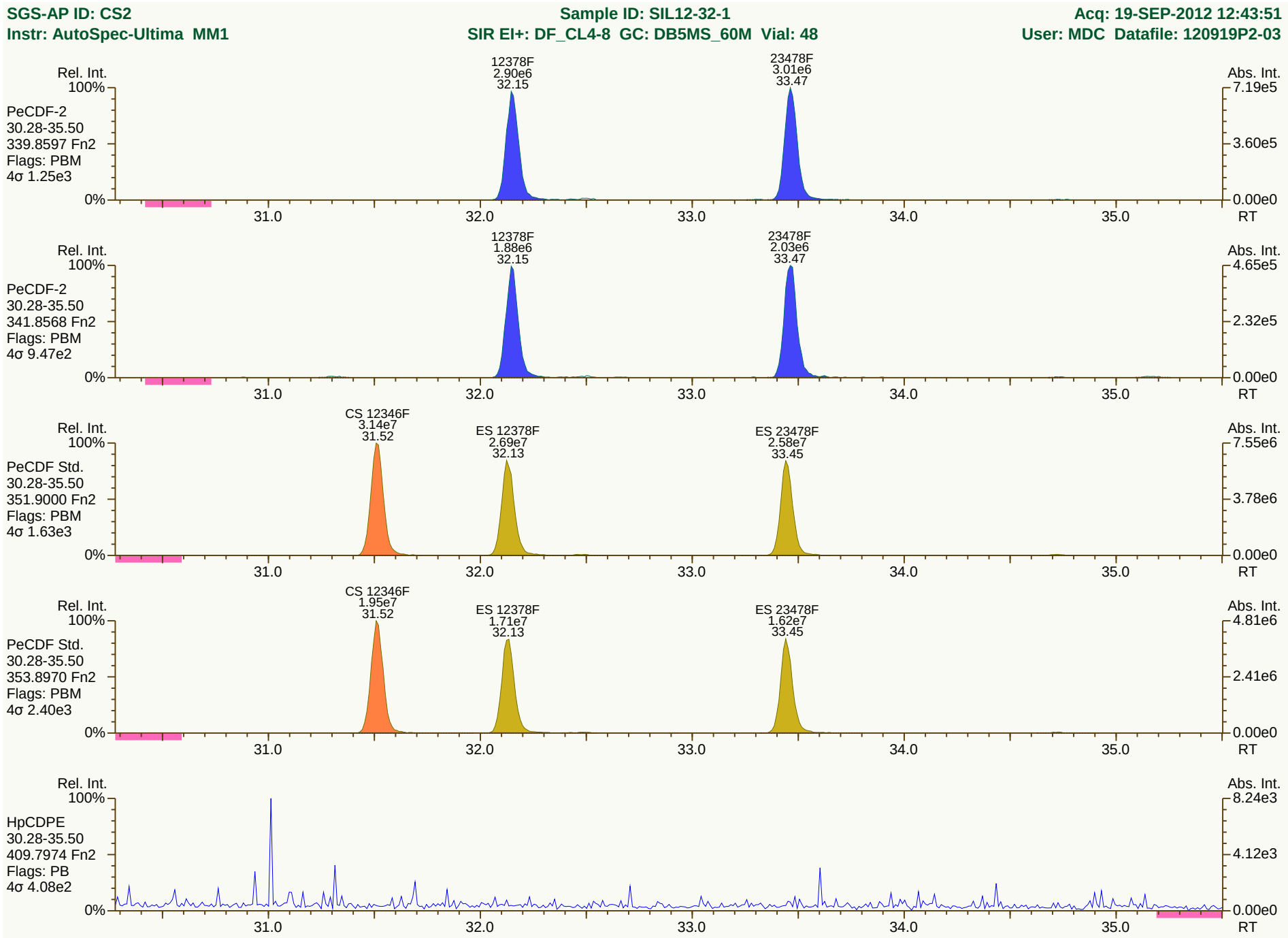


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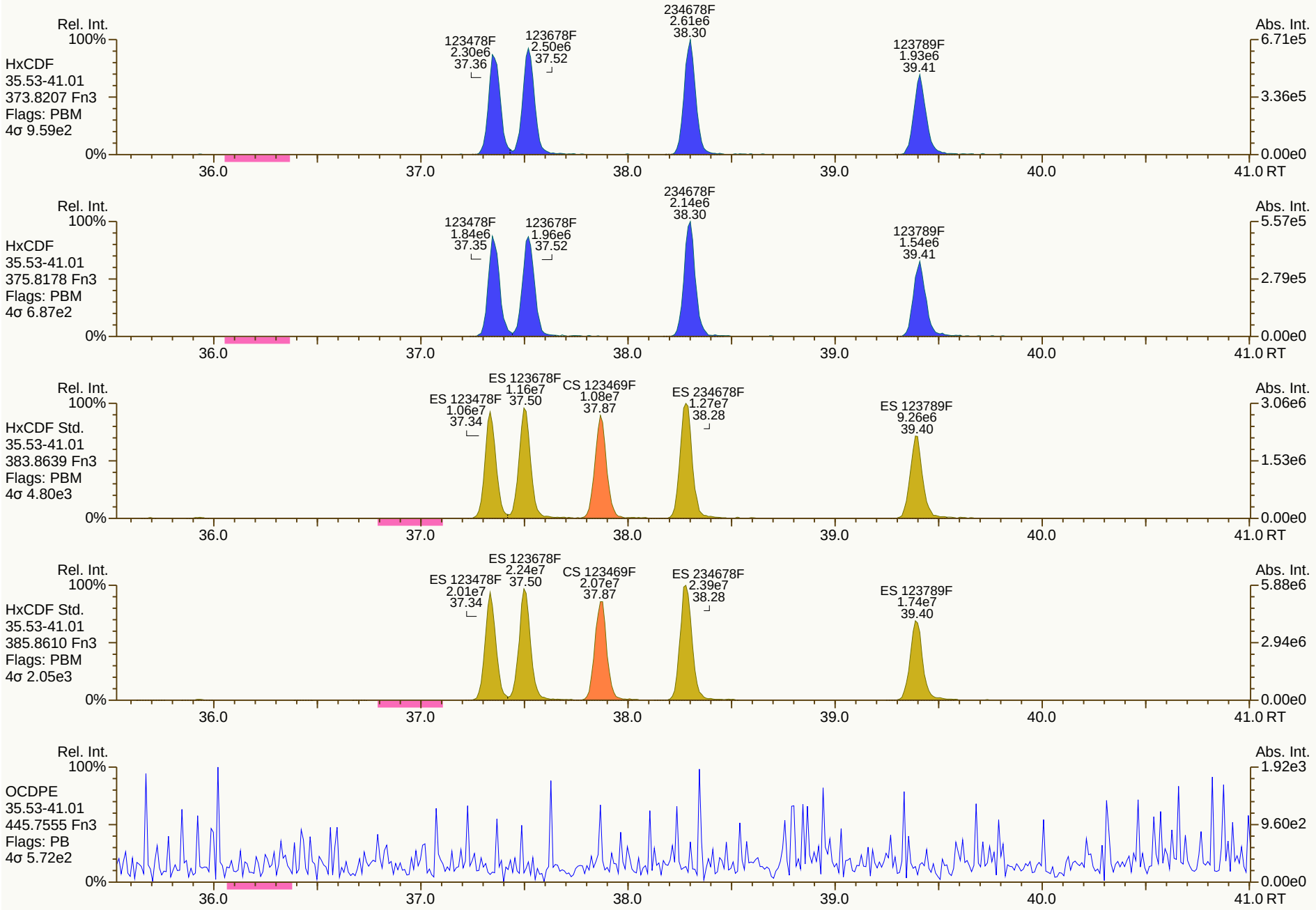
SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS2.utp_res, saved 19-Sep-2012 13:38 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 4251 scc: 932-183 *Revised: 19-Sep-2012 13:37 (MDC) Printed: 19-Sep-2012 17:42 Page 8 of 12*


SGS-AP ID: CS2
Sample ID: SIL12-32-1
Acq: 19-SEP-2012 12:43:51
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48
User: MDC Datafile: 120919P2-03
Rel. Int.
Abs. Int.
PeCDF-2
30.28-35.50
339.8597 Fn2
Flags: PBM
4σ 1.25e3
12378F
2.90e6
32.15
23478F
3.01e6
33.47
7.19e5
3.60e5
0.00e0
PeCDF-2
30.28-35.50
341.8568 Fn2
Flags: PBM
4σ 9.47e2
12378F
1.88e6
32.15
23478F
2.03e6
33.47
4.65e5
2.32e5
0.00e0
PeCDF Std.
30.28-35.50
351.9000 Fn2
Flags: PBM
4σ 1.63e3
CS 12346F
3.14e7
31.52
ES 12378F
2.69e7
32.13
ES 23478F
2.58e7
33.45
7.55e6
3.78e6
0.00e0
PeCDF Std.
30.28-35.50
353.8970 Fn2
Flags: PBM
4σ 2.40e3
CS 12346F
1.95e7
31.52
ES 12378F
1.71e7
32.13
ES 23478F
1.62e7
33.45
4.81e6
2.41e6
0.00e0
HpCDPE
30.28-35.50
409.7974 Fn2
Flags: PB
4σ 4.08e2
8.24e3
4.12e3
0.00e0
100%
0%
31.0
32.0
33.0
34.0
35.0
RT
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS2.utp_res, saved 19-Sep-2012 13:38 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 1552, 6872, 8249 scc: 932-183
Revised: 19-Sep-2012 13:37 (MDC) Printed: 19-Sep-2012 17:42 Page 9 of 12

SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**

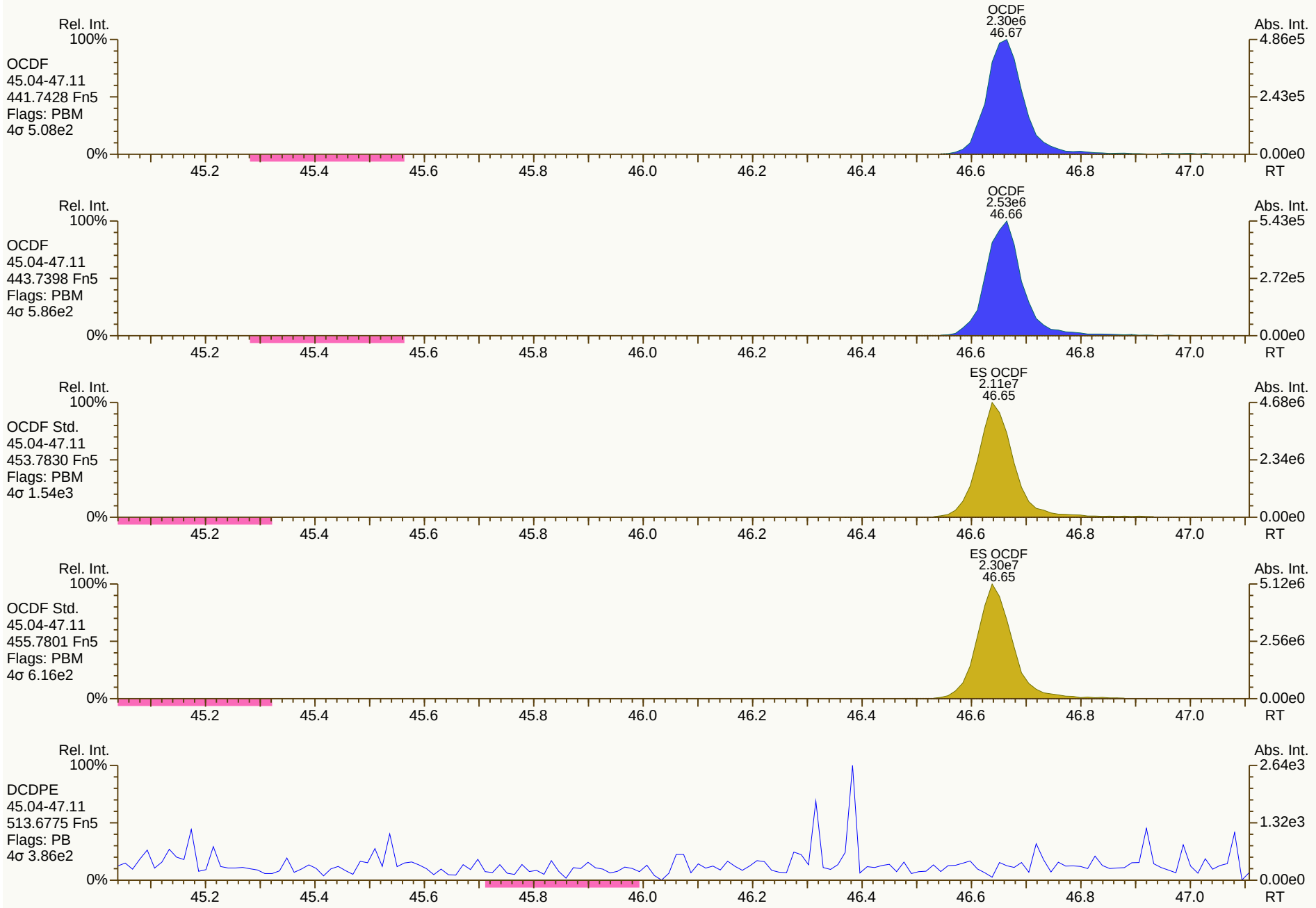


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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 4121, 6798, 9447 scc: 932-183 *Revised: 19-Sep-2012 13:37 (MDC) Printed: 19-Sep-2012 17:42 Page 10 of 12*



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS2.utp_res, saved 19-Sep-2012 13:38 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 9557, 8254, 4653 scc: 932-183
Revised: 19-Sep-2012 13:38 (MDC) Printed: 19-Sep-2012 17:42 Page 11 of 12

SGS-AP ID: CS2 **Sample ID: SIL12-32-1** **Acq: 19-SEP-2012 12:43:51**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 48** **User: MDC Datafile: 120919P2-03**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS2.utp_res, saved 19-Sep-2012 13:38 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 6258, 6090, 7856 scc: 932-183 *Revised: 19-Sep-2012 13:37 (MDC) Printed: 19-Sep-2012 17:42 Page 12 of 12*

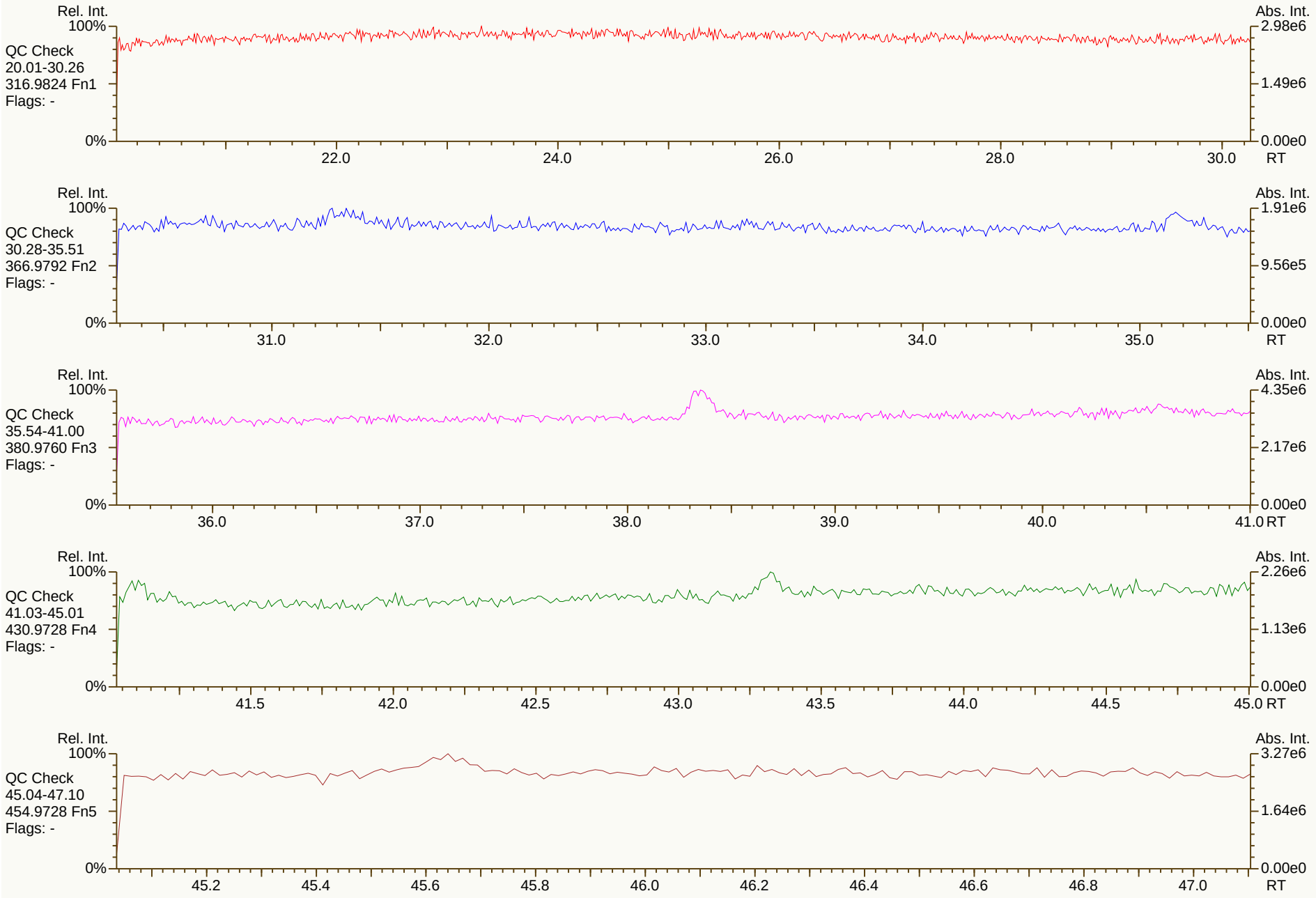
Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 13:34 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS3	UTP: 19-Sep-2012 14:27 MDC	Checkcode: 921-458-QJY
Sample ID: SIL12-31-4	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-04

Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
2378-TCDD	27.62	3.91E+06	0.80	Y	1.15	1.13	-1%
12378-PeCDD	33.90	1.31E+07	1.59	Y	1.08	1.07	-1%
123478-HxCDD	38.53	1.15E+07	1.26	Y	1.20	1.17	-3%
123678-HxCDD	38.66	1.16E+07	1.25	Y	1.10	1.06	-3%
123789-HxCDD	39.00	1.19E+07	1.27	Y	1.12	1.09	-3%
1234678-HpCDD	42.68	9.78E+06	1.05	Y	1.08	1.05	-3%
OCDD	46.42	1.58E+07	0.91	Y	1.11	1.11	0%
2378-TCDF	26.62	5.69E+06	0.77	Y	1.10	1.09	0%
12378-PeCDF	32.17	2.08E+07	1.56	Y	1.07	1.04	-3%
23478-PeCDF	33.48	2.17E+07	1.55	Y	1.14	1.13	-1%
123478-HxCDF	37.37	1.78E+07	1.26	Y	1.30	1.28	-2%
123678-HxCDF	37.53	1.89E+07	1.24	Y	1.27	1.25	-1%
234678-HxCDF	38.31	2.19E+07	1.28	Y	1.27	1.26	-1%
123789-HxCDF	39.43	1.51E+07	1.26	Y	1.25	1.22	-3%
1234678-HpCDF	41.41	1.55E+07	1.03	Y	1.44	1.40	-3%
1234789-HpCDF	43.29	1.49E+07	1.02	Y	1.50	1.50	0%
OCDF	46.67	2.21E+07	0.89	Y	1.06	1.04	-1%
ES 2378-TCDD	27.59	3.45E+07	0.79	Y	1.05	1.04	-2%
ES 12378-PeCDD	33.87	2.44E+07	1.63	Y	0.81	0.73	-9%
ES 123478-HxCDD	38.51	1.97E+07	1.28	Y	1.03	1.00	-3%
ES 123678-HxCDD	38.65	2.18E+07	1.31	Y	1.17	1.11	-5%
ES 123789-HxCDD	38.98	2.19E+07	1.27	Y	1.17	1.11	-5%
ES 1234678-HpCDD	42.66	1.87E+07	1.07	Y	1.00	0.95	-5%
ES OCDD	46.41	2.84E+07	0.91	Y	0.80	0.72	-10%
ES 2378-TCDF	26.60	5.20E+07	0.79	Y	1.02	0.98	-4%
ES 12378-PeCDF	32.14	4.00E+07	1.63	Y	0.85	0.75	-12%
ES 23478-PeCDF	33.46	3.86E+07	1.62	Y	0.81	0.73	-11%
ES 123478-HxCDF	37.35	2.79E+07	0.53	Y	1.44	1.42	-2%
ES 123678-HxCDF	37.51	3.02E+07	0.54	Y	1.61	1.54	-5%
ES 234678-HxCDF	38.30	3.48E+07	0.52	Y	1.67	1.77	6%
ES 123789-HxCDF	39.41	2.48E+07	0.53	Y	1.32	1.26	-5%
ES 1234678-HpCDF	41.39	2.22E+07	0.45	Y	1.16	1.13	-3%
ES 1234789-HpCDF	43.27	1.99E+07	0.43	Y	1.02	1.01	0%
ES OCDF	46.65	4.23E+07	0.92	Y	1.17	1.08	-8%

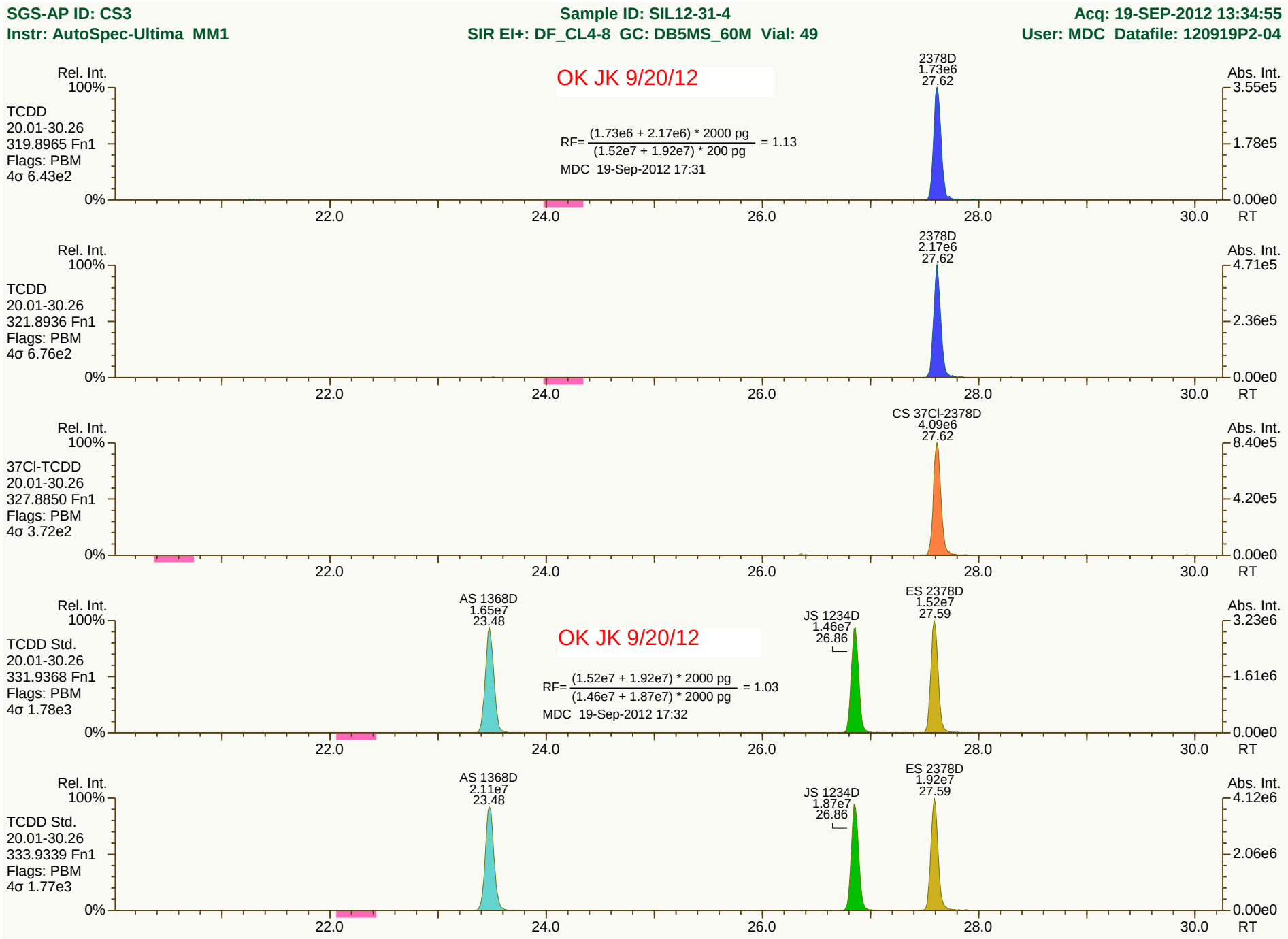
Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 13:34 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS3	UTP: 19-Sep-2012 14:27 MDC	Checkcode: 921-458
Sample ID: SIL12-31-4	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-04

Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
JS 1234-TCDD	26.86	3.33E+07	0.78	Y	-	-	-
JS 1234-TCDF	25.08	5.31E+07	0.80	Y	-	-	-
JS 123467-HxCDD	38.87	9.83E+06	1.25	Y	-	-	-
CS 37Cl-2378-TCDD	27.62	4.09E+06	n/a	-	1.22	1.23	0%
CS 12347-PeCDD	33.28	2.67E+07	1.64	Y	0.81	0.80	-1%
CS 12346-PeCDF	31.53	4.73E+07	1.61	Y	0.91	0.89	-2%
CS 123469-HxCDF	37.88	2.91E+07	0.53	Y	1.44	1.48	2%
CS 1234689-HpCDF	41.94	2.28E+07	0.44	Y	1.14	1.16	2%
SS 37Cl-2378-TCDD	27.62	4.09E+06	n/a	-	1.16	1.19	2%
SS 12347-PeCDD	33.28	2.67E+07	1.64	Y	1.01	1.09	8%
SS 12346-PeCDF	31.53	4.73E+07	1.61	Y	1.08	1.18	9%
SS 123469-HxCDF	37.88	2.91E+07	0.53	Y	0.90	0.96	7%
SS 1234689-HpCDF	41.94	2.28E+07	0.44	Y	0.98	1.03	5%
AS 1368-TCDD	23.48	3.77E+07	0.78	Y	1.11	1.13	2%
AS 1368-TCDF	21.27	6.40E+07	0.80	Y	1.23	1.21	-2%
FS 1278-TCDD	NotFnd						
FS 12478-PeCDD	NotFnd						
FS 123468-HxCDD	NotFnd						
FS 1234679-HpCDD	NotFnd						
TS 1378-TCDD	NotFnd						
OCDD-a	46.42	9.00E+05	2.22	Y	0.07	0.06	-4%
OCDF-a	46.66	1.32E+06	2.75	Y	0.06	0.06	0%

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**

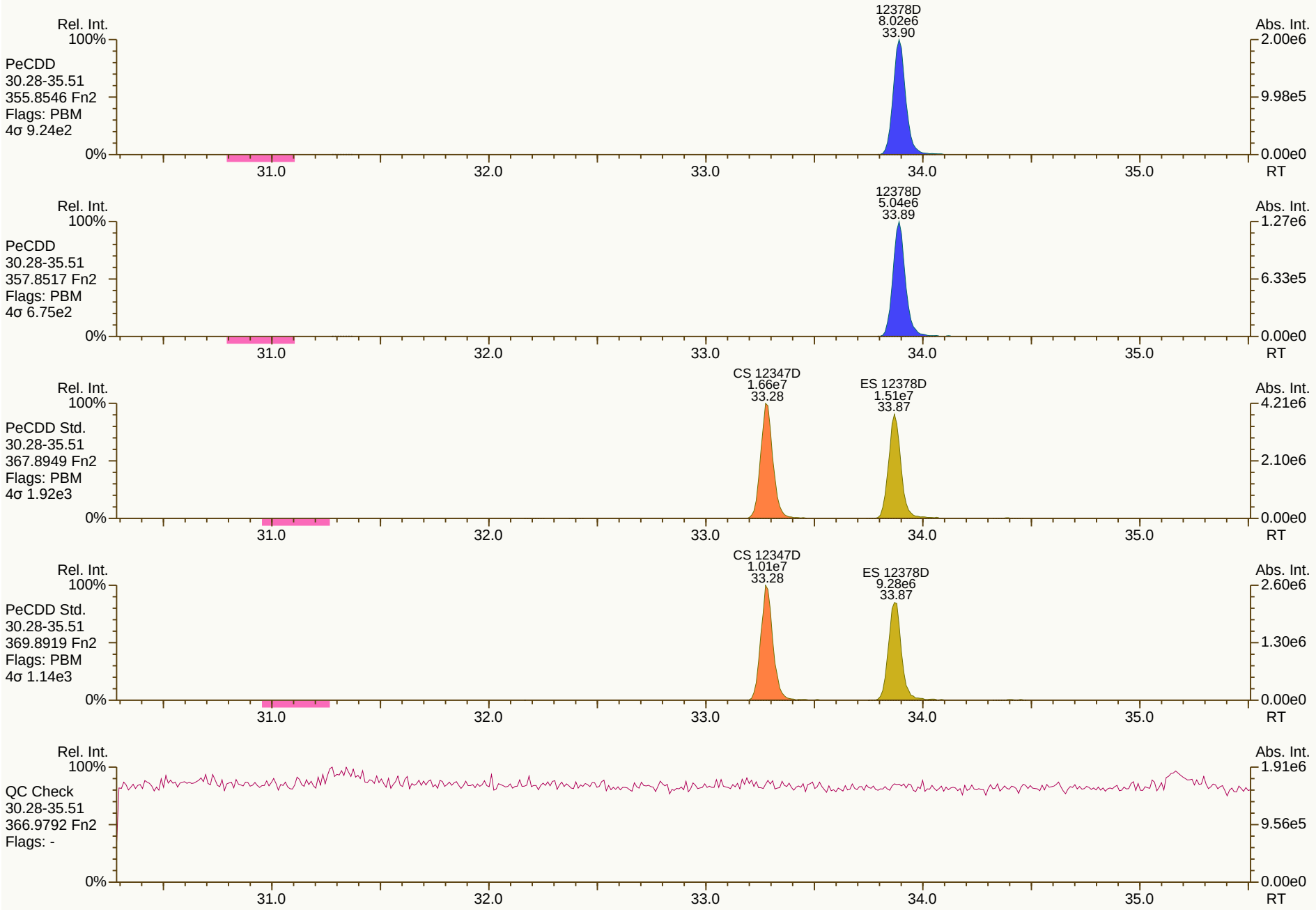


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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 scc: 921-458 *PKD: n/a Printed: 19-Sep-2012 17:42 Page 1 of 12*



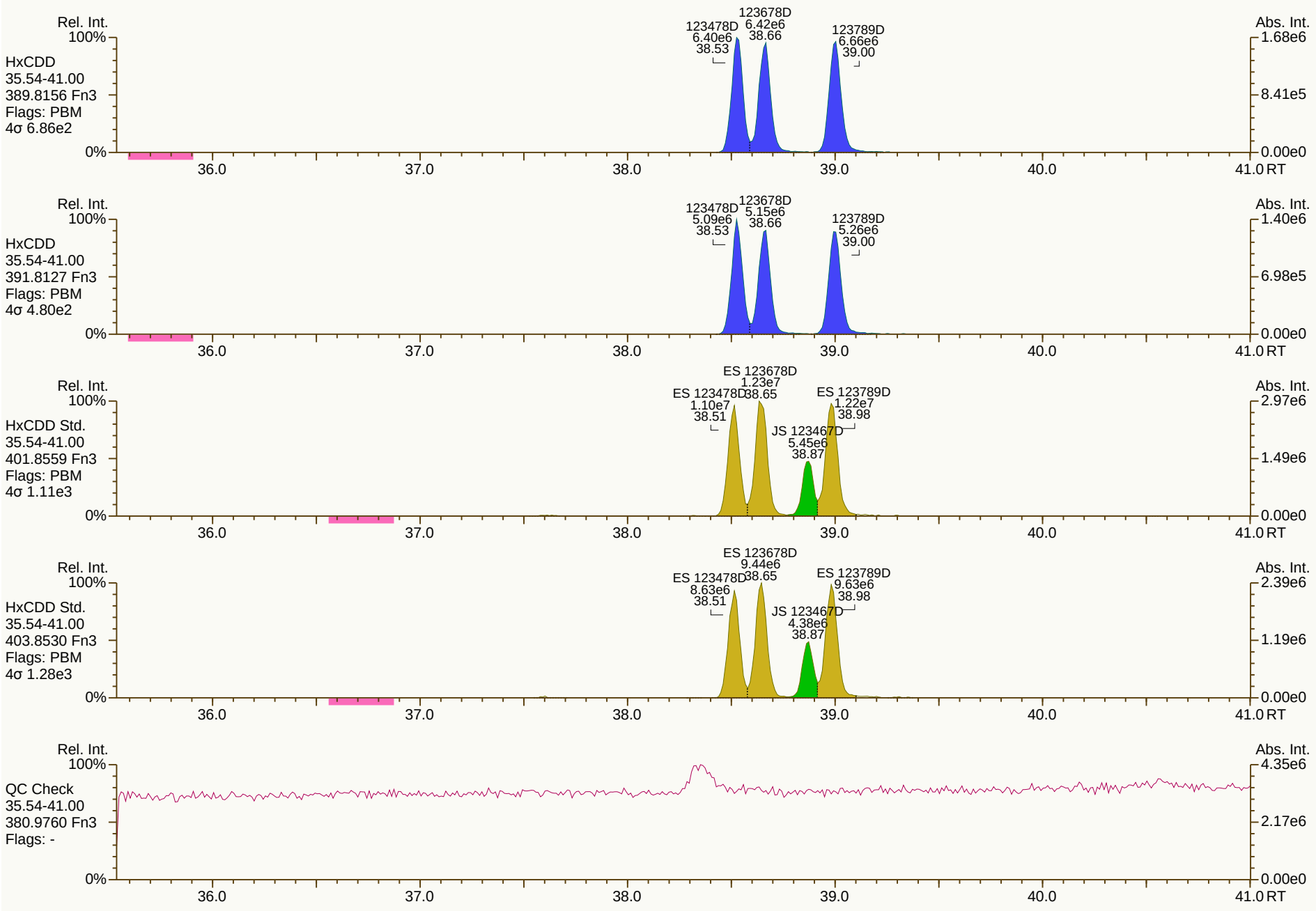
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Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 2871, 1992, 7018 scc: 921-458
Revised: 19-Sep-2012 14:25 (MDC) Printed: 19-Sep-2012 17:42 Page 2 of 12

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**



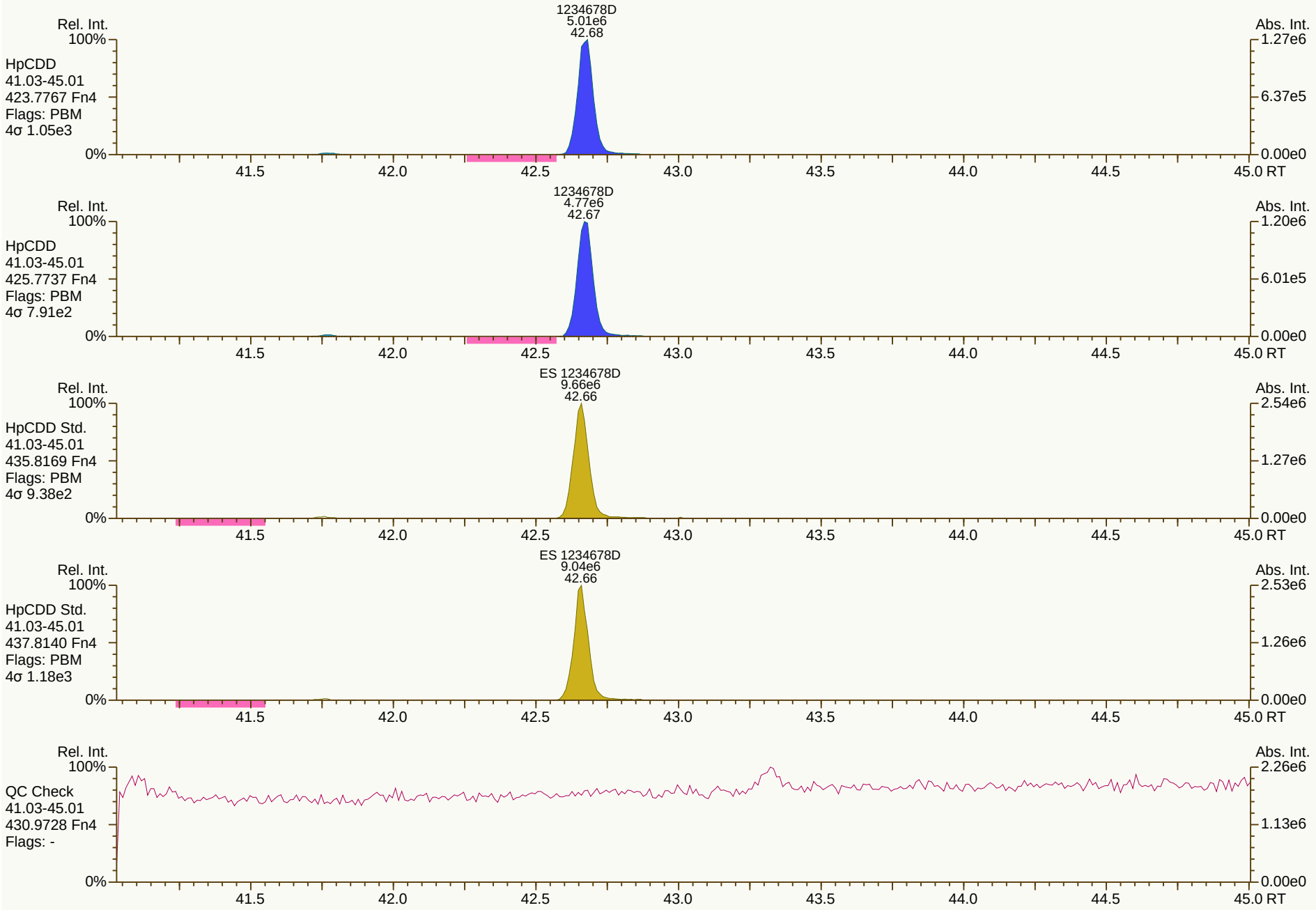
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 2720, 0702 scc: 921-458 *Revised: 19-Sep-2012 14:26 (MDC) Printed: 19-Sep-2012 17:42 Page 3 of 12*

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**



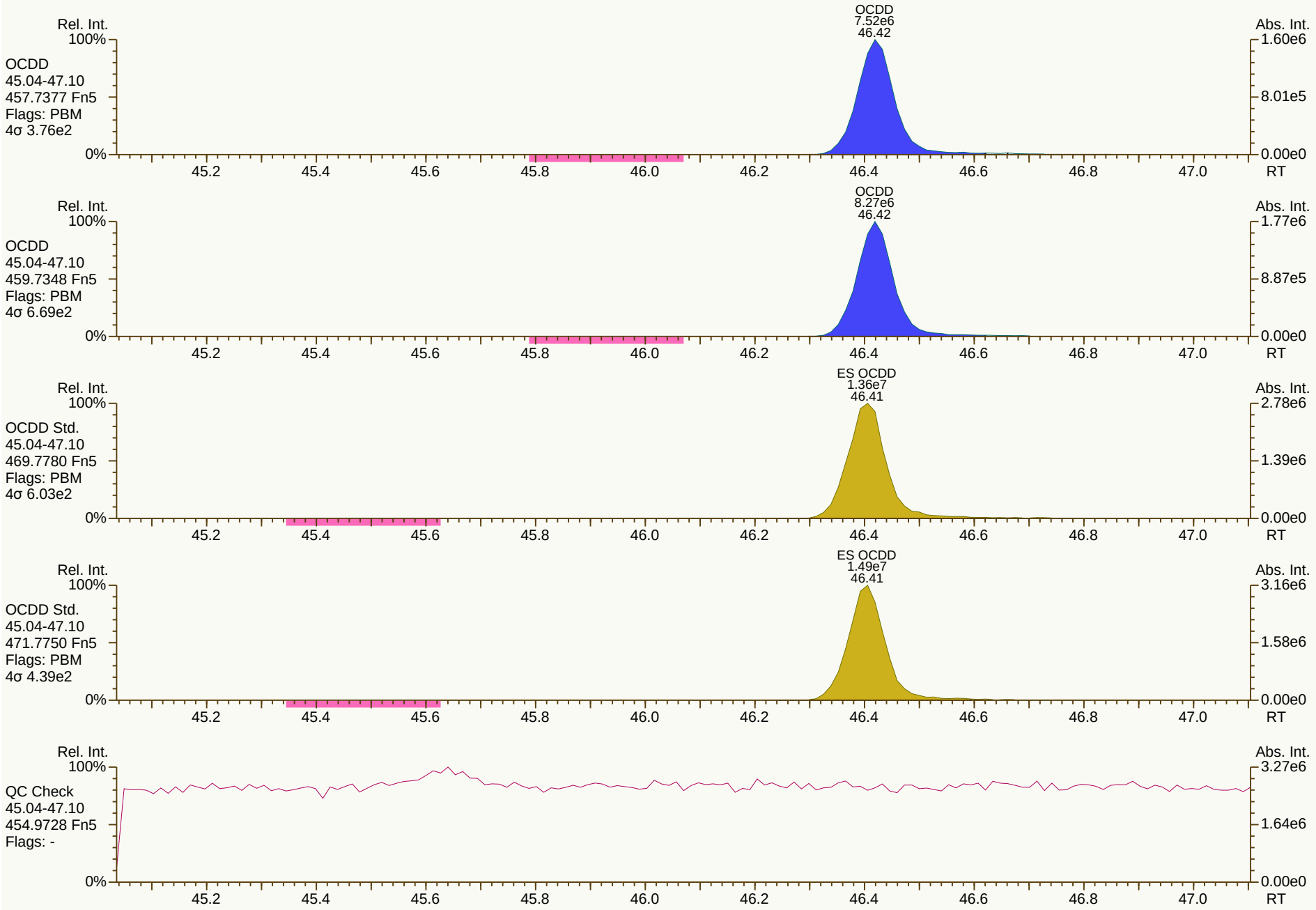
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 5247, 5579 scc: 921-458 *Revised: 19-Sep-2012 14:26 (MDC) Printed: 19-Sep-2012 17:42 Page 4 of 12*

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS3.utp_res, saved 19-Sep-2012 17:32 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 6843, 9773 scc: 921-458 *Revised: 19-Sep-2012 14:26 (MDC) Printed: 19-Sep-2012 17:42 Page 5 of 12*

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS3.utp_res, saved 19-Sep-2012 17:32 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 0410, 5997 scc: 921-458 *Revised: 19-Sep-2012 14:26 (MDC) Printed: 19-Sep-2012 17:42 Page 6 of 12*

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**

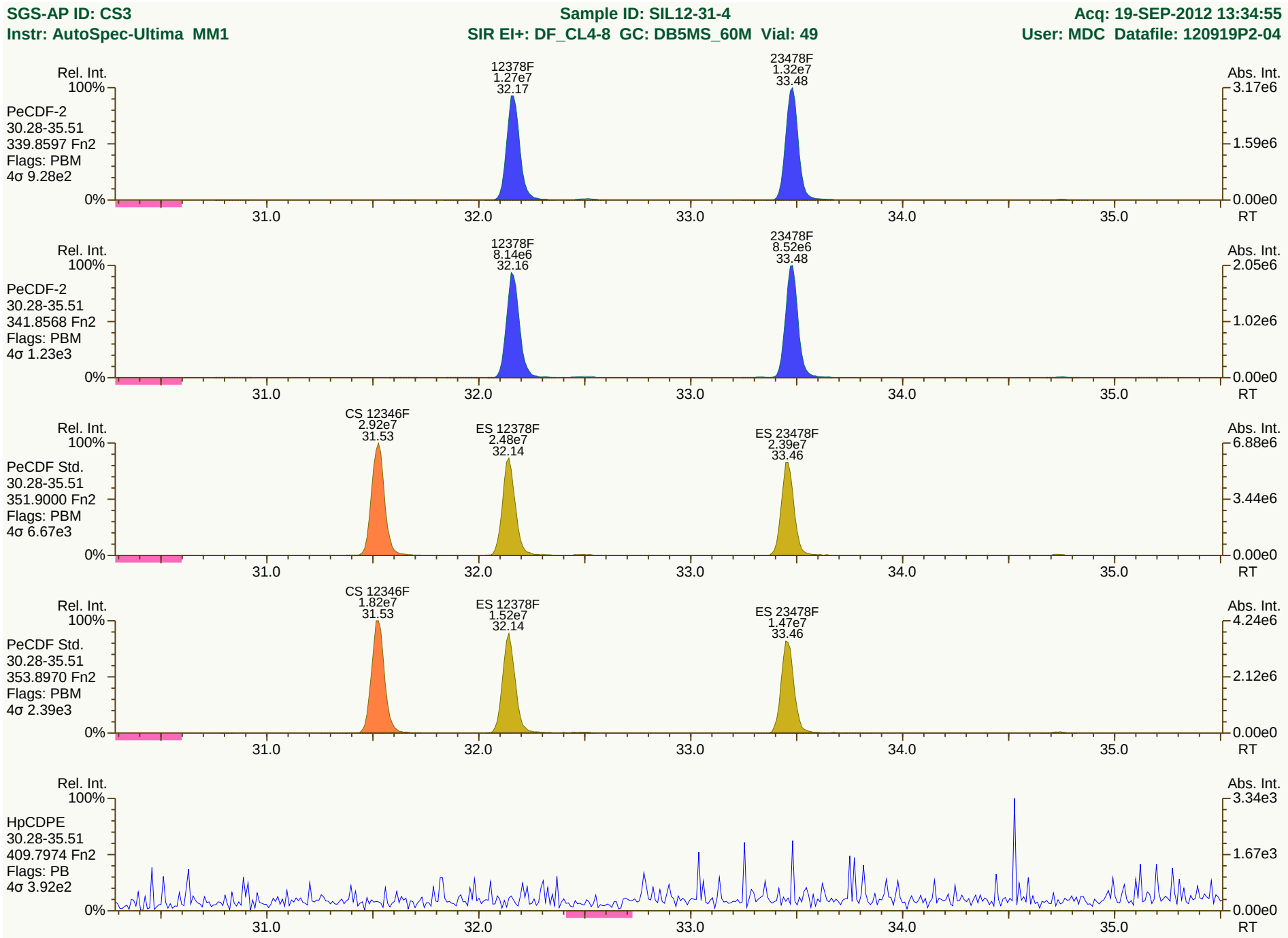


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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 6335, 2084, 6384 scc: 921-458 *Revised: 19-Sep-2012 14:25 (MDC) Printed: 19-Sep-2012 17:42 Page 7 of 12*

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**

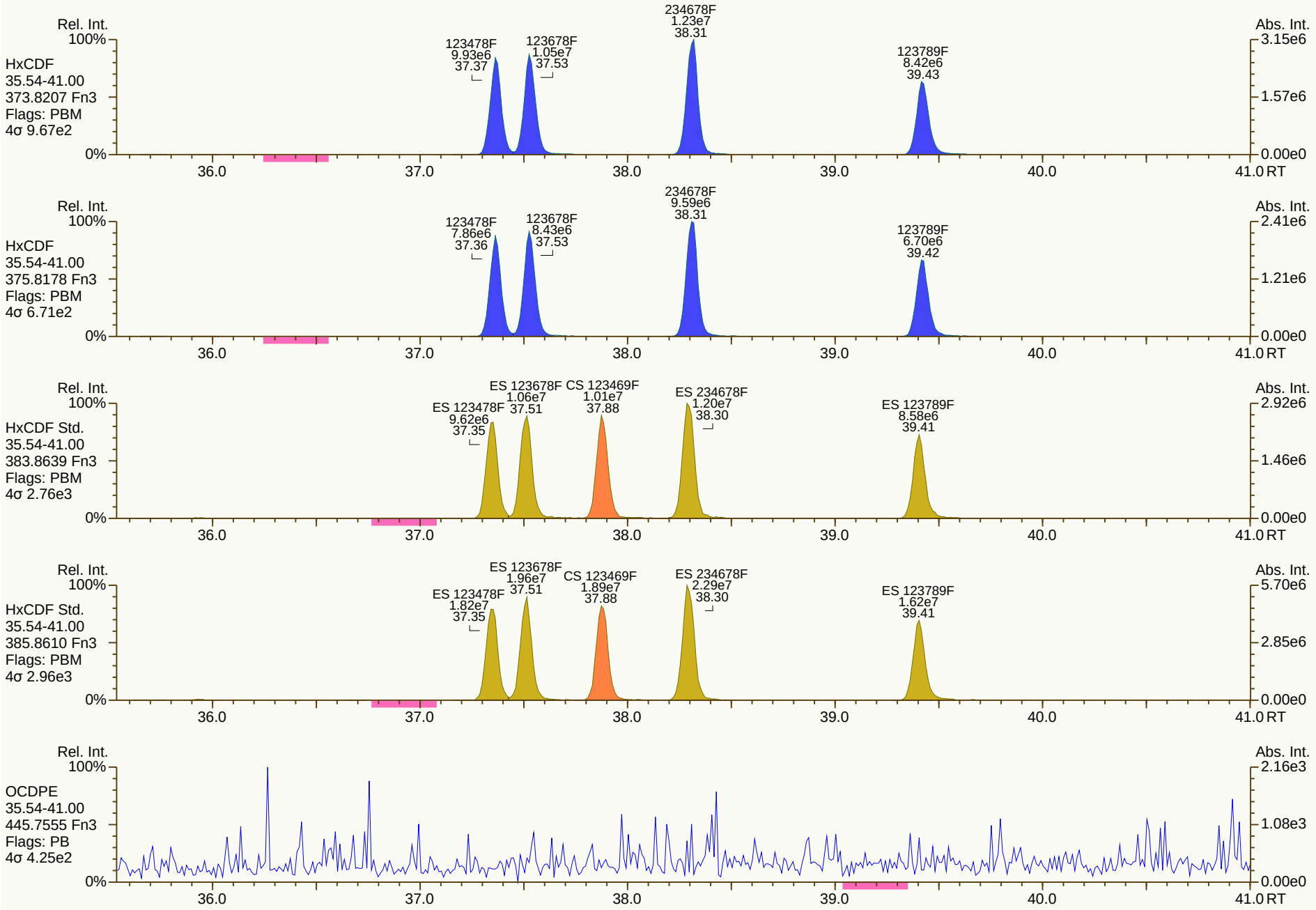


Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS3.utp_res, saved 19-Sep-2012 17:32 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 2274 scc: 921-458 *Revised: 19-Sep-2012 14:25 (MDC) Printed: 19-Sep-2012 17:42 Page 8 of 12*



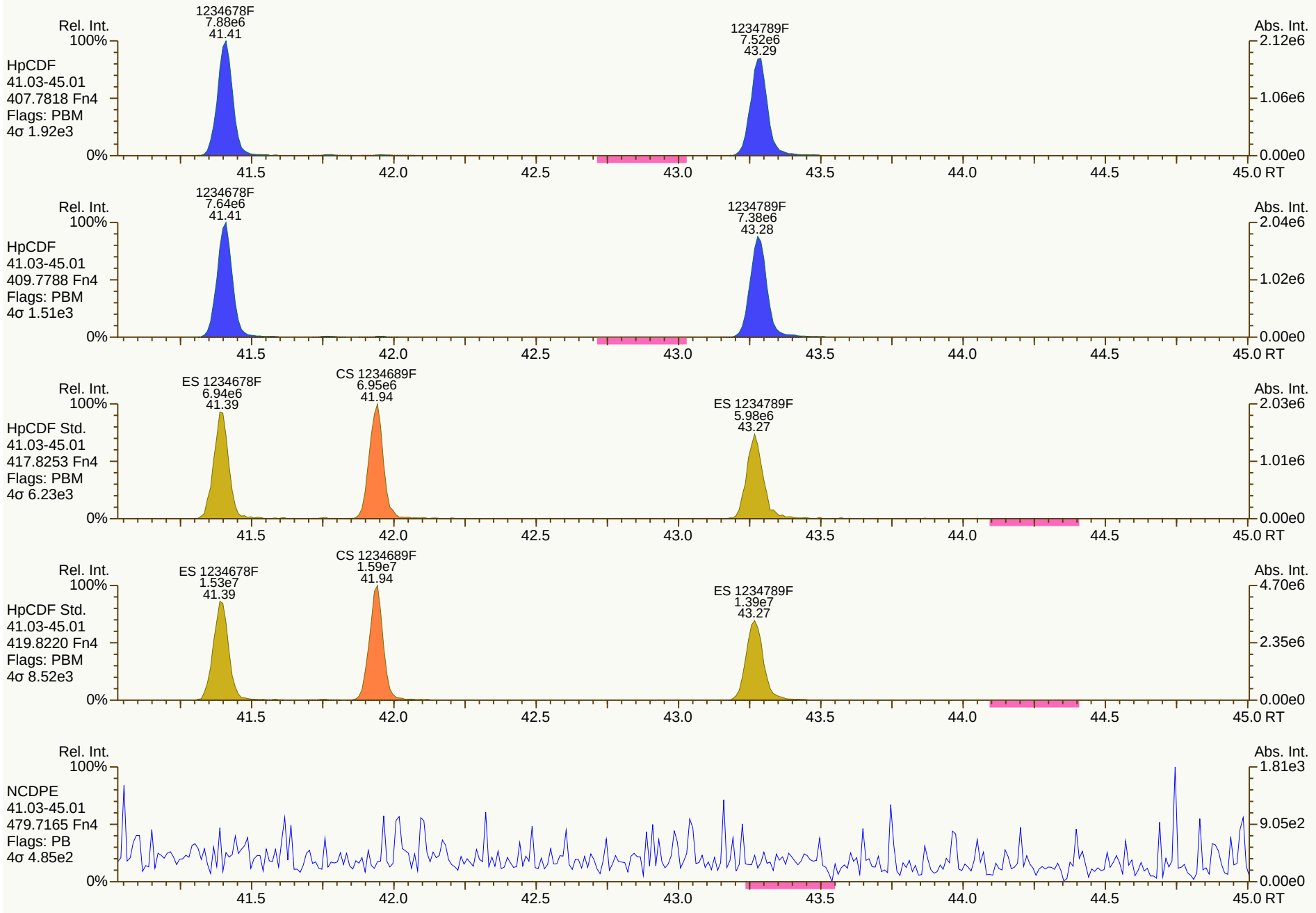
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Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 4570, 1800, 2726 scc: 921-458
Revised: 19-Sep-2012 14:27 (MDC) Printed: 19-Sep-2012 17:43 Page 9 of 12

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**



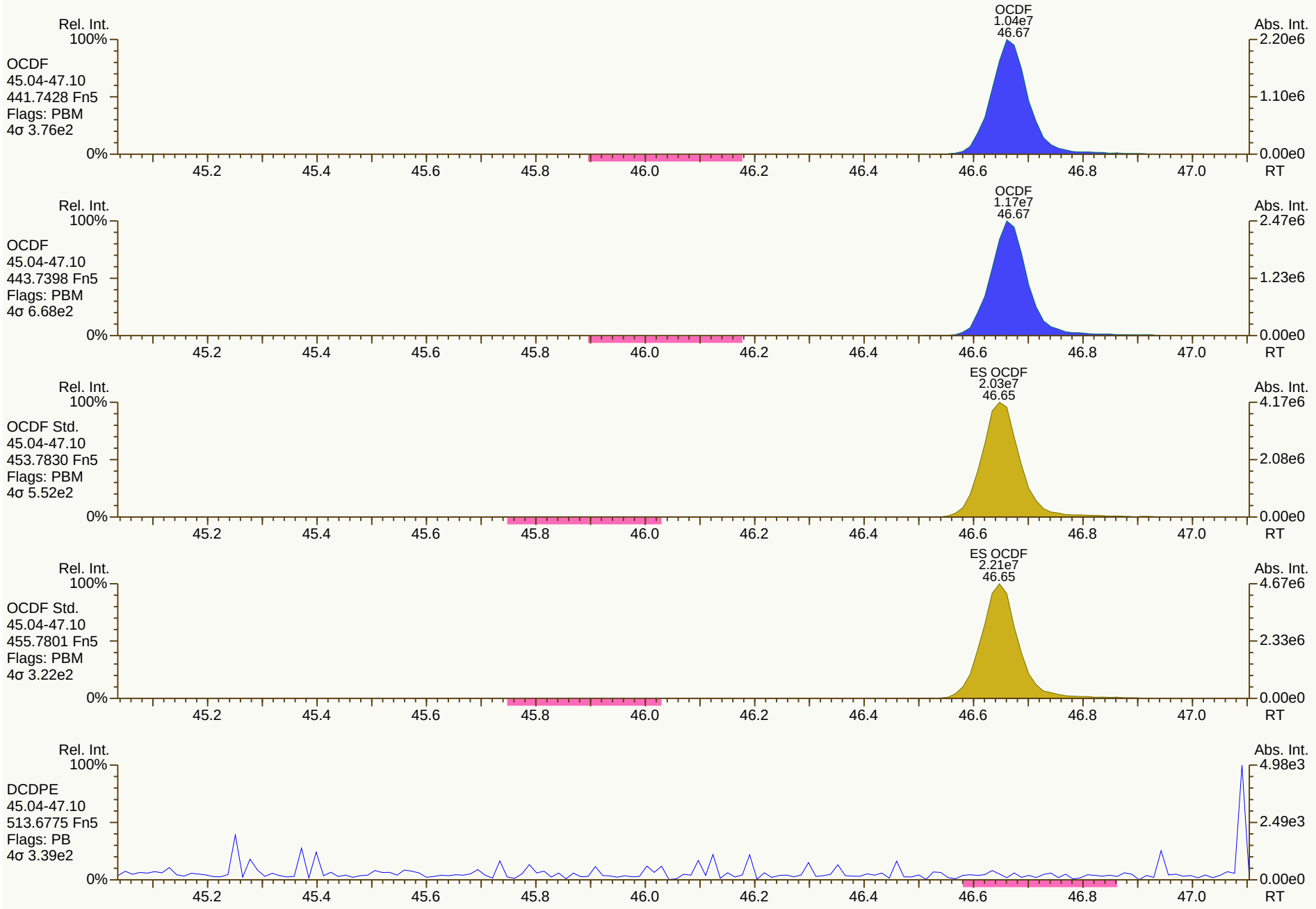
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS3.utp_res, saved 19-Sep-2012 17:32 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 2127, 9706, 6964 scc: 921-458 *Revised: 19-Sep-2012 14:26 (MDC) Printed: 19-Sep-2012 17:43 Page 10 of 12*

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS3.utp_res, saved 19-Sep-2012 17:32 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 6192, 5293, 4556 scc: 921-458 *Revised: 19-Sep-2012 14:27 (MDC) Printed: 19-Sep-2012 17:43 Page 11 of 12*

SGS-AP ID: CS3 **Sample ID: SIL12-31-4** **Acq: 19-SEP-2012 13:34:55**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 49** **User: MDC Datafile: 120919P2-04**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS3.utp_res, saved 19-Sep-2012 17:32 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 1731, 0173, 7334 scc: 921-458 *Revised: 19-Sep-2012 14:25 (MDC) Printed: 19-Sep-2012 17:43 Page 12 of 12*

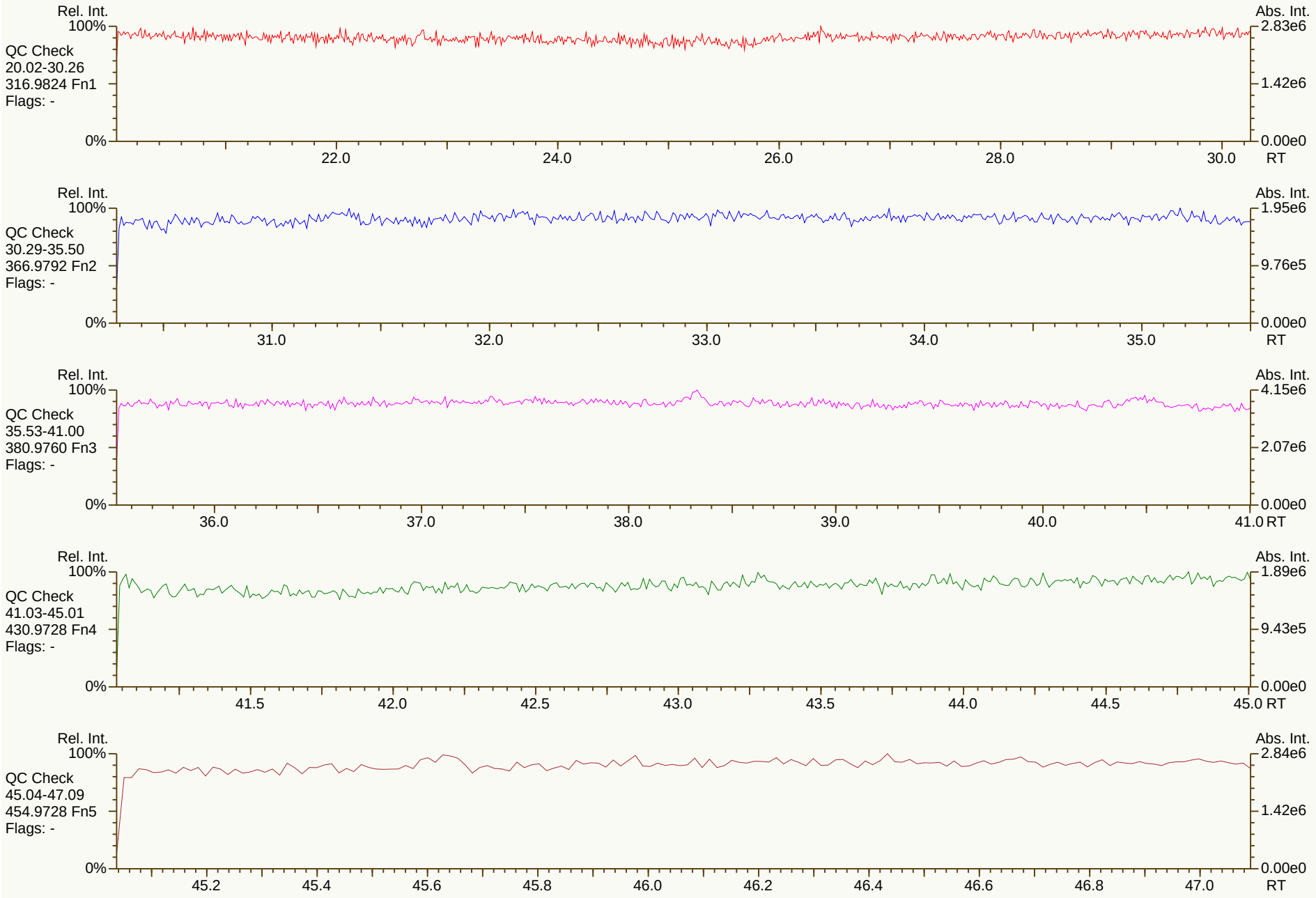
Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 14:25 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS4	UTP: 19-Sep-2012 15:22 MDC	Checkcode: 441-834-HJF
Sample ID: SIL12-31-3	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-05

Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
2378-TCDD	27.60	1.58E+07	0.78	Y	1.15	1.07	-7%
12378-PeCDD	33.88	5.83E+07	1.59	Y	1.08	1.03	-4%
123478-HxCDD	38.51	5.03E+07	1.29	Y	1.20	1.15	-5%
123678-HxCDD	38.64	5.33E+07	1.26	Y	1.10	1.05	-4%
123789-HxCDD	38.98	5.47E+07	1.27	Y	1.12	1.07	-4%
1234678-HpCDD	42.65	4.51E+07	1.05	Y	1.08	1.07	-1%
OCDD	46.41	7.48E+07	0.89	Y	1.11	1.06	-4%
2378-TCDF	26.60	2.31E+07	0.78	Y	1.10	1.04	-5%
12378-PeCDF	32.14	9.96E+07	1.55	Y	1.07	1.06	-1%
23478-PeCDF	33.46	9.61E+07	1.54	Y	1.14	1.09	-5%
123478-HxCDF	37.35	8.04E+07	1.25	Y	1.30	1.24	-5%
123678-HxCDF	37.51	8.65E+07	1.26	Y	1.27	1.21	-5%
234678-HxCDF	38.29	8.55E+07	1.24	Y	1.27	1.22	-4%
123789-HxCDF	39.40	6.94E+07	1.25	Y	1.25	1.20	-4%
1234678-HpCDF	41.39	6.86E+07	1.03	Y	1.44	1.38	-4%
1234789-HpCDF	43.26	6.20E+07	1.03	Y	1.50	1.48	-1%
OCDF	46.65	1.03E+08	0.90	Y	1.06	1.02	-4%
ES 2378-TCDD	27.57	3.70E+07	0.78	Y	1.05	1.06	0%
ES 12378-PeCDD	33.85	2.82E+07	1.58	Y	0.81	0.80	0%
ES 123478-HxCDD	38.49	2.20E+07	1.25	Y	1.03	1.01	-2%
ES 123678-HxCDD	38.63	2.53E+07	1.28	Y	1.17	1.17	0%
ES 123789-HxCDD	38.97	2.55E+07	1.27	Y	1.17	1.17	0%
ES 1234678-HpCDD	42.64	2.12E+07	1.07	Y	1.00	0.98	-3%
ES OCDD	46.39	3.52E+07	0.90	Y	0.80	0.81	1%
ES 2378-TCDF	26.58	5.54E+07	0.79	Y	1.02	1.07	5%
ES 12378-PeCDF	32.13	4.69E+07	1.59	Y	0.85	0.90	6%
ES 23478-PeCDF	33.44	4.42E+07	1.60	Y	0.81	0.85	5%
ES 123478-HxCDF	37.33	3.24E+07	0.51	Y	1.44	1.49	3%
ES 123678-HxCDF	37.49	3.57E+07	0.53	Y	1.61	1.65	2%
ES 234678-HxCDF	38.27	3.51E+07	0.53	Y	1.67	1.62	-3%
ES 123789-HxCDF	39.39	2.88E+07	0.54	Y	1.32	1.33	1%
ES 1234678-HpCDF	41.37	2.48E+07	0.45	Y	1.16	1.14	-2%
ES 1234789-HpCDF	43.24	2.10E+07	0.44	Y	1.02	0.97	-5%
ES OCDF	46.64	5.06E+07	0.92	Y	1.17	1.17	0%

Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 14:25 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS4	UTP: 19-Sep-2012 15:22 MDC	Checkcode: 441-834
Sample ID: SIL12-31-3	Report: 19 Sep 2012 17:48 MC	Datafile: 120919P2-05

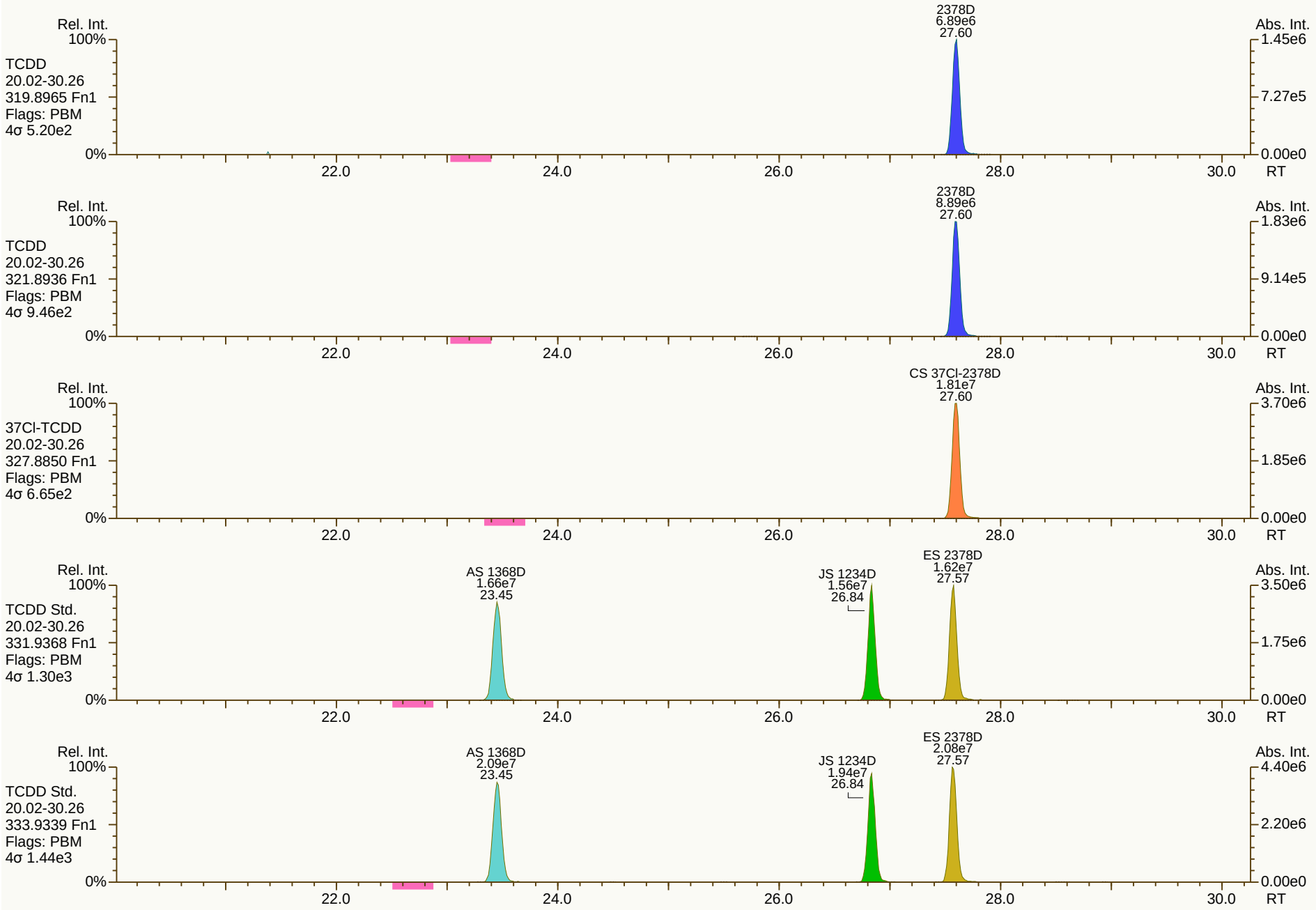
Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
JS 1234-TCDD	26.84	3.51E+07	0.81	Y	-	-	-
JS 1234-TCDF	25.06	5.20E+07	0.80	Y	-	-	-
JS 123467-HxCDD	38.85	1.09E+07	1.25	Y	-	-	-
CS 37Cl-2378-TCDD	27.60	1.81E+07	n/a	-	1.22	1.29	6%
CS 12347-PeCDD	33.26	2.86E+07	1.62	Y	0.81	0.82	1%
CS 12346-PeCDF	31.51	4.85E+07	1.57	Y	0.91	0.93	2%
CS 123469-HxCDF	37.86	3.17E+07	0.52	Y	1.44	1.46	1%
CS 1234689-HpCDF	41.92	2.37E+07	0.46	Y	1.14	1.09	-4%
SS 37Cl-2378-TCDD	27.60	1.81E+07	n/a	-	1.16	1.23	6%
SS 12347-PeCDD	33.26	2.86E+07	1.62	Y	1.01	1.02	0%
SS 12346-PeCDF	31.51	4.85E+07	1.57	Y	1.08	1.04	-4%
SS 123469-HxCDF	37.86	3.17E+07	0.52	Y	0.90	0.89	-1%
SS 1234689-HpCDF	41.92	2.37E+07	0.46	Y	0.98	0.95	-3%
AS 1368-TCDD	23.45	3.75E+07	0.79	Y	1.11	1.07	-4%
AS 1368-TCDF	21.24	6.47E+07	0.79	Y	1.23	1.25	2%
FS 1278-TCDD	NotFnd						
FS 12478-PeCDD	NotFnd						
FS 123468-HxCDD	NotFnd						
FS 1234679-HpCDD	NotFnd						
TS 1378-TCDD	NotFnd						
OCDD-a	46.40	4.34E+06	2.70	Y	0.07	0.06	-6%
OCDF-a	46.65	5.87E+06	2.42	Y	0.06	0.06	-6%

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 scc: 441-834 *PKD: n/a Printed: 19-Sep-2012 17:43 Page 1 of 12*

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



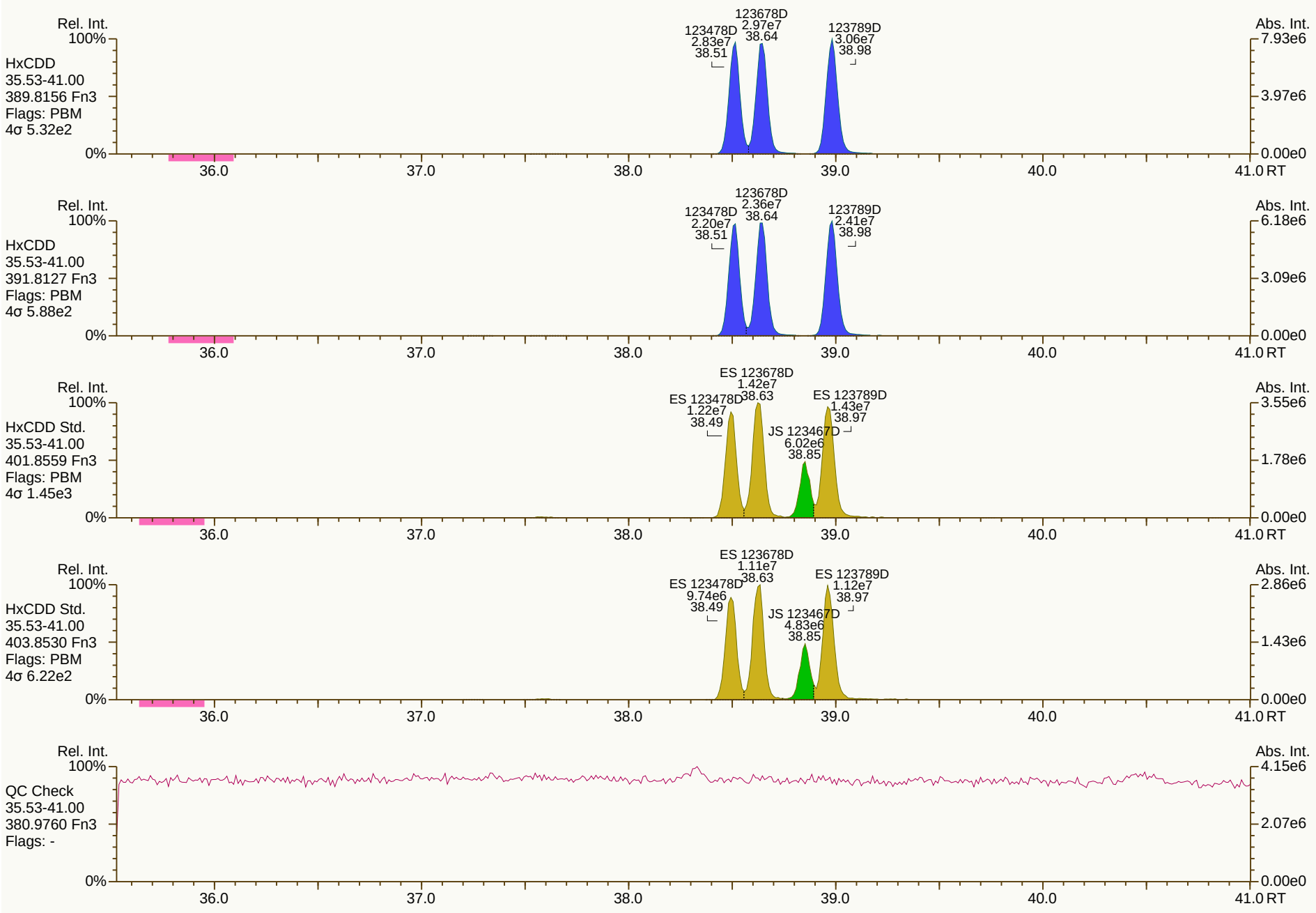
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 7122, 2733, 5994 scc: 441-834 *Revised: 19-Sep-2012 15:21 (MDC) Printed: 19-Sep-2012 17:43 Page 2 of 12*

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



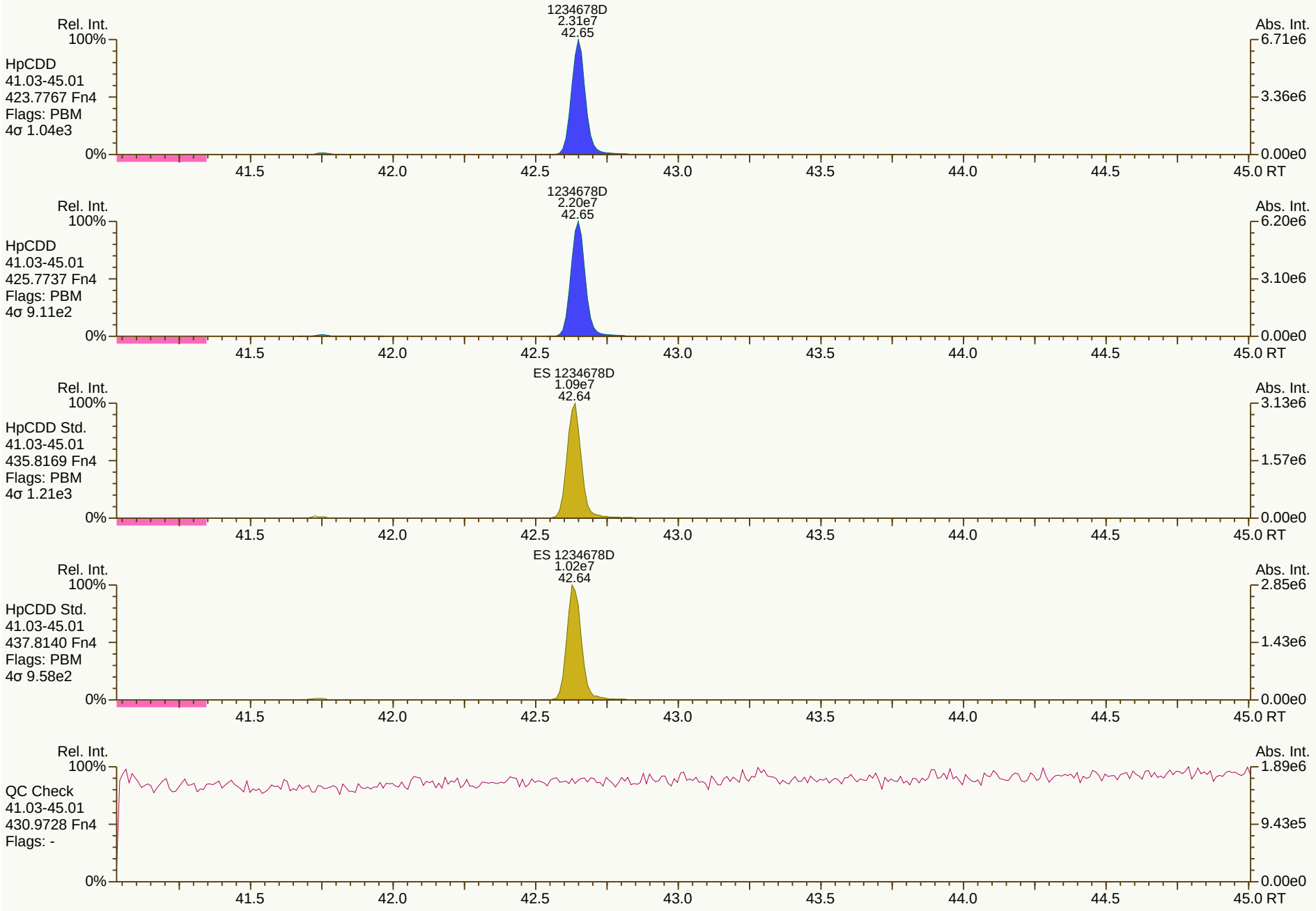
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 9878, 1083 scc: 441-834 *Revised: 19-Sep-2012 15:19 (MDC) Printed: 19-Sep-2012 17:43 Page 3 of 12*

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 1209, 2807 scc: 441-834 *Revised: 19-Sep-2012 15:20 (MDC) Printed: 19-Sep-2012 17:43 Page 4 of 12*

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 1238, 2884 scc: 441-834 *Revised: 19-Sep-2012 15:20 (MDC) Printed: 19-Sep-2012 17:43 Page 5 of 12*

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 3530, 9956 scc: 441-834 *Revised: 19-Sep-2012 15:19 (MDC) Printed: 19-Sep-2012 17:43 Page 6 of 12*

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**

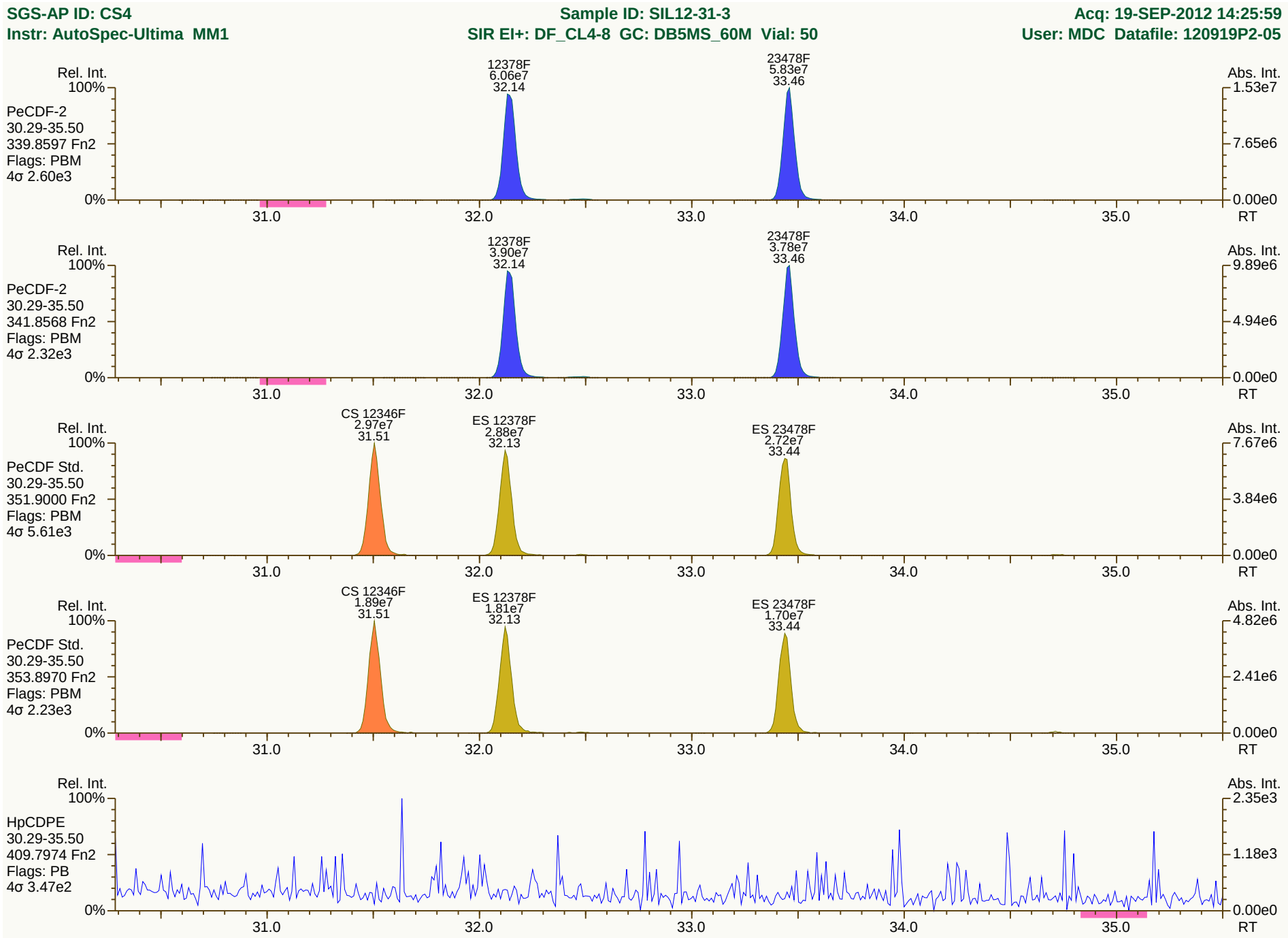


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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 9716, 6035, 2646 scc: 441-834 *Revised: 19-Sep-2012 15:22 (MDC) Printed: 19-Sep-2012 17:43 Page 7 of 12*

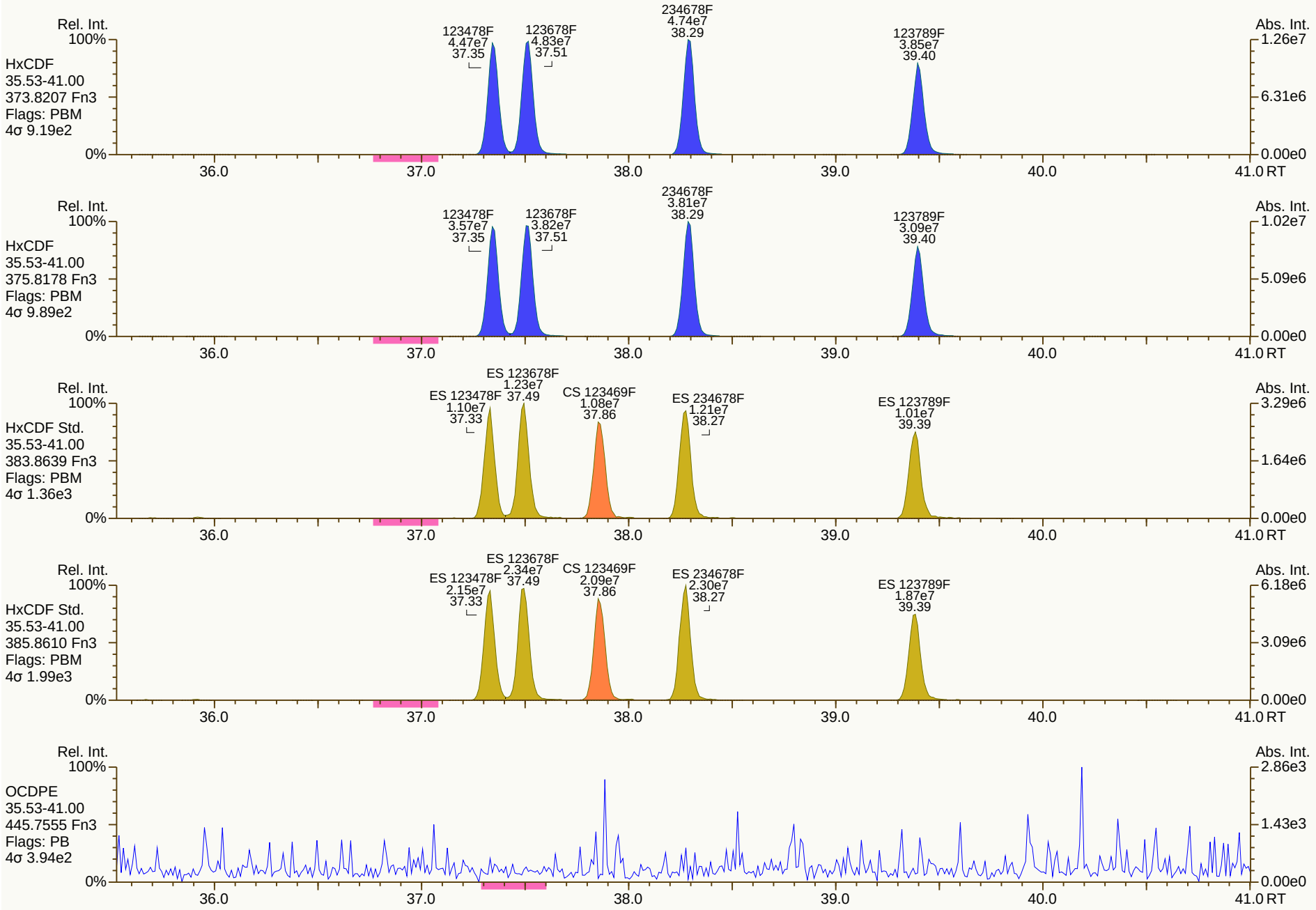
SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 5861 scc: 441-834 *Revised: 19-Sep-2012 15:19 (MDC) Printed: 19-Sep-2012 17:43 Page 8 of 12*

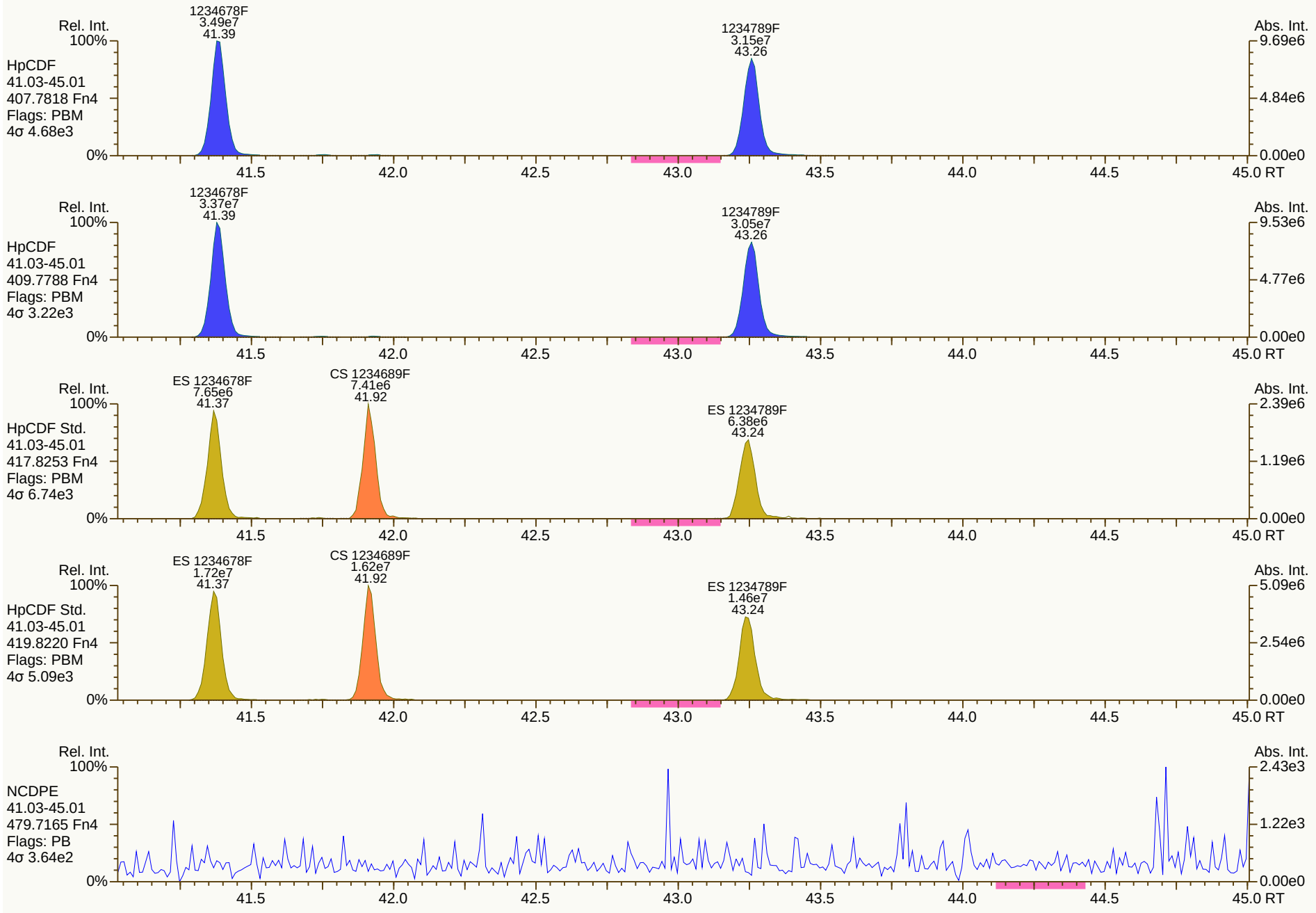

SGS-AP ID: CS4
Sample ID: SIL12-31-3
Acq: 19-SEP-2012 14:25:59
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50
User: MDC Datafile: 120919P2-05
Rel. Int.
Abs. Int.
PeCDF-2
30.29-35.50
339.8597 Fn2
Flags: PBM
4σ 2.60e3
12378F
6.06e7
32.14
23478F
5.83e7
33.46
1.53e7
7.65e6
0.00e0
PeCDF-2
30.29-35.50
341.8568 Fn2
Flags: PBM
4σ 2.32e3
12378F
3.90e7
32.14
23478F
3.78e7
33.46
9.89e6
4.94e6
0.00e0
PeCDF Std.
30.29-35.50
351.9000 Fn2
Flags: PBM
4σ 5.61e3
CS 12346F
2.97e7
31.51
ES 12378F
2.88e7
32.13
ES 23478F
2.72e7
33.44
7.67e6
3.84e6
0.00e0
PeCDF Std.
30.29-35.50
353.8970 Fn2
Flags: PBM
4σ 2.23e3
CS 12346F
1.89e7
31.51
ES 12378F
1.81e7
32.13
ES 23478F
1.70e7
33.44
4.82e6
2.41e6
0.00e0
HpCDPE
30.29-35.50
409.7974 Fn2
Flags: PB
4σ 3.47e2
2.35e3
1.18e3
0.00e0
100%
0%
31.0
32.0
33.0
34.0
35.0
RT
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 3643, 5257, 2897 scc: 441-834
Revised: 19-Sep-2012 15:20 (MDC) Printed: 19-Sep-2012 17:43 Page 9 of 12

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



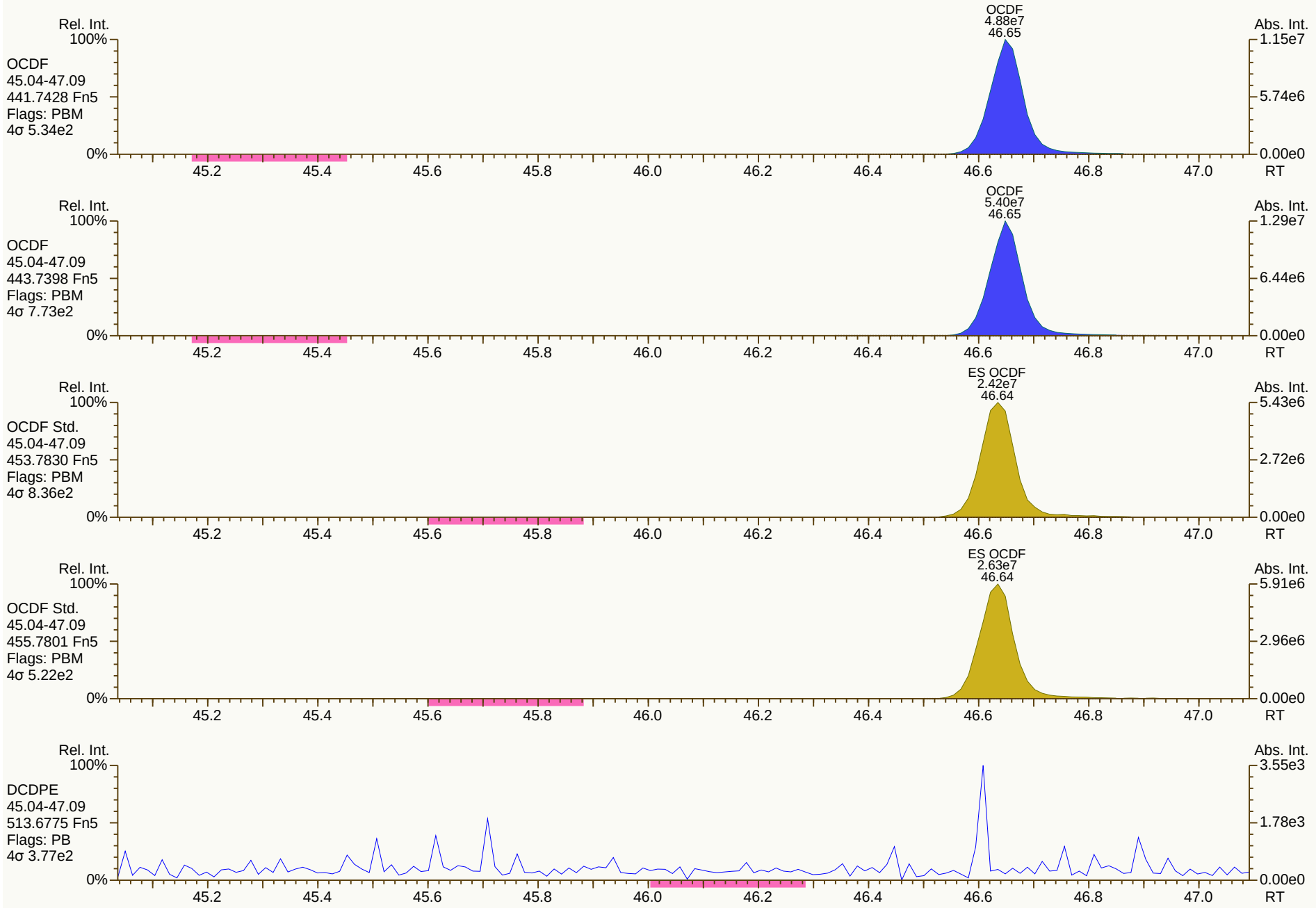
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 2967, 2164, 9349 scc: 441-834 *Revised: 19-Sep-2012 15:20 (MDC) Printed: 19-Sep-2012 17:43 Page 10 of 12*

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 8435, 6502, 5493 scc: 441-834 *Revised: 19-Sep-2012 15:20 (MDC) Printed: 19-Sep-2012 17:43 Page 11 of 12*

SGS-AP ID: CS4 **Sample ID: SIL12-31-3** **Acq: 19-SEP-2012 14:25:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 50** **User: MDC Datafile: 120919P2-05**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS4.utp_res, saved 19-Sep-2012 15:22 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 8063, 4101, 5751 scc: 441-834 *Revised: 19-Sep-2012 15:19 (MDC) Printed: 19-Sep-2012 17:43 Page 12 of 12*

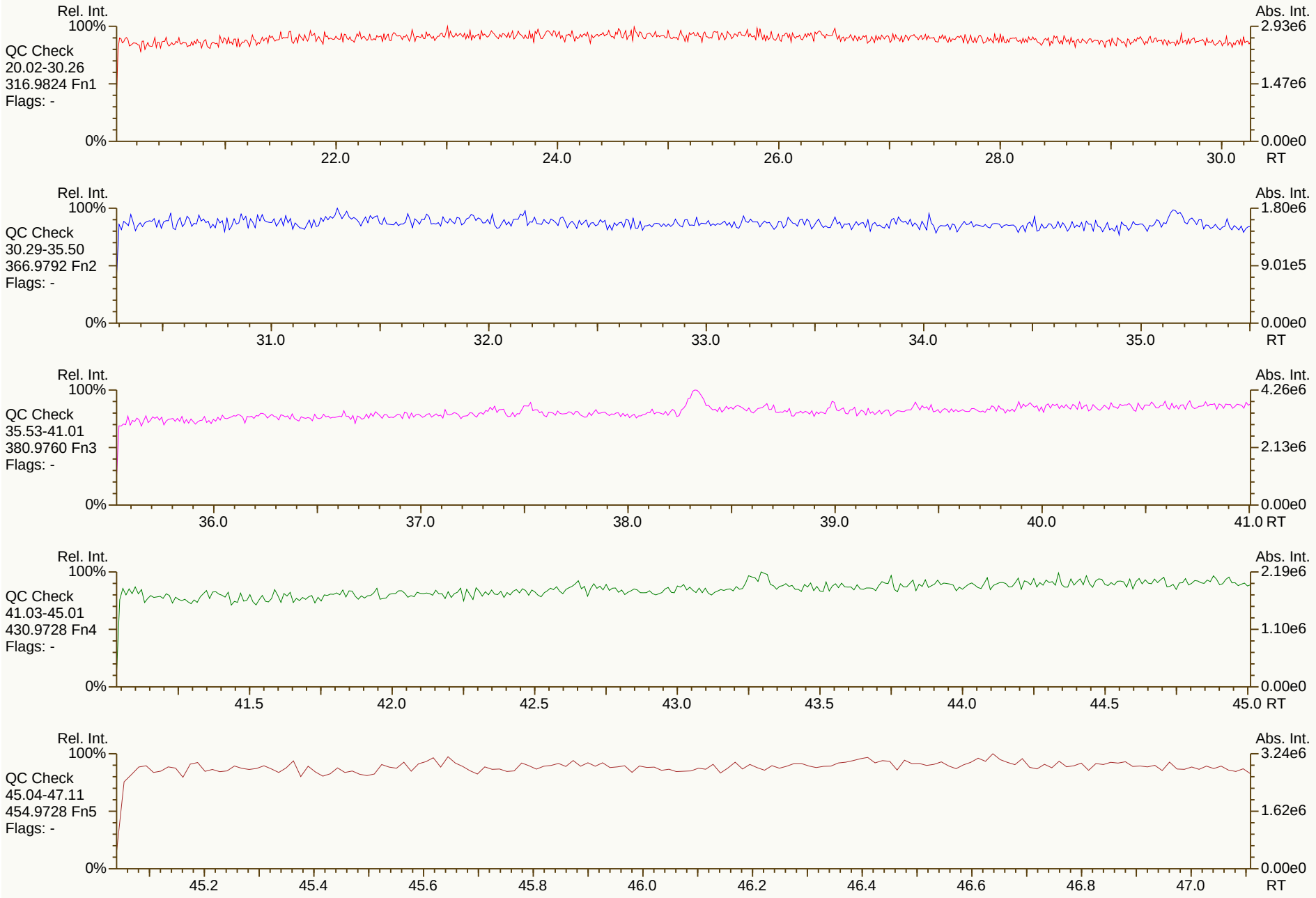
Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 15:17 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS5	UTP: 19-Sep-2012 16:11 MDC	Checkcode: 334-847-KWT
Sample ID: SIL12-31-2	Report: 19 Sep 2012 17:49 MC	Datafile: 120919P2-06

Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
2378-TCDD	27.60	7.25E+07	0.79	Y	1.15	1.07	-7%
12378-PeCDD	33.88	2.70E+08	1.59	Y	1.08	1.04	-4%
123478-HxCDD	38.52	2.46E+08	1.26	Y	1.20	1.16	-4%
123678-HxCDD	38.65	2.56E+08	1.26	Y	1.10	1.06	-3%
123789-HxCDD	38.99	2.62E+08	1.26	Y	1.12	1.10	-2%
1234678-HpCDD	42.66	2.28E+08	1.05	Y	1.08	1.08	0%
OCDD	46.41	3.86E+08	0.90	Y	1.11	1.06	-5%
2378-TCDF	26.60	1.03E+08	0.79	Y	1.10	1.04	-5%
12378-PeCDF	32.15	4.65E+08	1.56	Y	1.07	1.07	1%
23478-PeCDF	33.46	4.49E+08	1.55	Y	1.14	1.08	-5%
123478-HxCDF	37.35	3.90E+08	1.25	Y	1.30	1.28	-1%
123678-HxCDF	37.52	4.10E+08	1.25	Y	1.27	1.23	-3%
234678-HxCDF	38.30	4.31E+08	1.25	Y	1.27	1.26	0%
123789-HxCDF	39.41	3.39E+08	1.25	Y	1.25	1.23	-2%
1234678-HpCDF	41.39	3.43E+08	1.03	Y	1.44	1.39	-3%
1234789-HpCDF	43.27	3.16E+08	1.03	Y	1.50	1.46	-3%
OCDF	46.66	5.50E+08	0.91	Y	1.06	1.02	-4%
ES 2378-TCDD	27.57	3.40E+07	0.79	Y	1.05	1.10	4%
ES 12378-PeCDD	33.86	2.61E+07	1.57	Y	0.81	0.84	4%
ES 123478-HxCDD	38.50	2.12E+07	1.26	Y	1.03	1.10	6%
ES 123678-HxCDD	38.63	2.41E+07	1.28	Y	1.17	1.25	7%
ES 123789-HxCDD	38.97	2.39E+07	1.29	Y	1.17	1.24	5%
ES 1234678-HpCDD	42.65	2.11E+07	1.08	Y	1.00	1.09	9%
ES OCDD	46.40	3.65E+07	0.91	Y	0.80	0.94	17%
ES 2378-TCDF	26.58	4.96E+07	0.80	Y	1.02	1.03	1%
ES 12378-PeCDF	32.13	4.33E+07	1.60	Y	0.85	0.89	5%
ES 23478-PeCDF	33.44	4.15E+07	1.60	Y	0.81	0.86	5%
ES 123478-HxCDF	37.33	3.04E+07	0.51	Y	1.44	1.57	9%
ES 123678-HxCDF	37.50	3.33E+07	0.52	Y	1.61	1.72	7%
ES 234678-HxCDF	38.28	3.41E+07	0.53	Y	1.67	1.76	6%
ES 123789-HxCDF	39.39	2.76E+07	0.54	Y	1.32	1.43	8%
ES 1234678-HpCDF	41.38	2.46E+07	0.44	Y	1.16	1.27	10%
ES 1234789-HpCDF	43.25	2.17E+07	0.45	Y	1.02	1.12	11%
ES OCDF	46.64	5.41E+07	0.89	Y	1.17	1.40	20%

Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 15:17 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS5	UTP: 19-Sep-2012 16:11 MDC	Checkcode: 334-847
Sample ID: SIL12-31-2	Report: 19 Sep 2012 17:49 MC	Datafile: 120919P2-06

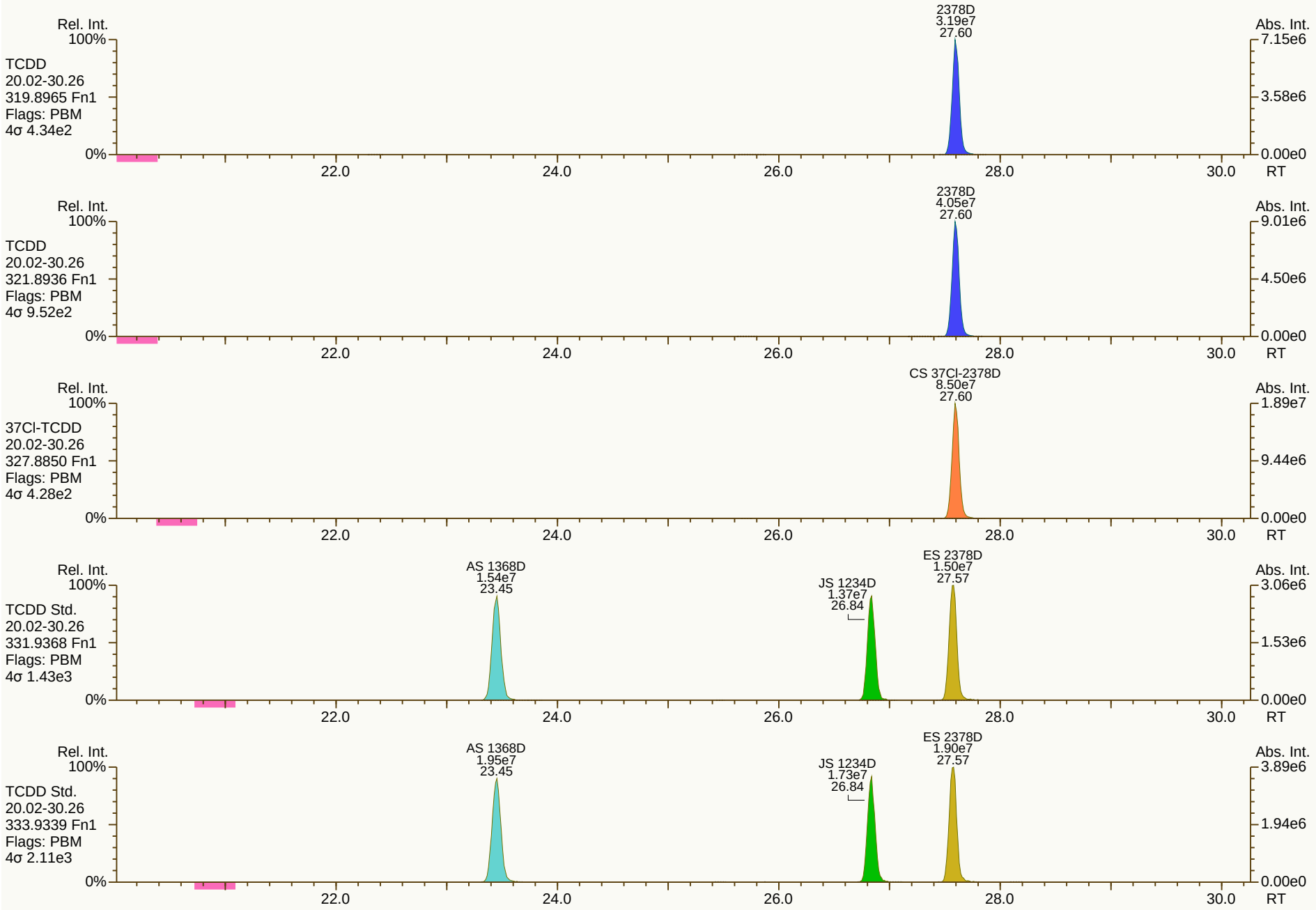
Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
JS 1234-TCDD	26.84	3.10E+07	0.79	Y	-	-	-
JS 1234-TCDF	25.06	4.84E+07	0.80	Y	-	-	-
JS 123467-HxCDD	38.86	9.66E+06	1.32	Y	-	-	-
CS 37Cl-2378-TCDD	27.60	8.50E+07	n/a	-	1.22	1.37	12%
CS 12347-PeCDD	33.27	2.47E+07	1.65	Y	0.81	0.80	-2%
CS 12346-PeCDF	31.51	4.34E+07	1.55	Y	0.91	0.90	-2%
CS 123469-HxCDF	37.86	2.76E+07	0.54	Y	1.44	1.43	-1%
CS 1234689-HpCDF	41.93	2.21E+07	0.45	Y	1.14	1.15	1%
SS 37Cl-2378-TCDD	27.60	8.50E+07	n/a	-	1.16	1.25	8%
SS 12347-PeCDD	33.27	2.47E+07	1.65	Y	1.01	0.95	-6%
SS 12346-PeCDF	31.51	4.34E+07	1.55	Y	1.08	1.00	-7%
SS 123469-HxCDF	37.86	2.76E+07	0.54	Y	0.90	0.83	-8%
SS 1234689-HpCDF	41.93	2.21E+07	0.45	Y	0.98	0.90	-9%
AS 1368-TCDD	23.45	3.49E+07	0.79	Y	1.11	1.13	1%
AS 1368-TCDF	21.23	5.90E+07	0.80	Y	1.23	1.22	-1%
FS 1278-TCDD	NotFnd						
FS 12478-PeCDD	NotFnd						
FS 123468-HxCDD	NotFnd						
FS 1234679-HpCDD	NotFnd						
TS 1378-TCDD	NotFnd						
OCDD-a	46.41	2.35E+07	2.50	Y	0.07	0.06	-2%
OCDF-a	46.65	3.21E+07	2.54	Y	0.06	0.06	-4%

SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**



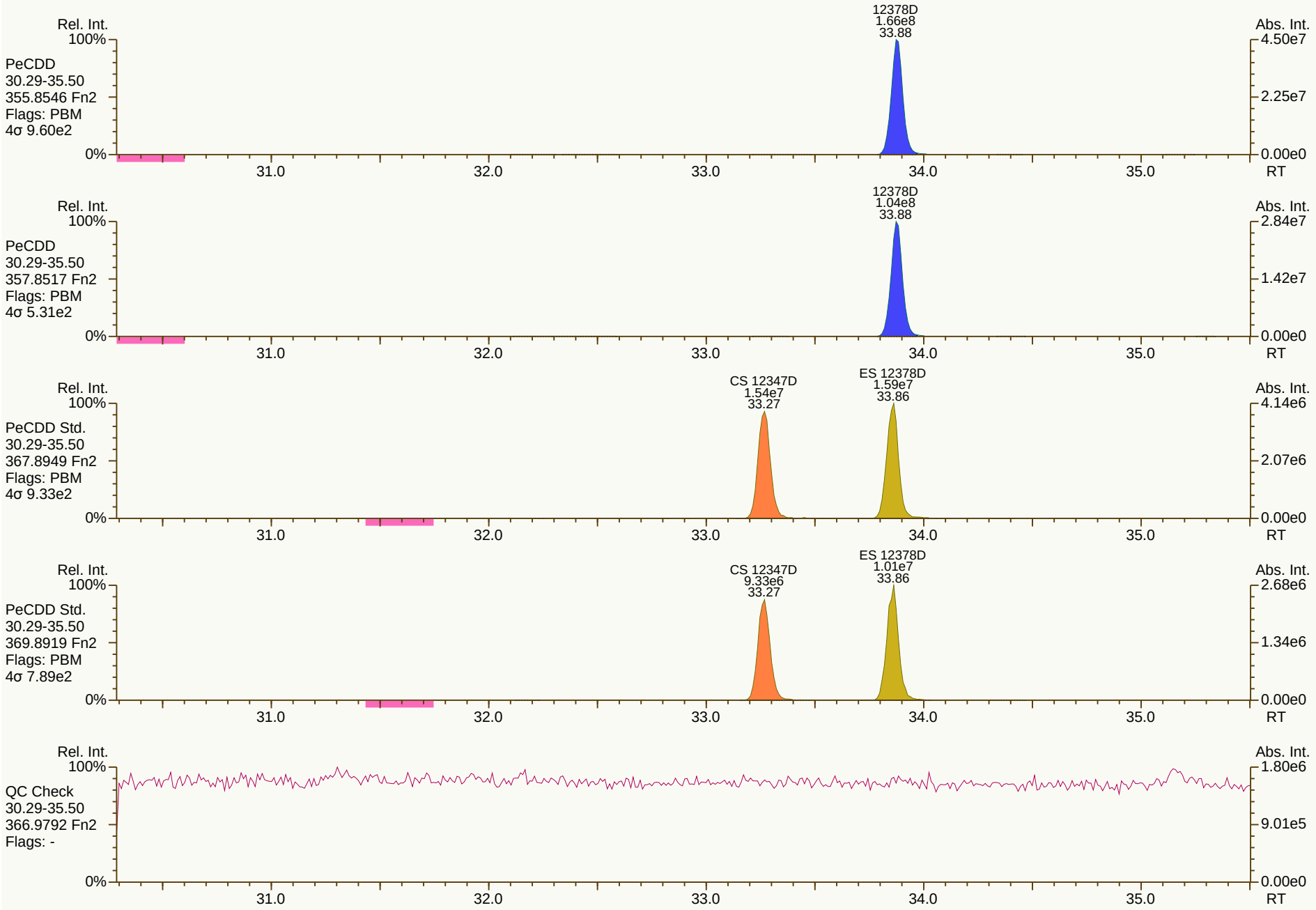
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS5.utp_res, saved 19-Sep-2012 16:11 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 scc: 334-847 *PKD: n/a Printed: 19-Sep-2012 17:43 Page 1 of 12*

SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**



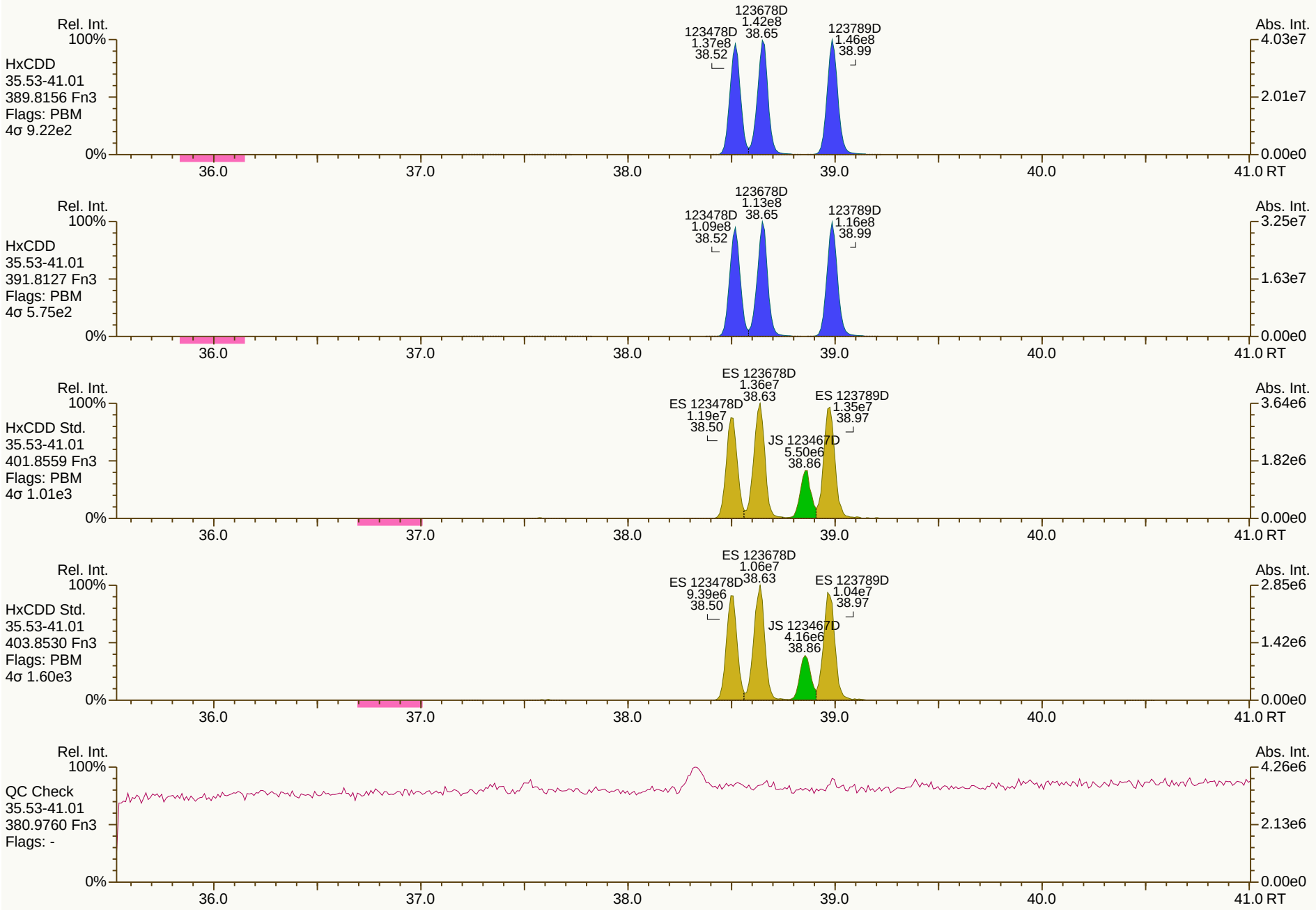
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 9600, 7550, 2037 scc: 334-847 *Revised: 19-Sep-2012 16:10 (MDC) Printed: 19-Sep-2012 17:43 Page 2 of 12*

SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**



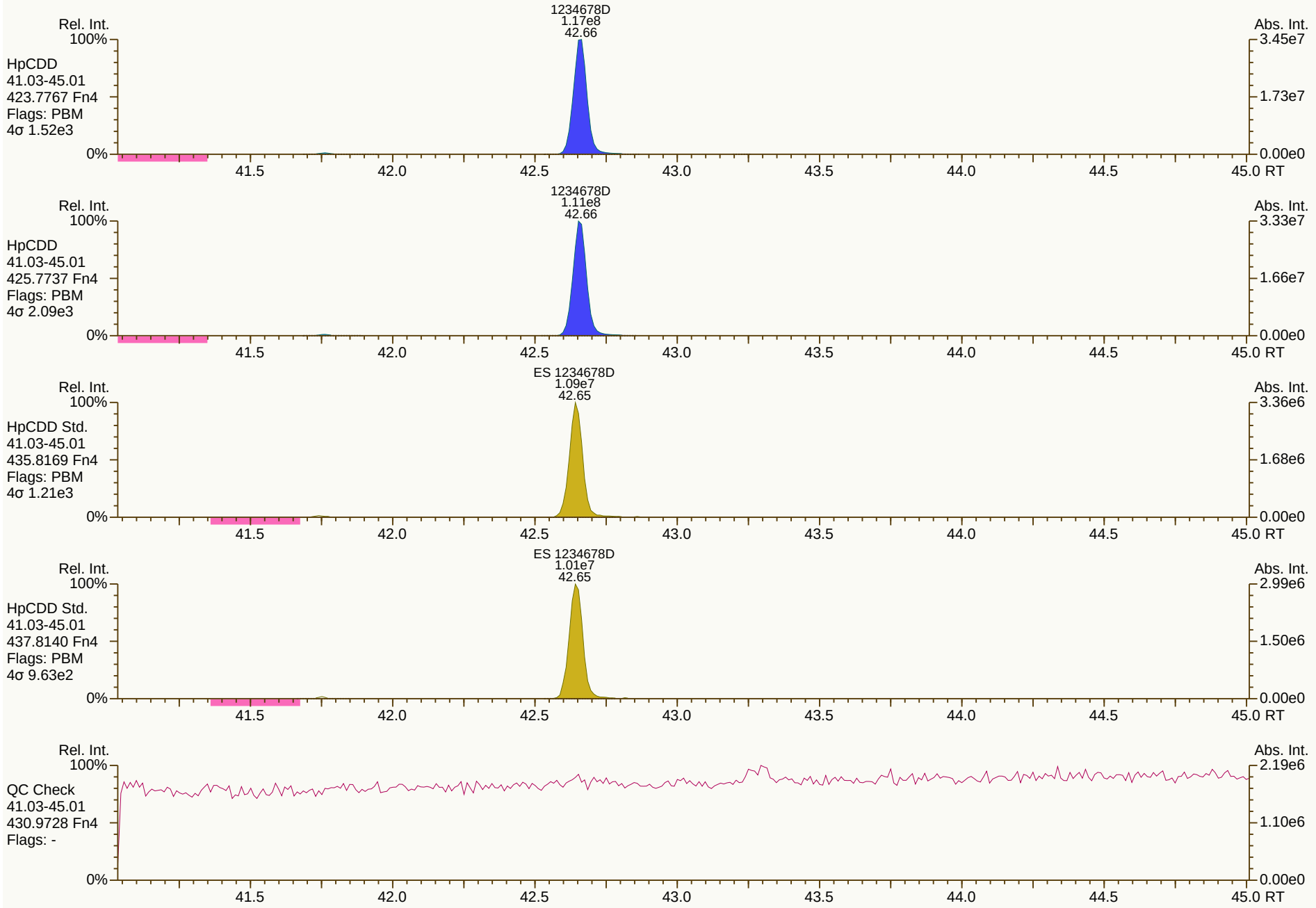
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 1177, 5781 scc: 334-847 *Revised: 19-Sep-2012 16:10 (MDC) Printed: 19-Sep-2012 17:43 Page 3 of 12*

SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**



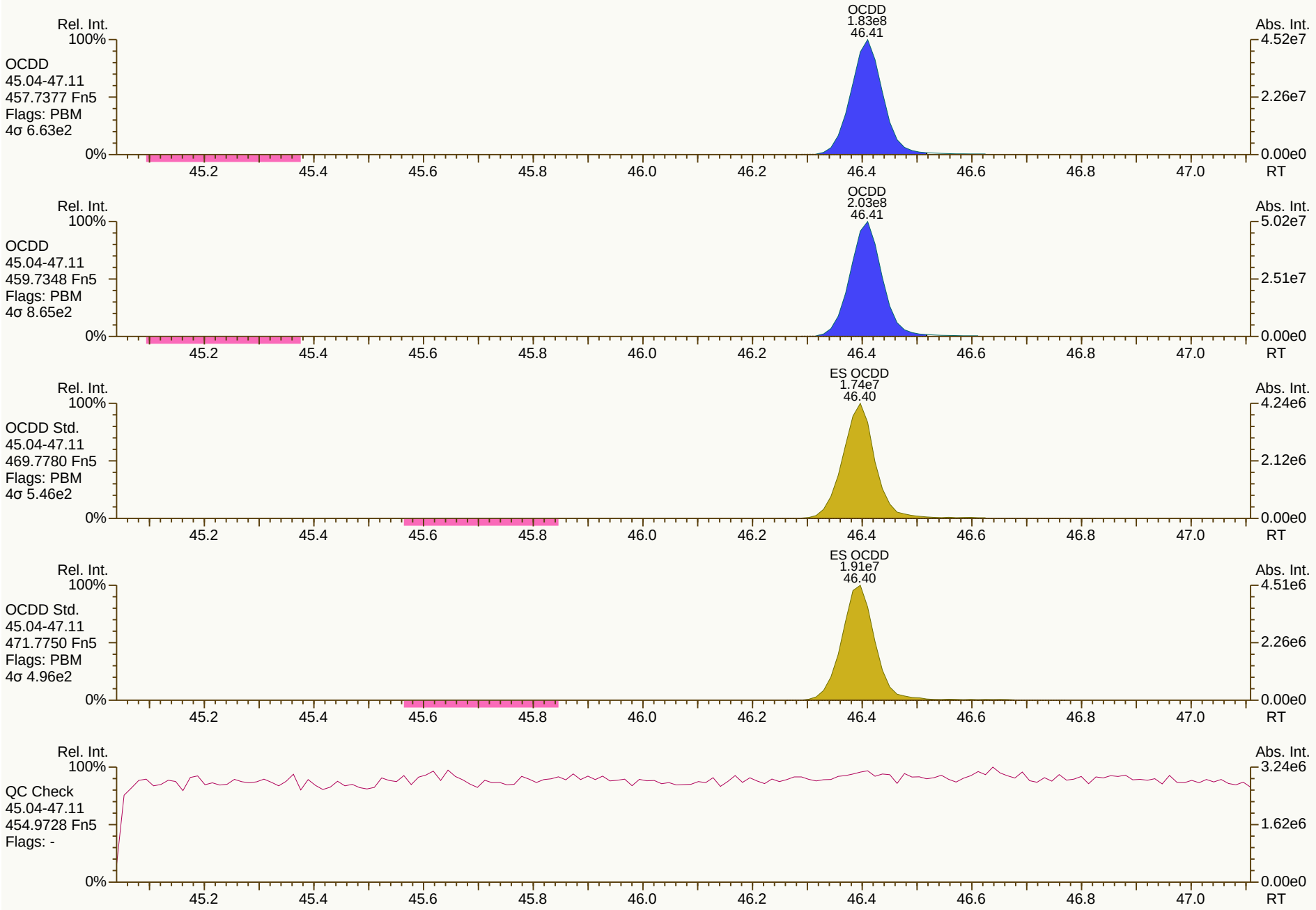
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 5316, 1282 scc: 334-847 *Revised: 19-Sep-2012 16:11 (MDC) Printed: 19-Sep-2012 17:43 Page 4 of 12*

SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS5.utp_res, saved 19-Sep-2012 16:11 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 8085, 0525 scc: 334-847 *Revised: 19-Sep-2012 16:11 (MDC) Printed: 19-Sep-2012 17:43 Page 5 of 12*

SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**



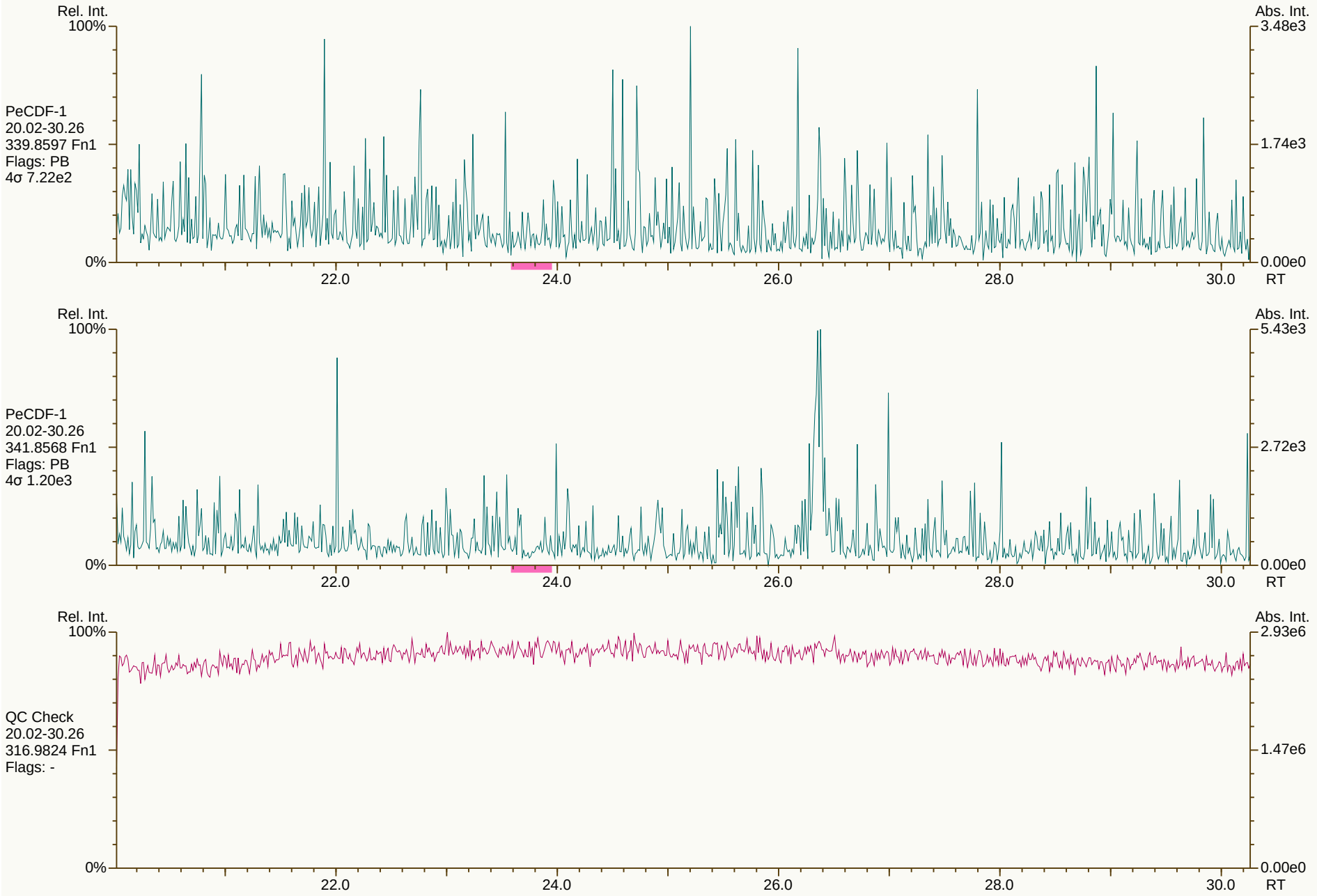
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 0204, 0023 scc: 334-847 *Revised: 19-Sep-2012 16:10 (MDC) Printed: 19-Sep-2012 17:43 Page 6 of 12*

SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**

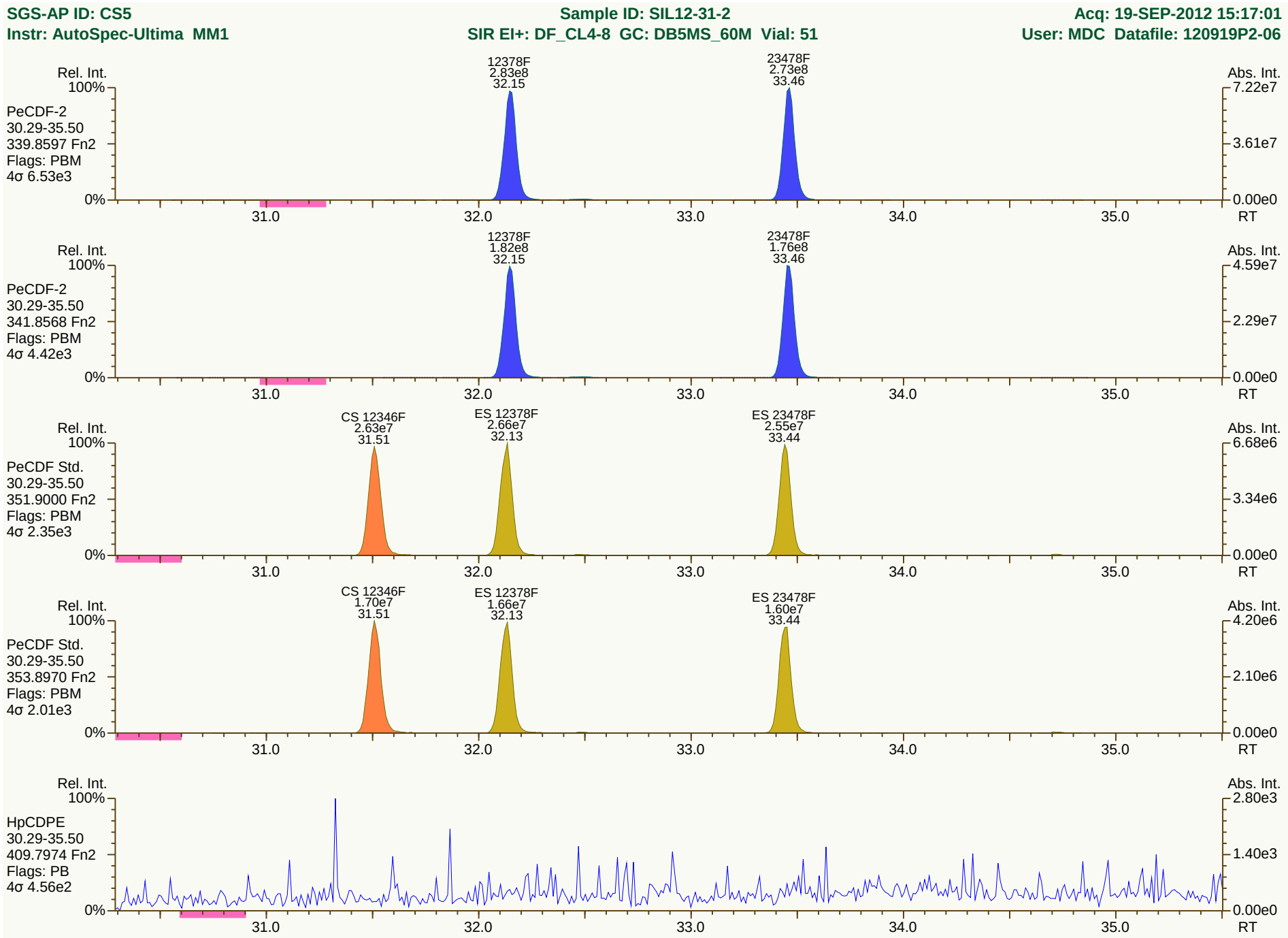


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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 8190, 6146, 2486 scc: 334-847 *Revised: 19-Sep-2012 16:10 (MDC) Printed: 19-Sep-2012 17:43 Page 7 of 12*

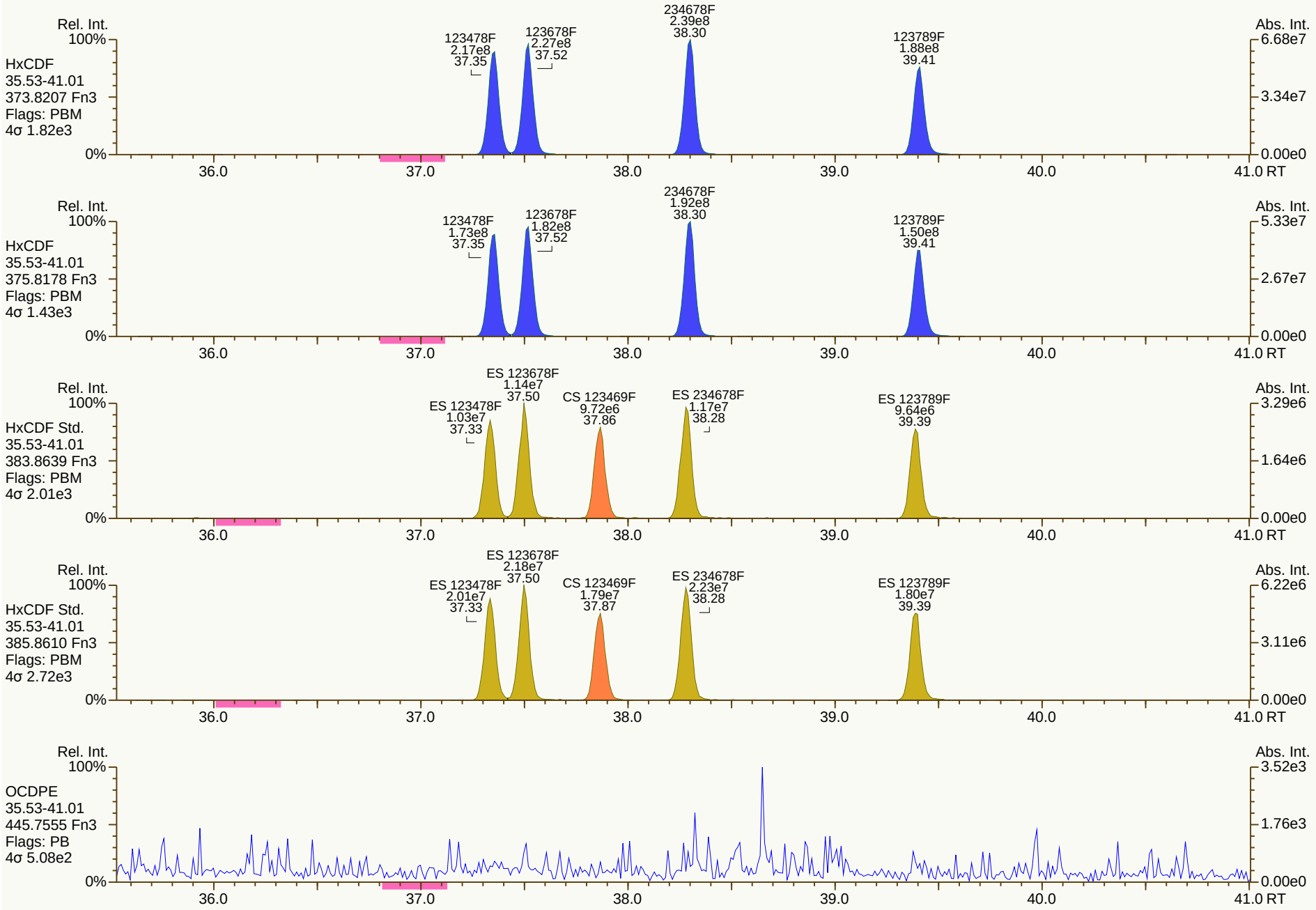
SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**



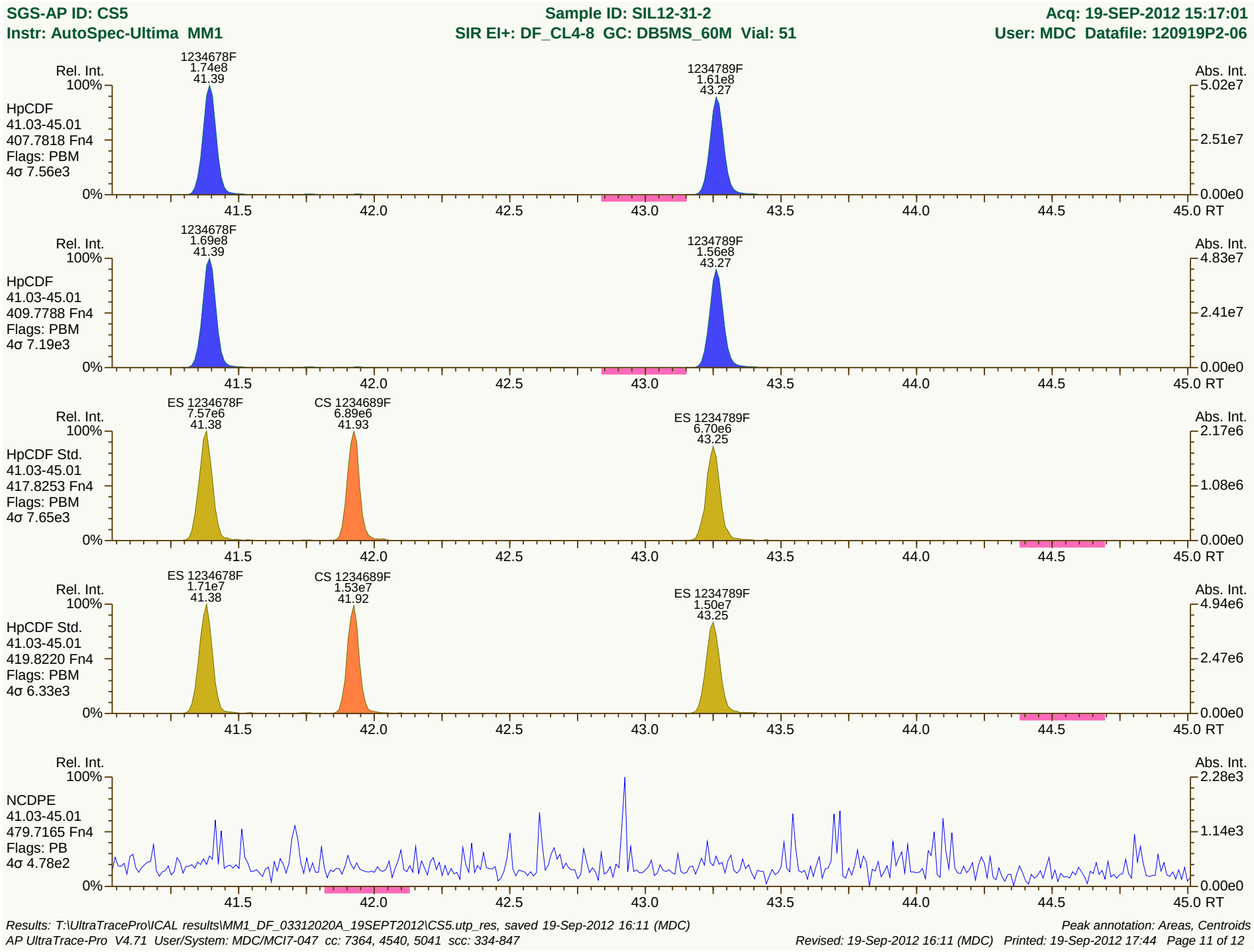
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS5.utp_res, saved 19-Sep-2012 16:11 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 6632 scc: 334-847 *Revised: 19-Sep-2012 16:10 (MDC) Printed: 19-Sep-2012 17:44 Page 8 of 12*


SGS-AP ID: CS5
Sample ID: SIL12-31-2
Acq: 19-SEP-2012 15:17:01
Instr: AutoSpec-Ultima MM1
SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51
User: MDC Datafile: 120919P2-06
Rel. Int.
Abs. Int.
PeCDF-2
30.29-35.50
339.8597 Fn2
Flags: PBM
4σ 6.53e3
12378F
2.83e8
32.15
23478F
2.73e8
33.46
7.22e7
3.61e7
0.00e0
PeCDF-2
30.29-35.50
341.8568 Fn2
Flags: PBM
4σ 4.42e3
12378F
1.82e8
32.15
23478F
1.76e8
33.46
4.59e7
2.29e7
0.00e0
PeCDF Std.
30.29-35.50
351.9000 Fn2
Flags: PBM
4σ 2.35e3
CS 12346F
2.63e7
31.51
ES 12378F
2.66e7
32.13
ES 23478F
2.55e7
33.44
6.68e6
3.34e6
0.00e0
PeCDF Std.
30.29-35.50
353.8970 Fn2
Flags: PBM
4σ 2.01e3
CS 12346F
1.70e7
31.51
ES 12378F
1.66e7
32.13
ES 23478F
1.60e7
33.44
4.20e6
2.10e6
0.00e0
HpCDPE
30.29-35.50
409.7974 Fn2
Flags: PB
4σ 4.56e2
2.80e3
1.40e3
0.00e0
100%
0%
31.0
32.0
33.0
34.0
35.0
RT
Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS5.utp_res, saved 19-Sep-2012 16:11 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 8990, 2497, 3787 scc: 334-847
Revised: 19-Sep-2012 16:10 (MDC) Printed: 19-Sep-2012 17:44 Page 9 of 12

SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**

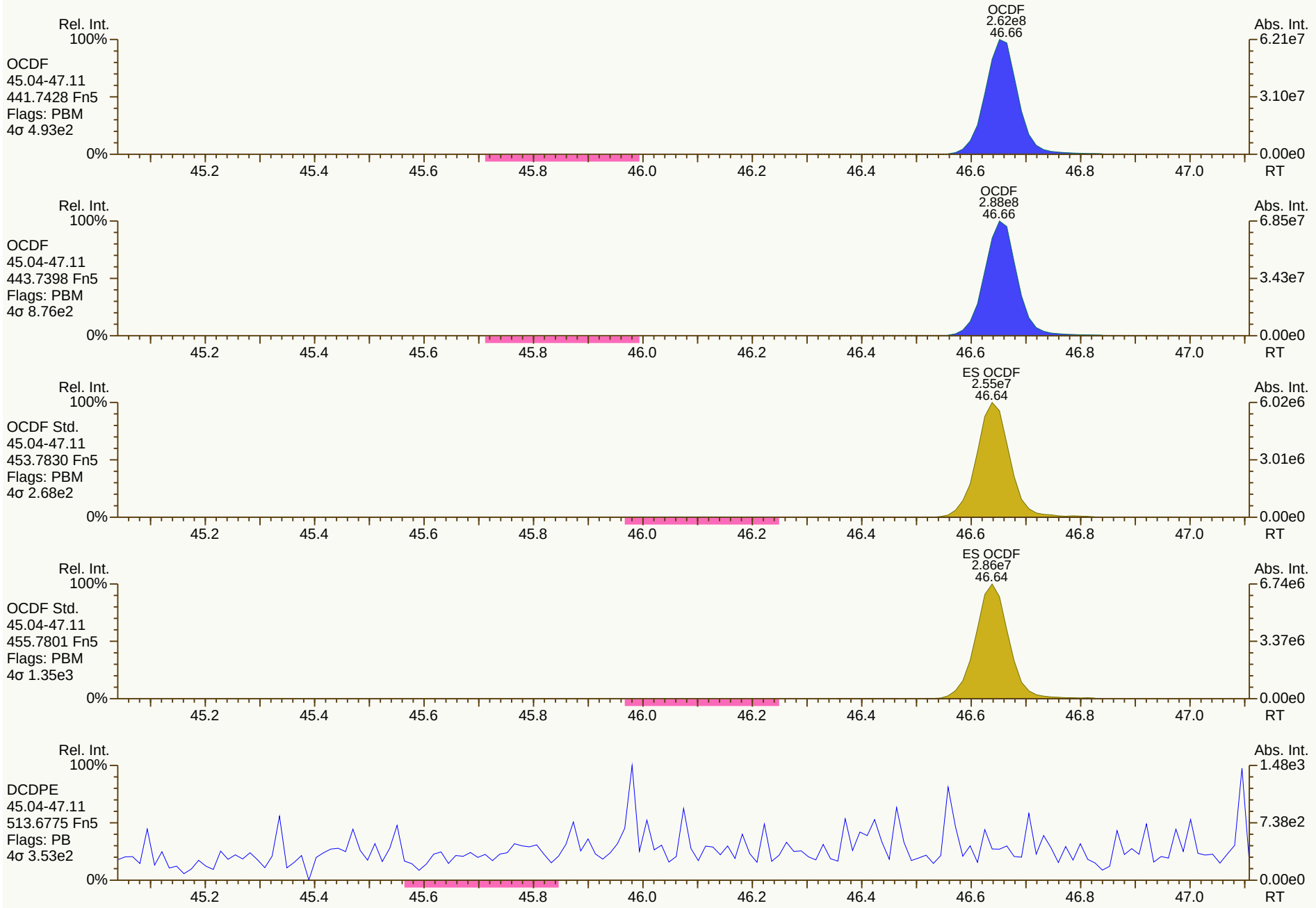


Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS5.utp_res, saved 19-Sep-2012 16:11 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 3406, 7347, 3973 scc: 334-847 *Revised: 19-Sep-2012 16:11 (MDC) Printed: 19-Sep-2012 17:44 Page 10 of 12*



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS5.utp_res, saved 19-Sep-2012 16:11 (MDC)
Peak annotation: Areas, Centroids
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 7364, 4540, 5041 scc: 334-847
Revised: 19-Sep-2012 16:11 (MDC) Printed: 19-Sep-2012 17:44 Page 11 of 12

SGS-AP ID: CS5 **Sample ID: SIL12-31-2** **Acq: 19-SEP-2012 15:17:01**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 51** **User: MDC Datafile: 120919P2-06**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS5.utp_res, saved 19-Sep-2012 16:11 (MDC) *Peak annotation: Areas, Centroids*
AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 2761, 2052, 1646 scc: 334-847 *Revised: 19-Sep-2012 16:10 (MDC) Printed: 19-Sep-2012 17:44 Page 12 of 12*

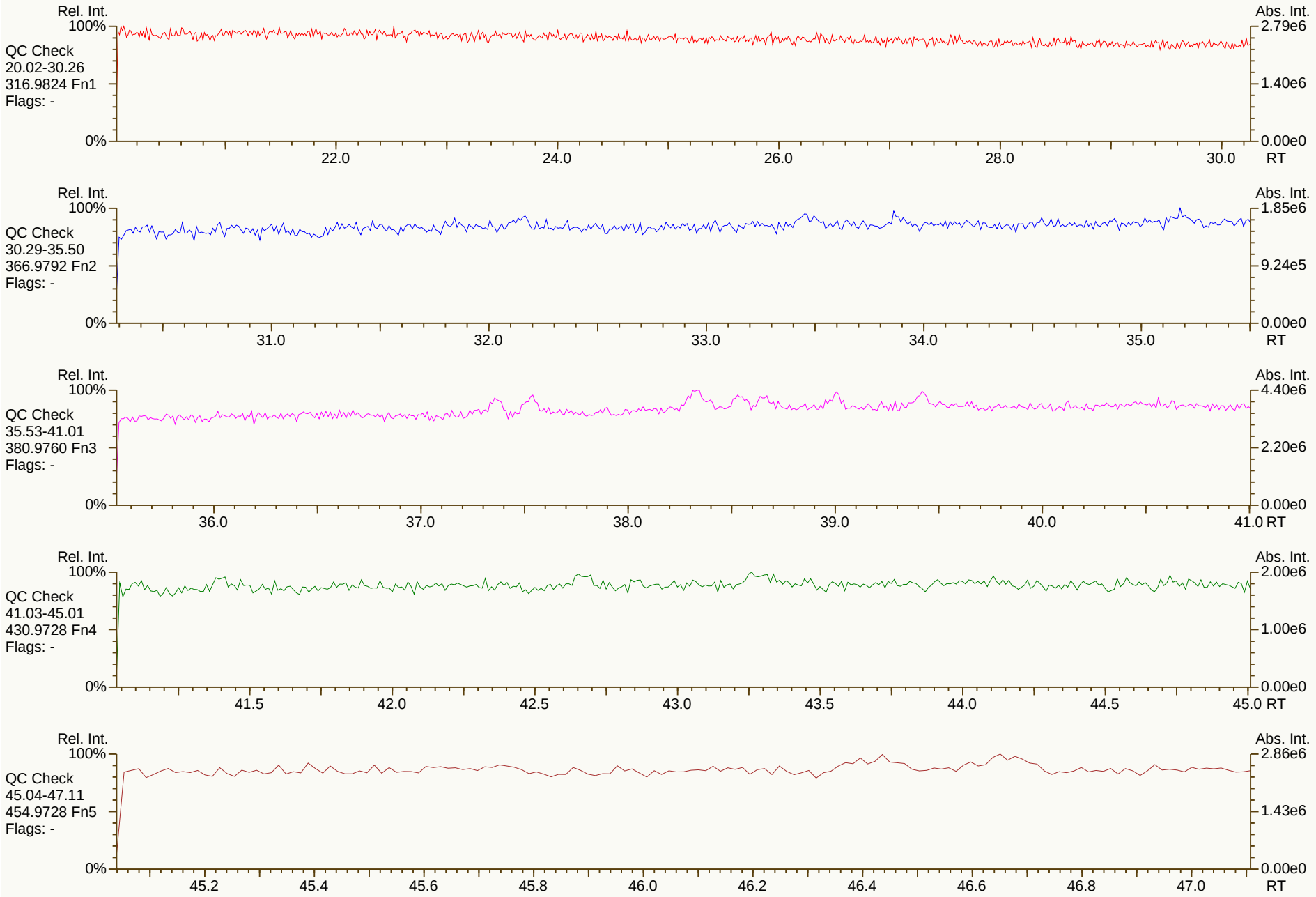
Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 16:07 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS6	UTP: 19-Sep-2012 17:46 MDC	Checkcode: 243-871-LLY
Sample ID: SIL12-31-1	Report: 19 Sep 2012 17:49 MC	Datafile: 120919P2-07

Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
2378-TCDD	27.61	1.79E+08	0.78	Y	1.15	1.12	-2%
12378-PeCDD	33.89	7.63E+08	1.58	Y	1.08	1.08	0%
123478-HxCDD	38.53	6.87E+08	1.26	Y	1.20	1.18	-2%
123678-HxCDD	38.66	7.22E+08	1.26	Y	1.10	1.11	1%
123789-HxCDD	39.00	7.47E+08	1.26	Y	1.12	1.10	-2%
1234678-HpCDD	42.68	6.42E+08	1.05	Y	1.08	1.12	4%
OCDD	46.42	1.06E+09	0.90	Y	1.11	1.10	-1%
2378-TCDF	26.61	2.66E+08	0.79	Y	1.10	1.09	0%
12378-PeCDF	32.16	1.29E+09	1.55	Y	1.07	1.11	3%
23478-PeCDF	33.48	1.27E+09	1.56	Y	1.14	1.15	1%
123478-HxCDF	37.37	1.07E+09	1.25	Y	1.30	1.31	1%
123678-HxCDF	37.53	1.13E+09	1.25	Y	1.27	1.29	2%
234678-HxCDF	38.31	1.14E+09	1.25	Y	1.27	1.28	1%
123789-HxCDF	39.42	9.72E+08	1.25	Y	1.25	1.28	2%
1234678-HpCDF	41.41	9.65E+08	1.03	Y	1.44	1.48	3%
1234789-HpCDF	43.28	8.64E+08	1.04	Y	1.50	1.49	0%
OCDF	46.67	1.51E+09	0.90	Y	1.06	1.05	0%
ES 2378-TCDD	27.59	3.19E+07	0.78	Y	1.05	1.09	4%
ES 12378-PeCDD	33.87	2.81E+07	1.60	Y	0.81	0.96	19%
ES 123478-HxCDD	38.51	2.32E+07	1.27	Y	1.03	1.21	17%
ES 123678-HxCDD	38.65	2.61E+07	1.29	Y	1.17	1.36	17%
ES 123789-HxCDD	38.99	2.72E+07	1.28	Y	1.17	1.41	21%
ES 1234678-HpCDD	42.66	2.29E+07	1.06	Y	1.00	1.19	19%
ES OCDD	46.41	3.86E+07	0.90	Y	0.80	1.00	25%
ES 2378-TCDF	26.59	4.85E+07	0.80	Y	1.02	1.07	5%
ES 12378-PeCDF	32.15	4.65E+07	1.60	Y	0.85	1.02	20%
ES 23478-PeCDF	33.46	4.44E+07	1.58	Y	0.81	0.98	20%
ES 123478-HxCDF	37.35	3.26E+07	0.53	Y	1.44	1.70	18%
ES 123678-HxCDF	37.52	3.52E+07	0.52	Y	1.61	1.83	13%
ES 234678-HxCDF	38.29	3.55E+07	0.53	Y	1.67	1.85	11%
ES 123789-HxCDF	39.40	3.03E+07	0.52	Y	1.32	1.58	19%
ES 1234678-HpCDF	41.39	2.61E+07	0.44	Y	1.16	1.36	17%
ES 1234789-HpCDF	43.27	2.32E+07	0.46	Y	1.02	1.21	19%
ES OCDF	46.65	5.75E+07	0.91	Y	1.17	1.50	28%

Dioxin/Furan QC Summary	Acq'd: 19 Sep 2012 16:07 MDC	ICAL: MM1_DF_03312020A_19SEPT2012
Lab ID: CS6	UTP: 19-Sep-2012 17:46 MDC	Checkcode: 243-871
Sample ID: SIL12-31-1	Report: 19 Sep 2012 17:49 MC	Datafile: 120919P2-07

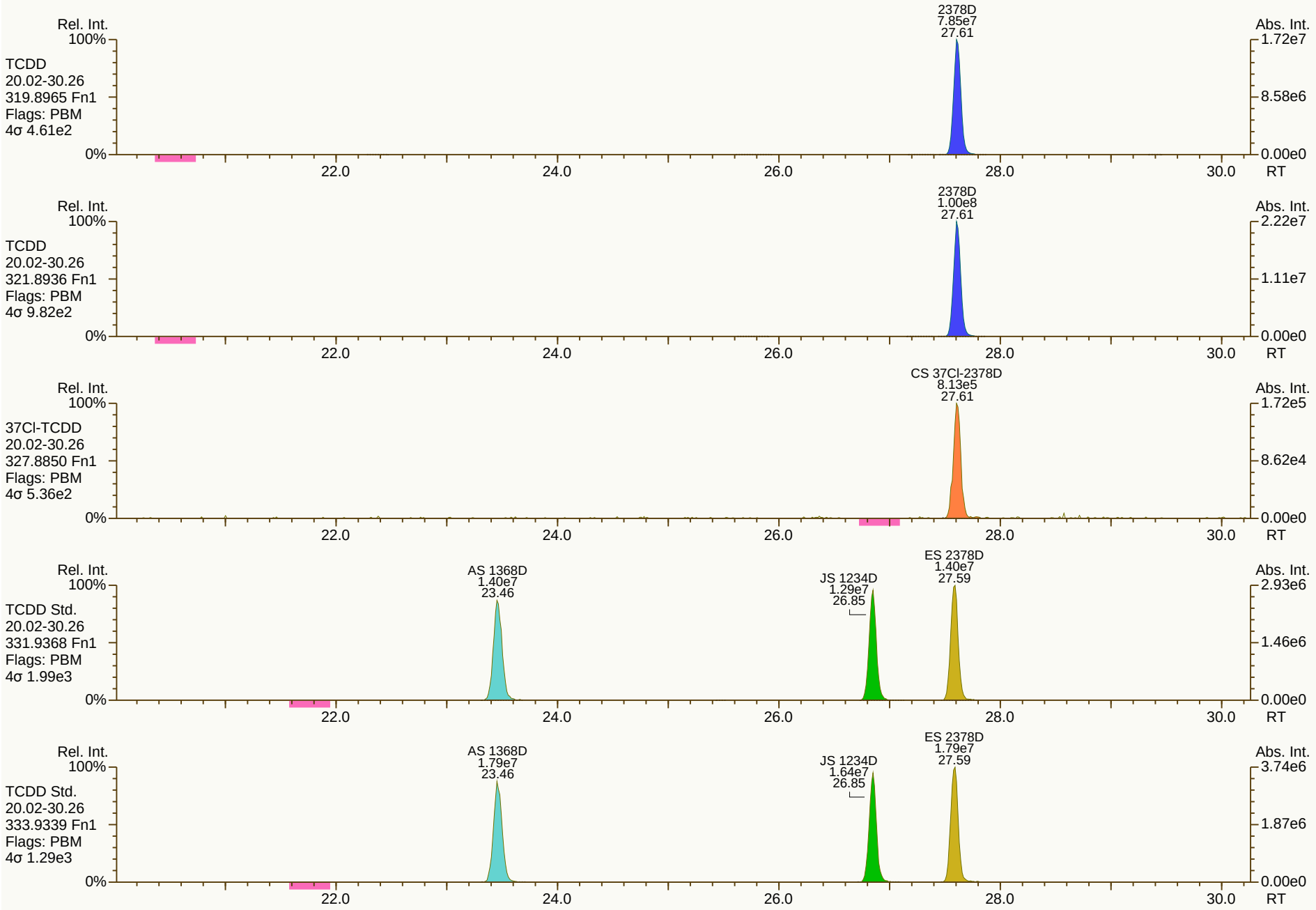
Name	RT	Response	RA	OK	Ref. RRFs	Calc. RRFs	Dev'n
JS 1234-TCDD	26.85	2.92E+07	0.79	Y	-	-	-
JS 1234-TCDF	25.07	4.55E+07	0.81	Y	-	-	-
JS 123467-HxCDD	38.87	9.60E+06	1.29	Y	-	-	-
CS 37Cl-2378-TCDD	NotFnd		n/a	-			
CS 12347-PeCDD	33.28	2.41E+07	1.60	Y	0.81	0.82	1%
CS 12346-PeCDF	31.53	4.17E+07	1.62	Y	0.91	0.92	0%
CS 123469-HxCDF	37.88	2.62E+07	0.53	Y	1.44	1.37	-5%
CS 1234689-HpCDF	41.94	2.20E+07	0.45	Y	1.14	1.14	1%
SS 37Cl-2378-TCDD	NotFnd		n/a	-			
SS 12347-PeCDD	33.28	2.41E+07	1.60	Y	1.01	0.86	-16%
SS 12346-PeCDF	31.53	4.17E+07	1.62	Y	1.08	0.90	-17%
SS 123469-HxCDF	37.88	2.62E+07	0.53	Y	0.90	0.75	-17%
SS 1234689-HpCDF	41.94	2.20E+07	0.45	Y	0.98	0.84	-15%
AS 1368-TCDD	23.46	3.18E+07	0.78	Y	1.11	1.09	-2%
AS 1368-TCDF	21.25	5.64E+07	0.80	Y	1.23	1.24	1%
FS 1278-TCDD	NotFnd						
FS 12478-PeCDD	NotFnd						
FS 123468-HxCDD	NotFnd						
FS 1234679-HpCDD	NotFnd						
TS 1378-TCDD	NotFnd						
OCDD-a	46.42	6.52E+07	2.51	Y	0.07	0.07	3%
OCDF-a	46.66	8.98E+07	2.62	Y	0.06	0.06	1%

SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 52** **User: MDC Datafile: 120919P2-07**



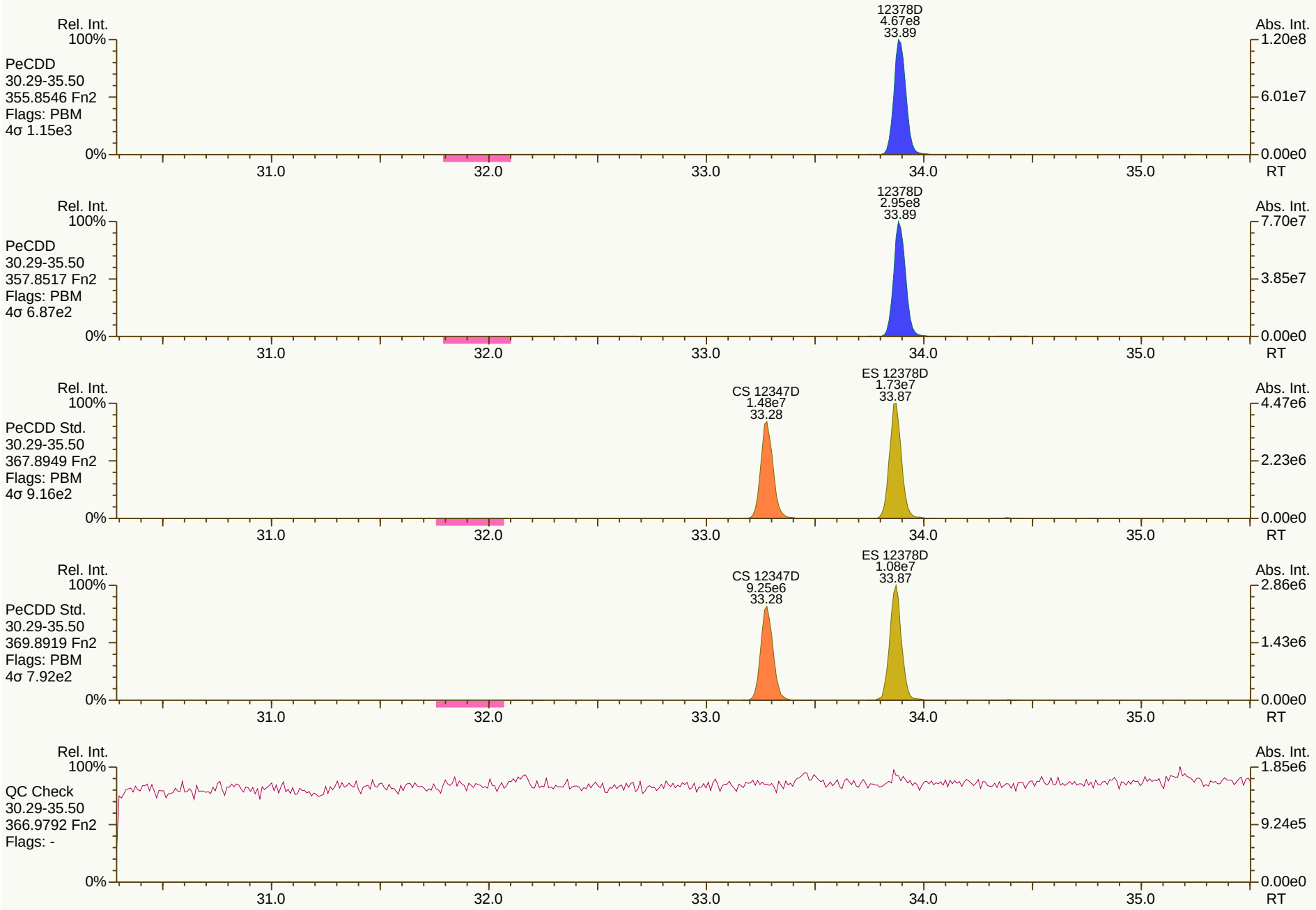
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 scc: 858-856 *PKD: n/a Printed: 19-Sep-2012 17:44 Page 1 of 12*

SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 52** **User: MDC Datafile: 120919P2-07**



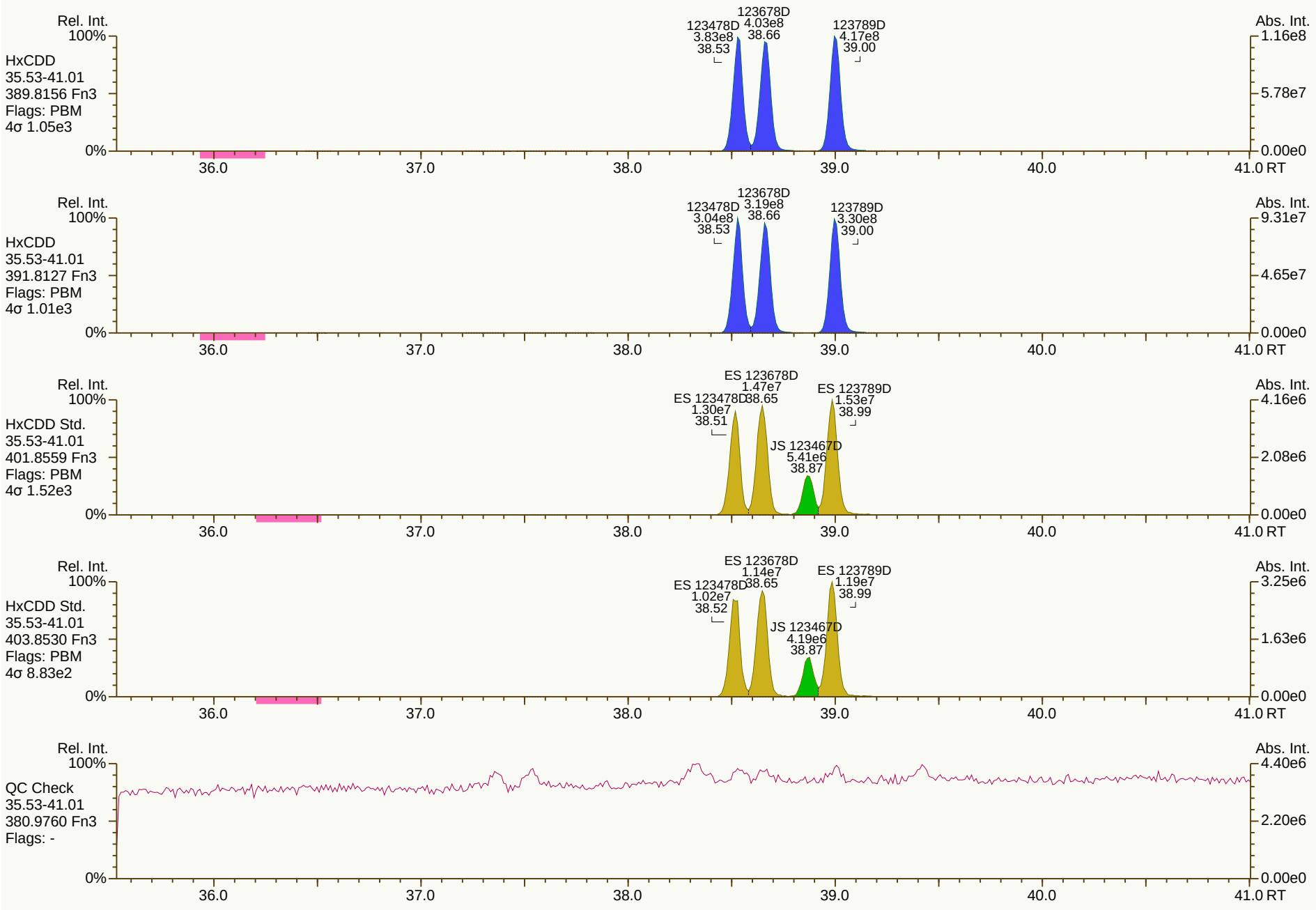
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 9965, 2808, 4408 scc: 858-856 *Revised: 19-Sep-2012 17:12 (MDC) Printed: 19-Sep-2012 17:44 Page 2 of 12*

SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 52** **User: MDC Datafile: 120919P2-07**



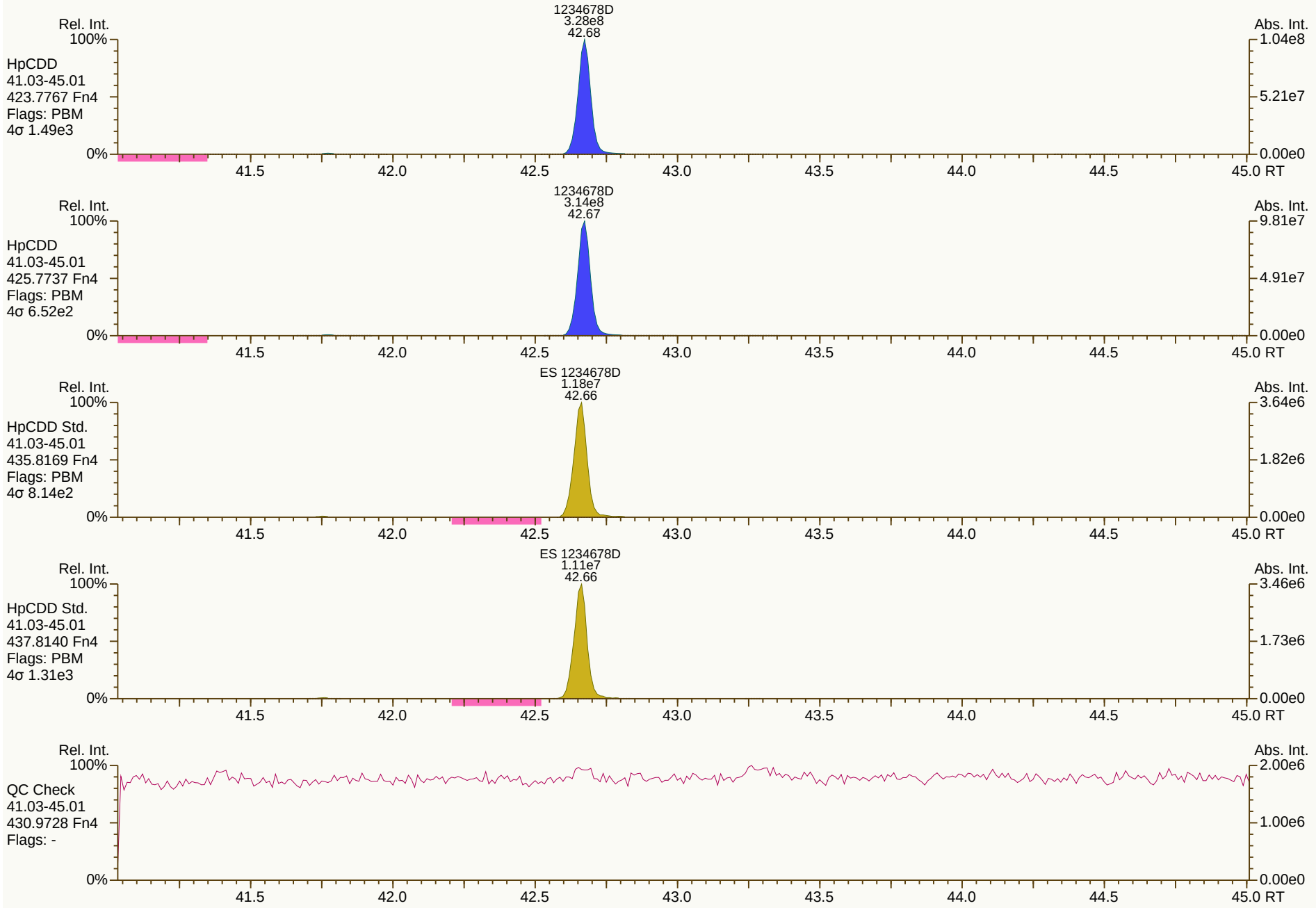
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SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 52** **User: MDC Datafile: 120919P2-07**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS6.utp_res, saved 19-Sep-2012 17:13 (MDC) *Peak annotation: Areas, Centroids*
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SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 52** **User: MDC Datafile: 120919P2-07**



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SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 52** **User: MDC Datafile: 120919P2-07**



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SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 52** **User: MDC Datafile: 120919P2-07**



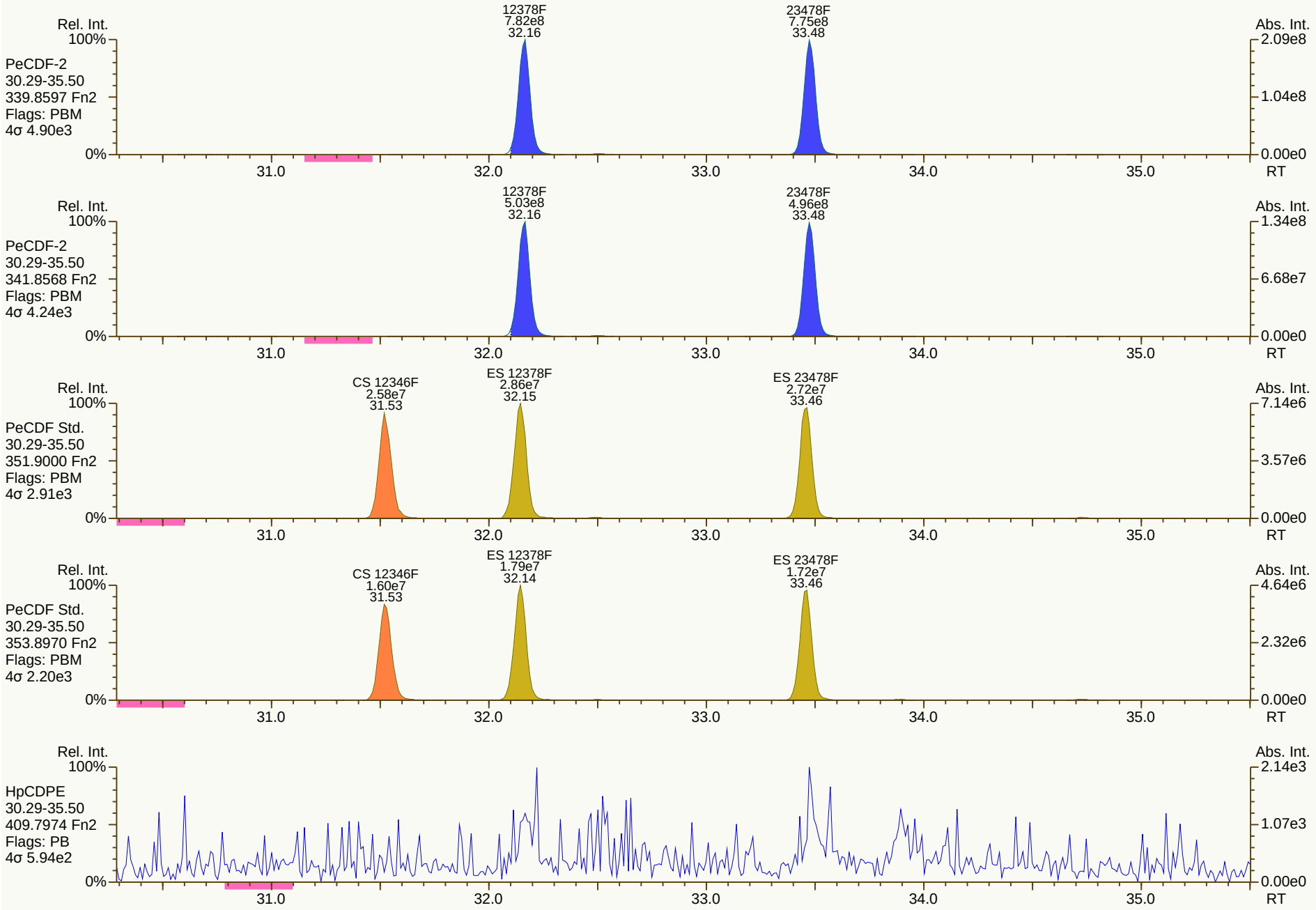
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SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 52** **User: MDC Datafile: 120919P2-07**



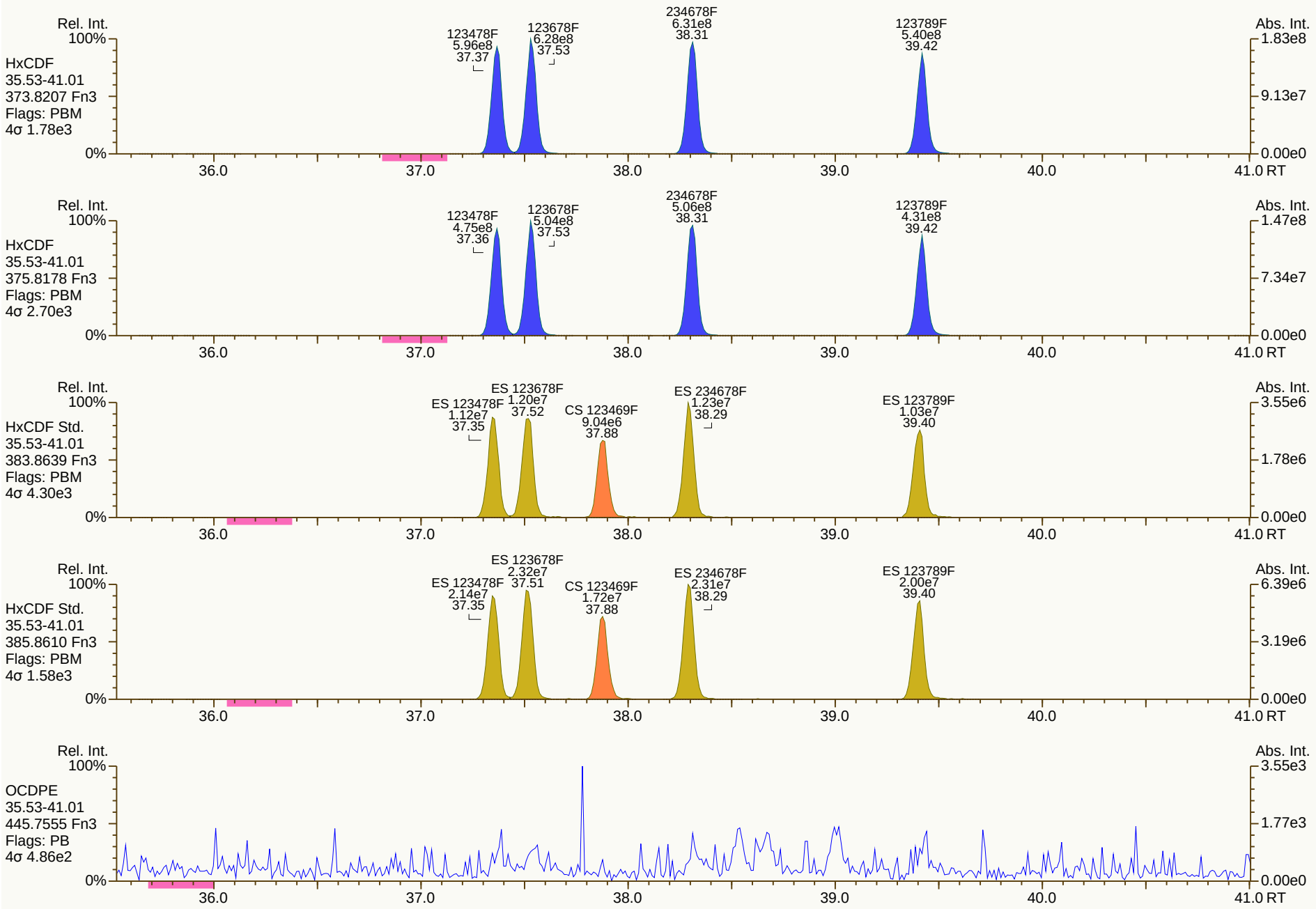
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SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
Instr: AutoSpec-Ultima MM1 **SIR EI+: DF_CL4-8 GC: DB5MS_60M Vial: 52** **User: MDC Datafile: 120919P2-07**



Results: T:\UltraTracePro\ICAL results\MM1_DF_03312020A_19SEPT2012\CS6.utp_res, saved 19-Sep-2012 17:13 (MDC) *Peak annotation: Areas, Centroids*
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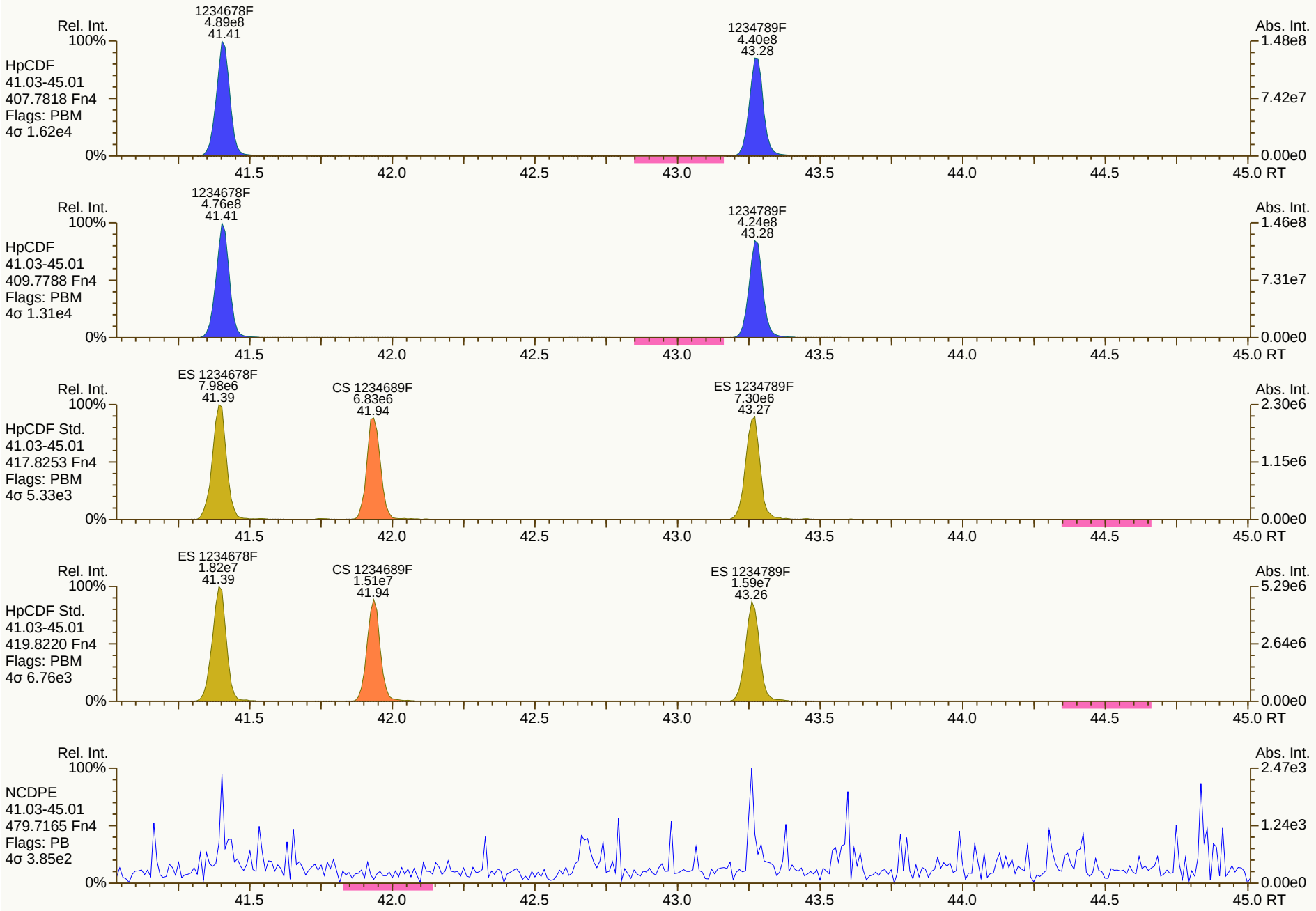
SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
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SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**

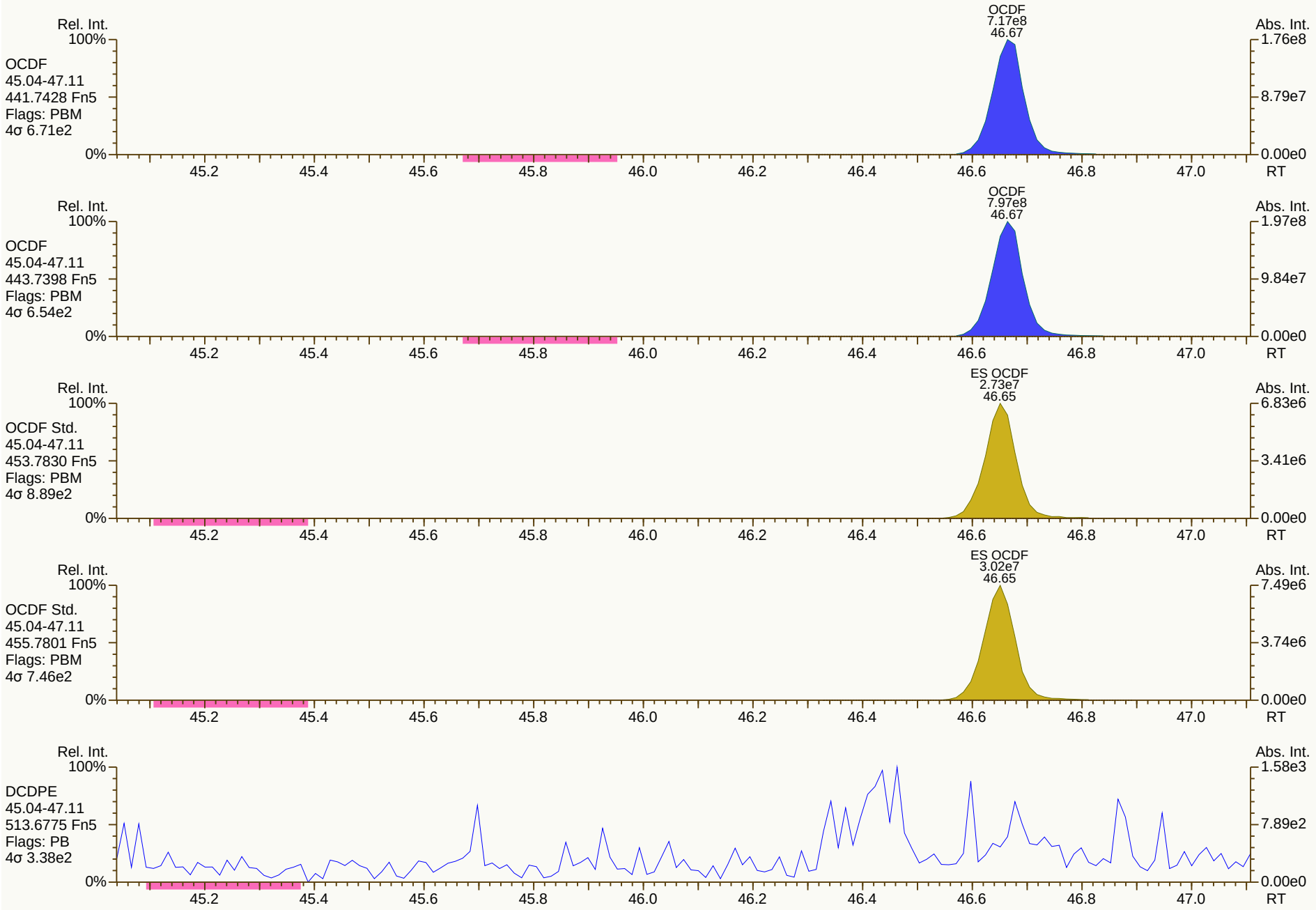
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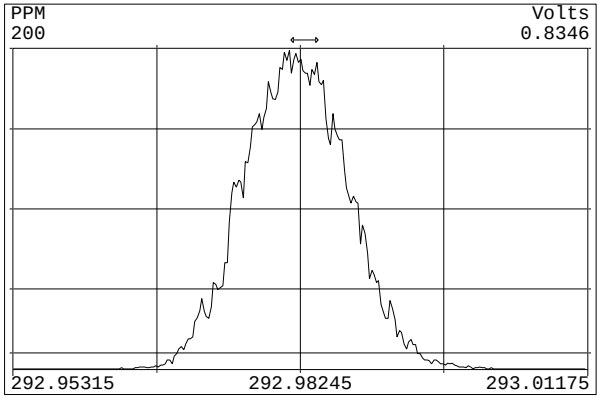
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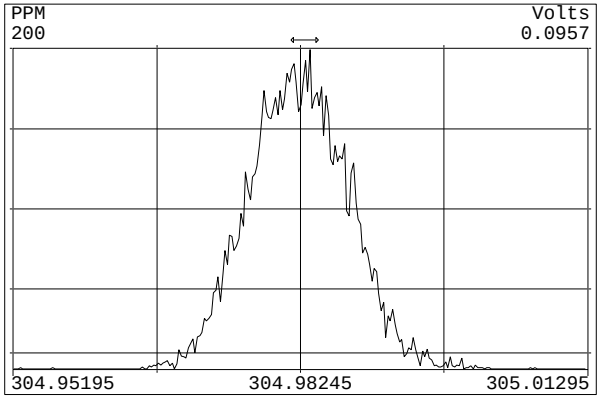
SGS-AP ID: CS6 **Sample ID: SIL12-31-1** **Acq: 19-SEP-2012 16:07:59**
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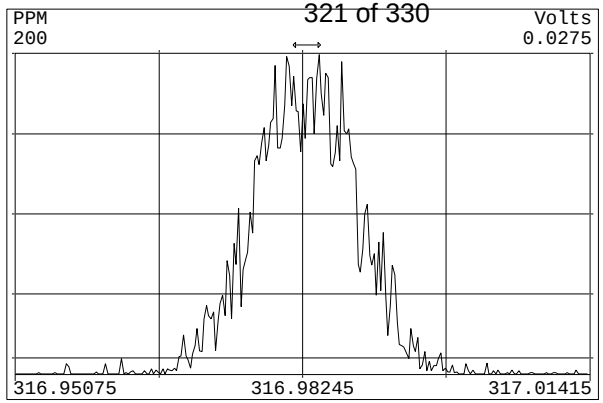


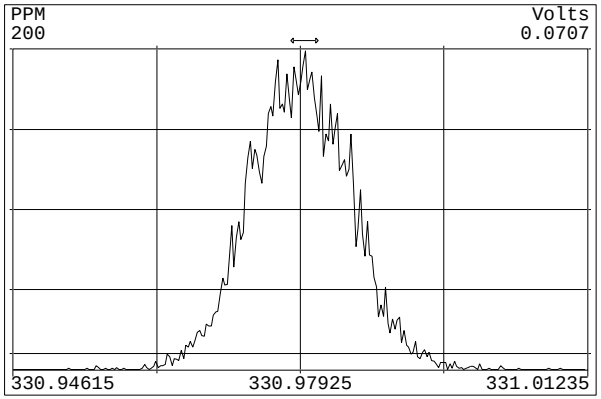
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AP UltraTrace-Pro V4.71 User/System: MDC/MCI7-047 cc: 4990, 8203, 4531 scc: 858-856 *Revised: 19-Sep-2012 17:12 (MDC) Printed: 19-Sep-2012 17:44 Page 12 of 12*

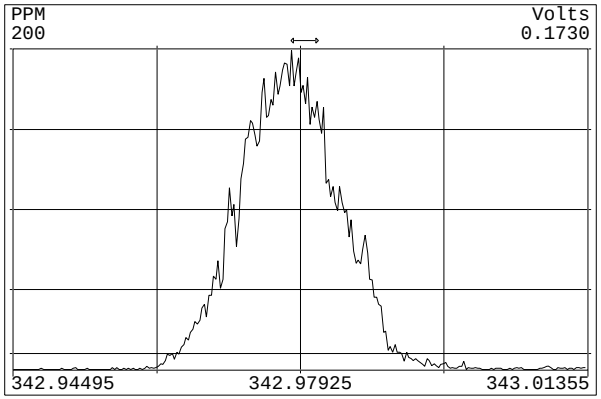
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Experiment:DF_CL4-8 Function:1 Reference:PFK2

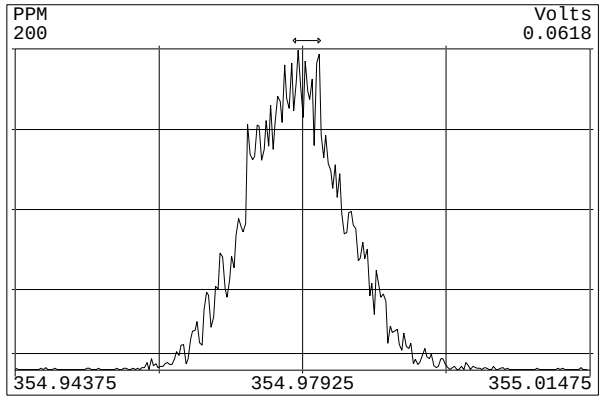


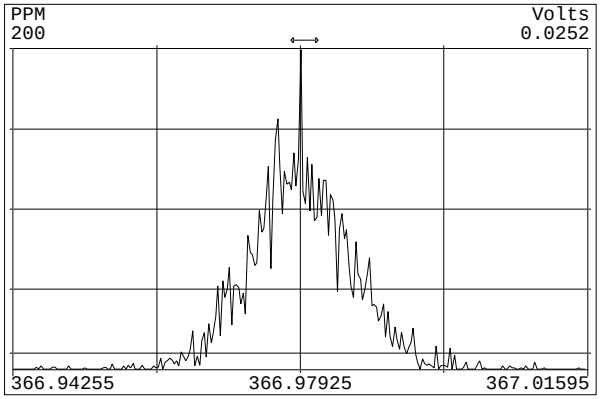


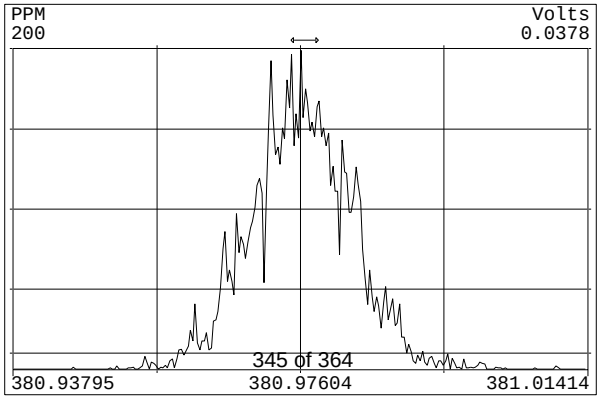




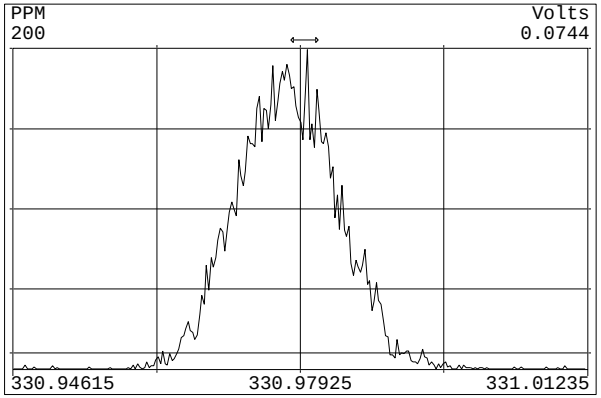


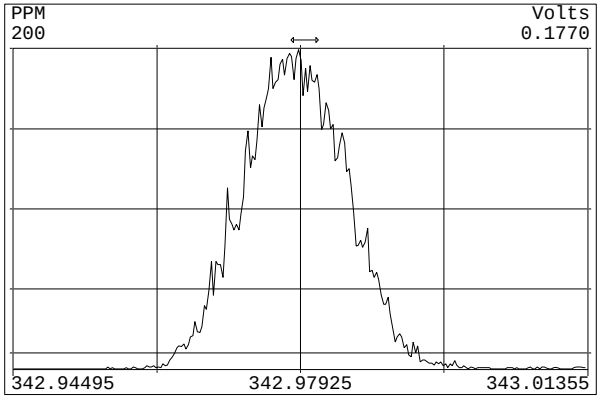


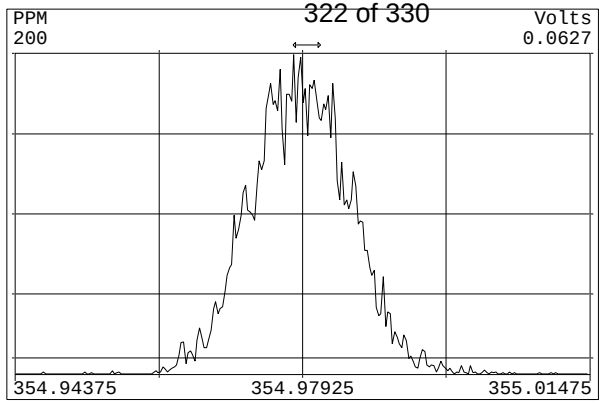


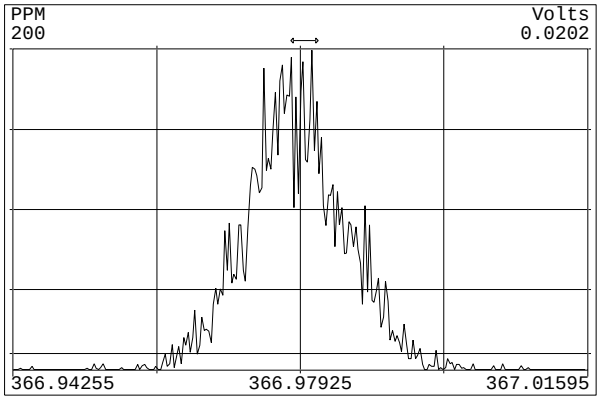


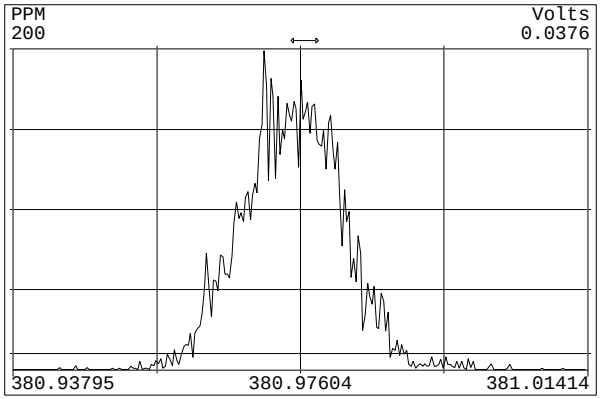
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Experiment:DF_CL4-8 Function:2 Reference:PFK2

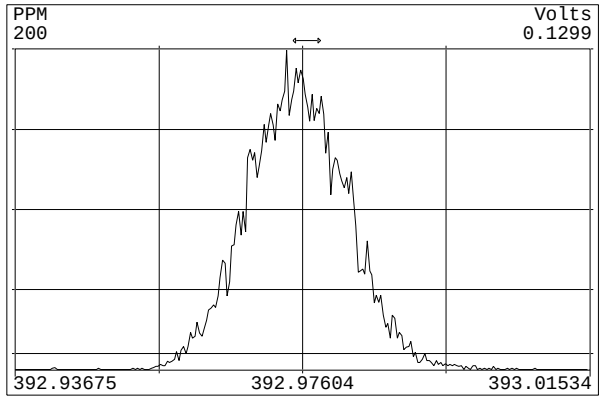


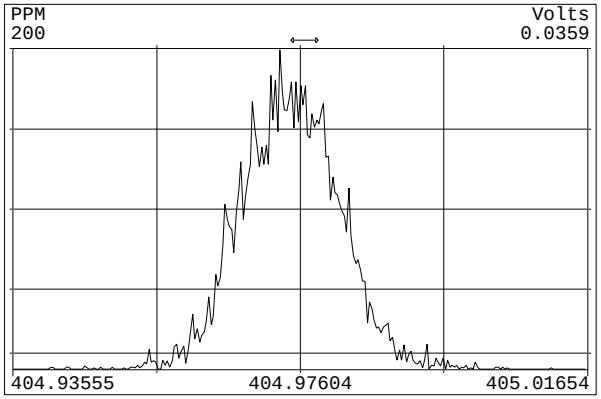


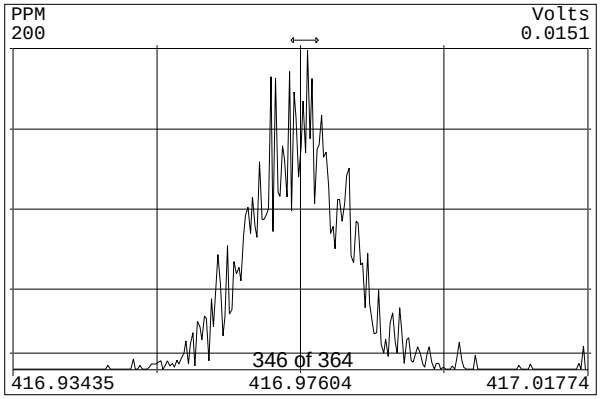




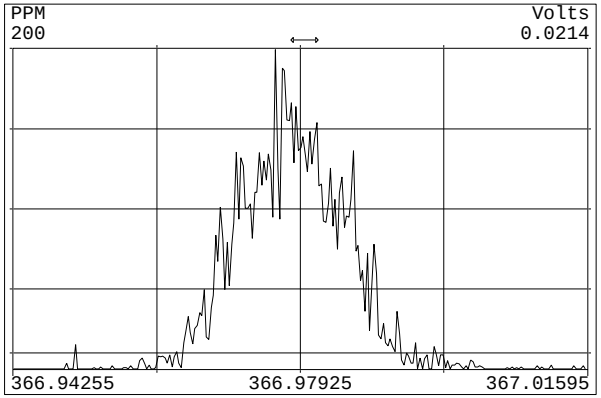


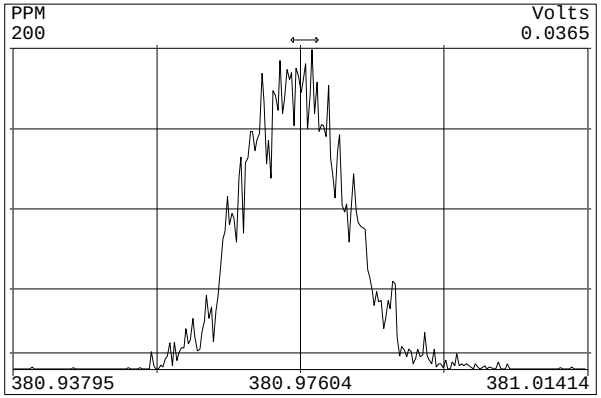


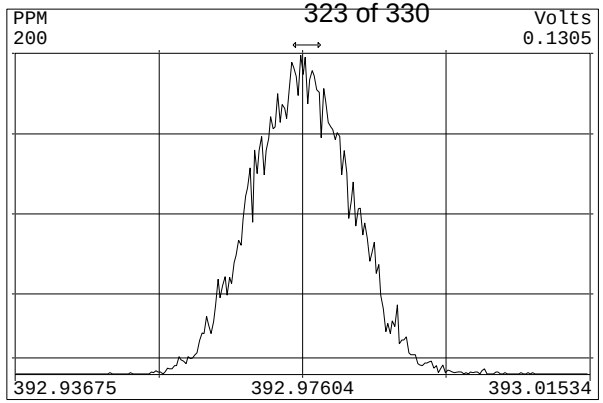


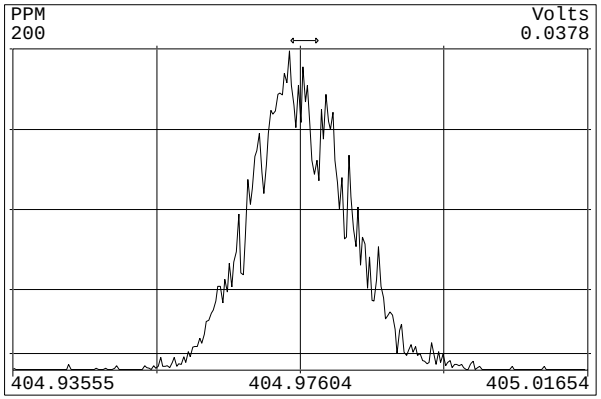


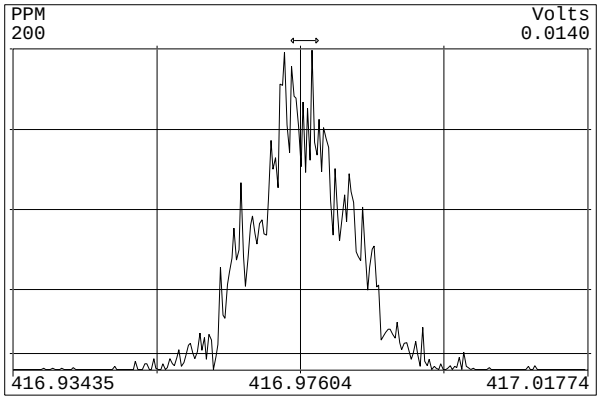
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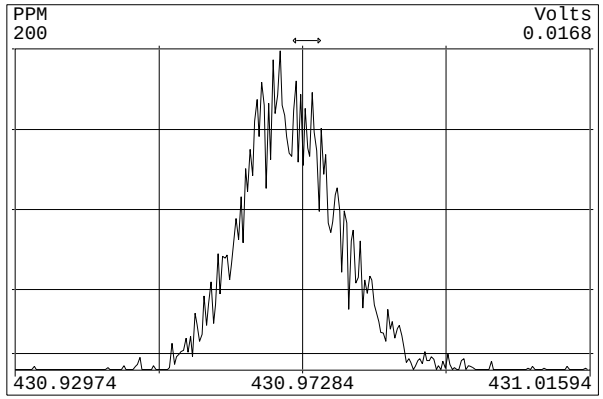


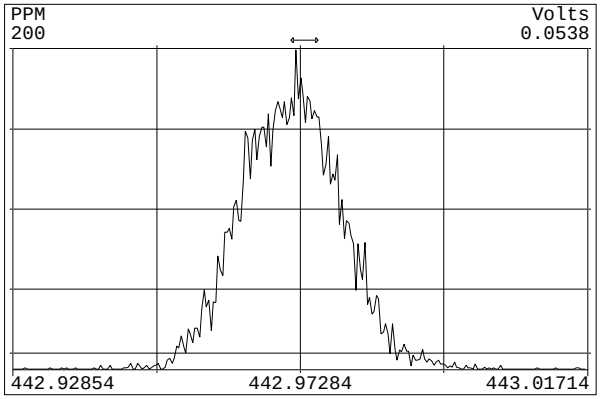


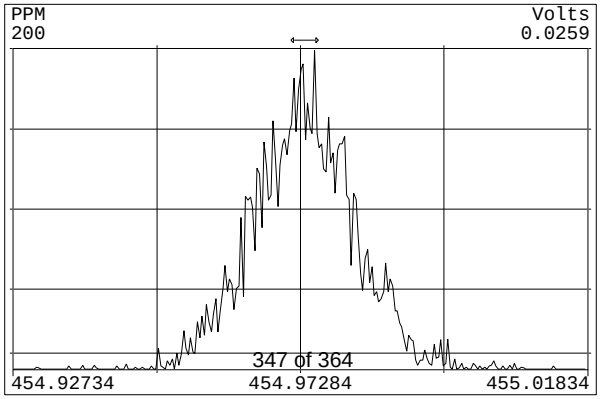


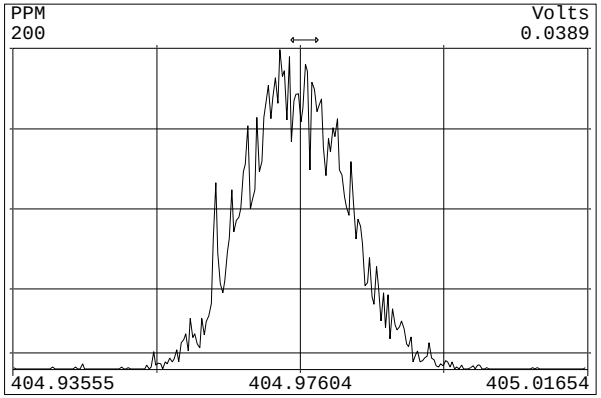


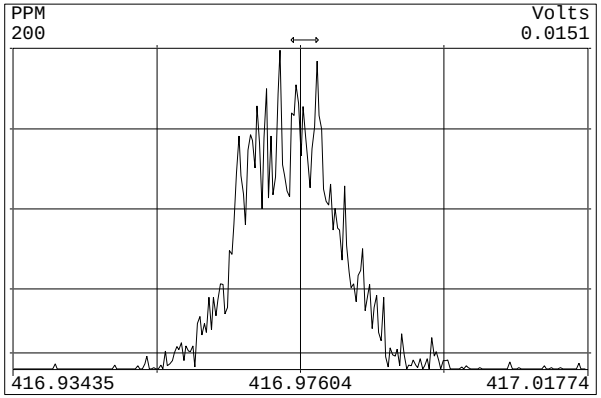


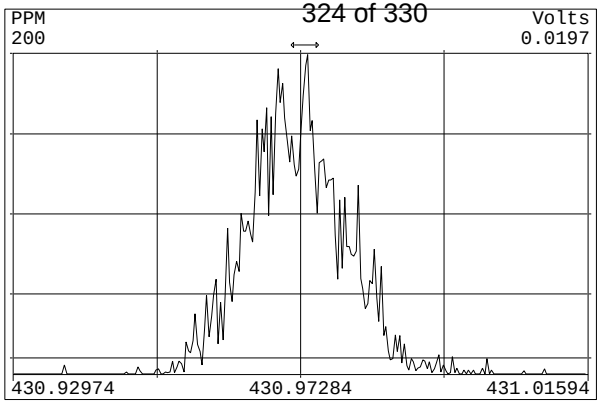


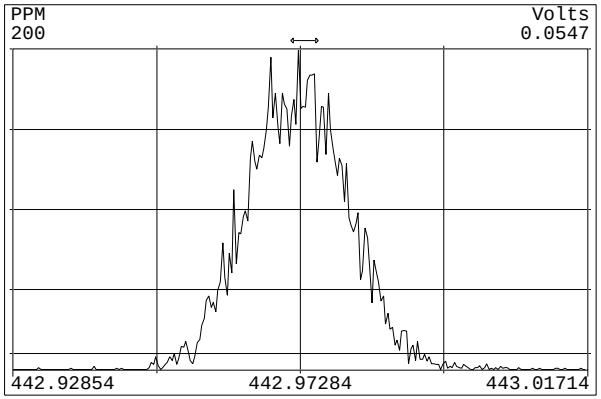


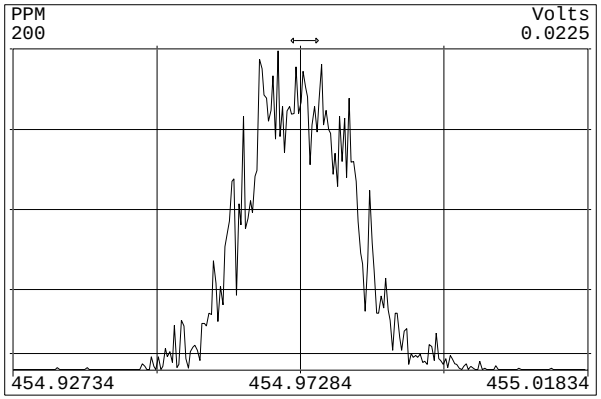


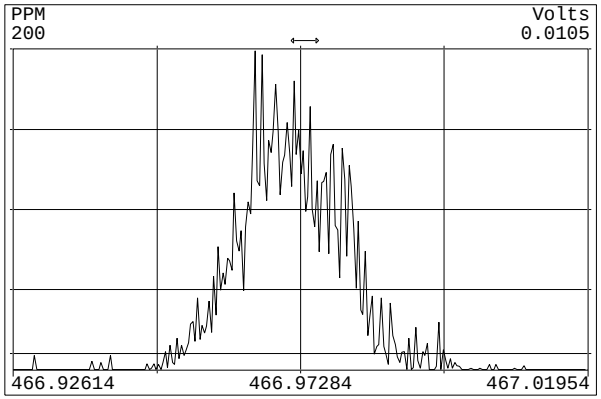

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404.97604
405.01654

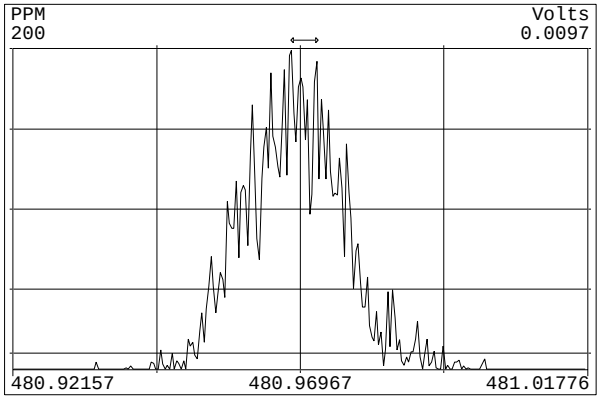

PPM
200
Volts
0.0151
416.93435
416.97604
417.01774


PPM
200
Volts
0.0197
430.92974
430.97284
431.01594

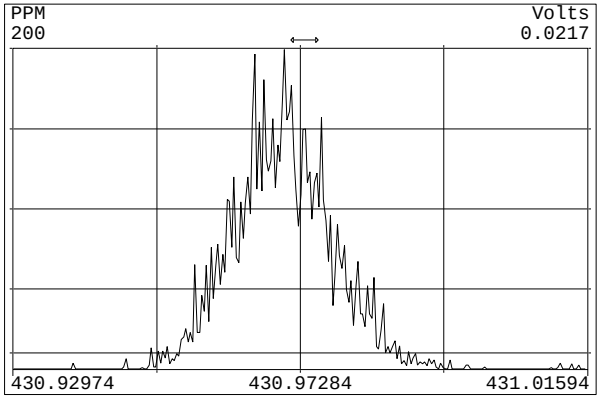

PPM
200
Volts
0.0547
442.92854
442.97284
443.01714

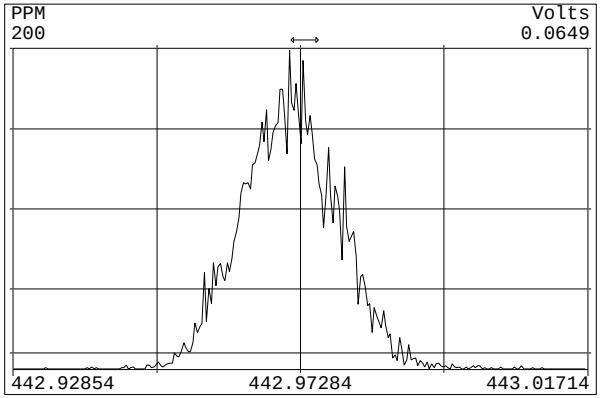

PPM
200
Volts
0.0225
454.92734
454.97284
455.01834

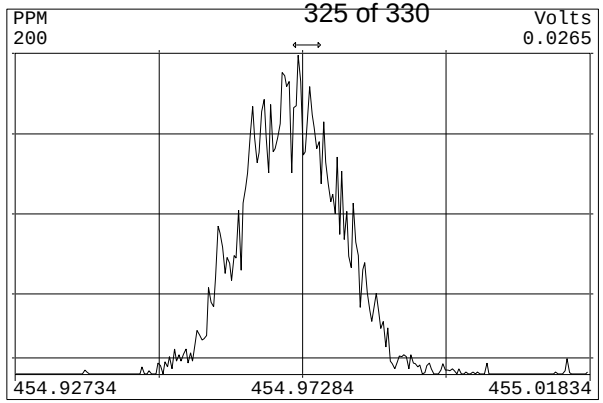

PPM
200
Volts
0.0105
466.92614
466.97284
467.01954

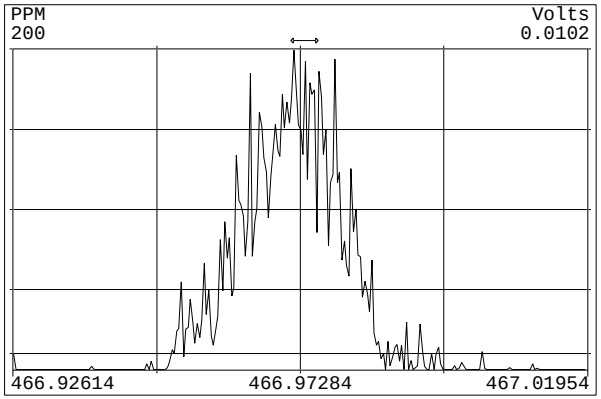

PPM
200
Volts
0.0097
480.92157
480.96967
481.01776

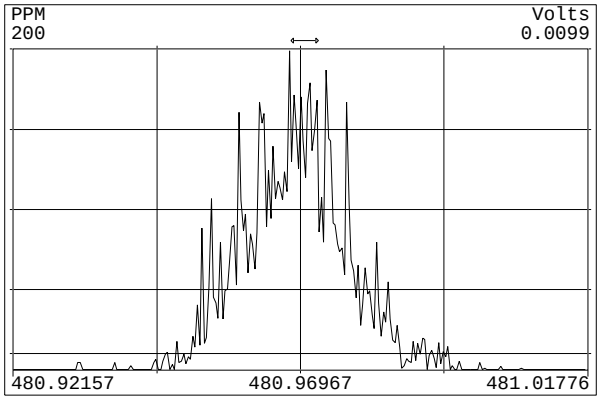
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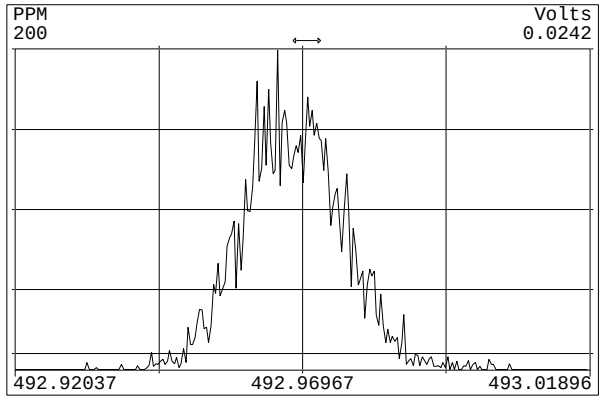


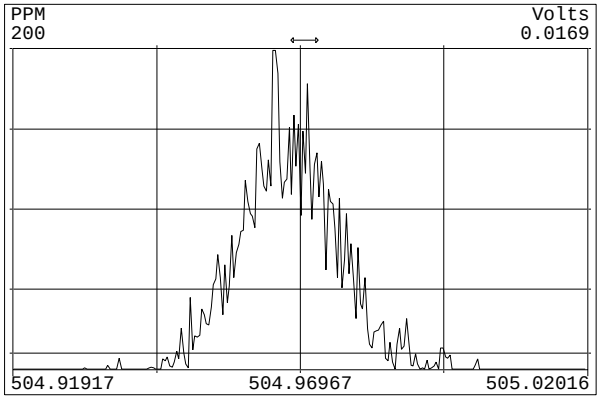


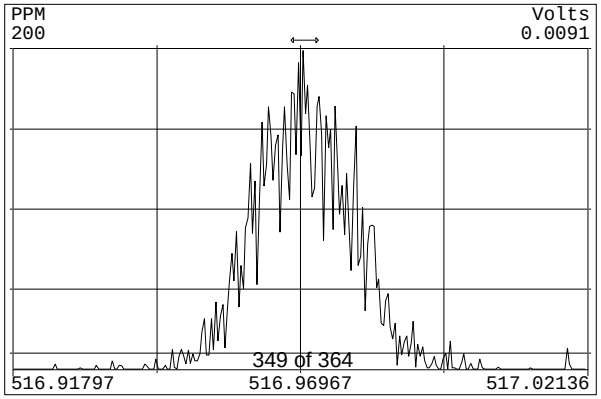




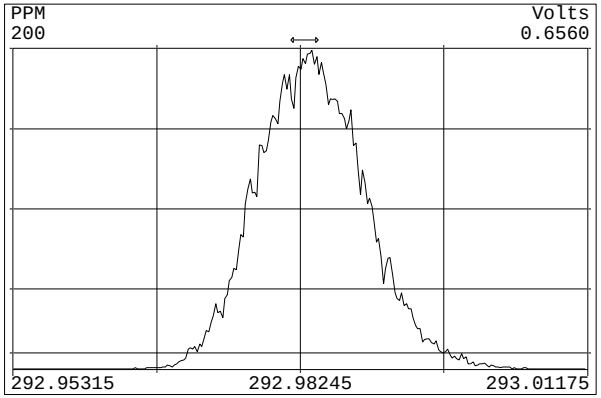


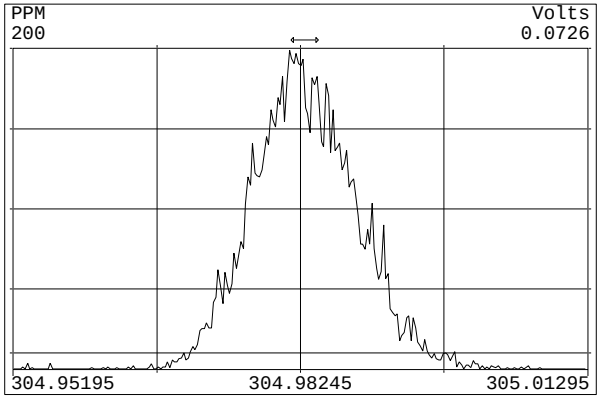


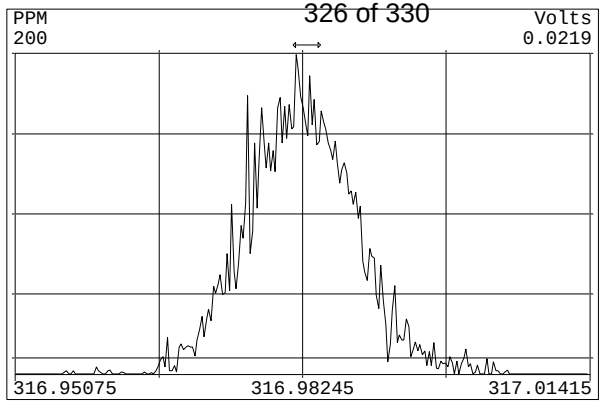


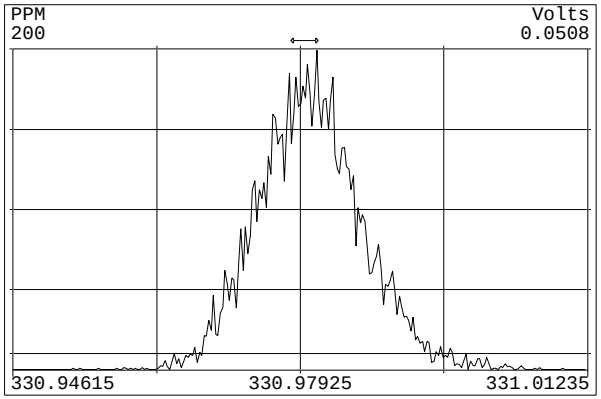


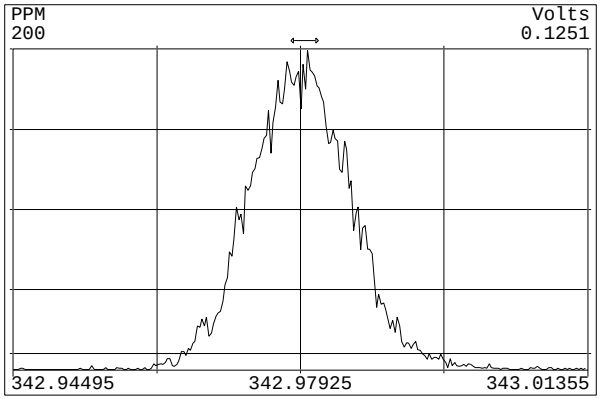
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Experiment:DF_CL4-8 Function:1 Reference:PFK2

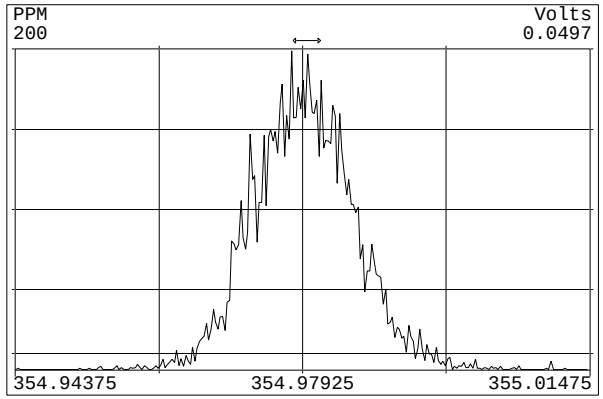


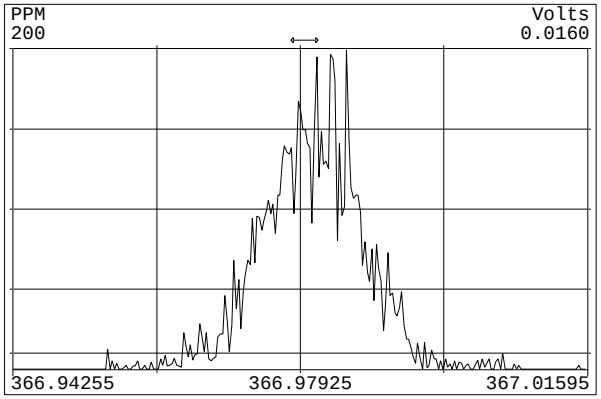


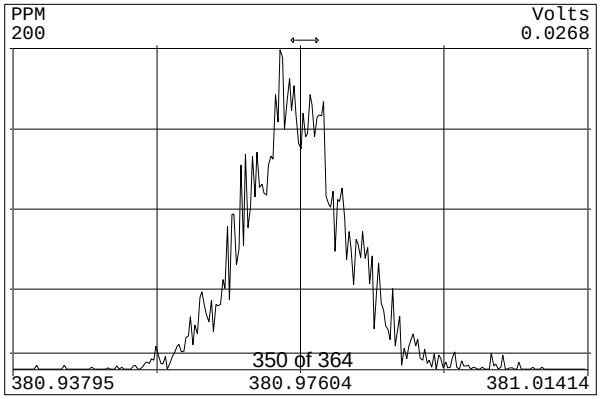




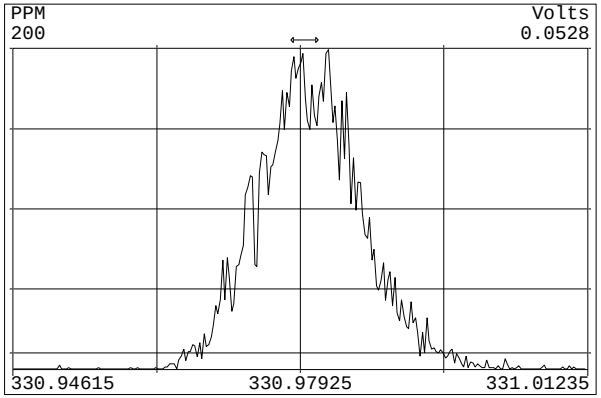


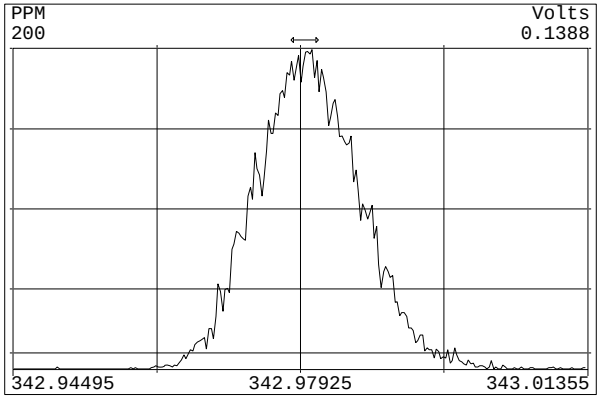


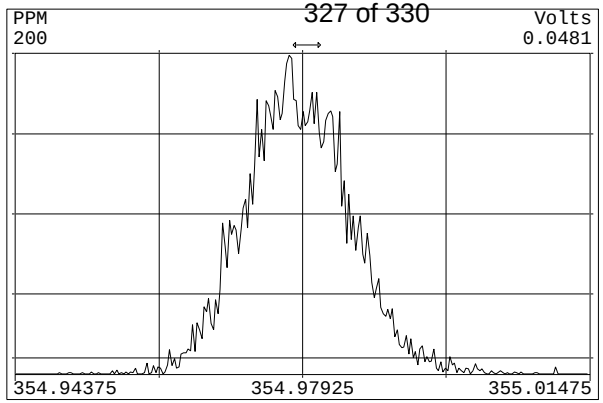


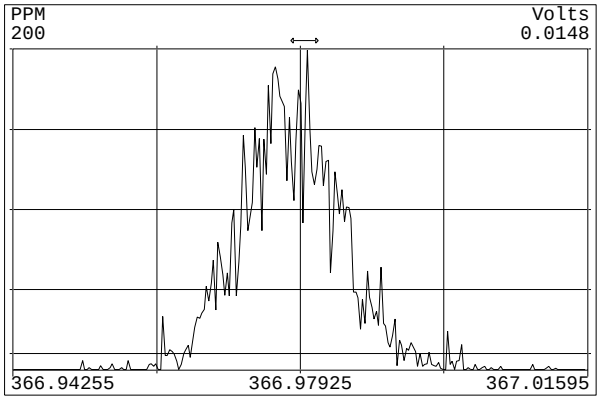


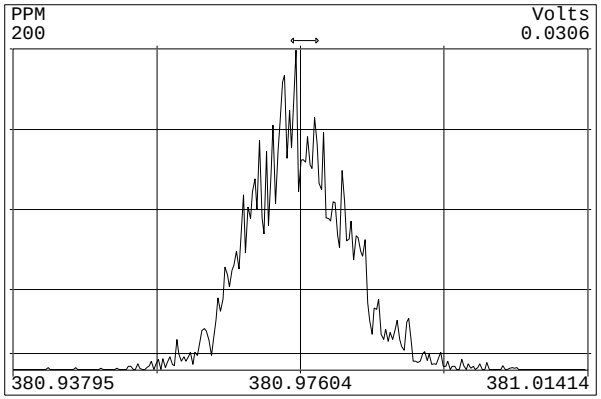
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Experiment:DF_CL4-8 Function:2 Reference:PFK2

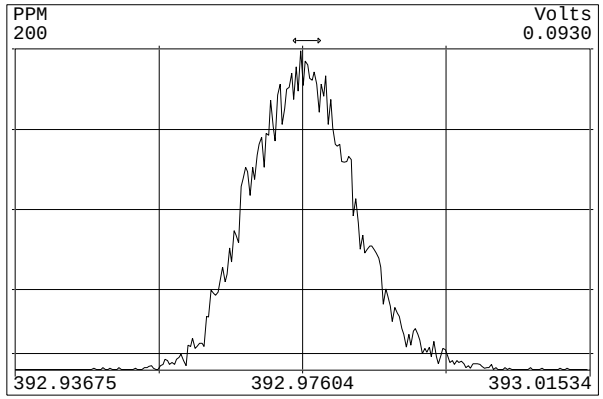


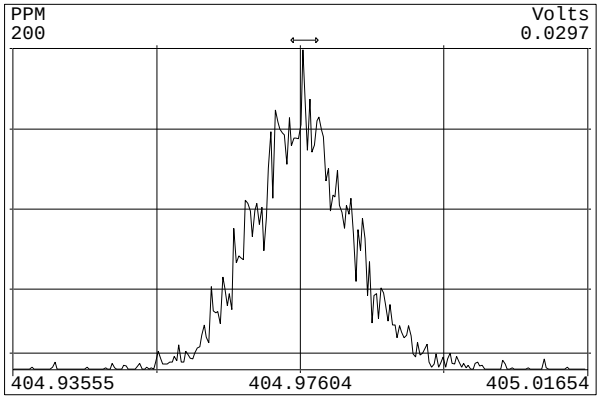


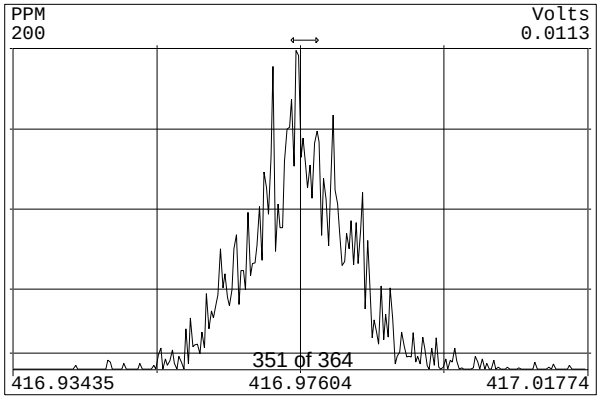




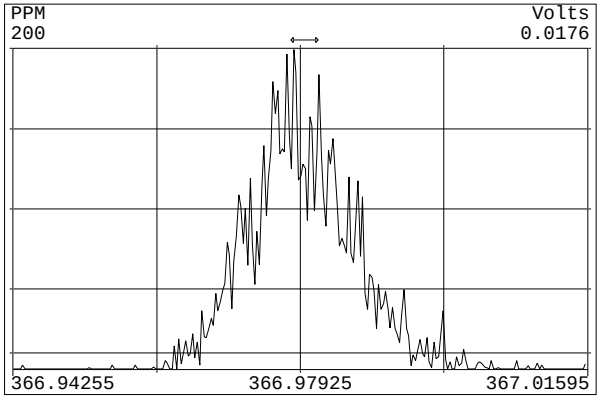


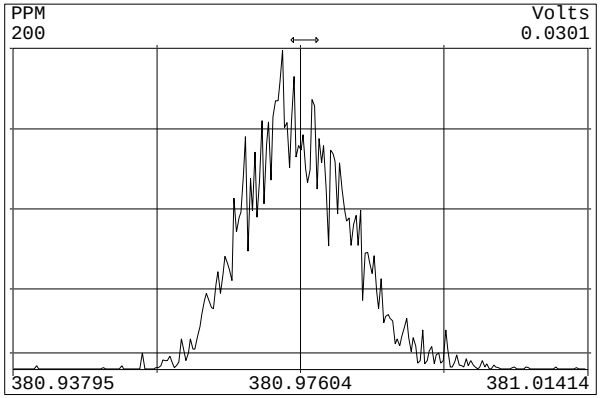


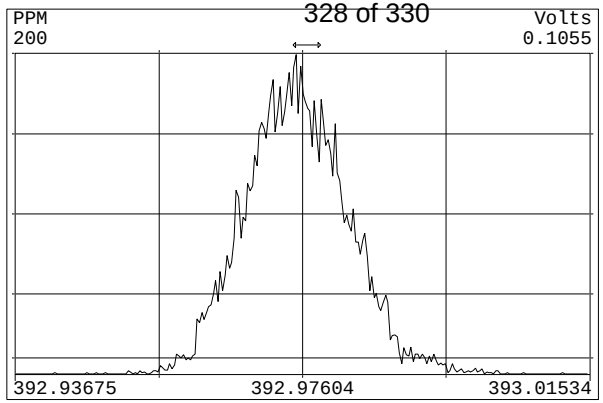


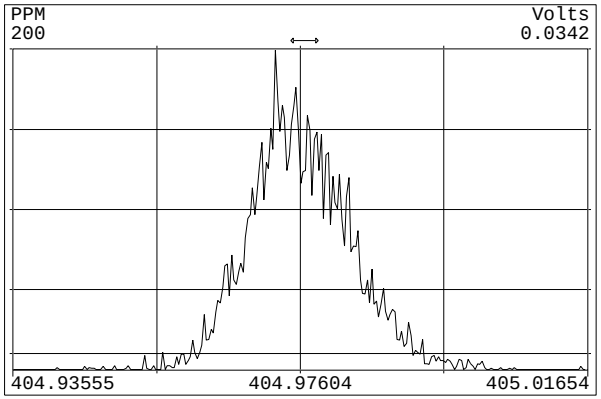


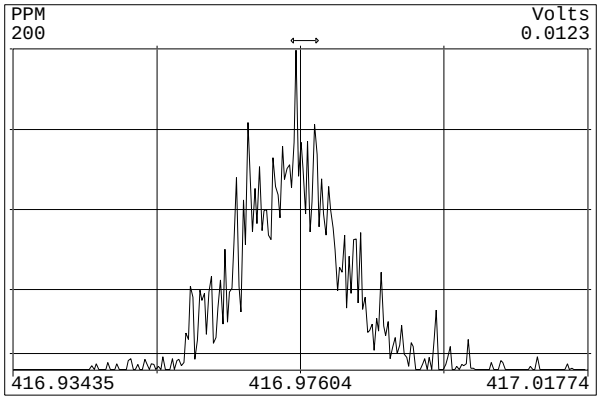
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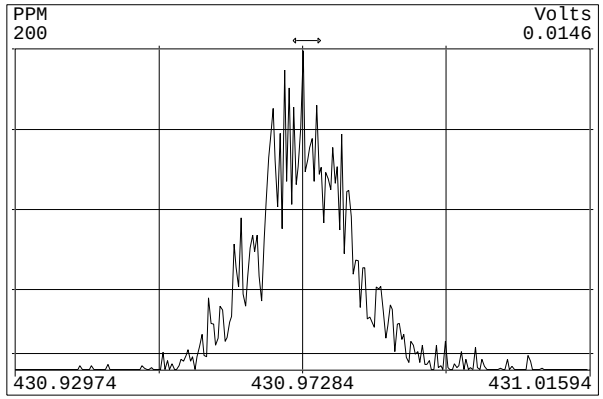


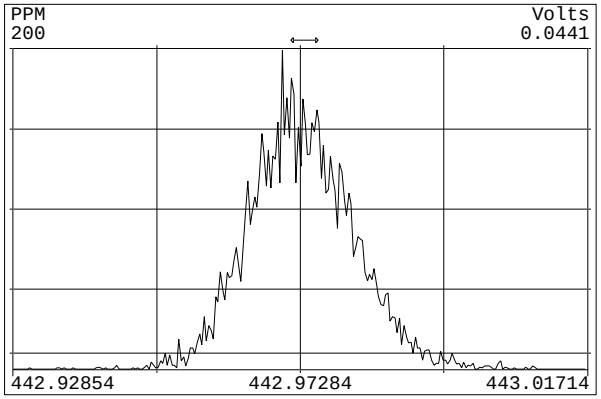


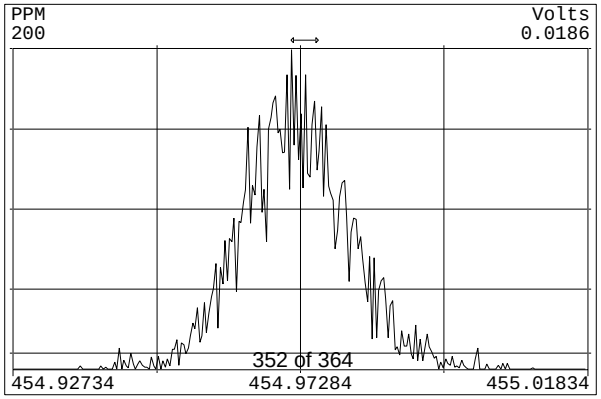




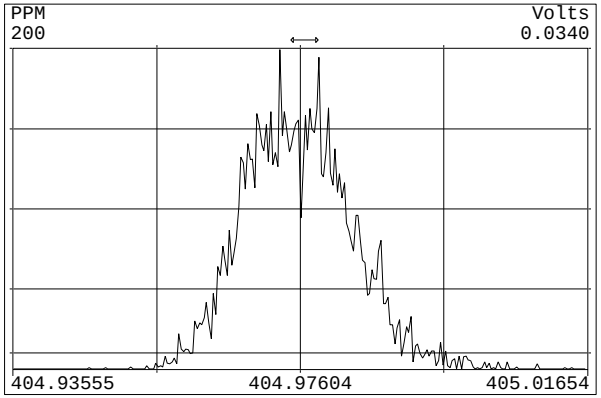


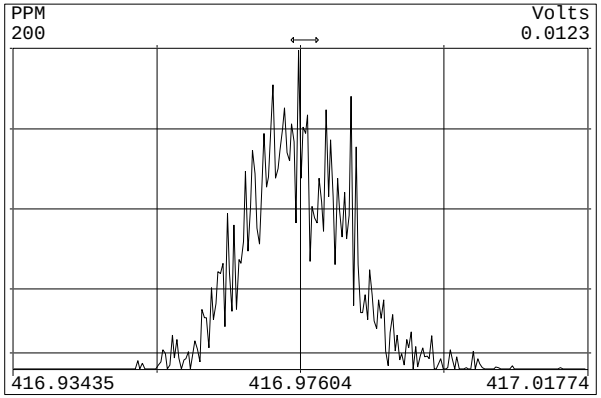


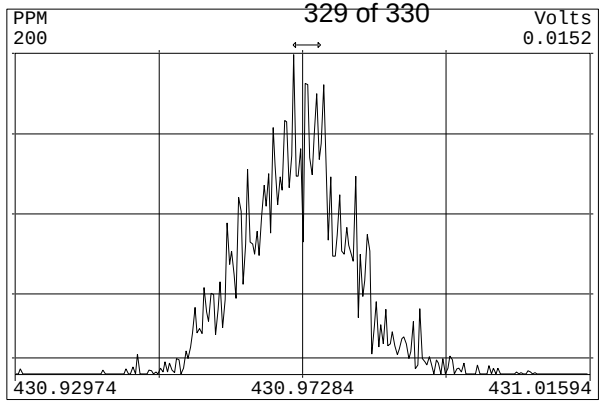


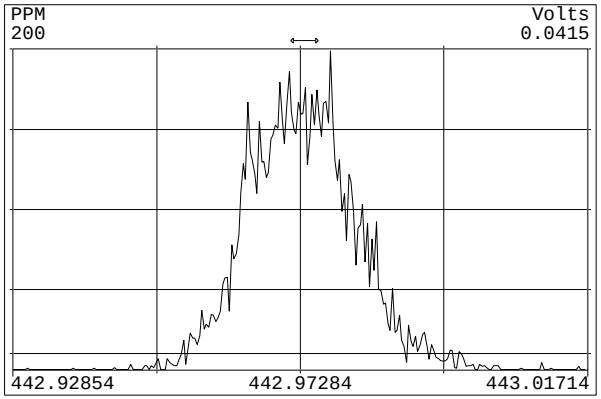


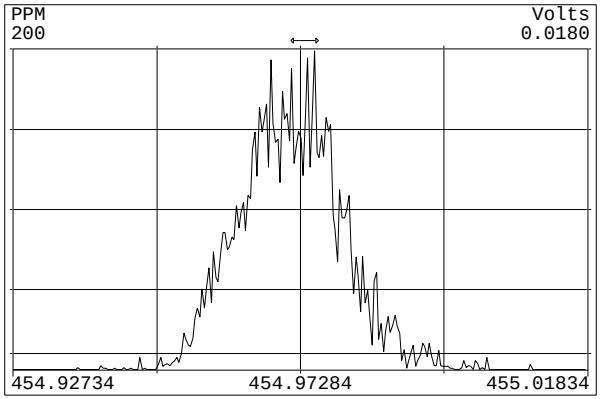
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Experiment:DF_CL4-8 Function:4 Reference:PFK2

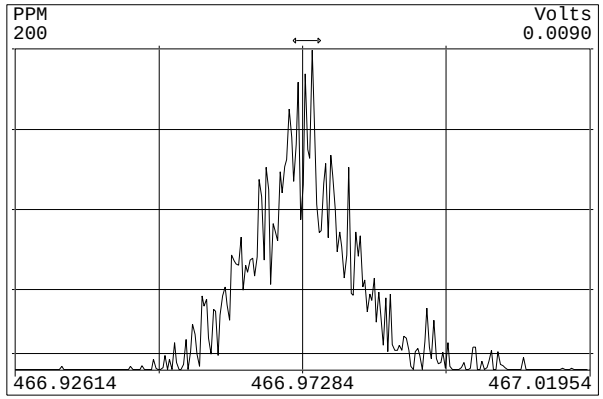


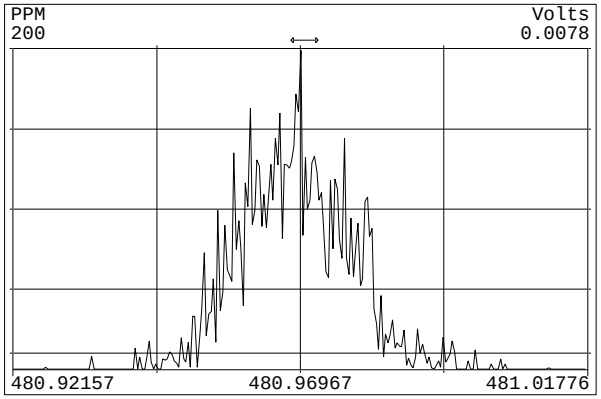




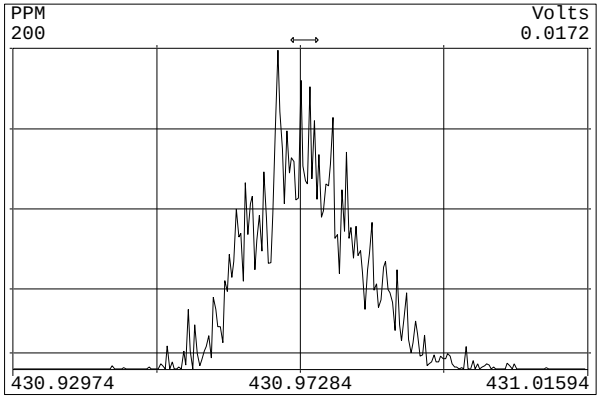


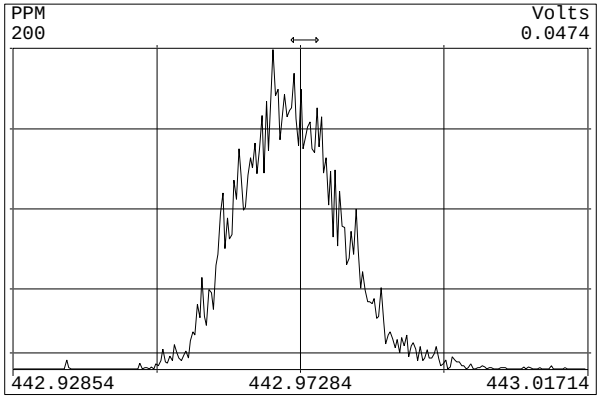


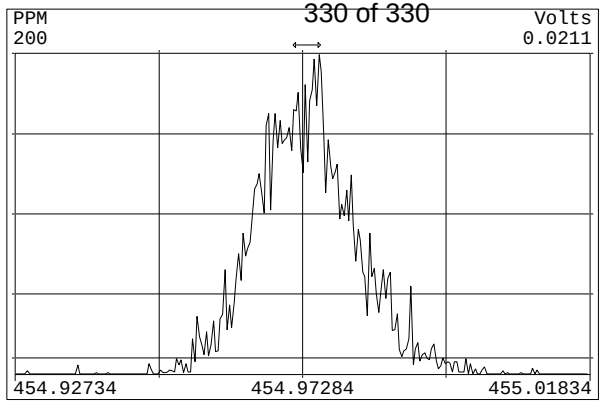


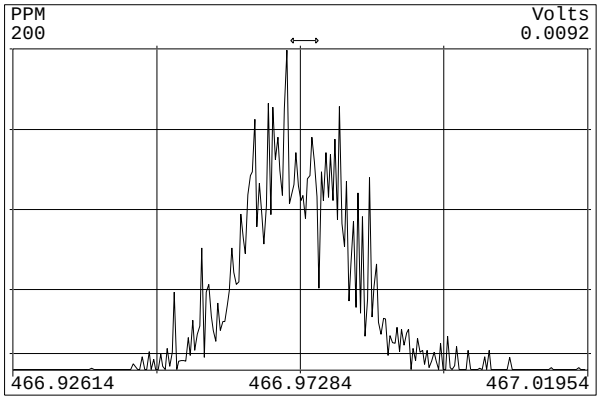


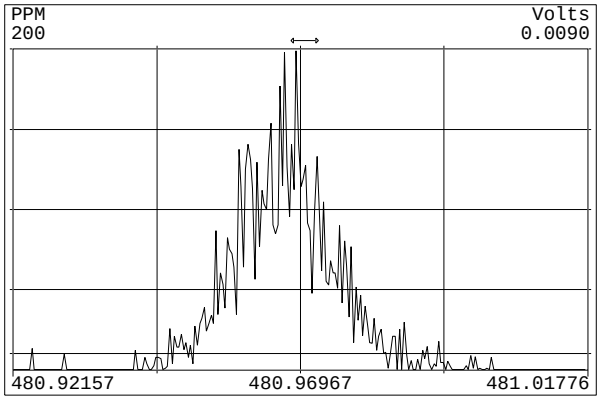
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Experiment:DF_CL4-8 Function:5 Reference:PFK2

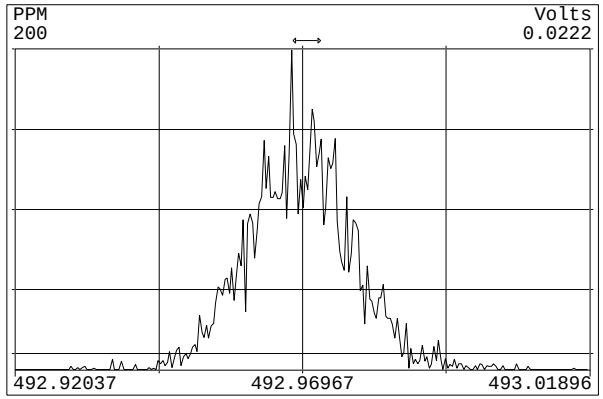


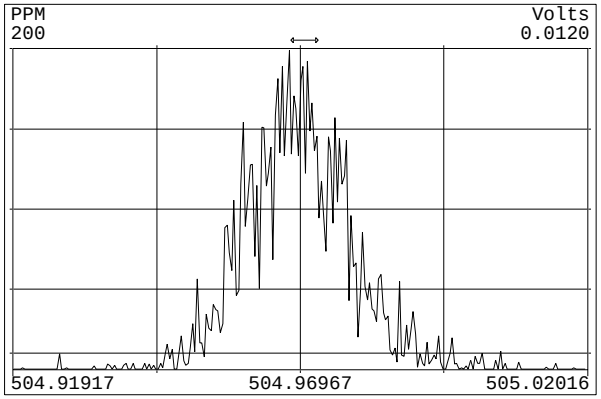


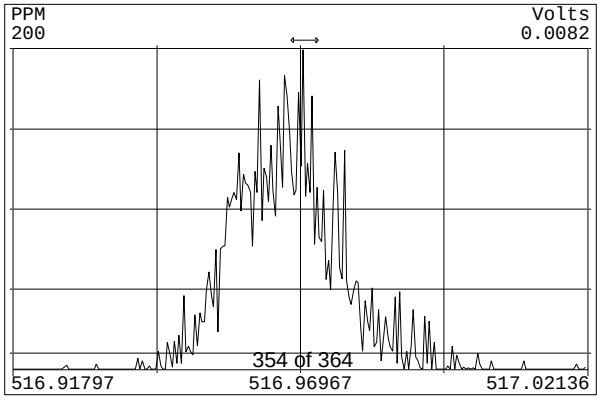












Appendix D

Alliance
SOURCE TESTING

Method 5
Dry Gas Meter Calibration
Using Critical Orifices

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report) for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells - YELLOW cells are calculated.

				INITIAL	FINAL	AVG (P_{bar})
DATE:	12/7/2012	METER SERIAL #:	13857995	BAROMETRIC PRESSURE (in Hg):	29.46	29.46	29.46
CONSOLE #:	1600	CRITICAL ORIFICE SET SERIAL #:	CR001				

ORIFICE #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	TEMPERATURES °F DGM AVERAGE INITIAL	TEMPERATURES °F DGM AVERAGE FINAL	TEMPERATURES °F DGM AVG	ELAPSED TIME (MIN) θ	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	(4) DH@
6	0.170	23.5	3.90	9.254	5.354	66	58	63	60.5	25.00	0.16	5.3508	5.4608	1.021	1.885
													Tolerance	0.017	0.20
													Status	PASS	PASS
55	0.438	20.0	10.10	15.776	5.676	68	64	65	64.5	10.00	1.20	5.6440	5.6172	0.995	2.127
													Tolerance	0.008	0.04
													Status	PASS	PASS
73	0.780	16.0	18.50	28.586	10.086	69	66	69	67.5	10.00	4.00	10.0415	9.9937	0.995	2.243
													Tolerance	0.008	0.16
													Status	PASS	PASS

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE CALIBRATION FACTOR, Y = 1.004

AVERAGE $DH_@$ = 2.085

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

(4) $$DH_@ = \left(\frac{0.75\,\Theta}{V_{cr}(std)}\right)^2 DH\left(\frac{V_m(std)}{V_m}\right)$$

Calibrated By: Stacy C

Date: 12-7-12

Effective 5/28/10

Alliance
SOURCE TESTING

Semi -Annual
Thermocouple Sensor Calibration

Date: 6/12/2012
Meter Box ID: 1600
Sensor Make/Model: Extech Model 42312
Reference Calibrator Serial No.: 55000154

Reference Temp.		Display Temp.		Difference	Accuracy	Result
°F	°R	°F	°R	°F	%	Pass/Fail
0	460	0	460	0	0.0	Pass
68	528	66	526	2	0.4	Pass
100	560	98	558	2	0.4	Pass
223	683	223	683	0	0.0	Pass
248	708	249	709	1	-0.1	Pass
273	733	274	734	1	-0.1	Pass
300	760	300	760	0	0.0	Pass
400	860	400	860	0	0.0	Pass
500	960	500	960	0	0.0	Pass
600	1060	598	1058	2	0.2	Pass
700	1160	700	1160	0	0.0	Pass
800	1260	800	1260	0	0.0	Pass
900	1360	901	1361	1	-0.1	Pass
1000	1460	1001	1461	1	-0.1	Pass
1100	1560	1101	1561	1	-0.1	Pass
1200	1660	1201	1661	1	-0.1	Pass

Accuracy Requirements:

0-100°F = +/- 2°F
223-273°F = +/- 5.4°F
>300°F = 1.5% absolute (°R)

$$°R = °F + 460$$

$$\text{Accuracy} = \frac{\text{Reference Temp (°R)} - \text{Display Temp (°R)}}{\text{Reference Temp (°R)}} \times 100$$

Completed by: Stacy Cunningham

Alliance SOURCE TESTING

Calibration Data

Location: Eastman - Kingsport

Source: LCD

Project No.: 12-0209

NOZZLE CALIBRATIONS

Date	Run No.	Calibrated By: (initials)	Nozzle ID	Nozzle Diameter			Max Difference [1]	Average D
				D1	D2	D3		
				inches	inches	inches	inches	inches
12/10/12	Run 1	JDH	G-406	0.253	0.251	0.252	0.002	0.252
12/11/12	Run 2	JDH	G-405	0.258	0.255	0.256	0.003	0.256
12/11/12	Run 3	JDH	G-406	0.253	0.251	0.252	0.002	0.252

Note: The maximum acceptability criteria is 0.004 inches between any two diameter measurements. Nozzle calibrations are conducted prior to each test run.

PITOT TUBE INSPECTION

Date	Run No.	Inspected By: (initials)	Equipment ID	Any evidence of damage or mis-alignment?	Does this pitot tube meet the alignment criteria?	Calibration/ Repair required?
12/10/12	Run 1	JDH	PR-104-3	No	Yes	No
12/11/12	Run 2	JDH	P-104-0	No	Yes	No
12/11/12	Run 3	JDH	PR-104-3	No	Yes	No

Note: Each 'S'-Type pitot tube is constructed and maintained according to the alignment criteria outlined in U.S. EPA Rerference Test Method 2. According to Method 2, pitots constructed in this manner may be assigned a coefficient of 0.84. Damaged pitots are recalibrated and either repaired or replaced whenever the coefficient of 0.84 cannot be applied. Standard pitots are also constructed and maintained according with the criteria outlined in Method 2. Standard pitots are assigned a coefficient of 0.99.

STACK THERMOCOUPLE SENSOR CALIBRATION

Equipment ID	Reference Temperature		Indicated Temperature		Difference Temperature	Difference
	(°F)	(°R)	(°F)	(°R)	(°R)	%
PR-104-3	121.0	581.0	121.0	581.0	0.0	0.0
P-104-0	121.0	581.0	120.0	580.0	1.0	0.2

Note: Thermocouple sensors are checked during (or after) each field use with a NIST traceable reference thermometer at a temperature within 10% of the average absolute stack temperature. Test data is considered valid if the sensor and reference thermometer agree within 1.5%.

NOTES

CSL

QA/QC Reviewer

DE: JDH

TL: JDH

PRAXAIR

Praxair Distribution Mid-Atlantic
145 Shimersville Rd.
Bethlehem, PA 18015
Telephone: (610) 317-1608
Facsimile: (610) 758-8382

DocNumber: 000018156

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

NEXAIR GAS TECH LLC
3095 LEEMAN FERRY RD
HUNTSVILLE AL 358010

Praxair Order Number: 03657775
Customer P. O. Number: 811261
Customer Reference Number:

Fill Date: 6/7/2012
Part Number: EV NICDOXE103AS
Lot Number: 917215947
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	6/13/2015	NIST Traceable
Cylinder Number:	CC145015	Analytical Uncertainty:
10.21 %	CARBON DIOXIDE	± 1 %
9.92 %	OXYGEN	± 1 %
Balance	NITROGEN	

Certifcation Information: *Certification Date:* 6/13/2012 *Term:* 36 Months *Expiration Date:* 6/13/2015

This cylinder was certified according to the 1997 EPA Traceability Protocol, Document #EPA-600/R-97/121, using Procedure G1
Do Not Use this Standard if Pressure is less than 150 PSIG
PGVP ID#F12012

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1 . Component: CARBON DIOXIDE

Requested Concentration: 10 %
Certified Concentration: 10.21 %
Instrument Used: SIEMENS ULTRAMAT 5E SN: D2-412
Analytical Method: NON-DISPERSIVE INFRARED
Last Multipoint Calibration: 5/24/2012

First Analysis Data:					Date: 6/13/2012
Z: 0	R: 12.2	C: 10.22	Conc:	10.2	
R: 12.22	Z: 0	C: 10.22	Conc:	10.2	
Z: 0	C: 10.24	R: 12.22	Conc:	10.22	
UOM: %		Mean Test Assay:		10.207 %	

Reference Standard Type: GMIS
Ref. Std. Cylinder # : SGAL3547
Ref. Std. Conc: 12.19 %
Ref. Std. Traceable to SRM # : 2745
SRM Sample # : 9-C-34
SRM Cylinder # : CAL016129

Second Analysis Data:					Date:
Z: 0	R: 0	C: 0	Conc:	0	
R: 0	Z: 0	C: 0	Conc:	0	
Z: 0	C: 0	R: 0	Conc:	0	
UOM: %		Mean Test Assay:		0 %	

2 . Component: OXYGEN

Requested Concentration: 10 %
Certified Concentration: 9.92 %
Instrument Used: SIEMENS OXYMAT 5E S/N F1-111
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 5/31/2012

First Analysis Data:					Date: 6/13/2012
Z: 0	R: 22.44	C: 9.92	Conc:	9.896	
R: 22.44	Z: 0	C: 9.92	Conc:	9.896	
Z: 0	C: 9.98	R: 22.42	Conc:	9.956	
UOM: %		Mean Test Assay:		9.916 %	

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC13530
Ref. Std. Conc: 22.38 %
Ref. Std. Traceable to SRM # : 2659a
SRM Sample # : 71-D-27
SRM Cylinder # : CAL015750

Second Analysis Data:					Date:
Z: 0	R: 0	C: 0	Conc:	0	
R: 0	Z: 0	C: 0	Conc:	0	
Z: 0	C: 0	R: 0	Conc:	0	
UOM: %		Mean Test Assay:		0 %	

Analyzed by: Robin Morgan

Certified by: John Pribish

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information con tained herein exceed the fee established for providing such information.

PRAXAIR

Praxair Distribution Mid-Atlantic
145 Shimersville Rd.
Bethlehem, PA 18015
Telephone: (610) 317-1608
Facsimile: (610) 758-8382

DocNumber: 000010205

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

NEXAIR GAS TECH LLC
3095 LEEMAN FERRY RD
HUNTSVILLE AL 358010

Praxair Order Number: 02895375
Customer P. O. Number: 785982
Customer Reference Number:

Fill Date: 4/6/2011
Part Number: EV NICDOXE123AS
Lot Number: 917109665
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	4/12/2014	NIST Traceable Analytical Uncertainty:
Cylinder Number:	SA18998	
19.64 %	CARBON DIOXIDE	± 1 %
19.93 %	OXYGEN	± 1 %
Balance	NITROGEN	

Certifcation Information: *Certification Date:* 4/12/2011 *Term:* 36 Months *Expiration Date:* 4/12/2014

This cylinder was certified according to the 1997 EPA Traceability Protocol, Document #EPA-600/R-97/121, using Procedure G1

Do Not Use this Standard if Pressure is less than 150 PSIG

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1 . Component: CARBON DIOXIDE

Requested Concentration: 20 %
Certified Concentration: 19.64 %
Instrument Used: SIEMENS ULTRAMAT 5E SN: D2-412
Analytical Method: NON-DISPERSIVE INFRARED
Last Multipoint Calibration: 3/31/2011

First Analysis Data:						Date:	4/12/2011
Z:	0	R:	18.1	C:	19.64	Conc:	19.629
R:	18.1	Z:	0	C:	19.66	Conc:	19.649
Z:	0	C:	19.66	R:	18.1	Conc:	19.649
UOM:	%			Mean Test Assay:			19.642 %

Reference Standard Type: GMIS
Ref. Std. Cylinder # : SA18907
Ref. Std. Conc: 18.09 %
Ref. Std. Traceable to SRM # : 2745
SRM Sample # : 9-C-34
SRM Cylinder # : CAL016063

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0 %

2 . Component: OXYGEN

Requested Concentration: 20 %
Certified Concentration: 19.93 %
Instrument Used: SIEMENS OXYMAT 5E S/N F1-111
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 4/7/2011

First Analysis Data:						Date:	4/12/2011
Z:	0	R:	23.02	C:	20	Conc:	19.936
R:	23.02	Z:	0	C:	20	Conc:	19.936
Z:	0	C:	19.98	R:	23	Conc:	19.916
UOM:	%			Mean Test Assay:			19.93 %

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC14600
Ref. Std. Conc: 22.94%
Ref. Std. Traceable to SRM # : 2659a
SRM Sample # : 71-D-27
SRM Cylinder # : CAL015750

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0 %

Analyzed by: Robin Morgan

Certified by: 4/13/11
Michelle Kostik

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information con tained herein exceed the fee established for providing such information.

Alliance SOURCE TESTING

Method 3A Data

Location: Eastman - Kingsport
Date: 12/11/12
Source: LCD
Project No.: 12-0209

CO_2 Concentration Span, % 19.6
CO_2 Response Time 0.25
O_2 Concentration Span, % 19.9
O_2 Response Time 0.25

CO_2 CALIBRATION ACCURACY

Date	Gas Type	Cylinder No.	Actual Concentration, %	Analyzer Concentration, %
12/11/12	ZERO	--	0.0	0.0
Time	HIGH	SA18998	19.6	19.6
3:05 PM	MID	CC145015	10.2	10.2
			Required Accuracy, ± 2% of span	0.4%

O_2 CALIBRATION ACCURACY

Date	Gas Type	Cylinder No.	Actual Concentration, %	Analyzer Concentration, %
12/11/12	ZERO	--	0.0	0.0
Time	HIGH	SA18998	19.9	19.9
3:05 PM	MID	CC145015	9.9	9.9
			Required Accuracy, ± 2% of span	0.4%

NOTES	

CSL
QA/QC Reviewer

DE: JDH
TL: JDH

v2011.0

Alliance SOURCE TESTING

Method 3A Data

Location: Eastman - Kingsport
Date: 12/11/12

Source: LCD
Project No.: 12-0209

CO_2 Concentration Span, % 19.6
CO_2 Response Time 0.25

O_2 Concentration Span, % 19.9
O_2 Response Time 0.25

CO_2 CALIBRATION ACCURACY

Date	Gas Type	Cylinder No.	Actual Concentration, %	Analyzer Concentration, %
12/11/12	ZERO	--	0.0	0.0
Time	HIGH	SA18998	19.6	19.6
7:40 PM	MID	CC145015	10.2	10.2
			Required Accuracy, ± 2% of span	0.4%

O_2 CALIBRATION ACCURACY

Date	Gas Type	Cylinder No.	Actual Concentration, %	Analyzer Concentration, %
12/11/12	ZERO	--	0.0	0.0
Time	HIGH	SA18998	19.9	19.9
7:40 PM	MID	CC145015	9.9	9.9
			Required Accuracy, ± 2% of span	0.4%

NOTES	

CSL
QA/QC Reviewer

DE: JDH
TL: JDH

v2011.0

Alliance SOURCE TESTING

Method 3A Data

Location: Eastman - Kingsport
Date: 12/11/12
Source: LCD
Project No.: 12-0209

CO_2 Concentration Span, % 19.6
CO_2 Response Time 0.25
O_2 Concentration Span, % 19.9
O_2 Response Time 0.25

CO_2 CALIBRATION ACCURACY

Date	Gas Type	Cylinder No.	Actual Concentration, %	Analyzer Concentration, %
12/11/12	ZERO	--	0.0	0.0
Time	HIGH	SA18998	19.6	19.6
11:35 PM	MID	CC145015	10.2	10.2
			Required Accuracy, ± 2% of span	0.4%

O_2 CALIBRATION ACCURACY

Date	Gas Type	Cylinder No.	Actual Concentration, %	Analyzer Concentration, %
12/11/12	ZERO	--	0.0	0.0
Time	HIGH	SA18998	19.9	19.9
11:35 PM	MID	CC145015	9.9	9.9
			Required Accuracy, ± 2% of span	0.4%

NOTES	

CSL
QA/QC Reviewer

DE: JDH
TL: JDH

This is the last page of the report

APPENDIX I-C

METALS DATA PACKAGE

Company: EASTMAN CHEMICAL COMPANY
Project name: 12-0311
Location: LCD
Testing personnel: Tim Hensley, Frank Fillers

	1	2	3	Average
Test Date	12/11/12	12/11/12	12/11/12	--
Start Time	12:10	16:12	20:41	--
Finish Time	14:31	18:22	22:57	--
Net Test Time, minutes	120	120	120	120
Vol. Sampled at STP, cu. ft.	82.06	77.52	78.21	79.27
Stack Gas Temperature, F	123.2	125.3	125.8	124.8
Moisture Content, % by volume	12.60	12.72	12.79	12.70
CO2 Percent, dry	6.3	6.4	6.4	6.4
O2 Percent, dry	13.3	13.1	13.0	13.1
CO Percent, dry	0.0	0.0	0.0	0.0
N2 Percent, dry	80.4	80.5	80.6	80.5
Excess Air, Percent	167.8	160.7	157.0	161.8
Stack Velocity, ft/min	2678	2551	2575	2601
Gas Flow Rate, acfm	25767	24537	24771	25025
Gas Flow Rate, scfm	22,254	21,114	21,296	21,555
Gas Flow Rate, dscfm	19451	18428	18573	18817
Particulate Concentration, gr/dscf	0.0000	0.0000	0.0000	0.0000
Part. Conc. at 7% O2, gr/dscf	0.0000	0.0000	0.0000	0.0000
Particulate Mass Rate, lb/MMBtu	0.0000	0.0000	0.0000	0.0000
Particulate Mass Rate, lb/hr	0.00	0.00	0.00	0.00
Particulate Mass Rate, ton/yr	0.00	0.00	0.00	0.00
Percent Isokinetic	99.2	98.9	99.0	NA

Run # 1

Proj # 12-0311
Location LCD

Initial conditions:

Initial impingers volume	200	ml
Initial impingers mass	400.0	g

Test parameters:

Nozzle diameter	0.25	in.
Pitot tube coefficient	0.84	--
Y-factor	0.993	--
Barometric pressure	28.56	in. Hg
Stack static pressure	-0.26	in. H_2O g.

Start time 12:10
Date 12/11/12

Point #	Gas Volume cu ft	DeltaP in. H_2O	Delta-H in. H_2O req'd	Delta-H in. H_2O actual	Stack Temp. F		Meter Outlet F	Sample Time min
init.	187.639							
1	194.840	0.56	1.73	1.73	124		53	10.0
2	202.250	0.57	1.76	1.76	123		56	10.0
3	209.320	0.53	1.63	1.63	123		58	10.0
4	216.370	0.53	1.63	1.63	122		61	10.0
5	223.550	0.54	1.66	1.66	123		62	10.0
6	230.234	0.46	1.42	1.42	125		63	10.0
7	237.150	0.51	1.57	1.57	122		61	10.0
8	244.370	0.56	1.73	1.73	122		62	10.0
9	251.690	0.57	1.76	1.76	123		62	10.0
10	258.850	0.53	1.63	1.63	122		63	10.0
11	265.850	0.53	1.63	1.63	124		64	10.0
12	272.732	0.49	1.51	1.51	125		65	10.0
13			0.00					
14			0.00					
15			0.00					
16			0.00					
17			0.00					
18			0.00					
19			0.00					
20			0.00					
21			0.00					
22			0.00					
23			0.00					
24			0.00					
25			0.00					
26			0.00					
27			0.00					
28			0.00					
29			0.00					
30			0.00					
31			0.00					
32			0.00					

Finish time 14:31

Final conditions:

Final impingers volume	426	ml
Final impingers mass	425.2	g
Particulate mass		g
Volume of dry gas sampled	85.077	cu. ft.
Percent CO2	6.3	%
Percent O2	13.3	%
Percent CO	0.0	%
Sample time	120	min.

Initial conditions:

Initial impingers volume	200	ml
Initial impingers mass	400.0	g

Test parameters:

Nozzle diameter	0.25	in.
Pitot tube coefficient	0.84	--
Y-factor	0.993	--
Barometric pressure	28.56	in. Hg
Stack static pressure	-0.26	in. H_2O g.

Start time	16:12
Date	12/11/12

Point #	Gas Volume cu ft	DeltaP in. H_2O	Delta-H in. H_2O req'd	actual	Stack Temp. F		Meter Outlet F	Sample Time min
init.	274.654							
1	281.260	0.47	1.45	1.45	125		57	10.0
2	288.400	0.55	1.70	1.70	124		59	10.0
3	295.420	0.52	1.60	1.60	124		61	10.0
4	302.030	0.46	1.42	1.42	125		63	10.0
5	308.770	0.47	1.45	1.45	127		64	10.0
6	315.033	0.43	1.33	1.33	126		65	10.0
7	321.970	0.51	1.57	1.57	127		64	10.0
8	328.840	0.51	1.57	1.57	127		65	10.0
9	335.580	0.47	1.45	1.45	127		67	10.0
10	342.670	0.52	1.60	1.60	125		67	10.0
11	349.480	0.48	1.48	1.48	124		68	10.0
12	355.583	0.38	1.17	1.17	123		69	10.0
13			0.00					
14			0.00					
15			0.00					
16			0.00					
17			0.00					
18			0.00					
19			0.00					
20			0.00					
21			0.00					
22			0.00					
23			0.00					
24			0.00					
25			0.00					
26			0.00					
27			0.00					
28			0.00					
29			0.00					
30			0.00					
31			0.00					
32			0.00					

Finish time	18:22

Final conditions:

Final impingers volume	420	ml
Final impingers mass	420.0	g
Particulate mass		g
Volume of dry gas sampled	80.902	cu. ft.
Percent CO2	6.4	%
Percent O2	13.1	%
Percent CO	0.0	%
Sample time	120	min.

Initial conditions:

Initial impinger volume	200	ml
Initial impingers mass	400.0	g

Test parameters:

Nozzle diameter	0.25	in.
Pitot tube coefficient	0.84	--
Y-factor	0.9977	--
Barometric pressure	28.56	in. Hg
Stack static pressure	-0.26	in. H_2O g.

Start time	20:41
Date	12/11/12

Point #	Gas Volume cu ft	DeltaP in. H_2O	Delta-H in. H_2O req'd	actual	Stack Temp. F		Meter Outlet F	Sample Time min
init.	355.902							
1	362.784	0.53	1.63	1.63	126		57	10.0
2	369.820	0.53	1.63	1.63	126		59	10.0
3	376.490	0.48	1.48	1.48	125		62	10.0
4	383.570	0.54	1.66	1.66	126		63	10.0
5	390.560	0.52	1.60	1.60	127		64	10.0
6	396.836	0.42	1.29	1.29	126		65	10.0
7	403.450	0.47	1.45	1.45	126		63	10.0
8	410.370	0.51	1.57	1.57	126		63	10.0
9	417.310	0.52	1.60	1.60	126		63	10.0
10	423.770	0.44	1.36	1.36	126		63	10.0
11	430.320	0.47	1.45	1.45	124		63	10.0
12	436.879	0.44	1.36	1.36	126		63	10.0
13			0.00					
14			0.00					
15			0.00					
16			0.00					
17			0.00					
18			0.00					
19			0.00					
20			0.00					
21			0.00					
22			0.00					
23			0.00					
24			0.00					
25			0.00					
26			0.00					
27			0.00					
28			0.00					
29			0.00					
30			0.00					
31			0.00					
32			0.00					

Finish time	22:57

Final conditions:

Final impingers Volume	426	ml
Final impingers mass	417.6	g
Particulate mass		g
Volume of dry gas sampled	80.963	cu. ft.
Percent CO2	6.4	%
Percent O2	13.0	%
Percent CO	0.0	%
Sample time	120	min.

Input for instantaneous isokinetic and delta-H calculations and constants for tests

Assumed values:

Moisture	13.50	%
Percent CO2	6.00	%
Percent O2	13.00	%
Percent CO	0.00	%
delta-H-@	1.8640	in. H2O
avg meter temp, assumed	65.00	deg F
assumed stack temp.	125.00	deg F

Actual values

F-sub-C for fuel		1800 for bituminous coal
Stack area	9.62	ft^2
Allowable particulate		lb/MMBtu

RUN # 1 Project # 12-0311
12/11/12

Delta p	Sqrt of Delta P		delta H (in. H2O)			Meter Outlet Temperature (deg F)		Stack Temperature (deg F)
0.560	0.748		1.73			53		124
0.570	0.755		1.76			56		123
0.530	0.728		1.63			58		123
0.530	0.728		1.63			61		122
0.540	0.735		1.66			62		123
0.460	0.678		1.42			63		125
0.510	0.714		1.57			61		122
0.560	0.748		1.73			62		122
0.570	0.755		1.76			62		123
0.530	0.728		1.63			63		122
0.530	0.728		1.63			64		124
0.490	0.700		1.51			65		125
Average	0.729		1.638			60.8		123.2

RUN # 2 Project # 12-0311
12/11/12

Delta p	Sqrt of Delta P		delta H (in. H2O)			Meter Outlet Temperature (deg F)		Stack Temperature (deg F)
0.470	0.686		1.45			57		125
0.550	0.742		1.70			59		124
0.520	0.721		1.60			61		124
0.460	0.678		1.42			63		125
0.470	0.686		1.45			64		127
0.430	0.656		1.33			65		126
0.510	0.714		1.57			64		127
0.510	0.714		1.57			65		127
0.470	0.686		1.45			67		127
0.520	0.721		1.60			67		125
0.480	0.693		1.48			68		124
0.380	0.616		1.17			69		123
Average	0.693		1.483			64.1		125.333

RUN # 3 Project # 12-0311
12/11/12

Delta p	Sqrt of Delta P		delta H (in. H2O)			Meter Outlet Temperature (deg F)		Stack Temperature (deg F)
0.530	0.728		1.63			57		126
0.530	0.728		1.63			59		126
0.480	0.693		1.48			62		125
0.540	0.735		1.66			63		126
0.520	0.721		1.60			64		127
0.420	0.648		1.29			65		126
0.470	0.686		1.45			63		126
0.510	0.714		1.57			63		126
0.520	0.721		1.60			63		126
0.440	0.663		1.36			63		126
0.470	0.686		1.45			63		124
0.440	0.663		1.36			63		126
Average	0.699		1.507			62.3		125.833

RUN # 1 Project Number: 12-0311
12/11/12

Impingers Initial mass, Wi	400	g
Impingers Final mass, Wf	425.20	g
Initial volume of water (ml), Vi	200	ml
Final volume of water (ml), Vf	426	ml
Initial volume in dry gas meter	187.64	cubic feet
Volume measured by dry gas meter, Vm	85.08	cubic feet
Delta H	1.64	in. H2O
Y-factor, gamma	0.993	--
Barometric Pressure, Pb	28.56	in. Hg
Temperature of the meter box, Tm	60.8	F
Percent CO2, %CO2	6.3	%
Percent O2, %O2	13.3	%
Percent CO, %CO	0.0	%
Percent N2, %N2	80.4	%
Average Sqrt Delta P, (DeltaP)^0.5	0.729	in^.5 water
Average Stack Temperature, Ts	123.2	F
Stack static pressure, Pstat	-0.3	in. water gage
Pressure in the stack, Ps	28.54	in Hg
Stack effective diameter	42.0	in.
Stack area, As	9.62	ft^2
Nozzle Diameter	0.250	in.
Nozzle Area, An	0.000341	ft^2
Sample Time, Time	120.0	minutes
Particulate Mass, Mn		grams
Pitot Tube Coefficient, Cp	0.840	
F-sub-C for particulates, Fc	1800	

INPUT PARAMETERS

RUN # 2 Project Number: 12-0311
12/11/12

Impingers Initial mass, Wi	400.00	g
Impingers Final mass, Wf	420.00	g
Initial volume of water (ml), Vi	200.00	ml
Final volume of water (ml), Vf	420.00	ml
Initial volume in dry gas meter	274.65	cubic feet
Volume measured by dry gas meter, Vm	80.90	cubic feet
Delta H	1.48	in. H2O
Y-factor, gamma	0.993	--
Barometric Pressure, Pb	28.56	in. Hg
Temperature of the meter box, Tm	64.1	F
Percent CO2, %CO2	6.4	%
Percent O2, %O2	13.1	%
Percent CO, %CO	0.0	%
Percent N2, %N2	80.5	%
Average Sqrt Delta P, (DeltaP)^0.5	0.693	in^.5 water
Average Stack Temperature, Ts	125.3	F
Stack static pressure, Pstat	-0.260	in. water gage
Pressure in the stack, Ps	28.54	in Hg
Stack effective diameter	42.0	in.
Stack area, As	9.62	ft^2
Nozzle Diameter	0.250	in.
Nozzle Area, An	0.000341	ft^2
Sample Time, Time	120.0	minutes
Particulate Mass, Mn		grams
Pitot Tube Coefficient, Cp	0.840	
F-sub-C for particulates, Fc	1800	

INPUT PARAMETERS

RUN # 3 Project Number: 12-0311
12/11/12

Impingers Initial mass, Wi	400	g
Impingers Final mass, Wf	417.6	g
Initial volume of water (ml), Vi	200.0	ml
Final volume of water (ml), Vf	426.0	ml
Initial volume in dry gas meter	355.902	cubic feet
Volume measured by dry gas meter, Vm	80.96	cubic feet
Delta H	1.51	in. H2O
Y-factor, gamma	0.998	--
Barometric Pressure, Pb	28.56	in. Hg
Temperature of the meter box, Tm	62.3	F
Percent CO2, %CO2	6.4	%
Percent O2, %O2	13.0	%
Percent CO, %CO	0.0	%
Percent N2, %N2	80.6	%
Average Sqrt Delta P, (DeltaP)^0.5	0.699	in^.5 water
Average Stack Temperature, Ts	125.8	F
Stack static pressure, Pstat	-0.260	in. water gage
Pressure in the stack, Ps	28.54	in Hg
Stack effective diameter	42.0	in.
Stack area, As	9.62	ft^2
Nozzle Diameter	0.250	in.
Nozzle Area, An	0.000341	ft^2
Sample Time, Time	120.0	minutes
Particulate Mass, Mn		grams
Pitot Tube Coefficient, Cp	0.840	
F-sub-C for particulates, Fc	1800	

Test Identification Label

RUN # 1 Project Number 12-0311

Stack Sampling Results 12/11/12

Volume of Water Collected

Vwstd = (Wf- Wi) * 0.04715 + (Vf - Vi) * 0.04707

Vwstd = 11.83 std. cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/(Tm+460)

Vmstd = 82.06 cubic feet

Moisture Content

Moisture Content from Impingers
Bwi = Vwstd/(Vmstd + Vwstd)
Bwi = 0.1260

Moisture Content at Saturation
Bwsatn= (10^(7.96681-(1668.21/(228 +(Ts-32)/1.8))/760*29.921)/
(Pb + Pstat/13.6)
Bwsatn= 0.1317

Moisture Content used in calculations
Bwo= 0.1260

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.540

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(Bwo)

Ms = 28.086

Velocity of Stack Gas

Vs = 85.49*Cp*(DeltaP)^.5 ((Ts+460) /Ps/Ms)^.5*60

Vs = 2678 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 25,767 CFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 22,254 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 19,451 DSCFM

Vsstd = Qstd/As

Vsstd = 2022 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.992

Particulate Mass Rate

Cs = (15.43)(Mn)/Vmstd E = Cs * Fc * 100 / CO2

Cs = 0.0000 gr/dscf 0.0000 lb/MMBtu

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00 lbs/hr 0.0 ton/yr

Particulate Concentration @ 7 % O2

Csc = Cs (14)/(21-O2)

Csc = 0.0000 gr/dscf

Excess air

% EA = 100 * (O2 - 0.5 * CO) / (0.264 * N2 - O2 - 0.5 * CO)

% EA = 167.81 %

Test Identification Label

RUN # 2 Project Number 12-0311

Stack Sampling Results 12/11/12

Volume of Water Collected

Vwstd = (Wf- Wi) * 0.04715 + (Vf - Vi) * 0.04707

Vwstd = 11.30 std. cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/(Tm+460)

Vmstd = 77.52 cubic feet

Moisture Content

Moisture Content from Impingers
Bwi = Vwstd/(Vmstd + Vwstd)
Bwi = 0.1272

Moisture Content at Saturation
Bwsatn= (10^(7.96681-(1668.21/(228 +(Ts-32)/1.8))/760*29.921)/
(Pb + Pstat/13.6)
Bwsatn= 0.1398

Moisture Content used in calculations
Bwo= 0.1272

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.55

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(Bwo)

Ms = 28.08

Velocity of Stack Gas

Vs = 85.49*Cp*(DeltaP)^.5 ((Ts+460)/Ps/Ms)^.5*60

Vs = 2551 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 24,537 CFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 21,114 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 18,428 DSCFM

Vsstd = Qstd/As

Vsstd = 1916 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.989

Particulate Mass Rate

Cs = (15.43)(Mn)/Vmstd E = C * Fc * 100 / CO2

Cs = 0.0000 gr/dscf 0.0000 lb/MMBtu

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00 lbs/hr 0.0 ton/yr

Particulate Concentration @ 7 % O2

Csc = Cs (14)/(21-O2)

Csc = 0.0000 gr/dscf

Excess air

% EA = 100 * (O2 - 0.5 * CO) / (0.264 * N2 - O2 - 0.5 * CO)

% EA = 160.70 %

Test Identification Label

RUN # 3 Project Number 12-0311

Stack Sampling Results 12/11/12

Volume of Water Collected

Vwstd = (Wf- Wi) * 0.04715 + (Vf - Vi) * 0.04707

Vwstd = 11.47 std. cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/(Tm+460)

Vmstd = 78.21 cubic feet

Moisture Content

Moisture Content from Impingers
Bwi = Vwstd/(Vmstd + Vwstd)
Bwi = 0.1279

Moisture Content at Saturation
Bwsatn= (10^(7.96681-(1668.21/(228 +(Ts-32)/1.8))/760*29.921)/
(Pb + Pstat/13.6)
Bwsatn= 0.1417

Moisture Content used in calculations
Bwo= 0.1279

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.54

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(Bwo)

Ms = 28.07

Velocity of Stack Gas

Vs = 85.49*Cp*(DeltaP)^.5 ((Ts+460)/Ps/Ms)^.5*60

Vs = 2575 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 24,771 CFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 21,296 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 18,573 DSCFM

Vsstd = Qstd/As

Vsstd = 1931 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.990

Particulate Mass Rate

Cs = (15.43)(Mn)/Vmstd E = C * Fc * 100 / CO2

Cs = 0.0000 gr/dscf 0.0000 lb/MMBtu

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00 lbs/hr 0.0 ton/yr

Particulate Concentration @ 7 % O2

Csc = Cs (14)/(21-O2)

Csc = 0.0000 gr/dscf

Excess air

% EA = 100 * (O2 - 0.5 * CO) / (0.264 * N2 - O2 - 0.5 * CO)

% EA = 157.04 %

Results of Isokinetic Sampling
Multimetals Sampling Train Project No. 12-0311

Run 1 Stack Concentrations Metal	Cs ug/dscm	Cs ug/dscm @ 7% O2	Cs gr/dscf	Cs gr/dscf @ 7% O2
Antimony (Sb)				
Arsenic (As)				
Barium (Ba)				
Beryllium (Be)				
Cadmium (Cd)				
Chromium (Cr)	21.740457	39.528104	9.60928E-06	1.74714E-05
Lead (Pb)	29.219657	53.126649	1.29151E-05	2.3482E-05
Mercury (Hg)				
Nickel (Ni)				
Selenium (Se)				
Silver (Ag)				
Thallium (Tl)				

Run 2 Stack Concentrations Metal	Cs ug/dscm	Cs ug/dscm @ 7% O2	Cs gr/dscf	Cs gr/dscf @ 7% O2
Antimony (Sb)				
Arsenic (As)				
Barium (Ba)				
Beryllium (Be)				
Cadmium (Cd)				
Chromium (Cr)	22.791026	40.389159	1.00736E-05	1.7852E-05
Lead (Pb)	29.92945	53.039531	1.32288E-05	2.34435E-05
Mercury (Hg)				
Nickel (Ni)				
Selenium (Se)				
Silver (Ag)				
Thallium (Tl)				

Run 3 Stack Concentrations Metal	Cs ug/dscm	Cs ug/dscm @ 7% O2	Cs gr/dscf	Cs gr/dscf @ 7% O2
Antimony (Sb)				
Arsenic (As)				
Barium (Ba)				
Beryllium (Be)				
Cadmium (Cd)				
Chromium (Cr)	28.626288	50.096004	1.26528E-05	2.21424E-05
Lead (Pb)	34.125787	59.720126	1.50836E-05	2.63963E-05
Mercury (Hg)				
Nickel (Ni)				
Selenium (Se)				
Silver (Ag)				
Thallium (Tl)				

Results of Isokinetic Sampling

Multimetals Sampling Train Project No. 12-0311

Run 1		
Emission Rates	E lb/hr	E g/s
Metal		
Antimony (Sb)		
Arsenic (As)		
Barium (Ba)		
Beryllium (Be)		
Cadmium (Cd)		
Chromium (Cr)	0.00158392	0.00019957
Lead (Pb)	0.00212882	0.00026823
Mercury (Hg)		
Nickel (Ni)		
Selenium (Se)		
Silver (Ag)		
Thallium (Tl)		

Run 2		
Emission Rates	E lb/hr	E g/s
Metal		
Antimony (Sb)		
Arsenic (As)		
Barium (Ba)		
Beryllium (Be)		
Cadmium (Cd)		
Chromium (Cr)	0.00157312	0.00019821
Lead (Pb)	0.00206584	0.0002603
Mercury (Hg)		
Nickel (Ni)		
Selenium (Se)		
Silver (Ag)		
Thallium (Tl)		

Run 3		
Emission Rates	E lb/hr	E g/s
Metal		
Antimony (Sb)		
Arsenic (As)		
Barium (Ba)		
Beryllium (Be)		
Cadmium (Cd)		
Chromium (Cr)	0.00199147	0.00025093
Lead (Pb)	0.00237406	0.00029913
Mercury (Hg)		
Nickel (Ni)		
Selenium (Se)		
Silver (Ag)		
Thallium (Tl)		

Results of Isokinetic Sampling
Multimetals Sampling Train Project No. 12-0311

Average Stack Concentrations Metal	Cs ug/dscm	Cs ug/dscm @ 7% O2	Cs gr/dscf	Cs gr/dscf @ 7% O2
Antimony (Sb)				
Arsenic (As)				
Barium (Ba)				
Beryllium (Be)				
Cadmium (Cd)				
Chromium (Cr)	24.385924	43.337756	1.07786E-05	1.91553E-05
Lead (Pb)	31.091631	55.295435	1.37425E-05	2.44406E-05
Mercury (Hg)				
Nickel (Ni)				
Selenium (Se)				
Silver (Ag)				
Thallium (Tl)				

Average Emission Rates Metal	E lb/hr	E g/s
Antimony (Sb)		
Arsenic (As)		
Barium (Ba)		
Beryllium (Be)		
Cadmium (Cd)		
Chromium (Cr)	0.0017162	0.0002162
Lead (Pb)	0.0021896	0.0002759
Mercury (Hg)		
Nickel (Ni)		
Selenium (Se)		
Silver (Ag)		
Thallium (Tl)		

Results of Isokinetic Sampling
Multimetals Sampling Train Project No. 12-0311

Run 1								
Analytical Results	Amounts (ug)							
	Fraction							
Metal	1A	2A	1B	2B	3A	3B	3C	Totals
Antimony (Sb)								
Arsenic (As)								
Barium (Ba)								
Beryllium (Be)								
Cadmium (Cd)								
Chromium (Cr)	49.9	0.62						50.52
Lead (Pb)	67.5	0.40						67.9
Mercury (Hg)								
Nickel (Ni)								
Selenium (Se)								
Silver (Ag)								
Thallium (Tl)								

Run 2								
Analytical Results	Amounts (ug)							
	Fraction							
Metal	1A	2A	1B	2B	3A	3B	3C	Totals
Antimony (Sb)								
Arsenic (As)								
Barium (Ba)								
Beryllium (Be)								
Cadmium (Cd)								
Chromium (Cr)	49.3	0.73						50.03
Lead (Pb)	65.4	0.30						65.7
Mercury (Hg)								
Nickel (Ni)								
Selenium (Se)								
Silver (Ag)								
Thallium (Tl)								

Run 3								
Analytical Results	Amounts (ug)							
	Fraction							
Metal	1A	2A	1B	2B	3A	3B	3C	Totals
Antimony (Sb)								
Arsenic (As)								
Barium (Ba)								
Beryllium (Be)								
Cadmium (Cd)								
Chromium (Cr)	62.0	1.4						63.4
Lead (Pb)	75.3	0.28						75.58
Mercury (Hg)								
Nickel (Ni)								
Selenium (Se)								
Silver (Ag)								
Thallium (Tl)								

Results of Isokinetic Sampling
Multimetals Sampling Train Project No. 12-0311

Selected Sampling Parameters			
Run	1	2	3
Volume of Gas Metered, Standard Conditions, Vmstd			
dscf	82.063	77.521	78.213
dscm	2.3238	2.1952	2.2147
Oxygen concentration, %vol dry	13.3	13.1	13
Stack gas flow			
dcsfm	19,451	18,428	18,573
dscmm	551	522	526

Results of Isokinetic Sampling
Multimetals Sampling Train Project No. 12-0311

Field Blank

Analytical Results	Amounts (ug) Fraction							
Metal	1A	2A	1B	2B	3A	3B	3C	Totals
Antimony (Sb)								
Arsenic (As)								
Barium (Ba)								
Beryllium (Be)								
Cadmium (Cd)								
Chromium (Cr)	1.0	0						1
Lead (Pb)	0	0						
Mercury (Hg)								
Nickel (Ni)								
Selenium (Se)								
Silver (Ag)								
Thallium (Tl)								

Reagent Blanks

Analytical Results	Amounts (ug) Blank Fractions							
Metal	1A	2A	1B	2B	3A	3B	3C	Totals
Antimony (Sb)								
Arsenic (As)								
Barium (Ba)								
Beryllium (Be)								
Cadmium (Cd)								
Chromium (Cr)	0.94	0						0.94
Lead (Pb)	0	0						
Mercury (Hg)								
Nickel (Ni)								
Selenium (Se)								
Silver (Ag)								
Thallium (Tl)								

FIELD DATA (ISOKINETIC SAMPLING)

Project # 12.0311 Run ID 1

Date 12.11.12 Type Test Metals

Building Number 248 Sampling Location LCD

Operators TH, FF

SOURCE INFORMATION

Assumed Stack Temp. 125 °F Assumed Moisture 13.5 %

Assumed Meter Temp. 65 °F Static Pressure -.26 in. H_2O

Barometric Pressure 28.56 in. Hg Stack Cross Section 9.62 ft^2

Ambient Temp. 40 °F Number of Points 12

Total Sample Time 120 Min.

Meter Box # 5222 Meter Delta H ~~1.8006~~ 1.8640 TH 12.11.12 Meter Y Factor ~~.9977~~ .9930 TH 12.11.12

Probe and Pitot # P.4.B Pitot Factor ✓ 0.84 ____ 0.99

Nozzle Diameter .250 in.

Thermocouples: TC 170 TC 171 TC ____

TC ____ LI ~~40~~ 22 TH 12.11.12 HB 16

LAB DATA

Sample Box Number M1 Filter Number M14 Orsat Can Number N/A

Impinger Initial 200 mL Impinger Final 426 mL

Silica Gel Initial 400 g Silica Gel Final 425.2 g

Sampling train run by: TH
Field data checked by: JLK
Data entered into spreadsheet by: TH
Data entry checked by: JLK

Eastman Chemical Company

Environmental Services Laboratory

Field Data (Isokinetic Sampling)

Date 12.11.12 Project Id 12.0311 Operators TH, FF

Port Change Time	Point	Time (min)	187.639 Gas volume (ft^3)	ΔP (In. H_2O)	ΔH (In. H_2O)	Stack Temp (°F)	Probe Temp (°F)	Oven Temp (°F)	Exit Temp (°F)	Meter Temp (°F)	Pump Vacuum (In. Hg)	Leak Check
12:10	1	10	194.84	.56	1.73	124	255	253	46	53	2	Pre Leak Check
	2	10	202.25	.57	1.76	123	255	255	46	56	2	@> 15 in. Hg = 0.000
	3	10	209.32	.53	1.63	123	254	255	54	58	2	Pitot Leak Check @ >5 – in H_2O
	4	10	216.37	.53	1.63	122	254	250	55	61	2	#2 = 0.00
	5	10	223.55	.54	1.66	123	255	250	53	62	2	#4 = 0.00
13:10	6	10	230.234	.46	1.42	125	255	250	54	63	2	#1 Post Ck DGM 230.234 cf
												#1 Lk Ck Post 0.000 @ 5 in. Hg
13:25	1	10	237.15	.51	1.57	122	255	252	46	61	2	#2 Lk Ck Pre 0.000 @ 5 in. Hg
STOP 13:45	2	10	244.37	.56	1.73	122	255	248	45	62	2	#2 Pre Ck DGM 230.250 cf
START 13:51	3	10	251.69	.57	1.76	123	255	245	43	62	2	1-2 Total Ck DGM 0.016 cf
	4	10	258.85	.53	1.63	122	255	247	44	63	2	#2 Post Ck DGM _____ cf
	5	10	265.85	.53	1.63	124	256	252	44	64	2	#2 Lk Ck Post _____ @ _____ in. Hg
14:31	6	10	272.732	.49	1.51	125	256	254	46	65	2	#3 Lk Ck Pre _____ @ _____ in. Hg
												#3 Pre Ck DGM _____ cf
												2-3 Total Ck DGM _____ cf
												#3 Post Ck DGM _____ cf
												#3 Lk Ck Post _____ @ _____ in. Hg
												#4 Lk Ck Pre _____ @ _____ in. Hg
												#4 Pre Ck DGM _____ cf
												3-4 Total Ck DGM _____ cf
												#4 Post Ck DGM _____ cf
												#4 Lk Ck Post _____ @ _____ in. Hg
												#5 Lk Ck Pre _____ @ _____ in. Hg
												#5 Pre Ck DGM _____ cf
												4-5 Total Ck DGM _____ cf
												Post Leak Check
												0.000 @ 6 in. Hg
												Pitot Leak Check @ >5 in. H_2O
												#2 = 0.00
												#4 = 0.00

FIELD DATA (ISOKINETIC SAMPLING)

Project # 12.0311 Run ID 2

Date 12.11.12 Type Test Metals

Building Number 248 Sampling Location LCD

Operators TH, FF

SOURCE INFORMATION

Assumed Stack Temp. 125 °F Assumed Moisture 13.5 %

Assumed Meter Temp. 65 °F Static Pressure -.26 in. H_2O

Barometric Pressure 28.56 in. Hg Stack Cross Section 9.62 ft^2

Ambient Temp. 45 °F Number of Points 12

Total Sample Time 120 Min.

Meter Box # 5222 Meter Delta H 1.8640 Meter Y Factor .9930

Probe and Pitot # P-4-C Pitot Factor ✓ 0.84 ____ 0.99

Nozzle Diameter .250 in.

Thermocouples: TC ~~170~~ TH 12.13.12 309 TC ~~171~~ TH 12.13.12 312 TC ____

TC ____ LI 22 HB 16

LAB DATA

Sample Box Number M2 Filter Number M17 Orsat Can Number N/A

Impinger Initial 200 mL Impinger Final 420 mL

Silica Gel Initial 400 g Silica Gel Final 420 g

Sampling train run by: TH
Field data checked by: JLK
Data entered into spreadsheet by: TH
Data entry checked by: JLK

Eastman Chemical Company

Environmental Services Laboratory

Field Data (Isokinetic Sampling)

Date 12.11.12 Project Id 12.0311 Operators TH, FF

Port Change Time	Point	Time (min)	Gas volume (ft³) 274.654	ΔP (In. H_2O)	ΔH (In. H_2O)	Stack Temp (°F)	Probe Temp (°F)	Oven Temp (°F)	Exit Temp (°F)	Meter Temp (°F)	Pump Vacuum (In. Hg)	Leak Check
16:12	1	10	281.26	.47	1.45	125	255	252	37	57	2	Pre Leak Check
	2	10	288.40	.55	1.70	124	255	252	37	59	2	@> 15 in. Hg = 0.000
	3	10	295.42	.52	1.60	124	255	249	40	61	2	Pitot Leak Check @ >5 – in H_2O
	4	10	302.03	.46	1.42	125	254	250	44	63	2	#2 = 0.00
	5	10	308.77	.47	1.45	127	255	251	44	64	2	#4 = 0.00
17:12	6	10	315.033	.43	1.33	126	255	247	44	65	2	#1 Post Ck DGM 315.033 cf
												#1 Lk Ck Post 0.000 @ 5 in. Hg
17:22	1	10	321.97	.51	1.57	127	255	248	40	64	2	#2 Lk Ck Pre 0.000 @ 5 in. Hg
	2	10	328.84	.51	1.57	127	255	252	42	65	2	#2 Pre Ck DGM 315.060 cf
	3	10	335.58	.47	1.45	127	255	251	46	67	2	1-2 Total Ck DGM 0.027 cf
	4	10	342.67	.52	1.60	125	254	252	47	67	2	#2 Post Ck DGM _____ cf
	5	10	349.48	.48	1.48	124	255	254	51	68	2	#2 Lk Ck Post _____ @ _____ in. Hg
18:22	6	10	355.583	.38	1.17	123	255	251	52	69	2	#3 Lk Ck Pre _____ @ _____ in. Hg
												#3 Pre Ck DGM _____ cf
												2-3 Total Ck DGM _____ cf
												#3 Post Ck DGM _____ cf
												#3 Lk Ck Post _____ @ _____ in. Hg
												#4 Lk Ck Pre _____ @ _____ in. Hg
												#4 Pre Ck DGM _____ cf
												3-4 Total Ck DGM _____ cf
												#4 Post Ck DGM _____ cf
												#4 Lk Ck Post _____ @ _____ in. Hg
												#5 Lk Ck Pre _____ @ _____ in. Hg
												#5 Pre Ck DGM _____ cf
												4-5 Total Ck DGM _____ cf
												Post Leak Check
												0.000 @ 5 in. Hg
												Pitot Leak Check @ >5 in. H_2O
												#2 = 0.00
												#4 = 0.00

FIELD DATA (ISOKINETIC SAMPLING)

Project # 12.0311 Run ID 3

Date 12.11.12 Type Test Metals

Building Number 248 Sampling Location LCD

Operators TH, FF

SOURCE INFORMATION

Assumed Stack Temp. 125 °F Assumed Moisture 13.5 %

Assumed Meter Temp. 65 °F Static Pressure -.26 in. H_2O

Barometric Pressure 28.56 in. Hg Stack Cross Section 9.62 ft^2

Ambient Temp. 35 °F Number of Points 12

Total Sample Time 120 Min.

Meter Box # 5222 Meter Delta H 1.8640 Meter Y Factor .9930

Probe and Pitot # P.4.D Pitot Factor ✓ 0.84 ____ 0.99

Nozzle Diameter .250 in.

Thermocouples: TC ~~170~~ TH 12.13.12 308 TC ~~171~~ TH 12.13.12 310 TC ____

TC ____ LI 22 HB 16

LAB DATA

Sample Box Number M3 Filter Number M18 Orsat Can Number N/A

Impinger Initial 200 mL Impinger Final 426 mL

Silica Gel Initial 400 g Silica Gel Final 417.6 g

Sampling train run by: TH
Field data checked by: JLK
Data entered into spreadsheet by: TH
Data entry checked by: JLK

Eastman Chemical Company

Environmental Services Laboratory

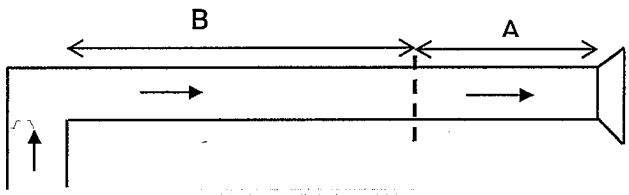
Field Data (Isokinetic Sampling)

Date 12.11.12 Project Id 12.0311 Operators TH, FF

Port Change Time	Point	Time (min)	355.902 Gas volume (ft^3)	ΔP (In. H_2O)	ΔH (In. H_2O)	Stack Temp (°F)	Probe Temp (°F)	Oven Temp (°F)	Exit Temp (°F)	Meter Temp (°F)	Pump Vacuum (In. Hg)	Leak Check
20:41	1	10	362.784	.53	1.63	126	255	245	41	57	2	Pre Leak Check
STOP 20:51	2	10	369.82	.53	1.63	126	256	252	41	59	2	@> 15 in. Hg = 0.000
START 20:55	3	10	376.49	.48	1.48	125	256	251	41	62	2	Pitot Leak Check @ >5 – in H_2O
	4	10	383.57	.54	1.66	126	254	253	43	63	2	#2 = 0.00
	5	10	390.56	.52	1.60	127	255	247	45	64	2	#4 = 0.00
21:45	6	10	396.836	.42	1.29	126	254	253	46	65	2	#1 Post Ck DGM 396.836 cf
												#1 Lk Ck Post 0.000 @ 5 in. Hg
21:57	1	10	403.45	.47	1.45	126	251	254	41	63	2	#2 Lk Ck Pre 0.000 @ 5 in. Hg
	2	10	410.37	.51	1.57	126	251	251	40	63	2	#2 Pre Ck DGM 396.850 cf
	3	10	417.31	.52	1.60	126	253	255	42	63	2	1-2 Total Ck DGM 0.014 cf
	4	10	423.77	.44	1.36	126	257	252	44	63	2	#2 Post Ck DGM ____ cf
	5	10	430.32	.47	1.45	124	254	249	46	63	2	#2 Lk Ck Post ____ @ ____ in. Hg
22:57	6	10	436.879	.44	1.36	126	255	252	47	63	2	#3 Lk Ck Pre ____ @ ____ in. Hg
												#3 Pre Ck DGM ____ cf
												2-3 Total Ck DGM ____ cf
												#3 Post Ck DGM ____ cf
												#3 Lk Ck Post ____ @ ____ in. Hg
												#4 Lk Ck Pre ____ @ ____ in. Hg
												#4 Pre Ck DGM ____ cf
												3-4 Total Ck DGM ____ cf
												#4 Post Ck DGM ____ cf
												#4 Lk Ck Post ____ @ ____ in. Hg
												#5 Lk Ck Pre ____ @ ____ in. Hg
												#5 Pre Ck DGM ____ cf
												4-5 Total Ck DGM ____ cf
												Post Leak Check
												0.000 @ 5 in. Hg
												Pitot Leak Check @ >5 in. H_2O
												#2 = 0.00
												#4 = 0.00

METHOD 1 AND 1A SAMPLE TRAVERSE POINTS

Project Number:	12-0311		
Plant/Company Name	Eastman Chemical Company		
Sampling Location	B-248 Destructor		
Number of ports	2		
Duct Diameter (in.):	42	Duct Area (ft^2):	9.62
Distance from outside of port to inside of duct (in.):	3.5		



A = Distance Upstream (in.):	135	Diameters Upstream:	3.21
B = Distance Downstream (in.):	338	Diameters Downstream:	8.05

	Velocity	Particulate
Min. Number of Traverse Points	12	12
Indicate the traverse needed (X)	x	
Minimum Number of Points:	12	

Point Number	Distance to be marked on probe inches
1	5.375
2	9.625
3	15.875
4	33.125
5	39.375
6	43.625
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Filled out by: TW Date: 12-10-12

Checked by: RZJ Date: 01/22/13

Cyclonic Flow and Velocity Profile Spreadsheet

Project Number	12-0311
Plant/Company Name	Eastman
Sampling Location	LCD
Number of ports	2
Pitot Used	P-4-E

Port Designation	1 (east side)		2 (north side)											
(for velocity profiles, a separate drawing of port orientation will be needed)														
Point	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC	Yaw angle, degrees	delta P, in. WC
1	0	0	5	0.04										
2	0	0	12	0.1										
3	2	0.02	10	0.07										
4	0	0	5	0.03										
5	2	0.02	7	0.05										
6	0	0	4	0.03										
7														
8														
9														
10														
11														
12														
13														
14														
15														

Number of points 12
Sum of ABS values 47
Yaw angle avg 3.9 Cyclonic flow check passed

Filled out by: Tim Hensley Date: 12/10/2012
Checked by: R. L. Zimmerman Date: 1/11/2013

Drawing of Port and Point Orientation at Sampling Location
Only needed for velocity profiles and at request of customer or project coordinator

Drawn by: _____

Eastman Chemical Company | Environmental Services Laboratory

Sample Chain-of-Custody Form

Project #/ID: 12-0311 Metals

Plant: Eastman Chemical Company

Source: LCD

Run #: 1

Date Sampled: 12.11.12

Sample Description: Box m1 Probe/Noz P.4.B 250B Fltr m14

Place Label Here (if available)

SAMPLE CASE/CAN HANDLING	Signature	Date
Case Assembled by:	[signature]	12-10-12
Sample Train Set-Up by:	Timothy C Hensley	12.11.12
Case Disassembled by:	[signature]	12-11-12

For liquid samples, confirm that liquid level is at mark on sample container and check (✓) ↓

Relinquished By	Time	Date	Received By	Time	Date	(✓)
Timothy C Hensley	14:50	12.11.12	[signature]	1450	12/11/12	

Eastman Chemical Company | Environmental Services Laboratory

Sample Chain-of-Custody Form

Project #/ID: 12-0311 Metals

Plant: Eastman Chemical Company

Source: LCD

Run #: 2

Date Sampled: 12.11.12

Sample Description: Box m2 Probe/Noz P.4.C Fltr m17

Place Label Here (if available)

SAMPLE CASE/CAN HANDLING	Signature	Date
Case Assembled by:		12-10-12
Sample Train Set-Up by:	Timothy C Hensley	12.11.12
Case Disassembled by:		12-11-12

For liquid samples, confirm that liquid level is at mark on sample container and check (✓) ↓

Relinquished By	Time	Date	Received By	Time	Date	(✓)
Timothy C Hensley	18:40	12.11.12		1840	12/11/12	

Eastman Chemical Company | Environmental Services Laboratory

Sample Chain-of-Custody Form

Project #/ID: 12-0311 Metals

Plant: Eastman Chemical Company

Source: LCD

Run #: 3

Date Sampled: 12.11.12

Sample Description: Box M3 Probe/Noz P.4.D Fltr M18

Place Label Here (if available)

SAMPLE CASE/CAN HANDLING

	Signature	Date
Case Assembled by:	[signature]	12-10-12
Sample Train Set-Up by:	Timothy C Hensley	12.11.12
Case Disassembled by:	[signature]	12-11-12

For liquid samples, confirm that liquid level is at mark on sample container and check (✓) ↓

Relinquished By	Time	Date	Received By	Time	Date	(✓)
Timothy C Hensley	23:15	12.11.12	[signature]	2315	12/11/12	

Eastman Chemical Company

Environmental Services Laboratory

Sample Chain-of-Custody Form

Project #/ID 12-0311 Metals

Plant Eastman Chemical Company

Source LCD

Run # Field Blank

Date Sampled 12.11.12

Sample Description Box 7&8 Probe/Noz P-2-B Fltr #17

Place Label Here (if available)

SAMPLE CASE/CAN HANDLING	Signature	Date
Case Assembled by:		12-10-12
Sample Train Set-Up by:	Timothy O Hensley	12.11.12
Case Disassembled by:		12-11-12

Relinquished By	Time	Date	Received By	Time	Date	For liquid samples, confirm that liquid level is at mark on sample container and check (✓) ↓ (✓)
Timothy O Hensley	9:30	12.11.12		0930	12/11/12	

Pre-Test Meterbox Calibration Data and Results

Box Number:	5222	**Ambient Temperature**	70
Date:	6-Nov-12	**Barometric Pressure**	28.91

Thermometers: 359A-TI-WB-2

Leak Check: 0

	Gas Volume		Temperature		Time(θ)						
Orifice Manometer Setting ΔH in H_2O	Wet Test Meter (Vw) ft^3	Dry Gas Meter (V_d) ft^3	Wet Test Meter (tw) °F	Dry Gas Meter Outlet (tdo) °F	minutes	seconds	gamma (Γ)	Absolute Difference from Average	gamma (Γ) Status	ΔH	ΔH Status
0.5	5.00	5.185	70	86	13	8	0.9922	0.0009	ok	1.9583	ok
1	5.00	5.220	70	86	9	16	0.9843	0.0088	ok	1.9499	ok
1.5	10.00	10.276	70	87	14	46	1.0005	0.0075	ok	1.8534	ok
2	10.00	10.330	70	88	12	42	0.9959	0.0028	ok	1.8245	ok
3	10.00	10.365	70	89	10	19	0.9918	0.0012	ok	1.8027	ok
4	10.00	10.283	70	87	8	54	0.9936	0.0005	ok	1.7953	ok
							Average=	0.9930		Average=	1.8640

For a calibration run to be acceptable, the individual gamma vlaues must be within 0.02 of the 6 run average.

For a calibration run to be acceptable, the individual ΔH must be within 0.20 of the 6 run average.

Calibrated by: _____ **Date:** 6-Nov-12

Reviewed by: _____ **Date:** 6-Nov-12

Post-Test Meterbox Calibration Data and Results

Box Number:	5222	**Ambient Temperature**	65
Date:	13-Dec-12	**Barometric Pressure**	29.29

Thermometers: 359A-TI-WB-2

Leak Check: 0

	Gas Volume		Temperature			
Orifice Manometer Setting ΔH in H_2O	Wet Test Meter (Vw) ft^3	Dry Gas Meter (V_d) ft^3	Wet Test Meter (tw) °F	Dry Gas Meter Outlet (tdo) °F	gamma (Γ)	Pass/Fail
1.542	5.00	5.163	70	77	0.9774	
1.542	5.00	5.182	70	78	0.9757	
1.542	5.00	5.188	70	80	0.9782	
				Average=	0.9771	
				Pre-Test to Post-Test % Difference=	1.61%	Pass

For a Post-Test calibration to be acceptable the Post-Test Γ average must be within 5% of the Pre-Test Γ average.

Calibrated by: _____ **Date:** 12-13-12

Reviewed by: Timothy C Hensley **Date:** 12.13.12

Thermocouple Calibration Check

Project # 12-0311 LCD Metals

Reference Thermometer	Calibration Date	Calibration Due Date
359A-TI-DIG-31	01/03/2012	01/03/2013

Nomenclature Thermocouples were checked at ambient temperature and the limits were ± 2 F.

CB-I = Control Box Inlet Thermocouple
CB-O = Control Box Outlet Thermocouple
HB = Heater Box Thermocouple
LI = Last Impinger Thermocouple
TC = Removable Thermocouple

Thermocouple ID	Reading	Reference Thermometer ID	Reading
1 CB-5222	71	359A-TI-DIG-31	70.6
2 HB-16	71	359A-TI-DIG-31	70.6
3 LI-22	70	359A-TI-DIG-31	70.6
4 TC-170	72	359A-TI-DIG-31	70.6
5 TC-171	70	359A-TI-DIG-31	70.6
6 TC-309	70	359A-TI-DIG-31	70.3
7 TC-312	69	359A-TI-DIG-31	68.5
8 TC-308	68	359A-TI-DIG-31	67.6
9 TC-310	67	359A-TI-DIG-31	66.4
10			

Checked By: D. L. Cole Date: 12-13-12

Reviewed By: Timothy C. Hensley Date: 12-13-12

NOZZLE CALIBRATION SHEET

Nozzle Number .250 - 2

Date 10 - 1 - 12

Measurement No. 1 .250 in.

2 .250 in.

3 .250 in.

Avg .250 in.

Acceptable if the difference between the maximum measurement and the minimum measurement is not greater than 0.004 inches.

Accept ✓

Reject _____

Conducted By _____ Date 10-1-12

Reviewed By _____ Date 10-1-12

NOZZLE CALIBRATION SHEET

Nozzle Number .250-3

Date 10-1-12

Measurement No. 1 .250 in.

2 .250 in.

3 .250 in.

Avg .250 in.

Acceptable if the difference between the maximum measurement and the minimum measurement is not greater than 0.004 inches.

Accept ✓

Reject _____

Conducted By D. L. C... Date 10-1-12

Reviewed By C... Date 10-1-12

NOZZLE CALIBRATION SHEET

Nozzle Number .250-4

Date 10-1-12

Measurement No. 1 .250 in.

2 .250 in.

3 .250 in.

Avg .250 in.

Acceptable if the difference between the maximum measurement and the minimum measurement is not greater than 0.004 inches.

Accept ✓

Reject _____

Conducted By [signature] Date 10-1-12

Reviewed By [signature] Date 10-1-12

PITOT DIMENSIONAL CALIBRATION FORM
S-Type Pitot Tube

Pitot Number: D-4-B

Pitot tube assembly level? ☑ Yes ☐ No

Pitot tube openings damaged? ☐ Yes ☑ No

If Yes, explain: _____

α_1 = 0 ° (<10°) α_2 = 1.5 ° (<10°)

β_1 = 0.5 ° (<5°) β_2 = 2.0 ° (<5°)

γ = 1.0 ° θ = 1.0 ° A = 2.5 cm

Z = A sin γ = 0.04 cm (<0.32 cm)

W = A sin θ = 0.04 cm (<0.08. cm)

P = P_A = P_b = A/2 1.25 P = P_A = P_b = 1.25 cm

D_t = 0.95 cm (Standard diameters: 3/8 inch pitots - 0.95 cm; ¼ inch pitots – 0.64 cm)

P / D_t = 1.32 (≥1.05 and ≤1.50)

Wind tunnel calibration required? ☐ Yes ☑ No

C_P = 0.84 (0.84 if no wind tunnel calibration is required)

Configuration (Check one):

Pitot only ☐ Pitot/thermocouple ☐ Probe/pitot assembly ☑

For pitot/thermocouple and probe/pitot assemblies:
Temperature sensor placement OK? ☑ Yes ☐ No

For probe/pitot assemblies:
Sampling nozzle placement OK? ☑ Yes ☐ No
Sample probe separation OK? ☑ Yes ☐ No

Comments: _____

Date: 10-2-06 Conducted by: _____

PITOT DIMENSIONAL CALIBRATION FORM
S-Type Pitot Tube

Pitot Number: P-4-C

Pitot tube assembly level? ☑ Yes ☐ No

Pitot tube openings damaged? ☐ Yes ☑ No

If Yes, explain: _____

α_1 = 0 ° (<10°) α_2 = 1 ° (<10°)

β_1 = 0 ° (<5°) β_2 = 1 ° (<5°)

γ = 1 ° θ = 1 ° A = 2.20 cm

$Z = A \sin \gamma$ = 0.04 cm (<0.32 cm)

$W = A \sin \theta$ = 0.04 cm (<0.08. cm)

$P = P_A = P_b = A/2$ 1.10 $P = P_A = P_b$ = 1.10 cm

D_t = 0.95 cm (Standard diameters: 3/8 inch pitots - 0.95 cm; ¼ inch pitots – 0.64 cm)

P / D_t = 1.16 (≥1.05 and ≤1.50)

Wind tunnel calibration required? ☐ Yes ☑ No

C_P = 0.84 (0.84 if no wind tunnel calibration is required)

Configuration (Check one):

Pitot only ☐ Pitot/thermocouple ☐ Probe/pitot assembly ☑

For pitot/thermocouple and probe/pitot assemblies:
Temperature sensor placement OK? ☑ Yes ☐ No

For probe/pitot assemblies:
Sampling nozzle placement OK? ☑ Yes ☐ No
Sample probe separation OK? ☑ Yes ☐ No

Comments: _____

Date: 10-2-06 Conducted by: _____

PITOT DIMENSIONAL CALIBRATION FORM
S-Type Pitot Tube

Pitot Number: P-4-D

Pitot tube assembly level? ☑ Yes ☐ No

Pitot tube openings damaged? ☐ Yes ☑ No

If Yes, explain: _____

α_1 = 1 ° (<10°) α_2 = 2 ° (<10°)

β_1 = 2 ° (<5°) β_2 = 2 ° (<5°)

γ = 3 ° θ = 1.5 ° A = 2.3 cm

Z = A sin γ = 0.12 cm (<0.32 cm)

W = A sin θ = 0.04 cm (<0.08. cm)

P = P_A = P_b = A/2 1.15 P = P_A = P_b = 1.15 cm

D_t = 0.95 cm (Standard diameters: 3/8 inch pitots - 0.95 cm; ¼ inch pitots – 0.64 cm)

P / D_t = 1.21 (≥1.05 and ≤1.50)

Wind tunnel calibration required? ☐ Yes ☑ No

C_P = 0.84 (0.84 if no wind tunnel calibration is required)

Configuration (Check one):

Pitot only ☐ Pitot/thermocouple ☐ Probe/pitot assembly ☑

For pitot/thermocouple and probe/pitot assemblies:
Temperature sensor placement OK? ☑ Yes ☐ No

For probe/pitot assemblies:
Sampling nozzle placement OK? ☑ Yes ☐ No
Sample probe separation OK? ☑ Yes ☐ No

Comments: _____

Date: 10-2-04 Conducted by: [signature]

Databook Metals CA. **Page** No. 108

	A						B
1	Project	12-0311					
2	Location	B-248 Destructor					
3	Date	12-11-12					
4	*	~~g Weight of~~ CA 12-17-12					
5							
6	Run 1	Imp	Solution	Initial	Final		
7	Box m1	1	—	Ø	122 mL		
8	Filter m14	2	HNO_3/H_2O_2	100 mL	~~182 mL~~ 182 mL	426 mL	
9	Probe P4B	3	HNO_3/H_2O_2	100 mL	~~182 mL~~ 122 mL		
10	CAN NA	4	5/G	400g	425.2g		
11	Nozzle 250B						
12							
13							
14	Run 2	Imp	Solution	Initial	Final		
15	Box m2	1	~~HNO_3/H_2O_2~~	Ø	136 mLs		
16	Filter m17	2	HNO_3/H_2O_2	100 mL	170 mL	420 mL	
17	Probe P4-C	3	HNO_3/H_2O_2	100 mL	114 mL		
18	Nozzle	4	5/G	400g	420.1g		
19							
20							
21	Run 3	Imp	Solution	Initial	Final		
22	Box	1	—	Ø	168 mL		
23	Filter	2	HNO_3/H_2O_2	100 mL	150 mL	426 mL	
24	Probe	3	HNO_3/H_2O_2	100 mL	108 mL		
25	Nozzle	4	5/G	400g	417.6g		
26							
27							
28	Field BLK	Imp	Solution	Initial	Final		
29	Box FB	1	—	Ø	Ø		
30	Filter m17	2	HNO_3/H_2O_2	100 mL	100mL	300mL	
31	Probe P-2-B	3	HNO_3/H_2O_2	100 mL	100mL		
32	Nozzle CAN220	4	5/G	400g	400g		

TED 12604-3 (9-94)

13.3	% O2 Run 1 average

12-0311 LCD CPT CEMS %O2	Run 1	
Date & Time	%O2	Comment
11-Dec-12 12:11:00	13.42	Start Port 1 sampling
11-Dec-12 12:12:00	13.42	
11-Dec-12 12:13:00	13.42	
11-Dec-12 12:14:00	13.42	
11-Dec-12 12:15:00	13.42	
11-Dec-12 12:16:00	13.41	
11-Dec-12 12:17:00	13.41	
11-Dec-12 12:18:00	13.37	
11-Dec-12 12:19:00	13.33	
11-Dec-12 12:20:00	13.28	
11-Dec-12 12:21:00	13.26	
11-Dec-12 12:22:00	13.29	
11-Dec-12 12:23:00	13.31	
11-Dec-12 12:24:00	13.34	
11-Dec-12 12:25:00	13.36	
11-Dec-12 12:26:00	13.39	
11-Dec-12 12:27:00	13.40	
11-Dec-12 12:28:00	13.40	
11-Dec-12 12:29:00	13.39	
11-Dec-12 12:30:00	13.39	
11-Dec-12 12:31:00	13.38	
11-Dec-12 12:32:00	13.38	
11-Dec-12 12:33:00	13.37	
11-Dec-12 12:34:00	13.37	
11-Dec-12 12:35:00	13.36	
11-Dec-12 12:36:00	13.36	
11-Dec-12 12:37:00	13.35	
11-Dec-12 12:38:00	13.34	
11-Dec-12 12:39:00	13.34	
11-Dec-12 12:40:00	13.33	
11-Dec-12 12:41:00	13.32	
11-Dec-12 12:42:00	13.32	
11-Dec-12 12:43:00	13.31	
11-Dec-12 12:44:00	13.31	
11-Dec-12 12:45:00	13.31	
11-Dec-12 12:46:00	13.31	
11-Dec-12 12:47:00	13.32	
11-Dec-12 12:48:00	13.32	
11-Dec-12 12:49:00	13.33	
11-Dec-12 12:50:00	13.33	
11-Dec-12 12:51:00	13.34	
11-Dec-12 12:52:00	13.34	
11-Dec-12 12:53:00	13.35	
11-Dec-12 12:54:00	13.35	
11-Dec-12 12:55:00	13.34	
11-Dec-12 12:56:00	13.34	
11-Dec-12 12:57:00	13.33	
11-Dec-12 12:58:00	13.33	
11-Dec-12 12:59:00	13.32	
11-Dec-12 13:00:00	13.32	
11-Dec-12 13:01:00	13.32	
11-Dec-12 13:02:00	13.31	
11-Dec-12 13:03:00	13.31	
11-Dec-12 13:04:00	13.30	
11-Dec-12 13:05:00	13.30	
11-Dec-12 13:06:00	13.30	
11-Dec-12 13:07:00	13.29	
11-Dec-12 13:08:00	13.29	
11-Dec-12 13:09:00	13.30	
11-Dec-12 13:10:00	13.30	
11-Dec-12 13:11:00	13.30	
11-Dec-12 13:12:00	13.29	
11-Dec-12 13:13:00	13.29	
11-Dec-12 13:14:00	13.28	
11-Dec-12 13:15:00	13.27	

12-0311 LCD CPT CEMS %O2	Run 1	
Date & Time	%O2	Comment
11-Dec-12 13:16:00	13.27	
11-Dec-12 13:17:00	13.26	
11-Dec-12 13:18:00	13.26	
11-Dec-12 13:19:00	13.25	
11-Dec-12 13:20:00	13.24	
11-Dec-12 13:21:00	13.24	
11-Dec-12 13:22:00	13.23	
11-Dec-12 13:23:00	13.23	
11-Dec-12 13:24:00	13.22	
11-Dec-12 13:25:00	13.21	
11-Dec-12 13:26:00	13.21	
11-Dec-12 13:27:00	13.20	
11-Dec-12 13:28:00	13.20	
11-Dec-12 13:29:00	13.19	
11-Dec-12 13:30:00	13.18	
11-Dec-12 13:31:00	13.19	Pause Port 1 sampling
11-Dec-12 13:32:00	13.20	
11-Dec-12 13:33:00	13.21	
11-Dec-12 13:34:00	13.22	
11-Dec-12 13:35:00	13.23	
11-Dec-12 13:36:00	13.23	
11-Dec-12 13:37:00	13.24	Resume Port 1 sampling
11-Dec-12 13:38:00	13.23	
11-Dec-12 13:39:00	13.23	
11-Dec-12 13:40:00	13.22	
11-Dec-12 13:41:00	13.21	
11-Dec-12 13:42:00	13.20	
11-Dec-12 13:43:00	13.19	
11-Dec-12 13:44:00	13.19	
11-Dec-12 13:45:00	13.18	End Port 1 sampling
11-Dec-12 13:46:00	13.17	
11-Dec-12 13:47:00	13.16	
11-Dec-12 13:48:00	13.15	
11-Dec-12 13:49:00	13.14	
11-Dec-12 13:50:00	13.14	
11-Dec-12 13:51:00	13.13	
11-Dec-12 13:52:00	13.12	
11-Dec-12 13:53:00	13.12	
11-Dec-12 13:54:00	13.16	Start Port 2 sampling
11-Dec-12 13:55:00	13.18	
11-Dec-12 13:56:00	13.18	
11-Dec-12 13:57:00	13.18	
11-Dec-12 13:58:00	13.18	
11-Dec-12 13:59:00	13.19	
11-Dec-12 14:00:00	13.19	
11-Dec-12 14:01:00	13.20	
11-Dec-12 14:02:00	13.19	
11-Dec-12 14:03:00	13.19	
11-Dec-12 14:04:00	13.19	
11-Dec-12 14:05:00	13.18	
11-Dec-12 14:06:00	13.18	
11-Dec-12 14:07:00	13.18	
11-Dec-12 14:08:00	13.17	
11-Dec-12 14:09:00	13.17	
11-Dec-12 14:10:00	13.17	
11-Dec-12 14:11:00	13.14	
11-Dec-12 14:12:00	13.11	
11-Dec-12 14:13:00	13.14	
11-Dec-12 14:14:00	13.27	
11-Dec-12 14:15:00	13.34	
11-Dec-12 14:16:00	13.42	
11-Dec-12 14:17:00	13.43	
11-Dec-12 14:18:00	13.42	
11-Dec-12 14:19:00	13.40	
11-Dec-12 14:20:00	13.39	

12-0311 LCD CPT CEMS %O2	Run 1	
Date & Time	%O2	Comment
11-Dec-12 14:21:00	13.38	
11-Dec-12 14:22:00	13.39	
11-Dec-12 14:23:00	13.40	
11-Dec-12 14:24:00	13.41	
11-Dec-12 14:25:00	13.39	
11-Dec-12 14:26:00	13.35	
11-Dec-12 14:27:00	13.32	
11-Dec-12 14:28:00	13.28	
11-Dec-12 14:29:00	13.25	
11-Dec-12 14:30:00	13.24	
11-Dec-12 14:31:00	13.23	
11-Dec-12 14:32:00	13.23	
11-Dec-12 14:33:00	13.22	
11-Dec-12 14:34:00	13.22	
11-Dec-12 14:35:00	13.22	
11-Dec-12 14:36:00	13.22	
11-Dec-12 14:37:00	13.22	
11-Dec-12 14:38:00	13.21	
11-Dec-12 14:39:00	13.21	
11-Dec-12 14:40:00	13.21	
11-Dec-12 14:41:00	13.21	
11-Dec-12 14:42:00	13.20	
11-Dec-12 14:43:00	13.18	
11-Dec-12 14:44:00	13.17	
11-Dec-12 14:45:00	13.20	
11-Dec-12 14:46:00	13.24	
11-Dec-12 14:47:00	13.25	
11-Dec-12 14:48:00	13.25	
11-Dec-12 14:49:00	13.26	
11-Dec-12 14:50:00	13.26	
11-Dec-12 14:51:00	13.25	
11-Dec-12 14:52:00	13.24	
11-Dec-12 14:53:00	13.23	
11-Dec-12 14:54:00	13.22	
11-Dec-12 14:55:00	13.21	
11-Dec-12 14:56:00	13.20	
11-Dec-12 14:57:00	13.19	
11-Dec-12 14:58:00	13.17	
11-Dec-12 14:59:00	13.15	
11-Dec-12 15:00:00	13.13	
11-Dec-12 15:01:00	13.12	
11-Dec-12 15:02:00	13.12	
11-Dec-12 15:03:00	13.12	
11-Dec-12 15:04:00	13.11	
11-Dec-12 15:05:00	13.11	
11-Dec-12 15:06:00	13.11	
11-Dec-12 15:07:00	13.11	
11-Dec-12 15:08:00	13.12	
11-Dec-12 15:09:00	13.14	
11-Dec-12 15:10:00	13.16	
11-Dec-12 15:11:00	13.18	
11-Dec-12 15:12:00	13.19	
11-Dec-12 15:13:00	13.20	
11-Dec-12 15:14:00	13.20	
11-Dec-12 15:15:00	13.20	
11-Dec-12 15:16:00	13.21	
11-Dec-12 15:17:00	13.22	
11-Dec-12 15:18:00	13.22	
11-Dec-12 15:19:00	13.23	
11-Dec-12 15:20:00	13.23	
11-Dec-12 15:21:00	13.22	
11-Dec-12 15:22:00	13.22	
11-Dec-12 15:23:00	13.22	End Port 2 Sampling

13.1	% O2 Run 2 average

12-0311 LCD CPT CEMS %O2	Run 2	
Date & Time	%O2	Comment
11-Dec-12 16:13:00	13.25	Start Port 1 sampling
11-Dec-12 16:14:00	13.17	
11-Dec-12 16:15:00	13.18	
11-Dec-12 16:16:00	13.25	
11-Dec-12 16:17:00	13.25	
11-Dec-12 16:18:00	13.25	
11-Dec-12 16:19:00	13.24	
11-Dec-12 16:20:00	13.24	
11-Dec-12 16:21:00	13.24	
11-Dec-12 16:22:00	13.24	
11-Dec-12 16:23:00	13.24	
11-Dec-12 16:24:00	13.22	
11-Dec-12 16:25:00	13.21	
11-Dec-12 16:26:00	13.20	
11-Dec-12 16:27:00	13.19	
11-Dec-12 16:28:00	13.18	
11-Dec-12 16:29:00	13.16	
11-Dec-12 16:30:00	13.15	
11-Dec-12 16:31:00	13.14	
11-Dec-12 16:32:00	13.13	
11-Dec-12 16:33:00	13.12	
11-Dec-12 16:34:00	13.11	
11-Dec-12 16:35:00	13.11	
11-Dec-12 16:36:00	13.10	
11-Dec-12 16:37:00	13.10	
11-Dec-12 16:38:00	13.10	
11-Dec-12 16:39:00	13.09	
11-Dec-12 16:40:00	13.12	
11-Dec-12 16:41:00	13.14	
11-Dec-12 16:42:00	13.17	
11-Dec-12 16:43:00	13.20	
11-Dec-12 16:44:00	13.22	
11-Dec-12 16:45:00	13.22	
11-Dec-12 16:46:00	13.22	
11-Dec-12 16:47:00	13.21	
11-Dec-12 16:48:00	13.21	
11-Dec-12 16:49:00	13.21	
11-Dec-12 16:50:00	13.20	
11-Dec-12 16:51:00	13.20	
11-Dec-12 16:52:00	13.18	
11-Dec-12 16:53:00	13.17	
11-Dec-12 16:54:00	13.15	
11-Dec-12 16:55:00	13.14	
11-Dec-12 16:56:00	13.14	
11-Dec-12 16:57:00	13.14	
11-Dec-12 16:58:00	13.13	
11-Dec-12 16:59:00	13.13	
11-Dec-12 17:00:00	13.13	
11-Dec-12 17:01:00	13.13	
11-Dec-12 17:02:00	13.13	
11-Dec-12 17:03:00	13.14	
11-Dec-12 17:04:00	13.14	
11-Dec-12 17:05:00	13.14	
11-Dec-12 17:06:00	13.14	
11-Dec-12 17:07:00	13.14	
11-Dec-12 17:08:00	13.14	
11-Dec-12 17:09:00	13.15	
11-Dec-12 17:10:00	13.15	
11-Dec-12 17:11:00	13.15	
11-Dec-12 17:12:00	13.15	
11-Dec-12 17:13:00	13.15	
11-Dec-12 17:14:00	13.15	
11-Dec-12 17:15:00	13.15	
11-Dec-12 17:16:00	13.15	
11-Dec-12 17:17:00	13.15	
11-Dec-12 17:18:00	13.16	
11-Dec-12 17:19:00	13.16	
11-Dec-12 17:20:00	13.16	
11-Dec-12 17:21:00	13.16	
11-Dec-12 17:22:00	13.16	
11-Dec-12 17:23:00	13.16	
11-Dec-12 17:24:00	13.17	
11-Dec-12 17:25:00	13.17	

12-0311 LCD CPT CEMS %O2	Run 2	
Date & Time	%O2	Comment
11-Dec-12 17:26:00	13.16	
11-Dec-12 17:27:00	13.15	
11-Dec-12 17:28:00	13.15	
11-Dec-12 17:29:00	13.15	
11-Dec-12 17:30:00	13.17	
11-Dec-12 17:31:00	13.20	
11-Dec-12 17:32:00	13.22	
11-Dec-12 17:33:00	13.25	
11-Dec-12 17:34:00	13.27	
11-Dec-12 17:35:00	13.30	
11-Dec-12 17:36:00	13.28	
11-Dec-12 17:37:00	13.24	
11-Dec-12 17:38:00	13.20	
11-Dec-12 17:39:00	13.18	
11-Dec-12 17:40:00	13.18	
11-Dec-12 17:41:00	13.19	
11-Dec-12 17:42:00	13.19	End Port 1 sampling
11-Dec-12 17:43:00	13.20	
11-Dec-12 17:44:00	13.21	
11-Dec-12 17:45:00	13.21	
11-Dec-12 17:46:00	13.22	
11-Dec-12 17:47:00	13.23	
11-Dec-12 17:48:00	13.24	
11-Dec-12 17:49:00	13.25	
11-Dec-12 17:50:00	13.26	
11-Dec-12 17:51:00	13.27	
11-Dec-12 17:52:00	13.27	
11-Dec-12 17:53:00	13.27	
11-Dec-12 17:54:00	13.27	
11-Dec-12 17:55:00	13.27	
11-Dec-12 17:56:00	13.27	
11-Dec-12 17:57:00	13.26	
11-Dec-12 17:58:00	13.26	
11-Dec-12 17:59:00	13.26	
11-Dec-12 18:00:00	13.26	
11-Dec-12 18:01:00	13.28	
11-Dec-12 18:02:00	13.27	
11-Dec-12 18:03:00	13.25	
11-Dec-12 18:04:00	13.23	
11-Dec-12 18:05:00	13.22	
11-Dec-12 18:06:00	13.20	
11-Dec-12 18:07:00	13.18	
11-Dec-12 18:08:00	13.17	
11-Dec-12 18:09:00	13.15	
11-Dec-12 18:10:00	13.14	
11-Dec-12 18:11:00	13.13	
11-Dec-12 18:12:00	13.12	
11-Dec-12 18:13:00	13.12	
11-Dec-12 18:14:00	13.12	
11-Dec-12 18:15:00	13.12	
11-Dec-12 18:16:00	13.12	
11-Dec-12 18:17:00	13.13	
11-Dec-12 18:18:00	13.13	
11-Dec-12 18:19:00	13.13	
11-Dec-12 18:20:00	13.13	
11-Dec-12 18:21:00	13.13	Start Port 2 sampling
11-Dec-12 18:22:00	13.15	
11-Dec-12 18:23:00	13.16	
11-Dec-12 18:24:00	13.17	
11-Dec-12 18:25:00	13.18	
11-Dec-12 18:26:00	13.20	
11-Dec-12 18:27:00	13.19	
11-Dec-12 18:28:00	13.12	
11-Dec-12 18:29:00	13.05	
11-Dec-12 18:30:00	12.99	
11-Dec-12 18:31:00	12.92	
11-Dec-12 18:32:00	12.94	
11-Dec-12 18:33:00	12.97	
11-Dec-12 18:34:00	13.02	
11-Dec-12 18:35:00	13.06	
11-Dec-12 18:36:00	13.06	
11-Dec-12 18:37:00	13.06	
11-Dec-12 18:38:00	13.05	

12-0311 LCD CPT CEMS %O2	Run 2	
Date & Time	%O2	Comment
11-Dec-12 18:39:00	13.04	
11-Dec-12 18:40:00	13.04	
11-Dec-12 18:41:00	13.03	
11-Dec-12 18:42:00	13.03	
11-Dec-12 18:43:00	13.03	
11-Dec-12 18:44:00	13.03	
11-Dec-12 18:45:00	13.03	
11-Dec-12 18:46:00	13.03	
11-Dec-12 18:47:00	13.03	
11-Dec-12 18:48:00	13.03	
11-Dec-12 18:49:00	13.03	
11-Dec-12 18:50:00	13.03	
11-Dec-12 18:51:00	13.03	
11-Dec-12 18:52:00	13.03	
11-Dec-12 18:53:00	13.04	
11-Dec-12 18:54:00	13.06	
11-Dec-12 18:55:00	13.08	
11-Dec-12 18:56:00	13.09	
11-Dec-12 18:57:00	13.10	
11-Dec-12 18:58:00	13.10	
11-Dec-12 18:59:00	13.10	
11-Dec-12 19:00:00	13.11	
11-Dec-12 19:01:00	13.11	
11-Dec-12 19:02:00	13.11	
11-Dec-12 19:03:00	13.12	
11-Dec-12 19:04:00	13.12	
11-Dec-12 19:05:00	13.15	
11-Dec-12 19:06:00	13.21	
11-Dec-12 19:07:00	13.21	
11-Dec-12 19:08:00	13.20	
11-Dec-12 19:09:00	13.19	
11-Dec-12 19:10:00	13.18	
11-Dec-12 19:11:00	13.17	
11-Dec-12 19:12:00	13.17	
11-Dec-12 19:13:00	13.17	
11-Dec-12 19:14:00	13.18	
11-Dec-12 19:15:00	13.18	
11-Dec-12 19:16:00	13.18	
11-Dec-12 19:17:00	13.18	
11-Dec-12 19:18:00	13.17	
11-Dec-12 19:19:00	13.16	
11-Dec-12 19:20:00	13.15	
11-Dec-12 19:21:00	13.14	
11-Dec-12 19:22:00	13.13	
11-Dec-12 19:23:00	13.11	
11-Dec-12 19:24:00	13.09	
11-Dec-12 19:25:00	13.11	
11-Dec-12 19:26:00	13.14	
11-Dec-12 19:27:00	13.17	
11-Dec-12 19:28:00	13.19	
11-Dec-12 19:29:00	13.22	
11-Dec-12 19:30:00	13.23	
11-Dec-12 19:31:00	13.22	
11-Dec-12 19:32:00	13.20	
11-Dec-12 19:33:00	13.19	
11-Dec-12 19:34:00	13.18	
11-Dec-12 19:35:00	13.17	
11-Dec-12 19:36:00	13.16	
11-Dec-12 19:37:00	13.15	
11-Dec-12 19:38:00	13.13	
11-Dec-12 19:39:00	13.13	
11-Dec-12 19:40:00	13.12	
11-Dec-12 19:41:00	13.12	
11-Dec-12 19:42:00	13.11	
11-Dec-12 19:43:00	13.11	
11-Dec-12 19:44:00	13.11	
11-Dec-12 19:45:00	13.11	
11-Dec-12 19:46:00	13.11	
11-Dec-12 19:47:00	13.12	
11-Dec-12 19:48:00	13.12	
11-Dec-12 19:49:00	13.12	
11-Dec-12 19:50:00	13.10	End Port 2 Sampling

13.0	% O2 Run 3 average

12-0311 LCD CPT CEMS %O2	Run 3		12-0311 LCD CPT CEMS %O2	Run 3		12-0311 LCD CPT CEMS %O2	Run 3	
Date & Time	%O2	Comment	Date & Time	%O2	Comment	Date & Time	%O2	Comment
11-Dec-12 20:42:00	13.01	Start Port 1 sampling	11-Dec-12 21:45:00	13.04		11-Dec-12 22:48:00	13.01	
11-Dec-12 20:43:00	13.03		11-Dec-12 21:46:00	13.11		11-Dec-12 22:49:00	13.02	
11-Dec-12 20:44:00	13.04		11-Dec-12 21:47:00	13.10		11-Dec-12 22:50:00	13.01	
11-Dec-12 20:45:00	13.08		11-Dec-12 21:48:00	13.10		11-Dec-12 22:51:00	13.01	
11-Dec-12 20:46:00	13.20		11-Dec-12 21:49:00	13.09		11-Dec-12 22:52:00	13.00	
11-Dec-12 20:47:00	13.13		11-Dec-12 21:50:00	13.09		11-Dec-12 22:53:00	12.99	
11-Dec-12 20:48:00	13.06		11-Dec-12 21:51:00	13.09		11-Dec-12 22:54:00	13.01	
11-Dec-12 20:49:00	13.00		11-Dec-12 21:52:00	13.08		11-Dec-12 22:55:00	13.03	
11-Dec-12 20:50:00	12.99		11-Dec-12 21:53:00	13.08		11-Dec-12 22:56:00	13.05	
11-Dec-12 20:51:00	12.97		11-Dec-12 21:54:00	13.07		11-Dec-12 22:57:00	13.05	
11-Dec-12 20:52:00	12.96		11-Dec-12 21:55:00	13.07		11-Dec-12 22:58:00	13.04	
11-Dec-12 20:53:00	12.99		11-Dec-12 21:56:00	13.06		11-Dec-12 22:59:00	13.02	
11-Dec-12 20:54:00	13.01		11-Dec-12 21:57:00	13.05		11-Dec-12 23:00:00	13.01	
11-Dec-12 20:55:00	13.01		11-Dec-12 21:58:00	13.03		11-Dec-12 23:01:00	13.00	
11-Dec-12 20:56:00	13.01		11-Dec-12 21:59:00	13.02		11-Dec-12 23:02:00	13.00	
11-Dec-12 20:57:00	13.01		11-Dec-12 22:00:00	13.01		11-Dec-12 23:03:00	13.01	
11-Dec-12 20:58:00	13.00		11-Dec-12 22:01:00	13.02		11-Dec-12 23:04:00	13.01	
11-Dec-12 20:59:00	13.00		11-Dec-12 22:02:00	13.03		11-Dec-12 23:05:00	13.01	
11-Dec-12 21:00:00	13.00		11-Dec-12 22:03:00	13.05		11-Dec-12 23:06:00	13.02	
11-Dec-12 21:01:00	12.99		11-Dec-12 22:04:00	13.06		11-Dec-12 23:07:00	13.02	
11-Dec-12 21:02:00	12.99		11-Dec-12 22:05:00	13.08		11-Dec-12 23:08:00	13.03	
11-Dec-12 21:03:00	12.97		11-Dec-12 22:06:00	13.03		11-Dec-12 23:09:00	13.03	
11-Dec-12 21:04:00	12.94		11-Dec-12 22:07:00	12.96		11-Dec-12 23:10:00	13.02	
11-Dec-12 21:05:00	12.96		11-Dec-12 22:08:00	12.97		11-Dec-12 23:11:00	13.01	
11-Dec-12 21:06:00	12.98		11-Dec-12 22:09:00	12.97		11-Dec-12 23:12:00	13.02	
11-Dec-12 21:07:00	12.99		11-Dec-12 22:10:00	12.96		11-Dec-12 23:13:00	13.04	
11-Dec-12 21:08:00	12.99		11-Dec-12 22:11:00	12.96	End Port 1 sampling	11-Dec-12 23:14:00	13.05	
11-Dec-12 21:09:00	12.99		11-Dec-12 22:12:00	12.95		11-Dec-12 23:15:00	13.07	
11-Dec-12 21:10:00	12.98		11-Dec-12 22:13:00	12.95		11-Dec-12 23:16:00	13.07	
11-Dec-12 21:11:00	12.98		11-Dec-12 22:14:00	12.95		11-Dec-12 23:17:00	13.07	
11-Dec-12 21:12:00	12.97		11-Dec-12 22:15:00	12.95		11-Dec-12 23:18:00	13.07	
11-Dec-12 21:13:00	12.97		11-Dec-12 22:16:00	12.95		11-Dec-12 23:19:00	13.07	
11-Dec-12 21:14:00	12.96		11-Dec-12 22:17:00	12.94		11-Dec-12 23:20:00	13.07	
11-Dec-12 21:15:00	12.95		11-Dec-12 22:18:00	12.94		11-Dec-12 23:21:00	13.06	
11-Dec-12 21:16:00	12.95		11-Dec-12 22:19:00	12.94		11-Dec-12 23:22:00	13.06	
11-Dec-12 21:17:00	12.95		11-Dec-12 22:20:00	12.95		11-Dec-12 23:23:00	13.05	
11-Dec-12 21:18:00	12.94		11-Dec-12 22:21:00	12.95	Start Port 2 sampling	11-Dec-12 23:24:00	13.05	
11-Dec-12 21:19:00	12.94		11-Dec-12 22:22:00	12.95		11-Dec-12 23:25:00	13.04	
11-Dec-12 21:20:00	12.93		11-Dec-12 22:23:00	12.95		11-Dec-12 23:26:00	13.04	
11-Dec-12 21:21:00	12.93		11-Dec-12 22:24:00	12.95		11-Dec-12 23:27:00	13.04	
11-Dec-12 21:22:00	12.92		11-Dec-12 22:25:00	12.95		11-Dec-12 23:28:00	13.03	
11-Dec-12 21:23:00	12.93		11-Dec-12 22:26:00	12.94		11-Dec-12 23:29:00	13.03	
11-Dec-12 21:24:00	12.94		11-Dec-12 22:27:00	12.94		11-Dec-12 23:30:00	13.02	
11-Dec-12 21:25:00	12.95		11-Dec-12 22:28:00	12.94		11-Dec-12 23:31:00	13.00	
11-Dec-12 21:26:00	12.96		11-Dec-12 22:29:00	12.91		11-Dec-12 23:32:00	13.01	
11-Dec-12 21:27:00	12.98		11-Dec-12 22:30:00	12.91		11-Dec-12 23:33:00	13.01	
11-Dec-12 21:28:00	12.98		11-Dec-12 22:31:00	12.93		11-Dec-12 23:34:00	13.02	
11-Dec-12 21:29:00	12.98		11-Dec-12 22:32:00	12.96		11-Dec-12 23:35:00	13.03	
11-Dec-12 21:30:00	12.97		11-Dec-12 22:33:00	12.98		11-Dec-12 23:36:00	13.02	
11-Dec-12 21:31:00	12.95		11-Dec-12 22:34:00	13.05		11-Dec-12 23:37:00	13.01	
11-Dec-12 21:32:00	13.07		11-Dec-12 22:35:00	13.14		11-Dec-12 23:38:00	13.00	
11-Dec-12 21:33:00	13.14		11-Dec-12 22:36:00	13.14		11-Dec-12 23:39:00	12.99	
11-Dec-12 21:34:00	13.13		11-Dec-12 22:37:00	13.14		11-Dec-12 23:40:00	13.03	
11-Dec-12 21:35:00	13.11		11-Dec-12 22:38:00	13.14		11-Dec-12 23:41:00	13.06	
11-Dec-12 21:36:00	13.09		11-Dec-12 22:39:00	13.14		11-Dec-12 23:42:00	13.07	
11-Dec-12 21:37:00	13.07		11-Dec-12 22:40:00	13.14		11-Dec-12 23:43:00	13.08	
11-Dec-12 21:38:00	13.08		11-Dec-12 22:41:00	13.13		11-Dec-12 23:44:00	13.10	
11-Dec-12 21:39:00	13.09		11-Dec-12 22:42:00	13.13		11-Dec-12 23:45:00	13.10	
11-Dec-12 21:40:00	12.97		11-Dec-12 22:43:00	13.13		11-Dec-12 23:46:00	13.10	
11-Dec-12 21:41:00	12.91		11-Dec-12 22:44:00	13.13		11-Dec-12 23:47:00	13.09	
11-Dec-12 21:42:00	12.92		11-Dec-12 22:45:00	13.12		11-Dec-12 23:48:00	13.09	
11-Dec-12 21:43:00	12.92		11-Dec-12 22:46:00	13.00		11-Dec-12 23:49:00	13.09	
11-Dec-12 21:44:00	12.98		11-Dec-12 22:47:00	12.99		11-Dec-12 23:50:00	13.09	End Port 2 Sampling

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. ESL 12 2723

Method 29

Lot #: H2L140401

Melissa Wise

Eastman Chemical Company
Building 54 Lab 344
Eastman Road
Kingsport, TN 37662

TESTAMERICA LABORATORIES, INC.



Kevin S. Woodcock
Project Manager

December 27, 2012

METHODS SUMMARY

H2L140401

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Inductively Coupled Plasma (ICP) Metals	SW846 6010B	

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

H2L140401

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MXK4W	001	M29 R1 092612 C01/C02	12/11/12	15:20
MXK40	002	M29 R1 092612 C03	12/11/12	15:40
MXK42	003	M29 R2 092612 C01/C02	12/11/12	08:20
MXK43	004	M29 R2 092612 C03	12/11/12	08:30
MXK44	005	M29 R3 092612 C01/C02	12/11/12	23:50
MXK46	006	M29 R3 092612 C03	12/12/12	00:10
MXK47	007	M29 FLB 092612 C01/C02	12/11/12	09:35
MXK48	008	M29 FLB 092612 C03	12/11/12	09:45
MXK49	009	M29 RGB 092612 C01/C04	12/11/12	10:30
MXK5A	010	M29 RGB 092612 C03	12/11/12	10:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H2L140401

The results reported herein are applicable to the samples submitted for analysis only. If you have any questions about this report, please call (865) 291-3000 to speak with the TestAmerica project manager listed on the cover page.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

The samples were hand-delivered via courier to the laboratory and received in good condition with custody seals intact. A "Relinquished by" signature was not obtained at the time of sample receipt.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

These stack gas samples were prepared and analyzed using TestAmerica Knoxville standard operating procedure KNOX-MT-0006 which is based on EPA SW-846 Method 0060, "Determination of Metals in Stack Emissions" and Method 29, "Determination of Metals Emissions from Stationary Sources". SW-846 Method 6010B as incorporated in TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analysis.

Acid digestion was performed on the front half particulate filter and the nitric acid probe rinse fractions separately using HNO_3 and HF. After digestion, these two fractions were combined, and the HF was sequestered using H_3BO_3 followed by another heating cycle. This digestate was adjusted to final volume and analyzed by ICP.

The 5%HNO_3/10%H_2O_2 impinger samples were reduced in volume, digested using HNO_3 and H_2O_2, and analyzed by ICP.

ICP results were calculated using the following equation:

$$ICP Analyte, \mu g = \left(\begin{array}{c} Raw\ Sample \\ Concentration, \mu g/L \end{array}\right) \times \left(\begin{array}{c} Bench \\ Dilution \\ Factor \end{array}\right) \times \left(\begin{array}{c} Final\ Volume \\ ICP\ Digestate, L \end{array}\right)$$

The post digestion spike duplicate percent recovery for sample M29 R2 092612 C01/C02 was outside control limits for lead. However, the laboratory control samples showed acceptable results indicating that the analysis was in control. Results outside of limits do not necessarily reflect poor method performance due to high lead concentrations in the sample relative to the spike level.

CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	ACLASS	DoD ELAP		ADE-1434
TestAmerica Knoxville	Arkansas	State Program	6	88-0688
TestAmerica Knoxville	California	State Program	9	2423
TestAmerica Knoxville	Colorado	State Program	8	N/A
TestAmerica Knoxville	Connecticut	State Program	1	PH-0223
TestAmerica Knoxville	Florida	NELAC	4	E87177
TestAmerica Knoxville	Georgia	State Program	4	906
TestAmerica Knoxville	Hawaii	State Program	9	N/A
TestAmerica Knoxville	Indiana	State Program	5	C-TN-02
TestAmerica Knoxville	Iowa	State Program	7	375
TestAmerica Knoxville	Kansas	NELAC	7	E-10349
TestAmerica Knoxville	Kentucky	State Program	4	90101
TestAmerica Knoxville	Louisiana	NELAC	6	LA110001
TestAmerica Knoxville	Louisiana	NELAC	6	83979
TestAmerica Knoxville	Maryland	State Program	3	277
TestAmerica Knoxville	Michigan	State Program	5	9933
TestAmerica Knoxville	Minnesota	NELAC	5	047-999-429
TestAmerica Knoxville	Nevada	State Program	9	TN00009
TestAmerica Knoxville	New Jersey	NELAC	2	TN001
TestAmerica Knoxville	New York	NELAC	2	10781
TestAmerica Knoxville	North Carolina	North Carolina DENR	4	64
TestAmerica Knoxville	North Carolina	North Carolina PHL	4	21705
TestAmerica Knoxville	Ohio	OVAP	5	CL0059
TestAmerica Knoxville	Oklahoma	State Program	6	9415
TestAmerica Knoxville	Pennsylvania	NELAC	3	68-00576
TestAmerica Knoxville	South Carolina	State Program	4	84001
TestAmerica Knoxville	Tennessee	State Program	4	2014
TestAmerica Knoxville	Texas	NELAC	6	T104704380-TX
TestAmerica Knoxville	USDA	USDA		P330-11-00035
TestAmerica Knoxville	Utah	NELAC	8	QUAN3
TestAmerica Knoxville	Virginia	State Program	3	165
TestAmerica Knoxville	Washington	State Program	10	C593
TestAmerica Knoxville	West Virginia	West Virginia DEP	3	345
TestAmerica Knoxville	West Virginia	West Virginia DHHR (DW)	3	9955C
TestAmerica Knoxville	Wisconsin	State Program	5	998044300

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

QC DATA ASSOCIATION SUMMARY

H2L140401

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	AIR	SW846 6010B		2352035	
002	AIR	SW846 6010B		2352036	
003	AIR	SW846 6010B		2352035	
004	AIR	SW846 6010B		2352036	
005	AIR	SW846 6010B		2352035	
006	AIR	SW846 6010B		2352036	
007	AIR	SW846 6010B		2352035	
008	AIR	SW846 6010B		2352036	
009	AIR	SW846 6010B		2352035	
010	AIR	SW846 6010B		2352036	

Sample Data Summary

Eastman Chemical Company

Client Sample ID: M29 R1 092612 C01/C02

TOTAL Metals

Lot-Sample #...: H2L140401-001 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**49.9**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK4W1AA**
		Dilution Factor: 1		Analysis Time..: 15:40	MDL.....: 0.32	
Lead	**67.5**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK4W1AC**
		Dilution Factor: 1		Analysis Time..: 15:40	MDL.....: 0.52	

Eastman Chemical Company

Client Sample ID: M29 R1 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-002 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	**0.62 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK401AA**
		Dilution Factor: 1		Analysis Time..: 13:47	MDL.....: 0.14	
Lead	**0.40 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK401AC**
		Dilution Factor: 1		Analysis Time..: 13:47	MDL.....: 0.27	

NOTE(S):

B Estimated result. Result is less than RL.

Eastman Chemical Company

Client Sample ID: M29 R2 092612 C01/C02

TOTAL Metals

Lot-Sample #...: H2L140401-003 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**49.3**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK421AA**
		Dilution Factor: 1		Analysis Time..: 15:45	MDL.....: 0.32	
Lead	**65.4**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK421AC**
		Dilution Factor: 1		Analysis Time..: 15:45	MDL.....: 0.52	

Eastman Chemical Company

Client Sample ID: M29 R2 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-004 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	**0.73 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK431AA**
		Dilution Factor: 1		Analysis Time..: 14:06	MDL.....: 0.14	
Lead	**0.30 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK431AC**
		Dilution Factor: 1		Analysis Time..: 14:06	MDL.....: 0.27	

NOTE(S):

B Estimated result. Result is less than RL.

Eastman Chemical Company

Client Sample ID: M29 R3 092612 C01/C02

TOTAL Metals

Lot-Sample #...: H2L140401-005 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**62.0**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK441AA**
		Dilution Factor: 1		Analysis Time..: 16:09	MDL.....: 0.32	
Lead	**75.3**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK441AC**
		Dilution Factor: 1		Analysis Time..: 16:09	MDL.....: 0.52	

Eastman Chemical Company

Client Sample ID: M29 R3 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-006 **Matrix.....:** AIR
Date Sampled...: 12/12/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	1.4	1.0	ug	SW846 6010B	12/17-12/20/12	MXK461AA
		Dilution Factor: 1		Analysis Time..: 14:21	MDL.....: 0.14	
Lead	0.28 B	1.0	ug	SW846 6010B	12/17-12/20/12	MXK461AC
		Dilution Factor: 1		Analysis Time..: 14:21	MDL.....: 0.27	

NOTE(S):

B Estimated result. Result is less than RL.

Eastman Chemical Company

Client Sample ID: M29 FLB 092612 C01/C02

TOTAL Metals

Lot-Sample #...: H2L140401-007 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**1.0**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK471AA**
		Dilution Factor: 1		Analysis Time..: 16:14	MDL.....: 0.32	
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK471AC
		Dilution Factor: 1		Analysis Time..: 16:14	MDL.....: 0.52	

Eastman Chemical Company

Client Sample ID: M29 FLB 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-008 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK481AA
		Dilution Factor: 1		Analysis Time..: 14:26	MDL.....: 0.14	
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK481AC
		Dilution Factor: 1		Analysis Time..: 14:26	MDL.....: 0.27	

Eastman Chemical Company

Client Sample ID: M29 RGB 092612 C01/C04

TOTAL Metals

Lot-Sample #...: H2L140401-009 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**0.94 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK491AA**
		Dilution Factor: 1		Analysis Time..: 16:19	MDL.....: 0.32	
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK491AC
		Dilution Factor: 1		Analysis Time..: 16:19	MDL.....: 0.52	

NOTE(S):

B Estimated result. Result is less than RL.

Eastman Chemical Company

Client Sample ID: M29 RGB 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-010 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK5A1AA
		Dilution Factor: 1		Analysis Time..: 14:31	MDL.....: 0.14	
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK5A1AC
		Dilution Factor: 1		Analysis Time..: 14:31	MDL.....: 0.27	

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: H2L140401 **Matrix.....:** AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: H2L170000-035 **Prep Batch #...:** 2352035						
Chromium	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXL231AA
		Dilution Factor: 1				
		Analysis Time..: 12:23				
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXL231AC
		Dilution Factor: 1				
		Analysis Time..: 12:23				
MB Lot-Sample #: H2L170000-036 **Prep Batch #...:** 2352036						
Chromium	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXL251AA
		Dilution Factor: 1				
		Analysis Time..: 12:08				
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXL251AC
		Dilution Factor: 1				
		Analysis Time..: 12:08				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: H2L140401 **Matrix.....:** AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Chromium	104	(80 - 120)			SW846 6010B	12/17-12/20/12	2352035
	104	(80 - 120)	0.79	(0-20)	SW846 6010B	12/17-12/20/12	2352035
		Dilution Factor: 1			Analysis Time..: 12:28		
Lead	107	(80 - 120)			SW846 6010B	12/17-12/20/12	2352035
	108	(80 - 120)	0.37	(0-20)	SW846 6010B	12/17-12/20/12	2352035
		Dilution Factor: 1			Analysis Time..: 12:28		
Chromium	103	(80 - 120)			SW846 6010B	12/17-12/20/12	2352036
	105	(80 - 120)	1.4	(0-20)	SW846 6010B	12/17-12/20/12	2352036
		Dilution Factor: 1			Analysis Time..: 12:13		
Lead	101	(80 - 120)			SW846 6010B	12/17-12/20/12	2352036
	105	(80 - 120)	3.4	(0-20)	SW846 6010B	12/17-12/20/12	2352036
		Dilution Factor: 1			Analysis Time..: 12:13		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: H2L140401 **Matrix.....:** AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chromium	20.0	20.9	ug	104		SW846 6010B	12/17-12/20/12	2352035
	20.0	20.7	ug	104	0.79	SW846 6010B	12/17-12/20/12	2352035
			Dilution Factor: 1			Analysis Time..: 12:28		
Lead	10.0	10.7	ug	107		SW846 6010B	12/17-12/20/12	2352035
	10.0	10.8	ug	108	0.37	SW846 6010B	12/17-12/20/12	2352035
			Dilution Factor: 1			Analysis Time..: 12:28		
Chromium	20.0	20.6	ug	103		SW846 6010B	12/17-12/20/12	2352036
	20.0	20.9	ug	105	1.4	SW846 6010B	12/17-12/20/12	2352036
			Dilution Factor: 1			Analysis Time..: 12:13		
Lead	10.0	10.1	ug	101		SW846 6010B	12/17-12/20/12	2352036
	10.0	10.5	ug	105	3.4	SW846 6010B	12/17-12/20/12	2352036
			Dilution Factor: 1			Analysis Time..: 12:13		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS MXK42A	Original Sample MXK42	Spike Added	Percent Recovery
Cr	689.58	492.81	200.0	98.4
Pb	741.51	653.63	100.0	87.9

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS MXK42A	Original Sample MXK42	Spike Added	Percent Recovery
Cr	674.86	492.81	200.0	91.0
Pb	721.83	653.63	100.0	68.2

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS MXK43A	Original Sample MXK43	Spike Added	Percent Recovery
Cr	215.10	7.29	200.0	103.9
Pb	105.72	2.99	100.0	102.7

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS D MXK43A	Original Sample MXK43	Spike Added	Percent Recovery
Cr	212.06	7.29	200.0	102.4
Pb	108.70	2.99	100.0	105.7

Sample Receipt Documentation

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

H2L140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_R1_092612_C01 770120 12-0311M29R01C01	Poly Petri, 4degC (Test America)	sign: [signature] date: 12-11-12 time: 1520	sign: [signature] date: 12-12-12 time: 10:15	sign: [signature] date: 12-13-12 time: 13:00	sign: date: time:
M29_R1_092612_C02 770121 12-0311M29R01C03	16oz poly, 4degC (Test America)	sign: [signature] date: 12-11-12 time: 1550	sign: date: time:	sign: date: time:	sign: date: time:
M29_R1_092612_C03 770122 12-0311M29R01C04	32 oz. poly, 4degC (Test America)	sign: [signature] date: 12-11-12 time: 1540	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

HAND DELIVERED
BD 12-13-12 ~~NO~~ CUSTODY SEALS INTACT
RECEIVED AT AMBIENT TEMP
BD 12-13-12

(CHAIN_SMP_SEL_3RECD)

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

H2L140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_R2_092612_C01 770123 12-0311M29R02C01	Poly Petri, 4degC (Test America)	sign: date: time: 12-11-12 0820	sign: date: time: 12-13-12 10:15	sign: date: time: 12-13-12 13:00	sign: date: time:
M29_R2_092612_C02 770124 12-0311M29R02C03	16oz poly, 4degC (Test America)	sign: date: time: 12-11-12 0845	sign: date: time:	sign: date: time:	sign: date: time:
M29_R2_092612_C03 770125 12-0311M29R02C04	32 oz. poly, 4degC (Test America)	sign: date: time: 12-11-12 0830	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

H2140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_R3_092612_C01 770126 12-0311M29R03C01	Poly Petri, 4degC (Test America)	sign: date: 12-11-12 time: 2350	sign: date: 12-12-12 time: 10:15	sign: date: 12-13-12 time: 13:00	sign: date: time:
M29_R3_092612_C02 770127 12-0311M29R03C03	16oz poly, 4degC (Test America)	sign: date: 12-8-12 time: 0020	sign: date: time:	sign: date: time:	sign: date: time:
M29_R3_092612_C03 770128 12-0311M29R03C04	32 oz. poly, 4degC (Test America)	sign: date: 12-12-12 time: 0010	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

H2L140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_FLB_092612_C01 770139 12-0311M29FLBC01	Poly Petri, 4degC (Test America)	sign: date: time: 12-11-12 0935	sign: date: time: 12.12.12 10:15	sign: date: time: 12-13-12 13:00	sign: date: time:
M29_FLB_092612_C02 770140 12-0311M29FLBC03	16oz poly, 4degC (Test America)	sign: date: time: 12-1-12 10:00	sign: date: time:	sign: date: time:	sign: date: time:
M29_FLB_092612_C03 770141 12-0311M29FLBC04	32 oz. poly, 4degC (Test America)	sign: date: time: 12-1-12 0945	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

(CHAIN_SMP_SEL_3RECD)

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

L12140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_RGB_092612_C01 ✓ 770135 12-0311M29RGBC8A	16oz poly, 4degC (Test America)	sign: [signature] date: 12-11-12 time: 1030	sign: [signature] date: 12-12-12 time: 10:15	sign: [signature] date: 12-13-12 time: 13:00	sign: date: time:
M29_RGB_092612_C02 770136 NO SAMPLE 12-0311M29RGBC8B	16oz poly, 4degC (Test America)	sign: NS date: time: LA 12-12-12 ~~12-11-12 1030~~	sign: NS date: time:	sign: date: time:	sign: date: time:
M29_RGB_092612_C03 770137 12-0311M29RGBC09	16oz poly, 4degC (Test America)	sign: [signature] date: 12-11-12 time: 1030	sign: [signature] date: 12-12-12 time: 10:15	sign: date: time:	sign: date: time:
M29_RGB_092612_C04 ✓ 770138 12-0311M29RGBC12	Poly Petri, 4degC (Test America)	sign: [signature] date: 12-11-12 time: 10:30	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 320140401

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **1a** Do not match COC ☐ **1b** Incomplete information ☐ **1c** Marking smeared ☐ **1d** Label torn ☐ **1e** No label ☐ **1f** COC not received ☐ **1g** Other:	1HA = However, samples were hand-delivered with custody seals to the lab. JTB 12-27-12
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C)			✓	☐ **2a** Temp Blank = _____ ☐ **2b** Cooler Temp = _____ ☐ **2c** Cooling initiated for recently collected samples, ice present.	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **3a** Sample preservative =	
4. Were custody seals present/intact on cooler and/or containers?	✓			☐ **4a** Not present ☐ **4b** Not intact ☐ **4c** Other:	
5. Were all of the samples listed on the COC received?	✓			☐ **5a** Samples received-not on COC ☐ **5b** Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ **6a** Leaking ☐ **6b** Broken	
7. Were VOA samples received without headspace?		✓	✓	☐ **7a** Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ **8a** Improper container	
9. Did you check for residual chlorine, if necessary?		✓	✓	☐ **9a** Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ **10a** Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For 1613B water samples is pH<9?			✓	If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____	
13. Are the shipping containers intact?	✓		✓	☐ **13a** Leaking ☐ **13b** Other:	
14. Was COC relinquished? (Signed/Dated/Timed) JTB 12-27-12	✓	✓		☑ **14a** Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ **15a** Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ **15a** Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ **15a** Incomplete information	
18. Is the client and project name/# identified?	✓			☐ **15a** Incomplete information	
19. Was the sampler identified on the COC?	✓			☐ **19a** Other	

Quote #: 76110 PM Instructions: _____

Sample Receiving Associate: _____ Date: 12-14-12

QA026R23.doc, 022812

Metals

Sample Results

Eastman Chemical Company

Client Sample ID: M29 R1 092612 C01/C02

TOTAL Metals

Lot-Sample #...: H2L140401-001 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**49.9**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK4W1AA**
		Dilution Factor: 1		Analysis Time..: 15:40	MDL.....: 0.32	
Lead	**67.5**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK4W1AC**
		Dilution Factor: 1		Analysis Time..: 15:40	MDL.....: 0.52	

Eastman Chemical Company

Client Sample ID: M29 R1 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-002 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	**0.62 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK401AA**
		Dilution Factor: 1		Analysis Time..: 13:47	MDL.....: 0.14	
Lead	**0.40 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK401AC**
		Dilution Factor: 1		Analysis Time..: 13:47	MDL.....: 0.27	

NOTE(S):

B Estimated result. Result is less than RL.

Eastman Chemical Company

Client Sample ID: M29 R2 092612 C01/C02

TOTAL Metals

Lot-Sample #...: H2L140401-003 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**49.3**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK421AA**
		Dilution Factor: 1		Analysis Time..: 15:45	MDL.....: 0.32	
Lead	**65.4**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK421AC**
		Dilution Factor: 1		Analysis Time..: 15:45	MDL.....: 0.52	

Eastman Chemical Company

Client Sample ID: M29 R2 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-004 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	**0.73 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK431AA**
		Dilution Factor: 1		Analysis Time..: 14:06	MDL.....: 0.14	
Lead	**0.30 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK431AC**
		Dilution Factor: 1		Analysis Time..: 14:06	MDL.....: 0.27	

NOTE(S):

B Estimated result. Result is less than RL.

Eastman Chemical Company

Client Sample ID: M29 R3 092612 C01/C02

TOTAL Metals

Lot-Sample #...: H2L140401-005 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**62.0**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK441AA**
		Dilution Factor: 1		Analysis Time..: 16:09	MDL.....: 0.32	
Lead	**75.3**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK441AC**
		Dilution Factor: 1		Analysis Time..: 16:09	MDL.....: 0.52	

Eastman Chemical Company

Client Sample ID: M29 R3 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-006 **Matrix.....:** AIR
Date Sampled...: 12/12/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	**1.4**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK461AA**
		Dilution Factor: 1		Analysis Time..: 14:21	MDL.....: 0.14	
Lead	**0.28 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK461AC**
		Dilution Factor: 1		Analysis Time..: 14:21	MDL.....: 0.27	

NOTE(S):

B Estimated result. Result is less than RL.

Eastman Chemical Company

Client Sample ID: M29 FLB 092612 C01/C02

TOTAL Metals

Lot-Sample #...: H2L140401-007 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**1.0**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK471AA**
		Dilution Factor: 1		Analysis Time..: 16:14	MDL.....: 0.32	
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK471AC
		Dilution Factor: 1		Analysis Time..: 16:14	MDL.....: 0.52	

Eastman Chemical Company

Client Sample ID: M29 FLB 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-008 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK481AA
		Dilution Factor: 1		Analysis Time..: 14:26	MDL.....: 0.14	
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK481AC
		Dilution Factor: 1		Analysis Time..: 14:26	MDL.....: 0.27	

Eastman Chemical Company

Client Sample ID: M29 RGB 092612 C01/C04

TOTAL Metals

Lot-Sample #...: H2L140401-009 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352035						
Chromium	**0.94 B**	**1.0**	**ug**	**SW846 6010B**	**12/17-12/20/12**	**MXK491AA**
		Dilution Factor: 1		Analysis Time..: 16:19	MDL.....: 0.32	
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK491AC
		Dilution Factor: 1		Analysis Time..: 16:19	MDL.....: 0.52	

NOTE(S):

B Estimated result. Result is less than RL.

Eastman Chemical Company

Client Sample ID: M29 RGB 092612 C03

TOTAL Metals

Lot-Sample #...: H2L140401-010 **Matrix.....:** AIR
Date Sampled...: 12/11/12 **Date Received..:** 12/13/12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2352036						
Chromium	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK5A1AA
		Dilution Factor: 1		Analysis Time..: 14:31	MDL.....: 0.14	
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXK5A1AC
		Dilution Factor: 1		Analysis Time..: 14:31	MDL.....: 0.27	

QC Summary

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: H2L140401 **Matrix.....:** AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: H2L170000-035 **Prep Batch #...:** 2352035						
Chromium	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXL231AA
		Dilution Factor: 1				
		Analysis Time..: 12:23				
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXL231AC
		Dilution Factor: 1				
		Analysis Time..: 12:23				
MB Lot-Sample #: H2L170000-036 **Prep Batch #...:** 2352036						
Chromium	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXL251AA
		Dilution Factor: 1				
		Analysis Time..: 12:08				
Lead	ND	1.0	ug	SW846 6010B	12/17-12/20/12	MXL251AC
		Dilution Factor: 1				
		Analysis Time..: 12:08				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: H2L140401 **Matrix.....:** AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Chromium	104	(80 - 120)			SW846 6010B	12/17-12/20/12	2352035
	104	(80 - 120)	0.79	(0-20)	SW846 6010B	12/17-12/20/12	2352035
		Dilution Factor: 1			Analysis Time..: 12:28		
Lead	107	(80 - 120)			SW846 6010B	12/17-12/20/12	2352035
	108	(80 - 120)	0.37	(0-20)	SW846 6010B	12/17-12/20/12	2352035
		Dilution Factor: 1			Analysis Time..: 12:28		
Chromium	103	(80 - 120)			SW846 6010B	12/17-12/20/12	2352036
	105	(80 - 120)	1.4	(0-20)	SW846 6010B	12/17-12/20/12	2352036
		Dilution Factor: 1			Analysis Time..: 12:13		
Lead	101	(80 - 120)			SW846 6010B	12/17-12/20/12	2352036
	105	(80 - 120)	3.4	(0-20)	SW846 6010B	12/17-12/20/12	2352036
		Dilution Factor: 1			Analysis Time..: 12:13		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: H2L140401 **Matrix.....:** AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chromium	20.0	20.9	ug	104		SW846 6010B	12/17-12/20/12	2352035
	20.0	20.7	ug	104	0.79	SW846 6010B	12/17-12/20/12	2352035
		Dilution Factor: 1				Analysis Time..: 12:28		
Lead	10.0	10.7	ug	107		SW846 6010B	12/17-12/20/12	2352035
	10.0	10.8	ug	108	0.37	SW846 6010B	12/17-12/20/12	2352035
		Dilution Factor: 1				Analysis Time..: 12:28		
Chromium	20.0	20.6	ug	103		SW846 6010B	12/17-12/20/12	2352036
	20.0	20.9	ug	105	1.4	SW846 6010B	12/17-12/20/12	2352036
		Dilution Factor: 1				Analysis Time..: 12:13		
Lead	10.0	10.1	ug	101		SW846 6010B	12/17-12/20/12	2352036
	10.0	10.5	ug	105	3.4	SW846 6010B	12/17-12/20/12	2352036
		Dilution Factor: 1				Analysis Time..: 12:13		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS MXK42A	Original Sample MXK42	Spike Added	Percent Recovery
Cr	689.58	492.81	200.0	98.4
Pb	741.51	653.63	100.0	87.9

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDSD MXK42A	Original Sample MXK42	Spike Added	Percent Recovery
Cr	674.86	492.81	200.0	91.0
Pb	721.83	653.63	100.0	68.2

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS MXK43A	Original Sample MXK43	Spike Added	Percent Recovery
Cr	215.10	7.29	200.0	103.9
Pb	105.72	2.99	100.0	102.7

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS D MXK43A	Original Sample MXK43	Spike Added	Percent Recovery
Cr	212.06	7.29	200.0	102.4
Pb	108.70	2.99	100.0	105.7

Quality Control Results ICP

TestAmerica Knoxville

ICP Data Reporting Form

Initial Calibration Verification

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Elem	True Conc	ICV 20-Dec-12 11:23 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Cr	1000.0	1006.60	**100.7**										
Pb	250.0	255.09	**102.0**										

TestAmerica Knoxville

ICP Data Reporting Form

Continuing Calibration Verification

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Elem	True Conc	CCV1 20-Dec-12 11:58 AM Found	% Rec	CCV2 20-Dec-12 12:57 PM Found	% Rec	CCV3 20-Dec-12 1:56 PM Found	% Rec	CCV4 20-Dec-12 2:55 PM Found	% Rec	CCV5 20-Dec-12 3:54 PM Found	% Rec	CCV6 20-Dec-12 4:54 PM Found	% Rec
Cr	2000.0	2030.10	**101.5**	2016.22	**100.8**	1982.94	**99.1**	2019.05	**101.0**	2042.92	**102.1**	2042.80	**102.1**
Pb	500.0	521.81	**104.4**	519.63	**103.9**	517.25	**103.5**	534.15	**106.8**	538.83	**107.8**	533.76	**106.8**

TestAmerica Knoxville

ICP Data Reporting Form

Reporting Limit Standard(s)

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Elem	True Conc	CRDL 20-Dec-12 11:53 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Cr	10.0	13.44	**134.4**										
Pb	10.0	10.19	**101.9**										

TestAmerica Knoxville

ICP Data Reporting Form

Initial Calibration Blank(s)

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Elem	Acceptance Limit	ICB 20-Dec-12 11:28 AM Found	Flag	Found	Flag	Found	Flag	Found	Flag	Found	Flag	Found	Flag
Cr	10.0	0.6	U										
Pb	10.0	2.6	U										

B - Analyte concentration is between IDL and Reporting Limit
U - Analyte concentration is less than IDL

TestAmerica Knoxville

ICP Data Reporting Form

Continuing Calibration Blank(s)

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Elem	Acceptance Limit	CCB1 20-Dec-12 12:03 PM		CCB2 20-Dec-12 1:02 PM		CCB3 20-Dec-12 2:01 PM		CCB4 20-Dec-12 3:00 PM		CCB5 20-Dec-12 3:59 PM		CCB6 20-Dec-12 4:59 PM	
		Found	Flag	Found	Flag	Found	Flag	Found	Flag	Found	Flag	Found	Flag
Cr	10.0	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Pb	10.0	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U

TestAmerica Knoxville

ICP Data Reporting Form

Interference Check Standard A

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Elem	True Conc	Reporting Limit	ICSA 20-Dec-12 11:43 AM Found	Found	Found	Found	Found
Al	500000		492680				
Ca	500000		483232				
Cr		10	3				
Fe	200000		191165				
Mg	500000		504816				
Pb		10	-5				

TestAmerica Knoxville

ICP Data Reporting Form

Interference Check Standard AB

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Elem	True Conc	ICSAB 20-Dec-12 11:48 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Al	250000	240120.1	**96.0**										
Ca	250000	244014.6	**97.6**										
Cr	500	508.7	**101.7**										
Fe	100000	95168.9	**95.2**										
Mg	250000	245770.4	**98.3**										
Pb	50	47.5	**95.0**										

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS MXK42A	Original Sample MXK42	Spike Added	Percent Recovery
Cr	689.58	492.81	200.0	98.4
Pb	741.51	653.63	100.0	87.9

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS MXK42A	Original Sample MXK42	Spike Added	Percent Recovery
Cr	674.86	492.81	200.0	91.0
Pb	721.83	653.63	100.0	68.2

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS MXK43A	Original Sample MXK43	Spike Added	Percent Recovery
Cr	215.10	7.29	200.0	103.9
Pb	105.72	2.99	100.0	102.7

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	PDS D MXK43A	Original Sample MXK43	Spike Added	Percent Recovery
Cr	212.06	7.29	200.0	102.4
Pb	108.70	2.99	100.0	105.7

TestAmerica Knoxville

ICP Data Reporting Form

Serial Dilution(s)

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	MXLT2	MXLT2P	Percent Difference
Cr	86.04	87.25	1.4
Pb	13.57	14.85B	9.4

B - Analyte concentration is between IDL and Reporting Limit
U - Analyte concentration is less than IDL
E - Percent Difference is greater than 10 and [OS]>50 times IDL

TestAmerica Knoxville

ICP Data Reporting Form

Serial Dilution(s)

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	MXLT3	MXLT3P	Percent Difference
Cr	11.50	13.15B	14.3
Pb	5.10B	13.23U	100.0

B - Analyte concentration is between IDL and Reporting Limit
U - Analyte concentration is less than IDL
E - Percent Difference is greater than 10 and [OS]>50 times IDL

TestAmerica Knoxville

ICP Data Reporting Form

Instrument Detection Limits

Units: ug/L (ppb)

IDL Completion Date: 16-Jan-12

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	Wavelength (nm)	IDL
Cr	267.72	0.61
Pb	220.35	2.7

TestAmerica Knoxville

ICP Data Reporting Form

Inter-Element Correction Factors

Instrument: Thermo iCAP 6500 Duo ICP **IEC Study Date:** 8/27/2012

Analyte	Correction Factor(s)
Aluminum	Mo(0.022847), V(0.021459)
Antimony	Cr(0.019021), Sn(-0.002638), V(-0.002552)
Arsenic	Cr(-0.001713), Fe(-0.000043), Mo(0.000884), Si(-0.000019)
Barium	Fe(0.000003)
Beryllium	V(0.000203)
Boron	Co(0.001078), Cr(0.000629), Fe(-0.00034), Mo(-0.001547)
Cadmium	Ca(0.000002), Fe(0.000067), Ni(-0.000088)
Chromium	Fe(0.000003), Mo(-0.000267), Si(0.000001)
Cobalt	Fe(0.000009), Mo(-0.001197), Si(-0.000006), Ti(0.001767)
Copper	Fe(-0.000064), Ti(-0.001075)
Iron	Co(0.066675), Mg(-0.000063), V(-0.052669)
Lead	Al(-0.000083), Fe(0.000028), Mo(-0.000724), Ni(0.000104), Si(0.000001), V(-0.000219)
Lithium	Ca(0.000015)
Magnesium	Mo(-0.011927)
Manganese	Fe(0.000011), Mg(0.000023)
Nickel	Co(-0.000267), Fe(-0.000022), Mo(0.001233), Si(-0.000012), Tl(0.000182)
Phosphorus	Mo(-0.005889), Si(-0.000028)
Selenium	Fe(-0.000087), Mn(0.000701), Si(0.000012)
Silicon	Co(0.011038), Cr(0.002165), Fe(-0.000178), V(0.00487)
Silver	V(-0.000813)
Strontium	Ca(0.00001)
Thallium	Al(-0.000008), Co(0.004591), Cr(0.000207), Fe(0.000004), Si(-0.000008), Ti(-0.00052), V(0.002237)
Titanium	Ca(0.000011), Cr(0.000272)
Vanadium	Cr(-0.001119), Fe(-0.000037), Mo(-0.000832), Ti(0.000813)

TestAmerica Knoxville

ICP Data Reporting Form

Inter-Element Correction Factors

Instrument: Thermo iCAP 6500 Duo ICP **IEC Study Date:** 8/27/2012

Zinc	As(0.000145), Ba(0.00015), Ca(0.000007), Co(0.000148), Cu(0.00064), Fe(0.000089), Mg(0.000037), Mn(0.000206), Ni(0.005774), Pb(0.000058), Si(0.000011), Sn(0.000157), Sr(0.000268), Ti(-0.000298)

TestAmerica Knoxville

ICP Data Reporting Form

Linear Dynamic Ranges

LDR Date: 27-Aug-12

Units: ug/L (ppb)

Instrument ID: Thermo iCAP 6500 Duo ICP

Data File Name: F122012.arc

Element	Linear Dynamic Range
Cr	40000.0
Pb	90000.0

TestAmerica Knoxville

Sample ID Nomenclature

The laboratory sample ID consists of 5 alpha-numeric characters followed by a suffix in the 6th position that designates the sample type:

Suffix	Sample Type
B	Method Blank
C	Laboratory Control Sample
L	Laboratory Control Sample Duplicate
S	Matrix Spike
D	Matrix Spike Duplicate
X	Sample Duplicate
P	Serial Dilution
A	Post Digestion Spike
Z#	Dilution; # = Dilution Factor

Raw Data
ICP

TestAmerica Knoxville
ICP Analysis Cover Sheet

Chart Number:	F122012	**Date of Analysis:**	12/20/12
Instrument:	DUO	**Analyst:**	KND

Standard	ID:
Calibration Std. ID :	
CCV (1:1 dil. of Cal. Std. ID):	4584-11
ICV ID:	4516-10
ICSA ID:	4582-17
ICSAB ID:	4582-18
CRI ID:	4582-16
INTERNAL STD ID:	4021-19-A
5% HNO_3/5% HCl SOLUTION ID:	4020-9-A

X Daily	As Needed	Annually
Check that argon manifold gas pressure is 80 psi.	□ Clean nebulizer and drain chamber.	□ Manufacturer service engineer for scheduled preventive maintenance service.
Check that nebulizer is not clogged.	□ Clean filters on back of power unit to remove dust.	□ Change vacuum pump oil on ST1
Check that capillary tubing is clean and in good condition.	Replace when needed: X peristaltic pump tubing □ sample capillary tubing □ autosampler sipper probe.	
Check that peristaltic pump windings are secure.	□ Clean and lubricate autosampler arm.	
Check that high voltage switch is on.	□ Check that cooling water supply system is full and drain bottle is not full.	
Check that exhaust fans are working.	□ Clean air filter on water cooling system.	
Clean plasma torch assembly to remove accumulated deposits.		
Check spray chamber O-rings		

Comments: Perform Torch Alignment

```
--------------------------------------------------------------------------------
:       Instrument Upload                                    Run Log - Page  1 :
:       Started Fri Dec 21 07:51:02 2012 by DAWSONK                            :
:       Data File: UPL$KNX_DATA_ROOT:<TJA>F122012.ARC;1                        :
--------------------------------------------------------------------------------
```

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
1	BLANK	1	20-DEC-2012	11:08:00			DUO
2	S1	1	20-DEC-2012	11:13:00			DUO
3	S2	1	20-DEC-2012	11:18:00			DUO
4	ICV	1	20-DEC-2012	11:23:00			DUO
5	ICB	1	20-DEC-2012	11:28:00			DUO
6	ICSA	1	20-DEC-2012	11:33:00			DUO
7	ICSA	1	20-DEC-2012	11:43:00			DUO
8	ICSAB	1	20-DEC-2012	11:48:00			DUO
9	CRDL	1	20-DEC-2012	11:53:00			DUO
10	CCV1	1	20-DEC-2012	11:58:00			DUO
11	CCB1	1	20-DEC-2012	12:03:00			DUO
12	MXL25B	1	20-DEC-2012	12:08:00	2352036	H2L170000	DUO
13	MXL25C	1	20-DEC-2012	12:13:00	2352036	H2L170000	DUO
14	MXL25L	1	20-DEC-2012	12:18:00	2352036	H2L170000	DUO
15	MXL23B	1	20-DEC-2012	12:23:00	2352035	H2L170000	DUO
16	MXL23C	1	20-DEC-2012	12:28:00	2352035	H2L170000	DUO
17	MXL23L	1	20-DEC-2012	12:33:00	2352035	H2L170000	DUO
18	MW21TA	1	20-DEC-2012	12:38:00			DUO
19	MW21TA	1	20-DEC-2012	12:43:00			DUO
20	MXLTX	1	20-DEC-2012	12:48:00	2352036	H2L160401	DUO
21	MXLT1	1	20-DEC-2012	12:52:00	2352036	H2L160401	DUO
22	CCV2	1	20-DEC-2012	12:57:00			DUO
23	CCB2	1	20-DEC-2012	13:02:00			DUO
24	MXLT3	1	20-DEC-2012	13:07:00	2352036	H2L160401	DUO
25	MXLT3A	1	20-DEC-2012	13:12:00	2352036	H2L160401	DUO
26	MXLT3A	1	20-DEC-2012	13:17:00	2352036	H2L160401	DUO
27	MXLT5	1	20-DEC-2012	13:22:00	2352036	H2L160401	DUO
28	MXLT7	1	20-DEC-2012	13:27:00	2352036	H2L160401	DUO
29	MXLT9	1	20-DEC-2012	13:32:00	2352036	H2L160401	DUO
30	MXLVC	1	20-DEC-2012	13:37:00	2352036	H2L160401	DUO
31	MXLVE	1	20-DEC-2012	13:42:00	2352036	H2L160401	DUO
32	MXK40	1	20-DEC-2012	13:47:00	2352036	H2L140401	DUO
33	MXLT3P	1	20-DEC-2012	13:52:00			DUO
34	CCV3	1	20-DEC-2012	13:56:00			DUO
35	CCB3	1	20-DEC-2012	14:01:00			DUO
36	MXK43	1	20-DEC-2012	14:06:00	2352036	H2L140401	DUO
37	MXK43A	1	20-DEC-2012	14:11:00	2352036	H2L140401	DUO
38	MXK43A	1	20-DEC-2012	14:16:00	2352036	H2L140401	DUO
39	MXK46	1	20-DEC-2012	14:21:00	2352036	H2L140401	DUO
40	MXK48	1	20-DEC-2012	14:26:00	2352036	H2L140401	DUO
41	MXK5A	1	20-DEC-2012	14:31:00	2352036	H2L140401	DUO
42	MXLTW	1	20-DEC-2012	14:36:00	2352035	H2L160401	DUO
43	MXLT0	1	20-DEC-2012	14:41:00	2352035	H2L160401	DUO
44	MXLT2	1	20-DEC-2012	14:46:00	2352035	H2L160401	DUO

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--------------------------------------------------------------------------------
:       Instrument Upload                                    Run Log - Page  2 :
:       Started Fri Dec 21 07:51:02 2012 by DAWSONK                            :
:       Data File: UPL$KNX_DATA_ROOT:<TJA>F122012.ARC;1                        :
--------------------------------------------------------------------------------
```

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
45	MXLT2P	1	20-DEC-2012	14:51:00			DUO
46	CCV4	1	20-DEC-2012	14:55:00			DUO
47	CCB4	1	20-DEC-2012	15:00:00			DUO
48	MXLT2A	1	20-DEC-2012	15:05:00	2352035	H2L160401	DUO
49	MXLT2A	1	20-DEC-2012	15:10:00	2352035	H2L160401	DUO
50	MXLT4	1	20-DEC-2012	15:15:00	2352035	H2L160401	DUO
51	MXLT6	1	20-DEC-2012	15:20:00	2352035	H2L160401	DUO
52	MXLT8	1	20-DEC-2012	15:25:00	2352035	H2L160401	DUO
53	MXLVA	1	20-DEC-2012	15:30:00	2352035	H2L160401	DUO
54	MXLVD	1	20-DEC-2012	15:35:00	2352035	H2L160401	DUO
55	MXK4W	1	20-DEC-2012	15:40:00	2352035	H2L140401	DUO
56	MXK42	1	20-DEC-2012	15:45:00	2352035	H2L140401	DUO
57	MXK42A	1	20-DEC-2012	15:50:00	2352035	H2L140401	DUO
58	CCV5	1	20-DEC-2012	15:54:00			DUO
59	CCB5	1	20-DEC-2012	15:59:00			DUO
60	MXK42A	1	20-DEC-2012	16:04:00	2352035	H2L140401	DUO
61	MXK44	1	20-DEC-2012	16:09:00	2352035	H2L140401	DUO
62	MXK47	1	20-DEC-2012	16:14:00	2352035	H2L140401	DUO
63	MXK49	1	20-DEC-2012	16:19:00	2352035	H2L140401	DUO
64	MXJ05	1	20-DEC-2012	16:24:00	2352035	H2L110431	DUO
65	MXJ05A	1	20-DEC-2012	16:29:00	2352035	H2L110431	DUO
66	MXJ05A	1	20-DEC-2012	16:34:00	2352035	H2L110431	DUO
67	MXJ06	1	20-DEC-2012	16:39:00	2352035	H2L110431	DUO
68	MLDTJ	1	20-DEC-2012	16:44:00			DUO
69	MLDTK	1	20-DEC-2012	16:49:00			DUO
70	CCV6	1	20-DEC-2012	16:54:00			DUO
71	CCB6	1	20-DEC-2012	16:59:00			DUO

```
---------------------------------- End of Report ----------------------------
```

TestAmerica Knoxville ICP Chart Review Checklist
Methods: 6010B/6010C, 200.7 - KNOX-MT-0007, Rev 12
Page 1 of 2

Chart Name:	F122012

A. Calibration/Instrument Run QC	NA	Yes	No	If No, why is data reportable?
1. Instrument calibrated per SOP?		X		
2. Was S2 within acceptance limits? (90-110%R)		X		
3. ICV analyzed at beginning of run & within acceptance limits? (6010B/6010C = 90 - 110%R **and** <5.0% RSD) (200.7 = 95 - 105%R **and** <3.0% RSD)		X		
4. CCV analyzed at required frequency?		X		
5. CCV within acceptance limits? (90 - 110%R **and** <5.0% RSD)		X		If no, list details: CCV4-Fe, K CCV5-Al, Ba, Ca, Fe, K, Li, Mg, Na CCV6-Al, Ba, Ca, Fe, K, Li, Mg, Na, Sr
6. ICB/CCB analyzed at required frequency?		X		
7. ICB/CCB within acceptance limits? (Water/Soil/Waste for 01/4U ≤3x SD of mean blank value & ≤MDL) (Air/SEP/PM10/JN Waste ≤RL)		X		If no, list details: _____
8. ICSA/ICSAB run at the beginning of run?		X		
9. ICSAB interferents and analytes within limits? (80 - 120%R)		X		
10. ICSA criteria for non-interfering elements met? (Water/Soil/Waste for 01 ±1x RL) (4U/Air/SEP/PM10/JN ±2x RL if RL ≤10 µg/L; ±1x RL if RL >10 µg/L) *If no, list analytes:* ICSA 1133 - As, Se, Zn Adjusted ICSA re-analyzed 1143		X		□ [ics1] Results outside limits due to contamination. □ [ics2] Interfering elements not present in sample at level which would result in false result >±1x RL. □ [ics3] Concentration of affected analyte in sample is more than 10x analyte signal in ICSA.
11. Reporting Limit Check Standard (CRDL) within limits? (Water/Soil/Waste for 01 = 70-130%R) (4U/Air/SEP/PM10/JN Waste = 50-150%)		X		
12. For method 6010C, were samples bracketed by RL Check Standards?	X			
13. Were all exposures for the QC standards used?		X		If no, list details: _____

B. Client Sample and QC Sample Results	NA	Yes	No	
1. Were samples with concentrations > the linear range for any parameter diluted and reanalyzed?			X	Comments: _____
2. Were all hits reported from a run in which interfering elements were less than the linear range?		X		
3. Were RLs for NDs elevated due to matrix effects?			X	Comments: _____
4. Internal standard (IS) response ±30% of ICB IS? *If no, list details:* 4371DR reading low starting at 1550 thru 1659 - Elements not requested		X		□ [is] High IS response. Sample(s) rerun at dilution. □ Low IS response. Sample(s) reanalyzed.

C. Preparation/Matrix QC	NA	Yes	No	
1. Method blank done per prep batch and within limits? (Waters/Soils/Waste for 01 < ½ RL; Zn <RL) (4U/Air/SEP/PM10/JN Waste <RL) *If no, list blank ID and reason, i.e. [Autotext]:* Blank ID [Autotext] Blank ID [Autotext]		X		□ **[mb3] No analyte >RL in associated samples.*** □ **[mb7] Sample results >10x blank.** □ **[mb5] Insufficient sample for reanalysis.***
2. LCS done per prep batch and within QC limits? *If no, list LCS ID:*		X		□ **[lcs2] Insufficient sample for reanalysis.** □ **[lcs3] LCS %R > QC limits & sample results <RL.**

TestAmerica Knoxville ICP Chart Review Checklist
Methods: 6010B/6010C, 200.7 - KNOX-MT-0007, Rev 12
Page 2 of 2

Chart Name: F122012

C. Preparation/Matrix QC (continued)	NA	Yes	No	If No, why is data reportable?
3. MS/MSD or MS/DUP run at required frequency?	X			□ [lcsd] Insufficient sample – lcs/lcsd analyzed.
4. MS/MSD %R and RPD within QC limits? *If no, list MS/MSD ID and [Autotext]:* *MS/MSD ID* *[Autotext]* *MS/MSD ID* *[Autotext]*	X			[ms1] [msd1] LCS acceptable - matrix effects. [ms2] [msd2] Native analyte > 4x spike level. [ms3] [msd3] Matrix effects and native analyte > 4x spike level.
5. PDS or PDS/PDSD analyzed at required frequency? *PDS ID* *Spike Level* *CLQC or Batch* MW21TA 50ppm Pb x 1/10 = 5ppm MXLT3A 1X LCS MXK43A ↓ MXLT2A MXK42A		X		MXJ05A 1XLCS MW21TA: 9ml sample + 1ml 50ppm Pb MXLT2A Se > 4x MXK42A - PDSD Pb 68%
6. Serial dilution done per prep batch?		X		
7. Was serial dilution reanalyzed at a dilution?			X	Comments:
8. Was the original sample analyzed on same chart as serial dilution?		X		If no, list details:
D. Other	**NA**	**Yes**	**No**	
1. Are nonconformances documented appropriately?	X			NCM #
2. Calculations checked for error? (Document manual calculation checks in comments section.)		X		
3. All client/project specific requirements met? (Review QuantIMS LIM L40 report, Lot Summary or Client Analysis Summary, and any applicable QAS.)		X		List requirements added since log-in:
4. Were all samples labeled correctly in the autosampler table?		X		If no, list details:

Reviewed by: LWD **Date:** 12/21/12

Comments:

Calculation: MXK40 Cr 1347

$$0.00062\ mg/L \times 0.100\ L \times \frac{0.100\ L}{0.100\ L} \times 1000\ \mu g/mg = 0.62\ \mu g$$

NOTE: Nonconformance memos are required for **bold** and *italicized* [autotext] statements: **Bold** = deficiency, *italicized* = anomaly

F122012

Report Author: Kerry Dawson

Published: 20/12/2012 17:10:24

Method Name: MT0007(v23) HF AIR (090512) (10)

Sample Name	Acquisition date
Blank	12/20/2012 11:08:49AM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (10)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-0.000171221	0.00183387	-0.000328158	3.58017e-005	0.0218427
Std Dev:	4.04565e-006	0.000480408	3.13299e-005	6.87995e-006	0.000802028
%RSD:	2.36282	26.1964	9.54719	19.2168	3.67183
Repeat:1	-0.000171299	0.00160788	-0.000292143	2.86486e-005	0.0220203
Repeat:2	-0.000175227	0.00150813	-0.000349125	4.23714e-005	0.0209668
Repeat:3	-0.000167137	0.0023856	-0.000343206	3.6385e-005	0.0225411
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.00015065	0.00557087	-0.000442758	-4.91891e-005	-3.67659e-005
Std Dev:	2.88244e-005	0.00024757	8.53402e-005	7.91071e-005	2.04588e-005
%RSD:	19.1333	4.44401	19.2747	160.822	55.6461
Repeat:1	-0.000135496	0.00563215	-0.000367434	9.72097e-006	-5.76459e-005
Repeat:2	-0.000132564	0.00578204	-0.000535444	-1.81865e-005	-3.58957e-005
Repeat:3	-0.000183891	0.00529841	-0.000425397	-0.000139102	-1.67561e-005
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.000352956	-0.000159659	-0.00150329	-0.00218577	-0.000179476
Std Dev:	7.0324e-006	0.000164052	0.00094928	0.000323616	0.000162144
%RSD:	1.99243	102.751	63.1467	14.8055	90.3431
Repeat:1	0.000346009	-0.000211804	-0.00225689	-0.00182203	-0.000204482
Repeat:2	0.000352789	-0.0002913	-0.00181585	-0.0022935	-6.28141e-006
Repeat:3	0.000360071	2.41273e-005	-0.000437145	-0.00244179	-0.000327664
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	2.88517e-005	8.50376e-005	-8.64752e-005	-0.00531357	-0.000842579
Std Dev:	8.17384e-006	4.66495e-005	0.000118679	0.00078621	7.5565e-005
%RSD:	28.3305	54.8574	137.241	14.7963	8.96829
Repeat:1	3.59902e-005	3.29485e-005	3.19013e-005	-0.00450292	-0.000833387
Repeat:2	1.99352e-005	9.91989e-005	-0.000205454	-0.00536498	-0.00092232
Repeat:3	3.06297e-005	0.000122965	-8.58725e-005	-0.00607282	-0.000772031
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	4.42062e-005	-4.62607e-006	-8.20981e-005	0.000193312	0.000140595
Std Dev:	4.22047e-005	1.8241e-005	7.221e-005	8.45525e-005	5.44461e-005
%RSD:	95.4725	394.309	87.9557	43.7389	38.7256
Repeat:1	9.22656e-005	-2.55952e-005	-0.000110529	9.76771e-005	0.000200813
Repeat:2	2.71733e-005	7.57789e-006	0	0.000258147	0.000126127
Repeat:3	1.31795e-005	4.13908e-006	-0.000135765	0.000224113	9.48439e-005
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.000175481	0.000104704	-0.00352082	-0.00109256	-8.4355e-005
Std Dev:	6.567e-005	3.49386e-005	0.000662528	0.000139105	6.45623e-005
%RSD:	37.4228	33.3688	18.8174	12.7321	76.5364
Repeat:1	0.000160552	7.46365e-005	-0.00427425	-0.000934813	-4.16413e-005
Repeat:2	0.000247331	9.64434e-005	-0.00302921	-0.00119766	-0.000158626
Repeat:3	0.000118561	0.000143033	-0.003259	-0.0011452	-5.27975e-005
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R

Avg. of Repeats:	7.27087e-005	0.00165633	13131.9	253871	17382
Std Dev:	2.5172e-005	4.99179e-005	156.604	2732.55	72.1878
%RSD:	34.6203	3.01377	1.19255	1.07635	0.415303
Repeat:1	6.52003e-005	0.00171248	12955.8	252309	17348.5
Repeat:2	0.000100781	0.00161699	13184.3	252277	17332.6
Repeat:3	5.21453e-005	0.00163951	13255.6	257026	17464.8

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----

Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	z *****	z *****	13131.9	253871	17382
Std Dev:	----	----	156.604	2732.55	72.1878
%RSD:	----	----	1.19255	1.07635	0.415303
Repeat:1	z ----	z ----	12955.8	252309	17348.5
Repeat:2	z ----	z ----	13184.3	252277	17332.6
Repeat:3	z ----	z ----	13255.6	257026	17464.8

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	13131.9	253871	17382
Std Dev:	156.604	2732.55	72.1878
%RSD:	1.19255	1.07635	0.415303
Repeat:1	12955.8	252309	17348.5
Repeat:2	13184.3	252277	17332.6
Repeat:3	13255.6	257026	17464.8

Sample Name	**Acquisition date**
S1	12/20/2012 11:13:48AM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (10)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.179522	0.867101	0.0782345	0.117839	10.8166
Std Dev:	0.00077853	0.00989381	0.000315736	0.000407072	0.101408
%RSD:	0.433668	1.14102	0.403577	0.345447	0.937521
Repeat:1	0.179937	0.878523	0.0784212	0.118309	10.9336
Repeat:2	0.180005	0.861187	0.0784123	0.117618	10.7547
Repeat:3	0.178624	0.861593	0.0778699	0.11759	10.7614
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	10.0735	14.8317	2.02231	4.48129	0.354617
Std Dev:	0.140529	0.174512	0.0128151	0.0253442	0.00261469
%RSD:	1.39504	1.17661	0.633687	0.565555	0.737326
Repeat:1	10.2301	15.0298	2.03461	4.50323	0.357587
Repeat:2	10.032	14.7007	2.02329	4.48711	0.353604
Repeat:3	9.95834	14.7646	2.00904	4.45355	0.352661
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.522271	0.279559	3.16139	2.89408	1.32219
Std Dev:	0.00262719	0.00390846	0.0357883	0.0290086	0.0156283
%RSD:	0.503032	1.39808	1.13204	1.00234	1.182
Repeat:1	0.524218	0.284063	3.20101	2.92719	1.33946
Repeat:2	0.523312	0.277051	3.13141	2.8731	1.30901
Repeat:3	0.519283	0.277564	3.15174	2.88195	1.31812
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	1.82303	1.70486	0.0350672	12.4063	2.88789
Std Dev:	0.0102597	0.00743361	0.000511841	0.144646	0.0128935
%RSD:	0.562781	0.436024	1.4596	1.1659	0.446467
Repeat:1	1.83478	1.70987	0.0354856	12.5716	2.89876
Repeat:2	1.81586	1.70839	0.0352195	12.3028	2.89126
Repeat:3	1.81845	1.69632	0.0344965	12.3445	2.87364

Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.192312	0.00714285	0.177436	0.0875019	0.0480702
Std Dev:	0.000837899	7.76706e-005	0.00133666	0.000295084	0.000190544
%RSD:	0.435699	1.08739	0.753321	0.337232	0.396386
Repeat:1	0.19261	0.0072324	0.178692	0.0874007	0.0481151
Repeat:2	0.192959	0.00709385	0.177586	0.0878343	0.0482343
Repeat:3	0.191365	0.00710228	0.176031	0.0872708	0.0478613
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.04153	0.853551	16.6309	1.31165	0.10733
Std Dev:	0.000502193	0.00575202	0.349334	0.0150077	0.000649769
%RSD:	1.20923	0.673893	2.10052	1.14418	0.605393
Repeat:1	0.0420998	0.859059	16.8532	1.32897	0.107924
Repeat:2	0.0411516	0.854011	16.2282	1.30258	0.10743
Repeat:3	0.0413388	0.847582	16.8112	1.3034	0.106636
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.506221	6.61101	12277.5	242782	17075.3
Std Dev:	0.00309976	0.0315061	117.817	3598.89	299.024
%RSD:	0.612333	0.47657	0.959612	1.48236	1.75122
Repeat:1	0.509669	6.63525	12150.8	238988	16798.6
Repeat:2	0.505328	6.62238	12298.1	243209	17392.5
Repeat:3	0.503665	6.5754	12383.7	246148	17034.6

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----

Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat:1	z ----	z ----	z ----	z ----	z ----
Repeat:2	z ----	z ----	z ----	z ----	z ----
Repeat:3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	z *****	z *****	12277.5	242782	17075.3
Std Dev:	----	----	117.817	3598.89	299.024
%RSD:	----	----	0.959612	1.48236	1.75122
Repeat:1	z ----	z ----	12150.8	238988	16798.6
Repeat:2	z ----	z ----	12298.1	243209	17392.5
Repeat:3	z ----	z ----	12383.7	246148	17034.6

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12277.5	242782	17075.3
Std Dev:	117.817	3598.89	299.024
%RSD:	0.959612	1.48236	1.75122
Repeat:1	12150.8	238988	16798.6
Repeat:2	12298.1	243209	17392.5
Repeat:3	12383.7	246148	17034.6

Sample Name	**Acquisition date**
S2	12/20/2012 11:18:52AM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (10)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0431959	0.214927	0.0187238	0.0293261	2.67829
Std Dev:	0.000477051	0.00138307	0.000145372	0.000373809	0.0201811
%RSD:	1.10439	0.643508	0.776402	1.27466	0.753508
Repeat:1	0.0437223	0.216507	0.0187967	0.0297055	2.70154
Repeat:2	0.042792	0.213935	0.0188184	0.0289581	2.66535
Repeat:3	0.0430734	0.214338	0.0185564	0.0293148	2.66797
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	2.64458	3.71635	0.50536	1.11311	0.089264
Std Dev:	0.0347363	0.0311987	0.0045999	0.00933867	0.00116927
%RSD:	1.31349	0.839496	0.910222	0.838971	1.3099
Repeat:1	2.68157	3.75202	0.509107	1.1199	0.0905959
Repeat:2	2.6395	3.70291	0.506746	1.11697	0.0884066

Repeat:3	2.61266	3.69413	0.500226	1.10246	0.0887894
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.12695	0.0700446	0.788127	0.69767	0.326814
Std Dev:	0.00128528	0.000679027	0.00411027	0.00733763	0.00262566
%RSD:	1.01243	0.969422	0.521523	1.05173	0.803411
Repeat:1	0.128332	0.0706596	0.792259	0.706134	0.32973
Repeat:2	0.12579	0.0701583	0.784039	0.693095	0.326074
Repeat:3	0.12673	0.0693159	0.788083	0.693782	0.324638
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.465357	0.421966	0.0088646	3.05101	0.723596
Std Dev:	0.00536507	0.0032661	0.000193631	0.0222557	0.00599721
%RSD:	1.15289	0.774018	2.18432	0.729453	0.828806
Repeat:1	0.471521	0.4238	0.00881064	3.07655	0.727797
Repeat:2	0.46174	0.423904	0.00907948	3.0407	0.726264
Repeat:3	0.462811	0.418196	0.00870367	3.03578	0.716728
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0469453	0.00181887	0.0443966	0.0214387	0.0117058
Std Dev:	0.000327715	6.88692e-006	0.000405639	0.000169292	7.44322e-005
%RSD:	0.698079	0.378637	0.91367	0.789659	0.635856
Repeat:1	0.0470766	0.00182648	0.0447344	0.021429	0.0117912
Repeat:2	0.047187	0.00181706	0.0445087	0.0216126	0.0116713
Repeat:3	0.0465723	0.00181307	0.0439467	0.0212744	0.0116549
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0104743	0.21415	4.16592	0.325374	0.026825
Std Dev:	0.000138801	0.00179009	0.0276932	0.00210623	0.000243711
%RSD:	1.32515	0.835903	0.664756	0.647327	0.908519
Repeat:1	0.010332	0.215524	4.1979	0.327691	0.0270448
Repeat:2	0.0104818	0.214801	4.14977	0.324857	0.0268675
Repeat:3	0.0106093	0.212126	4.15009	0.323574	0.0265629
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.126001	1.61602	12896.2	250288	17014.3
Std Dev:	0.00158215	0.0133664	131.272	4408.18	192.186
%RSD:	1.25567	0.827117	1.01792	1.76124	1.12955
Repeat:1	0.127775	1.624	12768.8	245272	16877.3
Repeat:2	0.124736	1.62347	12888.8	252047	16931.7
Repeat:3	0.125491	1.60059	13031	253545	17234

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.482704	12.3134	0.242572	0.994574	0.984346
Std Dev:	0.00531113	0.079876	0.00184417	0.0126479	0.00747813
%RSD:	1.10029	0.648693	0.760258	1.27169	0.759705
Repeat:1	0.488564	12.4046	0.24352	1.00743	0.992963
Repeat:2	0.478208	12.256	0.243749	0.982146	0.979551
Repeat:3	0.481339	12.2795	0.240447	0.994145	0.980525
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.05017	25.0287	0.250053	0.993586	1.00718
Std Dev:	0.0137937	0.21043	0.00227367	0.00833965	0.0131851
%RSD:	1.31347	0.840757	0.909273	0.839349	1.30911
Repeat:1	1.06486	25.2692	0.251905	0.999644	1.0222
Repeat:2	1.04816	24.938	0.25074	0.99704	0.997515

Repeat:3	1.0375	24.8788	0.247516	0.984075	1.00183
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.970301	12.5493	24.9655	0.96655	24.7278
Std Dev:	0.00984127	0.121372	0.129953	0.0101346	0.198527
%RSD:	1.01425	0.967167	0.52053	1.04854	0.802848
Repeat:1	0.980883	12.6597	25.0961	0.978239	24.9483
Repeat:2	0.961423	12.5689	24.8362	0.96023	24.6719
Repeat:3	0.968598	12.4193	24.9641	0.96118	24.5632
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.02103	0.98988	25.4677	24.6247	1.00314
Std Dev:	0.011774	0.00766339	0.555185	0.179313	0.00830519
%RSD:	1.15315	0.774174	2.17996	0.728185	0.82792
Repeat:1	1.03456	0.994181	25.3118	24.8305	1.00896
Repeat:2	1.01309	0.994426	26.0841	24.5417	1.00683
Repeat:3	1.01544	0.981032	25.0071	24.502	0.993628
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.975831	0.255068	0.25049	0.242827	0.241299
Std Dev:	0.00682188	0.000966157	0.00227491	0.00211555	0.00155151
%RSD:	0.699084	0.378784	0.908184	0.871217	0.642981
Repeat:1	0.978571	0.256136	0.252391	0.242477	0.243078
Repeat:2	0.980858	0.254812	0.25111	0.245096	0.240588
Repeat:3	0.968066	0.254255	0.247969	0.240908	0.24023
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.996179	1.00321	1.00261	0.994754	0.501086
Std Dev:	0.0137701	0.00838993	0.00665886	0.00641634	0.00454307
%RSD:	1.38229	0.836311	0.664153	0.645017	0.906645
Repeat:1	0.982042	1.00964	1.0103	1.00181	0.505172
Repeat:2	0.996943	1.00626	0.998726	0.993179	0.501894
Repeat:3	1.00955	0.993718	0.998804	0.989272	0.496194
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.995202	0.976811	12896.2	250288	17014.3
Std Dev:	0.0124982	0.00809402	131.272	4408.18	192.186
%RSD:	1.25584	0.828617	1.01792	1.76124	1.12955
Repeat:1	1.00922	0.981624	12768.8	245272	16877.3
Repeat:2	0.985218	0.981342	12888.8	252047	16931.7
Repeat:3	0.991169	0.967466	13031	253545	17234
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12896.2	250288	17014.3
Std Dev:	131.272	4408.18	192.186
%RSD:	1.01792	1.76124	1.12955
Repeat:1	12768.8	245272	16877.3

Repeat:2	12888.8	252047	16931.7	
Repeat:3	13031	253545	17234	

Sample Name	**Acquisition date**
ICV	12/20/2012 11:23:44AM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (10)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0432496	0.219698	0.018833	0.0296667	2.71966
Std Dev:	0.000560252	0.000364968	8.10973e-005	0.000389073	0.0116708
%RSD:	1.29539	0.166122	0.430612	1.31148	0.429127
Repeat:1	0.0428383	0.219344	0.018899	0.0294921	2.70821
Repeat:2	0.0438877	0.219678	0.0188576	0.0301125	2.71922
Repeat:3	0.0430227	0.220073	0.0187425	0.0293955	2.73154
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	2.59755	3.77742	0.509165	1.13467	0.0892127
Std Dev:	0.0469975	0.0138498	0.00170892	0.0048434	0.00130548
%RSD:	1.8093	0.366646	0.335633	0.426855	1.46333
Repeat:1	2.58621	3.76767	0.510811	1.13808	0.0888656
Repeat:2	2.64918	3.77133	0.509285	1.13681	0.0906567
Repeat:3	2.55726	3.79327	0.507399	1.12913	0.0881159
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.127186	0.0707148	0.797541	0.705781	0.329758
Std Dev:	0.00164605	0.00032196	0.00534249	0.00429302	0.00132201
%RSD:	1.29421	0.455293	0.669871	0.608265	0.400903
Repeat:1	0.126425	0.0706695	0.79286	0.701546	0.328671
Repeat:2	0.129074	0.0710569	0.796402	0.705668	0.329373
Repeat:3	0.126057	0.0704178	0.803361	0.71013	0.33123
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.465073	0.418963	0.0089854	3.09579	0.741603
Std Dev:	0.00687354	0.00155051	0.000484549	0.0129536	0.00207678
%RSD:	1.47795	0.370082	5.39263	0.418426	0.280039
Repeat:1	0.463068	0.420418	0.00867138	3.08265	0.743223
Repeat:2	0.472726	0.41914	0.00874137	3.09617	0.742324
Repeat:3	0.459425	0.417332	0.00954345	3.10855	0.739262
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0478595	0.00181896	0.0454998	0.0214571	0.0118886
Std Dev:	0.000166282	3.24674e-005	0.000198362	7.02634e-005	0.000131038
%RSD:	0.347438	1.78494	0.435962	0.32746	1.10222
Repeat:1	0.0477885	0.00183025	0.0456843	0.021377	0.0120335
Repeat:2	0.0480495	0.00184428	0.0455252	0.0215084	0.0117784
Repeat:3	0.0477406	0.00178236	0.04529	0.0214858	0.0118539
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0111426	0.215681	4.24434	0.32286	0.0274467
Std Dev:	0.000200426	0.000921899	0.0107579	0.000867518	0.000206226
%RSD:	1.79873	0.427437	0.253466	0.268698	0.751368
Repeat:1	0.0109614	0.215965	4.23961	0.32247	0.0275603
Repeat:2	0.0111086	0.216427	4.23675	0.322256	0.0275712
Repeat:3	0.0113579	0.21465	4.25665	0.323854	0.0272087
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.1262	1.63826	12885.9	252347	17018

Std Dev:	0.00188747	0.00759395	19.7163	3424.26	54.6108
%RSD:	1.49562	0.463539	0.153008	1.35697	0.3209
Repeat:1	0.125689	1.64352	12908.6	254005	16986
Repeat:2	0.12829	1.64169	12875.1	248409	16986.9
Repeat:3	0.124621	1.62955	12873.8	254626	17081

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.483301	12.5902	0.243966	1.0061	0.999676
Std Dev:	0.00623642	0.021355	0.00103792	0.0131657	0.00432485
%RSD:	1.29038	0.169616	0.425435	1.30859	0.432625
Repeat:1	0.478729	12.5697	0.244791	1.0002	0.995434
Repeat:2	0.490405	12.5887	0.244307	1.02118	0.999516
Repeat:3	0.48077	12.6123	0.242801	0.996917	1.00408
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.03149	25.4406	0.251934	1.01285	1.0066
Std Dev:	0.0186624	0.0934146	0.00084626	0.00433429	0.0147208
%RSD:	1.80926	0.367188	0.335905	0.427931	1.46243
Repeat:1	1.02699	25.3748	0.252751	1.0159	1.00269
Repeat:2	1.052	25.3994	0.251989	1.01476	1.02288
Repeat:3	1.0155	25.5475	0.251061	1.00789	0.994233
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.972099	12.668	25.2631	0.97775	24.9502
Std Dev:	0.0125934	0.0581791	0.168912	0.00592996	0.099882
%RSD:	1.29548	0.459261	0.66861	0.606491	0.400325
Repeat:1	0.966278	12.6595	25.1151	0.9719	24.8681
Repeat:2	0.98655	12.73	25.2271	0.977593	24.9211
Repeat:3	0.96347	12.6145	25.4471	0.983757	25.0614
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.0204	0.982833	25.8169	24.9855	1.02811
Std Dev:	0.0150888	0.00363802	1.38751	0.104367	0.00287459
%RSD:	1.47871	0.370157	5.37445	0.41771	0.2796
Repeat:1	1.016	0.986246	24.9172	24.8796	1.03035
Repeat:2	1.0372	0.983247	25.1186	24.9886	1.02911
Repeat:3	1.008	0.979005	27.4148	25.0883	1.02487
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.994699	0.255093	0.256593	0.243084	0.245117
Std Dev:	0.00344399	0.0045166	0.00111202	0.000784714	0.00273323
%RSD:	0.346234	1.77057	0.433379	0.322816	1.11507
Repeat:1	0.993249	0.256663	0.25762	0.242183	0.248138
Repeat:2	0.998631	0.258615	0.256746	0.243445	0.242815
Repeat:3	0.992217	0.250001	0.255412	0.243622	0.244399
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm

Avg. of Repeats:	1.06164	1.01038	1.02147	0.987081	0.512717
Std Dev:	0.0197788	0.00432083	0.00258666	0.00264116	0.00384091
%RSD:	1.86303	0.427645	0.253231	0.267573	0.749128
Repeat:1	1.04383	1.01171	1.02033	0.985897	0.514855
Repeat:2	1.05818	1.01388	1.01964	0.985239	0.515014
Repeat:3	1.08293	1.00555	1.02443	0.990107	0.508283
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.996776	0.990209	12885.9	252347	17018
Std Dev:	0.014914	0.00461644	19.7163	3424.26	54.6108
%RSD:	1.49622	0.466208	0.153008	1.35697	0.3209
Repeat:1	0.992743	0.993422	12908.6	254005	16986
Repeat:2	1.01329	0.992285	12875.1	248409	16986.9
Repeat:3	0.984293	0.984919	12873.8	254626	17081
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12885.9	252347	17018
Std Dev:	19.7163	3424.26	54.6108
%RSD:	0.153008	1.35697	0.3209
Repeat:1	12908.6	254005	16986
Repeat:2	12875.1	248409	16986.9
Repeat:3	12873.8	254626	17081

Sample Name	**Acquisition date**
ICB	12/20/2012 11:28:36AM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (10)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000168309	0.00180403	-0.000338607	0.000116351	0.0235171
Std Dev:	6.26063e-005	0.000109818	3.20069e-005	9.63307e-006	0.000236297
%RSD:	37.1973	6.08735	9.45251	8.27935	1.00479
Repeat:1	-0.000192259	0.00191084	-0.00030984	0.000118624	0.0237613
Repeat:2	-9.72629e-005	0.00169143	-0.000373085	0.000124644	0.0232896
Repeat:3	-0.000215404	0.00180982	-0.000332897	0.000105784	0.0235002
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-0.000156791	0.00588983	-0.000446849	2.97782e-005	-1.70381e-005
Std Dev:	2.41691e-005	0.000265166	2.62431e-005	0.000170203	2.75642e-005
%RSD:	15.4148	4.5021	5.87293	571.57	161.78
Repeat:1	-0.000138087	0.00604737	-0.00046405	7.47383e-005	-2.34969e-006
Repeat:2	-0.000148207	0.00558369	-0.000416643	0.000172987	-4.88358e-005
Repeat:3	-0.000184081	0.00603844	-0.000459853	-0.000158391	7.12511e-008
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.000341032	3.38094e-005	0.00225592	-0.00147219	-0.000216655
Std Dev:	2.82961e-005	0.000196901	0.00135599	0.00127799	0.000247362
%RSD:	8.29719	582.386	60.108	86.8091	114.173
Repeat:1	0.000310161	2.16927e-005	0.00379404	-0.00221184	-0.000316713
Repeat:2	0.000365736	0.000236489	0.00174047	3.50955e-006	6.50616e-005
Repeat:3	0.000347199	-0.000156754	0.00123324	-0.00220823	-0.000398313
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**

Avg. of Repeats:	2.14879e-005	0.000242866	0.000324291	-0.00271844	-0.000860826
Std Dev:	4.08161e-005	4.22217e-005	0.00032725	0.000521063	6.24854e-005
%RSD:	189.949	17.3847	100.912	19.1677	7.25877
Repeat:1	6.51624e-005	0.000197519	-3.22678e-005	-0.00238917	-0.000899179
Repeat:2	-1.56907e-005	0.000281045	0.000610931	-0.00244696	-0.000788723
Repeat:3	1.49921e-005	0.000250035	0.00039421	-0.00331919	-0.000894577
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	4.39684e-005	6.72284e-006	-5.24503e-005	0.000247927	0.000151349
Std Dev:	5.14615e-005	5.46705e-006	7.07852e-005	5.48144e-005	9.64308e-005
%RSD:	117.042	81.3205	134.957	22.1091	63.714
Repeat:1	0	9.28009e-006	-8.67766e-006	0.000203422	4.0066e-005
Repeat:2	3.13351e-005	4.45819e-007	-0.000134115	0.000231205	0.00020369
Repeat:3	0.00010057	1.04426e-005	-1.45577e-005	0.000309155	0.000210292
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	8.16207e-005	0.000134864	-0.00409539	-0.000914037	-0.000113567
Std Dev:	0.000133299	6.22677e-005	0.000606676	6.05264e-005	9.64861e-005
%RSD:	163.316	46.1706	14.8136	6.62188	84.9597
Repeat:1	-2.00657e-005	7.78623e-005	-0.00386183	-0.000900612	-8.38262e-005
Repeat:2	3.23958e-005	0.000125414	-0.00364021	-0.000980148	-0.000221422
Repeat:3	0.000232532	0.000201317	-0.00478414	-0.00086135	-3.54524e-005
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	8.98625e-005	0.00166861	12806.4	246376	16727.6
Std Dev:	3.42129e-005	8.37503e-005	147.702	1631.25	131.09
%RSD:	38.0725	5.01916	1.15334	0.662099	0.783678
Repeat:1	6.11276e-005	0.00176409	12796.6	247150	16763.1
Repeat:2	0.000127709	0.00160757	12663.8	244502	16837.2
Repeat:3	8.07513e-005	0.00163417	12958.7	247476	16582.3

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.24745e-005	-0.00174186	-0.000130978	0.00273597	0.000620337
Std Dev:	0.000695877	0.00637631	0.000404677	0.00033736	8.76154e-005
%RSD:	2142.84	366.062	308.966	12.3306	14.1238
Repeat:1	-0.000233849	0.00445932	0.000233158	0.00281178	0.000710859
Repeat:2	0.000822179	-0.00827994	-0.000566654	0.00302897	0.000535951
Repeat:3	-0.000490906	-0.00140497	-5.94372e-005	0.00236715	0.000614201
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-2.46668e-006	0.00215139	-4.3545e-006	6.96572e-005	0.000222456
Std Dev:	9.59775e-006	0.00178851	1.1083e-005	0.000151966	0.000310886
%RSD:	389.096	83.1325	254.518	218.162	139.752
Repeat:1	5.00812e-006	0.00321394	-1.2746e-005	0.000109567	0.00038807
Repeat:2	8.81972e-007	8.64946e-005	8.20899e-006	0.000197685	-0.000136176
Repeat:3	-1.32901e-005	0.00315374	-8.52643e-006	-9.82808e-005	0.000415473
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-8.84221e-005	0.0346194	0.118854	0.000985865	-0.00280577
Std Dev:	0.000217212	0.0352331	0.0428717	0.00176571	0.0186978
%RSD:	245.653	101.773	36.071	179.102	666.404
Repeat:1	-0.000324665	0.0324363	0.167484	-3.60567e-005	-0.01037
Repeat:2	0.000102658	0.0708932	0.102557	0.00302473	0.018489

Repeat:3	-4.32595e-005	0.000528671	0.08652	-3.10753e-005	-0.0165363
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-1.65092e-005	0.000370321	1.17736	0.0209089	-2.49727e-005
Std Dev:	8.99302e-005	9.90667e-005	0.938111	0.00419818	8.74715e-005
%RSD:	544.727	26.7516	79.6794	20.0785	350.269
Repeat:1	7.94872e-005	0.000263921	0.155266	0.0235618	-7.82482e-005
Repeat:2	-9.87995e-005	0.000459901	1.99913	0.0230962	7.5979e-005
Repeat:3	-3.02154e-005	0.000387141	1.37768	0.0160687	-7.26487e-005
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-2.99432e-006	0.00157734	0.000165943	0.000656637	0.00022708
Std Dev:	0.00106491	0.000761485	0.000393553	0.000661553	0.00200893
%RSD:	35564.4	48.2766	237.162	100.749	884.68
Repeat:1	-0.000913223	0.00193341	0.000410249	0.000114253	-0.00209139
Repeat:2	-0.000263874	0.000703047	-0.000288053	0.000461977	0.00132065
Repeat:3	0.00116811	0.00209555	0.000375632	0.00139368	0.00145198
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.00921826	0.000141356	-0.000138221	0.000538903	-0.00055155
Std Dev:	0.0130944	0.000291841	0.000145933	0.000186655	0.00182112
%RSD:	142.049	206.458	105.579	34.6362	330.182
Repeat:1	-0.0192098	-0.000125806	-8.20546e-005	0.00058437	9.64844e-006
Repeat:2	-0.0140506	9.70615e-005	-2.87169e-005	0.000333714	-0.00258722
Repeat:3	0.0056056	0.000452813	-0.000303892	0.000698623	0.000922918
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000136746	5.68567e-007	12806.4	246376	16727.6
Std Dev:	0.000270764	5.5744e-005	147.702	1631.25	131.09
%RSD:	198.005	9804.3	1.15334	0.662099	0.783678
Repeat:1	-8.99984e-005	6.31814e-005	12796.6	247150	16763.1
Repeat:2	0.000436542	-4.36652e-005	12663.8	244502	16837.2
Repeat:3	6.36958e-005	-1.78105e-005	12958.7	247476	16582.3
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12806.4	246376	16727.6
Std Dev:	147.702	1631.25	131.09
%RSD:	1.15334	0.662099	0.783678
Repeat:1	12796.6	247150	16763.1
Repeat:2	12663.8	244502	16837.2
Repeat:3	12958.7	247476	16582.3

Sample Name	**Acquisition date**
ICSA	12/20/2012 11:33:35AM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (10)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-0.000182458	8.48076	-0.00419312	-0.00141306	0.0255367
Std Dev:	5.10705e-005	0.137233	0.000189707	2.97456e-005	0.000916637
%RSD:	27.9902	1.61817	4.52424	2.10505	3.58949
Repeat:1	-0.000188449	8.55963	-0.00438328	-0.00144215	0.0255753
Repeat:2	-0.000128657	8.56036	-0.00419222	-0.00141432	0.0264335
Repeat:3	-0.000230269	8.3223	-0.00400387	-0.0013827	0.0246014
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.00107574	71.0768	0.0221215	-0.0148543	0.000438093
Std Dev:	5.69182e-005	1.41768	0.00056016	0.00037918	3.57487e-005
%RSD:	5.29109	1.99458	2.5322	2.55266	8.16007
Repeat:1	-0.0011194	72.3892	0.0224604	-0.0150189	0.000452987
Repeat:2	-0.00109644	71.2679	0.0224292	-0.0151234	0.000463987
Repeat:3	-0.00101136	69.5732	0.021475	-0.0144206	0.000397306
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	-0.00086448	1.07242	0.00200214	0.00203628	6.69041
Std Dev:	7.18435e-005	0.0158613	0.00166693	0.000659084	0.0892404
%RSD:	8.3106	1.47902	83.2574	32.367	1.33386
Repeat:1	-0.000912598	1.08052	0.00372297	0.002426	6.71593
Repeat:2	-0.000898945	1.08259	0.00188852	0.00240753	6.76411
Repeat:3	-0.000781898	1.05414	0.000394924	0.00127531	6.59119
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.00126056	-0.000451874	-0.000421184	0.00386682	-0.0194428
Std Dev:	1.6327e-005	0.000196753	0.000205496	0.00109125	0.000443484
%RSD:	1.29521	43.5415	48.7901	28.221	2.28097
Repeat:1	0.00126137	-0.0006607	-0.000362692	0.00450817	-0.0196334
Repeat:2	0.00127647	-0.000424953	-0.000251274	0.00448547	-0.019759
Repeat:3	0.00124384	-0.000269967	-0.000649584	0.00260681	-0.0189358
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	-0.00239507	-0.000257812	0.0210476	0.000920724	0.000373037
Std Dev:	6.18797e-005	3.06136e-005	0.000451415	0.000141706	9.71147e-005
%RSD:	2.58363	11.8744	2.14473	15.3907	26.0335
Repeat:1	-0.00236946	-0.000283328	0.0213739	0.000796017	0.000439893
Repeat:2	-0.00246564	-0.000223867	0.0212365	0.000891336	0.000417577
Repeat:3	-0.0023501	-0.00026624	0.0205325	0.00107482	0.000261642
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	20.1117	-0.00066083	0.00534556	0.00184944	-0.000864544
Std Dev:	0.15801	0.000173061	0.000393553	2.82766e-005	6.47381e-005
%RSD:	0.785663	26.1884	7.36225	1.52892	7.48812
Repeat:1	20.2863	-0.000823568	0.00518199	0.00187918	-0.000844729
Repeat:2	20.0704	-0.000479026	0.00506016	0.0018229	-0.000812029
Repeat:3	19.9785	-0.000679897	0.00579452	0.00184624	-0.000936874
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	-0.000507191	0.183488	11662.7	224138	15536.3
Std Dev:	7.51189e-006	0.00445584	285.214	4201.83	202.597
%RSD:	1.48108	2.42841	2.44552	1.87466	1.30403
Repeat:1	-0.000507554	0.187333	11417.8	222252	15415.2
Repeat:2	-0.000499504	0.184525	11594.4	221210	15423.4
Repeat:3	-0.000514514	0.178605	11975.9	228953	15770.2

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000122812	491.697	0.0146701	0.016267	0.000793015

Std Dev:	0.000567615	7.9582	0.00187555	0.000539397	0.000331922
%RSD:	462.18	1.61852	12.7849	3.3159	41.8557
Repeat:1	-0.000189342	496.271	0.0128064	0.015775	0.000802952
Repeat:2	0.000475136	496.313	0.0146464	0.0168437	0.00111986
Repeat:3	-0.00065423	482.508	0.0165573	0.0161821	0.000456236
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000367918	479.364	-0.00262808	-0.00310253	0.0028022
Std Dev:	2.26347e-005	9.56206	7.1462e-005	0.000313717	0.000385188
%RSD:	6.15211	1.99474	2.71917	10.1116	13.7459
Repeat:1	-0.000385271	488.216	-0.00257481	-0.00316026	0.00294851
Repeat:2	-0.000376168	480.654	-0.00260014	-0.00338338	0.0030928
Repeat:3	-0.000342316	469.223	-0.00270929	-0.00276396	0.00236529
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00297558	191.947	0.11083	-0.00135725	505.712
Std Dev:	0.000371486	2.83848	0.0527027	0.000780006	6.74528
%RSD:	12.4845	1.47879	47.5528	57.4696	1.33382
Repeat:1	0.00270024	193.396	0.165237	-0.000951588	507.641
Repeat:2	0.0028284	193.768	0.107238	-0.000863668	511.283
Repeat:3	0.00339811	188.676	0.0600153	-0.00225649	498.212
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.00598183	-0.00125978	-0.0112889	0.0739661	0.00216114
Std Dev:	8.43055e-005	0.000461649	0.603552	0.00879219	0.00046085
%RSD:	1.40936	36.6453	5346.41	11.8868	21.3244
Repeat:1	-0.00602106	-0.00174976	0.170611	0.0791335	0.00213515
Repeat:2	-0.00603936	-0.00119662	0.480393	0.0789506	0.00171384
Repeat:3	-0.00588505	-0.000832964	-0.68487	0.0638143	0.00263444
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00487732	-0.00273546	-0.131512	0.00873611	0.0185815
Std Dev:	0.00137996	0.00443738	0.00153574	0.00171934	0.00224809
%RSD:	28.2935	162.217	1.16775	19.6808	12.0985
Repeat:1	0.00588434	-0.00597073	-0.131835	0.00722408	0.0200747
Repeat:2	0.00330436	0.00232312	-0.129841	0.00837794	0.019674
Repeat:3	0.00544327	-0.00455876	-0.132861	0.0106063	0.015996
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Fail
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1976.14	-0.00358797	-0.00266105	0.00369729	0.00427056
Std Dev:	15.526	0.000811115	0.000182819	0.000101423	0.00134395
%RSD:	0.785673	22.6065	6.87017	2.74316	31.4702
Repeat:1	1993.3	-0.0043507	-0.00278891	0.00368973	0.00481242
Repeat:2	1972.08	-0.00273587	-0.00274259	0.00359986	0.005259
Repeat:3	1963.05	-0.00367733	-0.00245165	0.00380229	0.00274027
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----

Avg. of Repeats:	0.0025256	0.0672221	11662.7	224138	15536.3
Std Dev:	0.000159859	0.00223319	285.214	4201.83	202.597
%RSD:	6.32955	3.3221	2.44552	1.87466	1.30403
Repeat:1	0.00257612	0.0692037	11417.8	222252	15415.2
Repeat:2	0.0026541	0.0676603	11594.4	221210	15423.4
Repeat:3	0.00234659	0.0648023	11975.9	228953	15770.2
QC Status Pass/Fail:	Pass	Fail	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11662.7	224138	15536.3
Std Dev:	285.214	4201.83	202.597
%RSD:	2.44552	1.87466	1.30403
Repeat:1	11417.8	222252	15415.2
Repeat:2	11594.4	221210	15423.4
Repeat:3	11975.9	228953	15770.2

Method Name: MT0007(v23) HF AIR (090512) (11)

Sample Name	**Acquisition date**
ICSA	12/20/2012 11:43:44AM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000209949	8.49771	-0.00430265	-0.00145103	0.0267324
Std Dev:	3.14716e-005	0.0228305	0.00011434	3.6403e-005	0.00118273
%RSD:	14.9901	0.268666	2.65742	2.50876	4.42434
Repeat:1	-0.000175026	8.52406	-0.00438486	-0.00140984	0.027094
Repeat:2	-0.000236114	8.48386	-0.00417207	-0.00147889	0.0276922
Repeat:3	-0.000218707	8.4852	-0.00435101	-0.00146436	0.0254111
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-0.00108407	71.6501	0.0220928	-0.0152135	0.000465415
Std Dev:	3.90884e-005	0.588094	0.000356046	0.000252015	2.50861e-005
%RSD:	3.60571	0.820786	1.6116	1.65652	5.39006
Repeat:1	-0.00103936	71.7672	0.0224105	-0.0154515	0.000449133
Repeat:2	-0.00110105	71.0123	0.0221599	-0.0149495	0.000494304
Repeat:3	-0.0011118	72.1709	0.0217079	-0.0152395	0.000452807
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	-0.000886119	1.06805	0.000638172	0.0023889	6.67855
Std Dev:	1.57688e-005	0.00299246	0.00177217	0.00190989	0.0434853
%RSD:	1.77953	0.280181	277.694	79.9486	0.651119
Repeat:1	-0.000871343	1.07127	0.00234989	0.00137917	6.71618
Repeat:2	-0.000884293	1.06536	-0.00118882	0.00119581	6.68853
Repeat:3	-0.000902722	1.06752	0.000753452	0.00459171	6.63094
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00127375	-0.000567318	0.000281577	0.0020737	-0.019629
Std Dev:	1.95375e-005	0.000215858	0.00028152	0.00200106	0.000238849
%RSD:	1.53386	38.0488	99.9795	96.4971	1.21682
Repeat:1	0.00126756	-0.000774905	0.000389162	0.0043821	-0.0197526
Repeat:2	0.00125806	-0.000583004	-3.78699e-005	0.000831535	-0.0193536
Repeat:3	0.00129563	-0.000344045	0.00049344	0.00100748	-0.0197807

Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	-0.00247705	-0.000273402	0.0212252	0.000862773	0.000319787
Std Dev:	2.19567e-005	2.72832e-005	0.000337342	0.00022169	0.000220845
%RSD:	0.886403	9.97915	1.58935	25.695	69.0602
Repeat:1	-0.00246214	-0.000241911	0.0212643	0.0010477	0.00053103
Repeat:2	-0.00250227	-0.000289921	0.0215412	0.000923601	0.000337877
Repeat:3	-0.00246676	-0.000288375	0.0208699	0.000617019	9.04524e-005
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	19.8234	-0.000652269	0.00571741	0.0018357	-0.000814114
Std Dev:	0.631308	0.000163299	0.000367113	0.000151373	3.66298e-005
%RSD:	3.18466	25.0356	6.42096	8.24607	4.49935
Repeat:1	20.1597	-0.00065224	0.00559096	0.00200654	-0.000817733
Repeat:2	20.2154	-0.000815583	0.00543025	0.0017183	-0.000775809
Repeat:3	19.0952	-0.000488984	0.00613104	0.00178225	-0.0008488
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	-0.000470645	0.185824	11470.9	223005	15546.8
Std Dev:	7.1457e-005	0.000747037	9.18456	3237.98	44.2037
%RSD:	15.1828	0.402014	0.0800686	1.45198	0.284328
Repeat:1	-0.00050334	0.186615	11460.3	222709	15502.8
Repeat:2	-0.000519905	0.185131	11475.3	219925	15591.2
Repeat:3	-0.000388689	0.185726	11477	226380	15546.2

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000428076	492.68	-0.00312638	0.0147169	0.00123845
Std Dev:	0.00034967	1.32396	0.00224663	0.00141056	0.000438446
%RSD:	81.684	0.268727	71.8606	9.58461	35.4026
Repeat:1	-4.0206e-005	494.208	-0.00348135	0.0163052	0.00137071
Repeat:2	-0.000719153	491.877	-0.000723389	0.0136103	0.00159555
Repeat:3	-0.000524869	491.954	-0.00517439	0.0142352	0.000749106
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.00037128	483.232	-0.00259777	-0.00358644	0.00314087
Std Dev:	1.55806e-005	3.9666	0.000167361	0.000461616	0.000260765
%RSD:	4.19646	0.820849	6.44249	12.8712	8.3023
Repeat:1	-0.000353476	484.021	-0.00248039	-0.00360745	0.00292238
Repeat:2	-0.000377941	478.93	-0.00252351	-0.00311468	0.00342955
Repeat:3	-0.000382423	486.744	-0.00278941	-0.00403719	0.0030707
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00275993	191.165	0.0677059	-0.000928079	504.816
Std Dev:	0.000142666	0.535545	0.05603	0.00259156	3.28686
%RSD:	5.16919	0.280148	82.7549	279.239	0.651101
Repeat:1	0.00291041	191.742	0.121825	-0.00233496	507.66
Repeat:2	0.00274273	190.683	0.00994254	-0.00251192	505.57
Repeat:3	0.00262663	191.07	0.0713507	0.00206265	501.217
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.00593262	-0.00153065	2.00722	0.059519	0.00154605
Std Dev:	8.35019e-005	0.000506478	0.812756	0.0161225	0.000974459

%RSD:	1.40751	33.089	40.4917	27.088	63.0289
Repeat:1	-0.00598953	-0.00201772	2.31735	0.0781177	0.00178446
Repeat:2	-0.00597158	-0.00156746	1.08505	0.0495109	0.00237918
Repeat:3	-0.00583676	-0.00100678	2.61924	0.0509285	0.000474511
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00238695	-0.00475761	-0.126757	0.00802996	0.000890391
Std Dev:	0.00158438	0.00384955	0.0064148	0.00267717	0.00409568
%RSD:	66.3768	80.9136	5.06069	33.3398	459.986
Repeat:1	0.00361772	-0.000317843	-0.130842	0.0102688	0.00501094
Repeat:2	0.00294381	-0.00716572	-0.130066	0.00875667	0.000840196
Repeat:3	0.000599317	-0.00678927	-0.119364	0.00506446	-0.00317996
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1947.82	-0.00354784	-0.00261028	0.00360373	0.00500757
Std Dev:	62.0307	0.000765365	5.60754e-005	0.000445375	0.0011422
%RSD:	3.18463	21.5727	2.14825	12.3587	22.8095
Repeat:1	1980.85	-0.00354771	-0.00264859	0.0041146	0.00521449
Repeat:2	1986.33	-0.00431328	-0.00263633	0.00329717	0.00603217
Repeat:3	1876.26	-0.00278255	-0.00254592	0.00339941	0.00377605
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.00278527	0.00907805	11470.9	223005	15546.8
Std Dev:	0.000563737	0.00249588	9.18456	3237.98	44.2037
%RSD:	20.24	27.4936	0.0800686	1.45198	0.284328
Repeat:1	0.00254757	0.00815182	11460.3	222709	15502.8
Repeat:2	0.00237931	0.0071777	11475.3	219925	15591.2
Repeat:3	0.00342892	0.0119046	11477	226380	15546.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11470.9	223005	15546.8
Std Dev:	9.18456	3237.98	44.2037
%RSD:	0.0800686	1.45198	0.284328
Repeat:1	11460.3	222709	15502.8
Repeat:2	11475.3	219925	15591.2
Repeat:3	11477	226380	15546.2

Sample Name	**Acquisition date**
ICSAB	12/20/2012 11:48:49AM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0184253	4.14308	0.00370739	0.0269895	1.38525
Std Dev:	0.000649702	0.0163075	0.000340379	0.000976581	0.00458936
%RSD:	3.52614	0.393608	9.18109	3.61837	0.331302
Repeat:1	0.0180804	4.16078	0.0038353	0.0266703	1.38701
Repeat:2	0.0191747	4.12866	0.00332158	0.0280857	1.38004

Repeat:3	0.0180208	4.13981	0.00396528	0.0262124	1.3887
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	1.26985	36.1835	1.90344	0.518492	0.045249
Std Dev:	0.0306726	0.785351	0.00710036	0.00193454	0.00181928
%RSD:	2.41546	2.17047	0.373027	0.373109	4.02059
Repeat:1	1.2586	36.5064	1.89779	0.517238	0.0445069
Repeat:2	1.30455	36.7559	1.90112	0.517517	0.047322
Repeat:3	1.24638	35.2882	1.91141	0.52072	0.0439181
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0670991	0.531664	0.342897	0.731159	3.25122
Std Dev:	0.00260331	0.00309889	0.00142267	0.00225776	0.0170722
%RSD:	3.8798	0.582867	0.414897	0.308792	0.525101
Repeat:1	0.0659304	0.535239	0.342604	0.73171	3.26904
Repeat:2	0.070082	0.530014	0.341643	0.728676	3.23501
Repeat:3	0.065285	0.529739	0.344443	0.73309	3.24961
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.23551	0.407919	0.00355568	1.27018	0.675297
Std Dev:	0.00858421	0.00190654	0.000491447	0.00487054	0.00219031
%RSD:	3.64494	0.467382	13.8215	0.383454	0.324348
Repeat:1	0.23088	0.406446	0.00333506	1.27296	0.673184
Repeat:2	0.245416	0.407238	0.0032132	1.26455	0.675149
Repeat:3	0.230235	0.410072	0.00411877	1.27301	0.677557
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0452252	0.000228316	0.0306231	0.049701	0.00304858
Std Dev:	0.000180766	1.74603e-005	0.0005163	8.73861e-005	8.05063e-005
%RSD:	0.399701	7.64743	1.68598	0.175824	2.64078
Repeat:1	0.0450459	0.00022885	0.030028	0.0497746	0.00313748
Repeat:2	0.0452224	0.000245503	0.0308904	0.0497239	0.00302768
Repeat:3	0.0454074	0.000210595	0.030951	0.0496044	0.00298059
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	19.2744	0.199279	4.20975	0.317868	0.00400539
Std Dev:	0.287921	0.000615587	0.0198322	0.00132057	6.34802e-005
%RSD:	1.4938	0.308908	0.4711	0.415446	1.58487
Repeat:1	19.4378	0.198869	4.21618	0.319011	0.00400011
Repeat:2	19.4434	0.198981	4.1875	0.316422	0.00407134
Repeat:3	18.942	0.199987	4.22557	0.318169	0.00394471
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0634749	1.75974	12056	229996	15994.2
Std Dev:	0.00242176	0.00509437	35.8936	6808.09	172.131
%RSD:	3.81531	0.289496	0.297724	2.96009	1.07621
Repeat:1	0.062428	1.75535	12058.9	233511	15818.2
Repeat:2	0.066244	1.75853	12090.4	222149	16002.2
Repeat:3	0.0617528	1.76532	12018.7	234328	16162.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.207054	240.12	0.0930771	0.944473	0.504944
Std Dev:	0.00723495	0.945992	0.00392854	0.0329641	0.00170017
%RSD:	3.49423	0.393966	4.22074	3.49021	0.336705
Repeat:1	0.203215	241.147	0.0950335	0.933899	0.505595
Repeat:2	0.2154	239.283	0.0885545	0.981427	0.503015
Repeat:3	0.202549	239.931	0.0956433	0.918094	0.506223
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.504286	244.015	0.937464	0.473096	0.508719
Std Dev:	0.012178	5.29707	0.00355834	0.00156624	0.020496
%RSD:	2.4149	2.1708	0.379571	0.331062	4.02895
Repeat:1	0.499821	246.192	0.934613	0.472057	0.500332
Repeat:2	0.518066	247.876	0.936326	0.472333	0.532078
Repeat:3	0.494971	237.976	0.941452	0.474897	0.493747
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.517719	95.1689	10.8888	1.00953	245.77
Std Dev:	0.0198983	0.554282	0.04498	0.00318622	1.2904
%RSD:	3.84345	0.582419	0.413086	0.315614	0.525042
Repeat:1	0.508823	95.8083	10.8795	1.01026	247.117
Repeat:2	0.540513	94.8748	10.8491	1.00605	244.545
Repeat:3	0.503821	94.8238	10.9377	1.01229	245.649
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.512687	0.956919	10.6654	10.2766	0.960715
Std Dev:	0.0188601	0.0044734	1.40053	0.0392418	0.00272214
%RSD:	3.67867	0.46748	13.1316	0.381856	0.283346
Repeat:1	0.502498	0.953464	10.0352	10.299	0.957999
Repeat:2	0.53445	0.955321	9.69065	10.2313	0.960704
Repeat:3	0.501112	0.961972	12.2703	10.2994	0.963443
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.993064	0.0475199	-0.0696378	0.592487	0.0495626
Std Dev:	0.00310018	0.00236624	0.00578619	0.000970904	0.00153714
%RSD:	0.312184	4.97947	8.30898	0.163869	3.10141
Repeat:1	0.989784	0.0476333	-0.0750472	0.59351	0.0513167
Repeat:2	0.993461	0.0498273	-0.0703294	0.592372	0.0489201
Repeat:3	0.995946	0.0450989	-0.063537	0.591578	0.0484509
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1893.85	0.933505	1.01096	0.969722	0.090922
Std Dev:	28.2903	0.00288519	0.00481248	0.0040505	0.00135039
%RSD:	1.4938	0.30907	0.47603	0.417697	1.48521
Repeat:1	1909.9	0.931584	1.01249	0.97319	0.0909833
Repeat:2	1910.45	0.932109	1.00557	0.96527	0.0922407
Repeat:3	1861.18	0.936823	1.01483	0.970706	0.089542
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.504353	0.978674	12056	229996	15994.2
Std Dev:	0.0191256	0.00425629	35.8936	6808.09	172.131
%RSD:	3.79211	0.434904	0.297724	2.96009	1.07621
Repeat:1	0.496102	0.975295	12058.9	233511	15818.2
Repeat:2	0.52622	0.977273	12090.4	222149	16002.2
Repeat:3	0.490739	0.983454	12018.7	234328	16162.1

QC Status Pass/Fail:	Pass	Pass	None	None	None 96

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12056	229996	15994.2
Std Dev:	35.8936	6808.09	172.131
%RSD:	0.297724	2.96009	1.07621
Repeat:1	12058.9	233511	15818.2
Repeat:2	12090.4	222149	16002.2
Repeat:3	12018.7	234328	16162.1

Sample Name	**Acquisition date**
CRDL	12/20/2012 11:53:51AM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.000745511	0.00512165	0.000479079	0.00608486	0.0527255
Std Dev:	4.54399e-005	0.000488789	4.63686e-005	3.67309e-006	0.00101009
%RSD:	6.09514	9.54359	9.67871	0.0603644	1.91576
Repeat:1	0.000796546	0.00455796	0.000524619	0.0060822	0.053595
Repeat:2	0.00070944	0.00542807	0.000431924	0.00608334	0.0516175
Repeat:3	0.000730547	0.00537893	0.000480694	0.00608905	0.0529639
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.0166003	0.758039	0.0108099	0.0571007	0.00115469
Std Dev:	0.000117915	0.00495848	8.74774e-005	0.000197138	8.45985e-005
%RSD:	0.71032	0.65412	0.809232	0.345246	7.32654
Repeat:1	0.0164744	0.754896	0.0108956	0.0572396	0.00108905
Repeat:2	0.0167082	0.763755	0.0107208	0.0571874	0.00112485
Repeat:3	0.0166184	0.755466	0.0108134	0.0568751	0.00125016
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00348503	0.000792021	0.164104	0.0336933	0.064686
Std Dev:	1.08216e-005	0.000172572	0.0019173	0.000557281	0.000645889
%RSD:	0.310517	21.7889	1.16835	1.65398	0.998499
Repeat:1	0.00347471	0.000952423	0.161992	0.034314	0.0639402
Repeat:2	0.0034841	0.000609425	0.165736	0.0335301	0.0650562
Repeat:3	0.00349629	0.000814214	0.164583	0.0332359	0.0650616
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00749787	0.0170346	0.00216787	0.608345	0.0299772
Std Dev:	5.94078e-005	7.74345e-005	0.000546465	0.00360571	0.000280378
%RSD:	0.792329	0.454573	25.2074	0.592709	0.935303
Repeat:1	0.00744727	0.0170307	0.00156904	0.606493	0.029843
Repeat:2	0.00748307	0.0171139	0.00229503	0.6125	0.0297892
Repeat:3	0.00756328	0.0169591	0.00263955	0.606041	0.0302995
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0146988	6.8367e-005	0.0019168	0.00505592	0.000582485
Std Dev:	0.000134115	1.09354e-005	4.20865e-005	0.000133021	5.61763e-005
%RSD:	0.912421	15.9951	2.19566	2.631	9.64425
Repeat:1	0.0148531	7.93036e-005	0.00187308	0.00506851	0.000552267
Repeat:2	0.0146323	5.74329e-005	0.0019203	0.00491705	0.000547885
Repeat:3	0.0146108	6.83645e-005	0.00195704	0.0051822	0.000647302
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0322503	0.0218222	0.206905	0.014668	0.000426757

Std Dev:	0.00249243	5.96705e-005	0.0011063	0.000338294	3.01358e-005
%RSD:	7.72838	0.273439	0.534692	2.30634	7.06158
Repeat:1	0.0347559	0.0218903	0.207902	0.0146175	0.000393452
Repeat:2	0.0322238	0.0217974	0.207099	0.0143578	0.000434676
Repeat:3	0.0297712	0.021779	0.205715	0.0150287	0.000452143
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0032725	0.0368279	12742.7	243746	16136.5
Std Dev:	2.84364e-005	0.000162466	112.246	2331.09	187.492
%RSD:	0.86895	0.441149	0.880863	0.95636	1.16191
Repeat:1	0.00326462	0.0369828	12619.1	245669	16241.6
Repeat:2	0.00330404	0.0368422	12770.7	241154	15920
Repeat:3	0.00324883	0.0366588	12838.3	244416	16247.8

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0102073	0.189209	0.0102762	0.20461	0.0114435
Std Dev:	0.000504844	0.0283433	0.000590419	0.000123564	0.000374213
%RSD:	4.94594	14.9799	5.74549	0.06039	3.27008
Repeat:1	0.0107743	0.156522	0.0108576	0.20453	0.0117657
Repeat:2	0.00980664	0.206969	0.00967714	0.204548	0.011033
Repeat:3	0.0100408	0.204137	0.010294	0.204752	0.0115319
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00664765	5.07528	0.00556316	0.0510262	0.0134418
Std Dev:	4.68042e-005	0.0334442	4.13887e-005	0.000179163	0.000954142
%RSD:	0.704071	0.658963	0.743978	0.35112	7.09833
Repeat:1	0.00659766	5.05408	0.00560377	0.0511517	0.0127013
Repeat:2	0.00669043	5.11383	0.00552103	0.0511058	0.0131055
Repeat:3	0.00665486	5.05793	0.00556468	0.050821	0.0145185
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0240217	0.16852	5.23593	0.0494947	4.90337
Std Dev:	8.2902e-005	0.0308664	0.0606186	0.000770099	0.04882
%RSD:	0.345113	18.3162	1.15774	1.55592	0.995642
Repeat:1	0.0239444	0.197205	5.16918	0.0503525	4.847
Repeat:2	0.0240115	0.135858	5.28754	0.0492685	4.93135
Repeat:3	0.0241092	0.172497	5.25107	0.048863	4.93176
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0163304	0.0397695	6.45569	4.94423	0.0427132
Std Dev:	0.000130008	0.000181688	1.56629	0.0290511	0.000386396
%RSD:	0.796108	0.456853	24.2621	0.587577	0.904628
Repeat:1	0.0162197	0.0397604	4.73919	4.9293	0.042531
Repeat:2	0.0162979	0.0399555	6.82052	4.97771	0.0424516
Repeat:3	0.0164736	0.0395925	7.80737	4.92567	0.043157
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.303397	0.0101863	0.0108061	0.058853	0.00917738
Std Dev:	0.00277992	0.00151738	0.000267096	0.00159491	0.00117267

%RSD:	0.916266	14.8964	2.47172	2.70999	12.7778
Repeat:1	0.306596	0.0117032	0.0105291	0.05902	0.00854797
Repeat:2	0.302024	0.00866843	0.010827	0.0571812	0.0084538
Repeat:3	0.301571	0.0101872	0.0110621	0.0603579	0.0105304
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.1509	0.101787	0.0505622	0.0479496	0.00939696
Std Dev:	0.244902	0.000279668	0.000266064	0.00102873	0.000567475
%RSD:	7.77242	0.274757	0.526211	2.14543	6.03892
Repeat:1	3.3971	0.102107	0.0508021	0.0478039	0.00877007
Repeat:2	3.14829	0.101671	0.0506084	0.0470015	0.00954521
Repeat:3	2.90732	0.101585	0.050276	0.0490434	0.00987559
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.0252623	0.0209168	12742.7	243746	16136.5
Std Dev:	0.000223824	9.57985e-005	112.246	2331.09	187.492
%RSD:	0.885999	0.457997	0.880863	0.95636	1.16191
Repeat:1	0.0252005	0.0210065	12619.1	245669	16241.6
Repeat:2	0.0255105	0.020928	12770.7	241154	15920
Repeat:3	0.0250759	0.0208159	12838.3	244416	16247.8
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12742.7	243746	16136.5
Std Dev:	112.246	2331.09	187.492
%RSD:	0.880863	0.95636	1.16191
Repeat:1	12619.1	245669	16241.6
Repeat:2	12770.7	241154	15920
Repeat:3	12838.3	244416	16247.8

Sample Name	**Acquisition date**
CCV1	12/20/2012 11:58:44AM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0899386	0.428727	0.0389936	0.0596222	5.52013
Std Dev:	0.000870634	0.00332399	0.000224563	0.000622354	0.0266059
%RSD:	0.968031	0.775315	0.575896	1.04383	0.48198
Repeat:1	0.0903221	0.431623	0.0388194	0.0601744	5.5438
Repeat:2	0.0889421	0.42946	0.0389144	0.0589478	5.52525
Repeat:3	0.0905517	0.425098	0.0392471	0.0597442	5.49134
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	5.27998	7.46941	1.03113	2.25823	0.179959
Std Dev:	0.0346927	0.0536826	0.00318335	0.00627654	0.00212027
%RSD:	0.657061	0.7187	0.308724	0.277941	1.17819
Repeat:1	5.29494	7.52694	1.03372	2.26419	0.181966
Repeat:2	5.24031	7.46064	1.02758	2.25168	0.177741
Repeat:3	5.30468	7.42066	1.0321	2.25882	0.180172
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**

Avg. of Repeats:	0.254124	0.136385	1.63603	1.45287	0.652679
Std Dev:	0.00327538	0.00146841	0.00546719	0.00689906	0.00463578
%RSD:	1.28889	1.07666	0.334174	0.474859	0.710269
Repeat:1	0.256817	0.137914	1.64089	1.45798	0.657983
Repeat:2	0.250478	0.136256	1.63711	1.4556	0.650649
Repeat:3	0.255078	0.134986	1.63011	1.44502	0.649404
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.928855	0.852927	0.0177937	6.31443	1.48705
Std Dev:	0.00811338	0.00171541	0.000193473	0.039942	0.00284121
%RSD:	0.873482	0.20112	1.08731	0.632551	0.191063
Repeat:1	0.927102	0.854501	0.0180121	6.35084	1.48845
Repeat:2	0.921762	0.851099	0.0177256	6.32075	1.48378
Repeat:3	0.937702	0.853182	0.0176435	6.27171	1.48892
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0974214	0.00372612	0.090791	0.0439246	0.0238518
Std Dev:	0.000177119	3.34281e-005	0.000389148	9.01426e-005	0.000115938
%RSD:	0.181807	0.89713	0.428619	0.205221	0.486077
Repeat:1	0.0973523	0.00374671	0.0911713	0.0438456	0.0237207
Repeat:2	0.0976226	0.00368755	0.0903936	0.0439054	0.0238935
Repeat:3	0.0972892	0.0037441	0.0908081	0.0440228	0.0239411
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0355831	0.436037	8.5198	0.646924	0.0538057
Std Dev:	0.00115561	0.00101705	0.0402401	0.00573793	0.000193794
%RSD:	3.24765	0.233248	0.472313	0.886956	0.360174
Repeat:1	0.0365349	0.437082	8.56521	0.652952	0.0539874
Repeat:2	0.035917	0.43505	8.50565	0.646294	0.0536017
Repeat:3	0.0342973	0.435979	8.48855	0.641528	0.0538279
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.25232	3.29094	12343.7	241715	16258
Std Dev:	0.00314582	0.00591553	114.206	1595.53	223.768
%RSD:	1.24676	0.179752	0.925214	0.660087	1.37636
Repeat:1	0.255448	3.29657	12217.1	240276	16018.3
Repeat:2	0.249157	3.28478	12374.8	243431	16294.3
Repeat:3	0.252354	3.29147	12439.1	241437	16461.3

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.00292	24.6672	0.500566	2.02291	2.0374
Std Dev:	0.0096906	0.192573	0.00282524	0.0210683	0.00985845
%RSD:	0.966239	0.780685	0.564409	1.04149	0.483875
Repeat:1	1.0072	24.8346	0.49841	2.04167	2.04617
Repeat:2	0.991826	24.7104	0.499524	2.00012	2.0393
Repeat:3	1.00973	24.4568	0.503765	2.02696	2.02673
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.09664	50.3425	0.510061	2.01579	2.0301
Std Dev:	0.0137745	0.362081	0.00157312	0.00559418	0.0239088
%RSD:	0.656978	0.719236	0.308419	0.277518	1.17772
Repeat:1	2.10257	50.7305	0.511326	2.02108	2.05272
Repeat:2	2.08089	50.2833	0.5083	2.00994	2.00508
Repeat:3	2.10645	50.0136	0.510559	2.01634	2.03249
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.94495	24.4055	51.7734	2.00955	49.3705
Std Dev:	0.025068	0.263307	0.172854	0.00952699	0.350432
%RSD:	1.28888	1.07888	0.333867	0.474085	0.7098
Repeat:1	1.96558	24.68	51.9268	2.01661	49.7715
Repeat:2	1.91705	24.3815	51.8073	2.01333	49.2171
Repeat:3	1.95221	24.155	51.5861	1.99872	49.123
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.03805	2.00106	50.8792	50.918	2.06033
Std Dev:	0.0178136	0.00402494	0.55018	0.321811	0.00393307
%RSD:	0.874054	0.20114	1.08134	0.632019	0.190895
Repeat:1	2.03419	2.00476	51.5005	51.2113	2.06227
Repeat:2	2.02248	1.99677	50.6834	50.9689	2.0558
Repeat:3	2.05747	2.00166	50.4537	50.5738	2.06291
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.02576	0.521813	0.511483	0.500456	0.494623
Std Dev:	0.0036445	0.00465225	0.00219325	0.00123381	0.00238922
%RSD:	0.179908	0.891555	0.428801	0.246538	0.483038
Repeat:1	2.02436	0.52469	0.51362	0.499147	0.491919
Repeat:2	2.0299	0.516446	0.509238	0.500623	0.495501
Repeat:3	2.02303	0.524303	0.511593	0.501597	0.496449
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.44705	2.04316	2.04958	1.9745	1.00338
Std Dev:	0.11354	0.00476678	0.00967522	0.0174862	0.00357346
%RSD:	3.29383	0.233304	0.472059	0.885599	0.356141
Repeat:1	3.5404	2.04806	2.06049	1.99287	1.00674
Repeat:2	3.4801	2.03854	2.04617	1.97259	0.999623
Repeat:3	3.32065	2.04289	2.04206	1.95805	1.00379
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	1.99351	1.99024	12343.7	241715	16258
Std Dev:	0.0248484	0.00355542	114.206	1595.53	223.768
%RSD:	1.24647	0.178643	0.925214	0.660087	1.37636
Repeat:1	2.01822	1.99361	12217.1	240276	16018.3
Repeat:2	1.96852	1.98652	12374.8	243431	16294.3
Repeat:3	1.99378	1.99057	12439.1	241437	16461.3
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	12343.7	241715	16258
Std Dev:	114.206	1595.53	223.768
%RSD:	0.925214	0.660087	1.37636
Repeat:1	12217.1	240276	16018.3
Repeat:2	12374.8	243431	16294.3
Repeat:3	12439.1	241437	16461.3

Sample Name	Acquisition date
CCB1	12/20/2012 12:03:38PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-0.000191146	0.00171803	-0.000287821	0.000108948	0.0238796
Std Dev:	2.38685e-005	0.000154603	4.17487e-005	6.07099e-006	0.000479518
%RSD:	12.487	8.99887	14.5051	5.57236	2.00807
Repeat:1	-0.000210844	0.00157606	-0.000313579	0.000104306	0.0243322
Repeat:2	-0.000197992	0.00188275	-0.000310231	0.000115818	0.0233771
Repeat:3	-0.000164603	0.00169528	-0.000239652	0.00010672	0.0239295
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.00012924	0.00563668	-0.000482155	3.51457e-005	-1.10587e-005
Std Dev:	4.00252e-005	0.000253515	9.39286e-006	0.000131469	2.95921e-005
%RSD:	30.9697	4.49759	1.9481	374.068	267.593
Repeat:1	-0.000153169	0.00534503	-0.000488005	0.000184017	2.25848e-005
Repeat:2	-8.30324e-005	0.00576064	-0.000487139	-6.50216e-005	-2.27055e-005
Repeat:3	-0.000151518	0.00580435	-0.00047132	-1.35581e-005	-3.30553e-005
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.000297366	1.6575e-005	0.0051572	-0.00228199	-0.000157874
Std Dev:	3.25471e-005	6.48491e-005	0.0014477	0.000499159	0.000237285
%RSD:	10.9451	391.247	28.0714	21.8739	150.3
Repeat:1	0.000334107	1.32533e-005	0.00525931	-0.00278094	-2.39688e-005
Repeat:2	0.000285843	-4.65495e-005	0.00655114	-0.00178262	-0.000431845
Repeat:3	0.000272148	8.30211e-005	0.00366115	-0.0022824	-1.78098e-005
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	4.66816e-005	0.000244119	0.000229717	-0.00323847	-0.00091698
Std Dev:	1.00337e-005	4.65303e-005	0.000152764	0.000629046	0.000170368
%RSD:	21.494	19.0605	66.5009	19.4241	18.5793
Repeat:1	5.56561e-005	0.000284048	7.67e-005	-0.00264432	-0.000982372
Repeat:2	4.85402e-005	0.000193021	0.000230224	-0.0038974	-0.000723603
Repeat:3	3.58485e-005	0.000255289	0.000382226	-0.00317371	-0.00104496
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	4.0378e-006	-5.94785e-006	-7.58824e-005	0.000214682	8.33206e-005
Std Dev:	5.97914e-005	1.5706e-005	3.66332e-005	0.000110387	4.46059e-005
%RSD:	1480.79	264.062	48.2763	51.4185	53.5353
Repeat:1	-4.55719e-005	-2.39641e-005	-0.000105317	0.000288378	7.54008e-005
Repeat:2	-1.27407e-005	1.26051e-006	-3.48556e-005	0.0002679	0.000131356
Repeat:3	7.04259e-005	4.86007e-006	-8.7474e-005	8.77685e-005	4.3205e-005
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.00640423	0.000161217	-0.00446041	-0.000719517	-0.000109414
Std Dev:	0.000965843	5.34761e-005	0.000349741	0.000299327	2.87423e-005
%RSD:	15.0813	33.1702	7.84102	41.6011	26.2692
Repeat:1	0.0074117	0.000183827	-0.00457606	-0.00077181	-0.000109669
Repeat:2	0.00631475	0.000199675	-0.00473767	-0.000989251	-0.000138028
Repeat:3	0.00548624	0.00010015	-0.00406749	-0.000397489	-8.05454e-005
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	8.02335e-005	0.0016727	12770	246434	16294.3
Std Dev:	2.74719e-005	5.64751e-005	45.5601	2038.09	254.397
%RSD:	34.24	3.37629	0.356774	0.827031	1.56127

Repeat:1	0.000109785	0.0017379	12753.7	246194	16119.5
Repeat:2	7.5445e-005	0.00164089	12734.9	244527	16177.2
Repeat:3	5.54705e-005	0.0016393	12821.5	248582	16586.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000221357	-0.00672752	0.000524361	0.00248455	0.000754701
Std Dev:	0.000265064	0.00897042	0.000526889	0.000202523	0.000177674
%RSD:	119.745	133.339	100.482	8.15128	23.5423
Repeat:1	-0.000440044	-0.0149674	0.000200835	0.00232712	0.000922424
Repeat:2	-0.000297461	0.00282809	0.000239907	0.00271303	0.000568518
Repeat:3	7.34342e-005	-0.00804321	0.00113234	0.00241351	0.000773162
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	8.49118e-006	0.000443878	-2.16608e-005	7.71599e-005	0.000289268
Std Dev:	1.59039e-005	0.00170992	3.99176e-006	0.000117922	0.000333615
%RSD:	187.299	385.222	18.4285	152.828	115.331
Repeat:1	-1.05994e-006	-0.00152321	-2.45267e-005	0.00021112	0.000668561
Repeat:2	2.68504e-005	0.00128	-2.33543e-005	-1.09502e-005	0.000157949
Repeat:3	-3.16957e-007	0.00157485	-1.71015e-005	3.13095e-005	4.12951e-005
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000422009	0.0315314	0.210582	-0.000132933	0.00163722
Std Dev:	0.000248444	0.0115986	0.0457713	0.00068962	0.0179366
%RSD:	58.8718	36.7843	21.7356	518.774	1095.55
Repeat:1	-0.00014116	0.0309411	0.213811	-0.000822261	0.0117597
Repeat:2	-0.000511763	0.0202392	0.254654	0.000556979	-0.0190724
Repeat:3	-0.000613104	0.0434139	0.163282	-0.000133517	0.0122244
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.87721e-005	0.000373261	0.906047	0.016719	-9.54174e-005
Std Dev:	2.21537e-005	0.000109176	0.437694	0.0050682	0.000236169
%RSD:	57.1384	29.2493	48.3081	30.314	247.512
Repeat:1	5.83477e-005	0.000466948	0.467499	0.0215061	-0.000184939
Repeat:2	4.32455e-005	0.000253366	0.90776	0.0114101	0.000172425
Repeat:3	1.47229e-005	0.000399468	1.34288	0.0172408	-0.000273738
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000811398	-0.000185868	-4.56285e-005	0.000253658	-0.00119656
Std Dev:	0.001234	0.00218453	0.000207642	0.00133087	0.000927986
%RSD:	152.083	1175.32	455.071	524.67	77.5542
Repeat:1	-0.00183407	-0.00269183	-0.000222006	0.0011381	-0.00136261
Repeat:2	-0.00115935	0.000817498	0.000183214	0.000899796	-0.000196766
Repeat:3	0.000559222	0.00131673	-9.80941e-005	-0.00127692	-0.00203032
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.612025	0.00026487	-0.000225999	0.00113331	-0.00046786
Std Dev:	0.0948975	0.000250636	8.41156e-005	0.000911558	0.000542227

%RSD:	15.5055	94.626	37.2195	80.4331	115.895
Repeat:1	0.711013	0.000370838	-0.000253797	0.000975718	-0.00047324
Repeat:2	0.603232	0.000445117	-0.000292697	0.000310826	-0.00100738
Repeat:3	0.52183	-2.13443e-005	-0.000131503	0.00211339	7.70367e-005
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	6.0251e-005	-1.95643e-005	12770	246434	16294.3
Std Dev:	0.000217362	3.26498e-005	45.5601	2038.09	254.397
%RSD:	360.76	166.885	0.356774	0.827031	1.56127
Repeat:1	0.000294025	1.81278e-005	12753.7	246194	16119.5
Repeat:2	2.24736e-005	-3.91124e-005	12734.9	244527	16177.2
Repeat:3	-0.000135746	-3.77082e-005	12821.5	248582	16586.1
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12770	246434	16294.3
Std Dev:	45.5601	2038.09	254.397
%RSD:	0.356774	0.827031	1.56127
Repeat:1	12753.7	246194	16119.5
Repeat:2	12734.9	244527	16177.2
Repeat:3	12821.5	248582	16586.1

Sample Name	**Acquisition date**	**Analyst Name**	**Method Name**
MXL25B	12/20/2012 12:08:39PM	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000186048	0.00184169	-0.000270472	0.0003216	0.0242888
Std Dev:	1.06793e-005	0.000204446	5.58711e-005	1.1343e-005	0.000588958
%RSD:	5.74007	11.101	20.6569	3.52706	2.42481
Repeat:1	-0.000191304	0.00200974	-0.00020971	0.00032864	0.0243376
Repeat:2	-0.00019308	0.00161407	-0.000282078	0.000327645	0.023677
Repeat:3	-0.000173759	0.00190124	-0.000319629	0.000308515	0.0248518
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-0.000146791	0.0108153	-0.000493357	-8.54768e-005	-2.67116e-005
Std Dev:	2.59439e-005	0.000139835	0.000133731	3.52926e-005	1.40375e-005
%RSD:	17.674	1.29294	27.1064	41.2891	52.5521
Repeat:1	-0.000143759	0.0109453	-0.000645242	-8.73044e-005	-1.05543e-005
Repeat:2	-0.000122497	0.0106674	-0.000441543	-0.00011982	-3.59117e-005
Repeat:3	-0.000174118	0.0108332	-0.000393286	-4.93059e-005	-3.36689e-005
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.000325122	0.000166513	0.00204886	-0.00264411	-0.000166968
Std Dev:	2.14823e-005	0.000108598	0.000515547	0.000411971	0.000198025
%RSD:	6.60744	65.219	25.1627	15.5807	118.601
Repeat:1	0.000342863	0.000197108	0.00188912	-0.0030383	-0.000299207
Repeat:2	0.000331266	4.5899e-005	0.00262537	-0.00267762	-0.000262398
Repeat:3	0.000301238	0.000256531	0.00163209	-0.00221641	6.07018e-005
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.000223285	0.000187763	5.58726e-005	-5.3802e-005	-0.000716043
Std Dev:	2.97829e-005	5.40816e-005	0.000221706	0.000895157	4.98782e-005

%RSD:	13.3385	28.8032	396.807	1663.8	6.96581
Repeat:1	0.000257566	0.000217672	0.000148611	-8.42318e-005	-0.000690708
Repeat:2	0.000208519	0.000220283	-0.000197144	0.000856182	-0.000773503
Repeat:3	0.000203771	0.000125333	0.000216151	-0.000933356	-0.000683916
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.000116645	2.36698e-006	0.000127878	0.000489795	0.000159213
Std Dev:	4.83485e-005	2.14899e-006	6.61059e-005	6.53886e-005	4.39075e-005
%RSD:	41.4493	90.7903	51.6944	13.3502	27.5777
Repeat:1	0.000165245	1.57437e-006	0.000192622	0.000528114	0.000124335
Repeat:2	0.000116137	4.79971e-006	0.000130523	0.000414294	0.000208519
Repeat:3	6.85523e-005	7.26876e-007	6.049e-005	0.000526978	0.000144786
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.00418664	0.000490343	-0.0038516	-0.000866397	-0.000259942
Std Dev:	0.000157458	0.000126052	0.000166106	0.000308057	6.67245e-005
%RSD:	3.76095	25.7069	4.31264	35.556	25.669
Repeat:1	0.00429327	0.000632757	-0.00400682	-0.00114695	-0.000289711
Repeat:2	0.00426086	0.000445173	-0.00387155	-0.000536735	-0.0003066
Repeat:3	0.00400579	0.0003931	-0.00367642	-0.00091551	-0.000183515
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	7.57612e-005	0.00397805	12970.2	255122	16551.3
Std Dev:	2.12382e-005	0.000149546	103.259	6765.3	621.871
%RSD:	28.0331	3.75928	0.796123	2.65179	3.75723
Repeat:1	7.00777e-005	0.00415004	12851.4	248097	15995.2
Repeat:2	5.7943e-005	0.00390539	13021.1	261594	16436
Repeat:3	9.92629e-005	0.00387872	13038.2	255674	17222.8

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.00016473	0.000447297	0.000740571	0.00968472	0.000906247
Std Dev:	0.000118801	0.0118549	0.000707561	0.000379243	0.00021819
%RSD:	72.1187	2650.33	95.5426	3.91589	24.0762
Repeat:1	-0.000223175	0.0101922	0.0015104	0.00992465	0.000924317
Repeat:2	-0.000242987	-0.0127507	0.000592638	0.00988201	0.000679585
Repeat:3	-2.80279e-005	0.0039004	0.000118672	0.0092475	0.00111484
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.52762e-006	0.0353728	-2.90599e-005	-3.14982e-005	0.000112868
Std Dev:	1.03378e-005	0.000943167	6.64214e-005	3.21384e-005	0.000158274
%RSD:	676.724	2.66637	228.567	102.033	140.23
Repeat:1	2.74127e-006	0.0362498	-0.000104753	-3.1519e-005	0.00029505
Repeat:2	1.1205e-005	0.0343751	-1.92124e-006	-6.36262e-005	9.20548e-006
Repeat:3	-9.3634e-006	0.0354933	1.94951e-005	6.50639e-007	3.43476e-005
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000208446	0.058365	0.112307	-0.000633771	0.000948303
Std Dev:	0.000163571	0.0194377	0.0162998	0.000569186	0.0149663
%RSD:	78.4717	33.3037	14.5137	89.8094	1578.22
Repeat:1	-7.33045e-005	0.0638364	0.107257	-0.0011784	-0.00904625
Repeat:2	-0.000161745	0.0367779	0.130534	-0.000680059	-0.00626395
Repeat:3	-0.000390289	0.0744805	0.0991301	-4.28544e-005	0.0181551
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000426166	0.000241028	0.407956	0.0423778	0.000181659
Std Dev:	6.54698e-005	0.000126894	0.635831	0.00721225	6.93978e-005
%RSD:	15.3625	52.647	155.858	17.0189	38.2022
Repeat:1	0.000501489	0.000311206	0.674114	0.0421326	0.000217029
Repeat:2	0.000394081	0.000317333	-0.317703	0.0497095	0.000101703
Repeat:3	0.000382927	9.45463e-005	0.867457	0.0352913	0.000226247
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00151058	0.0009704	0.00111375	0.00358637	0.000388716
Std Dev:	0.00100094	0.00029852	0.000365783	0.000789451	0.000913229
%RSD:	66.2618	30.7625	32.8424	22.0126	234.935
Repeat:1	0.0025164	0.000860859	0.00147195	0.00404771	-0.000337578
Repeat:2	0.00150073	0.00130822	0.00112849	0.00267481	0.00141395
Repeat:3	0.000514605	0.000742125	0.000740825	0.00403657	8.97756e-005
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.394136	0.00180744	-7.99139e-005	0.000687203	-0.00330821
Std Dev:	0.01547	0.000590791	3.99556e-005	0.000941873	0.00125764
%RSD:	3.92504	32.6866	49.9983	137.059	38.0159
Repeat:1	0.404614	0.00247492	-0.000117259	-0.000169563	-0.0038699
Repeat:2	0.401427	0.00159573	-8.47032e-005	0.00169575	-0.00418713
Repeat:3	0.376368	0.00135167	-3.77796e-005	0.000535423	-0.0018676
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	2.60123e-005	0.00139339	12970.2	255122	16551.3
Std Dev:	0.000168406	8.95577e-005	103.259	6765.3	621.871
%RSD:	647.407	6.42731	0.796123	2.65179	3.75723
Repeat:1	-1.76706e-005	0.00149588	12851.4	248097	15995.2
Repeat:2	-0.000116248	0.00135408	13021.1	261594	16436
Repeat:3	0.000211955	0.00133022	13038.2	255674	17222.8
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	12970.2	255122	16551.3
Std Dev:	103.259	6765.3	621.871
%RSD:	0.796123	2.65179	3.75723
Repeat:1	12851.4	248097	15995.2
Repeat:2	13021.1	261594	16436
Repeat:3	13038.2	255674	17222.8

Sample Name	Acquisition date
MXL25C	12/20/2012 12:13:41PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	0.00424422	0.0362555	0.00739591	0.0294012	0.297325

Std Dev:	6.3506e-005	0.000197873	7.31901e-005	0.00018682	0.000648447
%RSD:	1.4963	0.545774	0.989603	0.635415	0.218094
Repeat:1	0.00427232	0.0360799	0.00744918	0.0295056	0.297178
Repeat:2	0.00417151	0.0362167	0.00731245	0.0295124	0.298035
Repeat:3	0.00428882	0.0364699	0.00742609	0.0291855	0.296763
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.132431	7.485	0.101894	0.111848	0.018229
Std Dev:	0.00072448	0.0181472	0.000334931	0.000631881	0.000140911
%RSD:	0.547062	0.242448	0.328705	0.564945	0.773008
Repeat:1	0.132972	7.4714	0.102237	0.112538	0.0183507
Repeat:2	0.132713	7.478	0.101568	0.111296	0.0182616
Repeat:3	0.131608	7.50561	0.101878	0.11171	0.0180746
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0321856	0.00584385	1.61478	0.0700444	0.127118
Std Dev:	0.000256419	2.86774e-005	0.00490761	0.000857958	0.000340209
%RSD:	0.796688	0.490729	0.303918	1.22488	0.267632
Repeat:1	0.0324693	0.00587453	1.6123	0.0703583	0.126951
Repeat:2	0.0321171	0.00583928	1.61161	0.0707012	0.126894
Repeat:3	0.0319704	0.00581773	1.62043	0.0690737	0.12751
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0472095	0.21287	0.0175717	6.25965	0.370998
Std Dev:	0.000338888	0.00107791	0.000300866	0.00430993	0.00147197
%RSD:	0.717838	0.50637	1.71222	0.0688525	0.396758
Repeat:1	0.0475997	0.214037	0.0178988	6.25551	0.372407
Repeat:2	0.0469894	0.211912	0.0175093	6.25933	0.369471
Repeat:3	0.0470393	0.212661	0.0173069	6.26411	0.371117
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.242045	0.000720251	0.0179941	0.0411288	0.0071023
Std Dev:	0.00158782	1.18373e-005	0.000112628	0.000223022	4.31637e-005
%RSD:	0.656003	1.6435	0.625916	0.542253	0.607743
Repeat:1	0.243492	0.00073337	0.018115	0.0413812	0.00710175
Repeat:2	0.240346	0.000710368	0.0178922	0.0409583	0.00714574
Repeat:3	0.242296	0.000717015	0.0179751	0.0410468	0.00705942
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0559397	0.108217	2.10764	0.032261	0.0206687
Std Dev:	0.000236657	0.000524165	0.0114413	0.000302789	5.22604e-005
%RSD:	0.423057	0.484363	0.542848	0.938562	0.252847
Repeat:1	0.0556863	0.108749	2.1203	0.0325999	0.0207242
Repeat:2	0.0559778	0.107701	2.09804	0.0321659	0.0206205
Repeat:3	0.056155	0.108203	2.10458	0.0320172	0.0206616
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.025453	0.810151	12456.3	242344	16281.2
Std Dev:	0.000192326	0.00442236	24.2649	2895.49	108.496
%RSD:	0.75561	0.545868	0.1948	1.19479	0.666389
Repeat:1	0.0256454	0.815033	12429.9	239570	16307.1
Repeat:2	0.0254531	0.806413	12477.6	242114	16374.4
Repeat:3	0.0252607	0.809007	12461.5	245347	16162.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0492276	1.98041	0.0978396	0.99392	0.102081
Std Dev:	0.000705519	0.0115358	0.000924334	0.0063184	0.000240289
%RSD:	1.43318	0.582496	0.944744	0.635705	0.235391

Repeat:1	0.0495411	1.97013	0.0985137	0.997456	0.102026
Repeat:2	0.0484196	1.97821	0.0967859	0.997679	0.102344
Repeat:3	0.049722	1.99288	0.0982193	0.986625	0.101873
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.052615	50.4476	0.0506268	0.100389	0.206089
Std Dev:	0.000287442	0.1224	0.000166121	0.000565921	0.00158924
%RSD:	0.546312	0.242628	0.328129	0.563728	0.771143
Repeat:1	0.0528295	50.3559	0.0507968	0.101006	0.207462
Repeat:2	0.0527272	50.4004	0.0504648	0.099894	0.206457
Repeat:3	0.0522884	50.5866	0.0506186	0.100267	0.204348
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.243686	1.07869	51.1015	0.0990369	9.62783
Std Dev:	0.00196284	0.00518109	0.155162	0.00118706	0.0257123
%RSD:	0.805477	0.480313	0.303635	1.19861	0.267063
Repeat:1	0.245858	1.08422	51.0231	0.099472	9.6152
Repeat:2	0.243162	1.07791	51.0012	0.099945	9.61088
Repeat:3	0.242039	1.07395	51.2802	0.0976937	9.65742
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.103434	0.499267	50.6955	50.4766	0.514711
Std Dev:	0.000743995	0.00252915	0.862163	0.034725	0.00203664
%RSD:	0.719295	0.506572	1.70067	0.0687941	0.395685
Repeat:1	0.104291	0.502006	51.6331	50.4433	0.51666
Repeat:2	0.102951	0.497019	50.5165	50.474	0.512597
Repeat:3	0.10306	0.498778	49.9368	50.5126	0.514877
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.00797	0.101277	0.100997	0.492728	0.144996
Std Dev:	0.032852	0.00164729	0.000634661	0.00268674	0.000899504
%RSD:	0.655995	1.62652	0.628396	0.545279	0.620363
Repeat:1	5.03792	0.103102	0.10168	0.495763	0.144985
Repeat:2	4.97283	0.0999007	0.100425	0.490654	0.145902
Repeat:3	5.01316	0.100827	0.100886	0.491766	0.144103
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.47691	0.506712	0.507285	0.100642	0.390557
Std Dev:	0.0232676	0.0024567	0.00275242	0.000920328	0.000981051
%RSD:	0.424832	0.484832	0.542579	0.914454	0.251193
Repeat:1	5.45199	0.509203	0.510331	0.101672	0.391597
Repeat:2	5.48065	0.504291	0.504976	0.100353	0.389648
Repeat:3	5.49807	0.506642	0.506548	0.0999011	0.390425
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.200859	0.489129	12456.3	242344	16281.2
Std Dev:	0.00152004	0.00268494	24.2649	2895.49	108.496

%RSD:	0.756768	0.548923	0.1948	1.19479	0.666389
Repeat:1	0.20238	0.492094	12429.9	239570	16307.1
Repeat:2	0.200858	0.486862	12477.6	242114	16374.4
Repeat:3	0.19934	0.488432	12461.5	245347	16162.1
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12456.3	242344	16281.2
Std Dev:	24.2649	2895.49	108.496
%RSD:	0.1948	1.19479	0.666389
Repeat:1	12429.9	239570	16307.1
Repeat:2	12477.6	242114	16374.4
Repeat:3	12461.5	245347	16162.1

Sample Name	**Acquisition date**
MXL25L	12/20/2012 12:18:27PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00430854	0.0358479	0.00752498	0.0298126	0.295146
Std Dev:	6.40127e-005	0.000975425	6.62814e-005	0.00010188	0.00872987
%RSD:	1.48572	2.72101	0.880819	0.341734	2.95781
Repeat:1	0.00436773	0.0364315	0.00760119	0.0297623	0.302529
Repeat:2	0.00431729	0.0363904	0.00749301	0.0297457	0.297399
Repeat:3	0.0042406	0.0347219	0.00748075	0.0299299	0.285511
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.133899	7.43189	0.101897	0.112358	0.0184876
Std Dev:	0.000520748	0.191384	0.000953683	0.000952311	5.82859e-005
%RSD:	0.388912	2.57518	0.935926	0.847565	0.315271
Repeat:1	0.133654	7.59617	0.102998	0.113442	0.0184254
Repeat:2	0.133545	7.47776	0.10132	0.11198	0.0184964
Repeat:3	0.134497	7.22174	0.101374	0.111654	0.0185409
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0325569	0.00534858	1.60697	0.0701118	0.127396
Std Dev:	0.000132644	0.000172885	0.0405952	0.00179818	0.00407556
%RSD:	0.407422	3.23235	2.52619	2.56473	3.19911
Repeat:1	0.0326653	0.00552517	1.64489	0.0715292	0.130426
Repeat:2	0.032409	0.00534092	1.61187	0.0707172	0.129001
Repeat:3	0.0325964	0.00517965	1.56415	0.0680891	0.122763
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0478229	0.213124	0.0174793	6.20465	0.372025
Std Dev:	0.00010872	0.00189936	0.000271924	0.152242	0.00394446
%RSD:	0.227339	0.891201	1.55569	2.45367	1.06027
Repeat:1	0.0479439	0.215301	0.0176572	6.34256	0.376579
Repeat:2	0.0477911	0.211803	0.0171663	6.23011	0.369799
Repeat:3	0.0477336	0.212268	0.0176143	6.04129	0.369696
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.242642	0.000745155	0.0179443	0.0410599	0.00706585
Std Dev:	0.00227721	1.44416e-005	0.000218387	0.000331062	3.52348e-005
%RSD:	0.938503	1.93806	1.21702	0.80629	0.498664
Repeat:1	0.24527	0.000736801	0.0181234	0.0414421	0.00710034

Repeat:2	0.24124	0.000736833	0.017701	0.0408769	0.00706729
Repeat:3	0.241417	0.00076183	0.0180086	0.0408607	0.00702991
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0561978	0.111111	2.09165	0.0319518	0.020671
Std Dev:	0.0014558	0.000973415	0.0599386	0.000987312	0.000234613
%RSD:	2.59049	0.876073	2.86561	3.09001	1.13499
Repeat:1	0.0575474	0.112235	2.14486	0.0327963	0.0209335
Repeat:2	0.056391	0.110576	2.10339	0.0321927	0.0205978
Repeat:3	0.0546551	0.110522	2.02672	0.0308663	0.0204817
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0257423	0.811777	12522.7	239739	16210.1
Std Dev:	9.70429e-005	0.00679218	173.371	1609.16	463.854
%RSD:	0.376978	0.836705	1.38445	0.671214	2.86152
Repeat:1	0.0256992	0.819616	12336.6	239406	15854
Repeat:2	0.0256743	0.807656	12552.1	238323	16041.5
Repeat:3	0.0258535	0.808058	12679.5	241489	16734.6

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0499442	1.95671	0.0994746	1.0078	0.101274
Std Dev:	0.000710773	0.05654	0.00083775	0.00343485	0.00323489
%RSD:	1.42313	2.88954	0.842174	0.340826	3.19421
Repeat:1	0.0506016	1.99044	0.100438	1.00612	0.104009
Repeat:2	0.050041	1.98825	0.0990732	1.00553	0.102109
Repeat:3	0.04919	1.89144	0.0989132	1.01175	0.0977032
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0531974	50.0894	0.0506351	0.100848	0.209006
Std Dev:	0.000206663	1.29086	0.000469804	0.000851751	0.000656429
%RSD:	0.388484	2.57711	0.927822	0.84459	0.314072
Repeat:1	0.0531004	51.1974	0.0511772	0.101818	0.208305
Repeat:2	0.0530571	50.3987	0.0503477	0.100505	0.209104
Repeat:3	0.0534348	48.6719	0.0503803	0.100221	0.209607
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.24652	0.990165	50.8545	0.0991355	9.64886
Std Dev:	0.00101543	0.0308671	1.28348	0.00246509	0.308082
%RSD:	0.411908	3.11737	2.52383	2.48658	3.19294
Repeat:1	0.247354	1.02169	52.0535	0.101077	9.87789
Repeat:2	0.245389	0.988797	51.0095	0.0999673	9.7701
Repeat:3	0.246817	0.960004	49.5006	0.0963621	9.29861
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.104781	0.499863	50.4305	50.0335	0.516131
Std Dev:	0.000235045	0.00445656	0.779603	1.22661	0.00546206
%RSD:	0.22432	0.891556	1.5459	2.45157	1.05827
Repeat:1	0.105043	0.50497	50.9416	51.1446	0.522437
Repeat:2	0.10471	0.496763	49.5332	50.2386	0.513051
Repeat:3	0.10459	0.497856	50.8167	48.7173	0.512904
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.02033	0.104741	0.100722	0.491882	0.144228
Std Dev:	0.0471248	0.00200362	0.00121779	0.00402453	0.000735124
%RSD:	0.938678	1.91293	1.20906	0.818191	0.509696
Repeat:1	5.0747	0.103584	0.101711	0.496527	0.144948
Repeat:2	4.9913	0.103584	0.0993617	0.48966	0.144258
Repeat:3	4.99498	0.107054	0.101093	0.489457	0.143478
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.50223	0.520274	0.503443	0.0997056	0.390591
Std Dev:	0.143044	0.00456228	0.0144039	0.00299164	0.00442469
%RSD:	2.59975	0.876899	2.86108	3.00048	1.13282
Repeat:1	5.63483	0.52554	0.51623	0.102262	0.395541
Repeat:2	5.52122	0.517767	0.506262	0.10044	0.389214
Repeat:3	5.35064	0.517515	0.487839	0.0964151	0.387019
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.203143	0.490121	12522.7	239739	16210.1
Std Dev:	0.000766536	0.00409124	173.371	1609.16	463.854
%RSD:	0.377338	0.83474	1.38445	0.671214	2.86152
Repeat:1	0.202805	0.494843	12336.6	239406	15854
Repeat:2	0.202604	0.487622	12552.1	238323	16041.5
Repeat:3	0.204021	0.487899	12679.5	241489	16734.6
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	12522.7	239739	16210.1
Std Dev:	173.371	1609.16	463.854
%RSD:	1.38445	0.671214	2.86152
Repeat:1	12336.6	239406	15854
Repeat:2	12552.1	238323	16041.5
Repeat:3	12679.5	241489	16734.6

Sample Name	Acquisition date
MXL23B	12/20/2012 12:23:13PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-0.000241678	0.00175384	-0.000102623	4.50903	0.0305217
Std Dev:	1.02901e-005	0.000200734	4.91301e-005	0.00328246	0.000616927
%RSD:	4.25777	11.4454	47.8746	0.0727975	2.02127
Repeat:1	-0.000235401	0.0015245	-0.000137724	4.50555	0.0299044
Repeat:2	-0.000253553	0.00183939	-0.000123668	4.51208	0.0311383
Repeat:3	-0.000236079	0.00189762	-4.64755e-005	4.50947	0.0305224

Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.000144173	0.0127514	-0.00066358	-0.00029215	2.05813e-005
Std Dev:	1.65665e-005	0.000109946	0.000151856	0.000111226	1.43852e-005
%RSD:	11.4907	0.862227	22.8844	38.0714	69.8948

Repeat:1	-0.000152994	0.0126698	-0.00082515	-0.000208309	2.1229e-005
Repeat:2	-0.000125062	0.012708	-0.000523789	-0.000249814	3.46317e-005
Repeat:3	-0.000154463	0.0128764	-0.000641802	-0.000418327	5.8831e-006
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.000284046	7.67336e-005	0.00982541	-0.00162958	-0.000123757
Std Dev:	9.0128e-006	0.00027796	0.00210953	0.000953899	0.000153435
%RSD:	3.17301	362.24	21.4701	58.5363	123.981
Repeat:1	0.000290941	0.000257133	0.0120281	-0.00052827	3.30519e-005
Repeat:2	0.000287349	-0.000243366	0.00962479	-0.00219614	-0.000130743
Repeat:3	0.000273847	0.000216434	0.00782336	-0.00216434	-0.000273579
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.000274713	0.000335976	0.000214456	0.00590252	-0.000775969
Std Dev:	2.80489e-005	3.60035e-005	0.00012707	0.00173427	3.08137e-005
%RSD:	10.2103	10.7161	59.2524	29.3819	3.97099
Repeat:1	0.000257873	0.000313206	0.000322676	0.00719901	-0.000749253
Repeat:2	0.000259173	0.000377484	0.000246153	0.00657603	-0.000809678
Repeat:3	0.000307092	0.000317239	7.45371e-005	0.00393252	-0.000768975
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	6.24465e-005	-2.40779e-006	-2.02003e-005	0.000367256	-1.69869e-005
Std Dev:	2.6744e-005	1.62092e-005	0.000165523	7.01839e-005	2.17126e-005
%RSD:	42.827	673.198	819.406	19.1103	127.82
Repeat:1	5.82083e-005	-2.92764e-006	-1.40372e-005	0.000333946	-4.15351e-005
Repeat:2	3.80748e-005	1.40551e-005	-0.000188718	0.00031993	-2.99553e-007
Repeat:3	9.10566e-005	-1.83508e-005	0.000142155	0.000447892	-9.12598e-006
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0359995	0.000395876	-0.00295021	-0.000623416	-0.000143114
Std Dev:	0.0200564	1.67265e-005	0.000506059	0.000166598	7.74535e-005
%RSD:	55.713	4.22519	17.1533	26.7233	54.1202
Repeat:1	0.0590534	0.000381254	-0.00241447	-0.000484459	-0.000164762
Repeat:2	0.0263825	0.000392258	-0.00301601	-0.000808103	-5.71397e-005
Repeat:3	0.0225627	0.000414115	-0.00342015	-0.000577687	-0.00020744
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	8.6208e-005	0.0140085	12674.1	242697	16303.5
Std Dev:	2.92586e-005	0.000165341	34.9323	2423.84	117.78
%RSD:	33.9395	1.18029	0.275619	0.998709	0.72242
Repeat:1	6.83557e-005	0.0141602	12648.7	240461	16195.5
Repeat:2	7.0294e-005	0.0140331	12714	242359	16285.9
Repeat:3	0.000119974	0.0138323	12659.7	245273	16429.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000782823	-0.00465689	0.00292766	152.476	0.00321599
Std Dev:	0.000114427	0.0116366	0.000595895	0.110985	0.000228745
%RSD:	14.6172	249.88	20.354	0.0727887	7.11277
Repeat:1	-0.000713193	-0.017952	0.00253008	152.358	0.00298714
Repeat:2	-0.000914886	0.00030507	0.00264009	152.579	0.00344464
Repeat:3	-0.00072039	0.00367625	0.0036128	152.491	0.00321618
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.55066e-006	0.0484316	-0.000112438	-0.000198086	0.000643158
Std Dev:	6.6038e-006	0.000741569	7.81256e-005	0.000108288	0.000162095
%RSD:	258.906	1.53117	69.4832	54.6671	25.2031

Repeat:1	-9.24195e-007	0.0478812	-0.000194725	-0.000110709	0.000648085
Repeat:2	1.01664e-005	0.0481387	-3.92744e-005	-0.000164313	0.000802733
Repeat:3	-1.5902e-006	0.0492749	-0.000103315	-0.000319236	0.000478655
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000522899	0.0423165	0.358176	0.000767709	0.0042186
Std Dev:	6.82311e-005	0.0497415	0.0666962	0.00131792	0.0115974
%RSD:	13.0486	117.546	18.6211	171.669	274.91
Repeat:1	-0.000467638	0.0745826	0.427817	0.0022893	0.0160704
Repeat:2	-0.000501897	-0.0149673	0.351832	-1.50504e-005	0.00369171
Repeat:3	-0.000599163	0.0673343	0.294877	2.88773e-005	-0.00710633
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000539193	0.000588789	0.862309	0.0903677	0.000134895
Std Dev:	6.1478e-005	8.44766e-005	0.364226	0.013973	6.25682e-005
%RSD:	11.4019	14.3475	42.2385	15.4623	46.383
Repeat:1	0.000501717	0.000535361	1.17242	0.100813	0.000199969
Repeat:2	0.000505718	0.000686181	0.953292	0.0957942	7.5177e-005
Repeat:3	0.000610144	0.000544826	0.461215	0.0744955	0.000129538
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000479261	0.00030205	-0.000117016	0.00209415	-0.00331471
Std Dev:	0.000542611	0.00225486	0.000969692	0.000851949	0.000468115
%RSD:	113.218	746.519	828.686	40.6823	14.1223
Repeat:1	0.000454721	0.000224281	-0.000380715	0.00169089	-0.00384593
Repeat:2	-5.06635e-005	0.00259479	-0.000927582	0.0015187	-0.00296258
Repeat:3	0.00103373	-0.00191292	0.000957251	0.00307286	-0.00313562
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.51998	0.00136469	0.000136763	0.0014256	-0.00107896
Std Dev:	1.97069	7.83951e-005	0.000121727	0.000507952	0.00145855
%RSD:	55.9859	5.74456	89.0059	35.6307	135.181
Repeat:1	5.7852	0.00129616	0.000265628	0.0018479	-0.00146922
Repeat:2	2.57503	0.00134773	0.00012094	0.000861944	0.00053502
Repeat:3	2.19972	0.00145017	2.37212e-005	0.00156696	-0.00230268
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000108128	0.00739219	12674.1	242697	16303.5
Std Dev:	0.000231332	5.65892e-005	34.9323	2423.84	117.78
%RSD:	213.943	0.765527	0.275619	0.998709	0.72242
Repeat:1	-3.19185e-005	0.00738986	12648.7	240461	16195.5
Repeat:2	-1.88378e-005	0.0074499	12714	242359	16285.9
Repeat:3	0.000375141	0.0073368	12659.7	245273	16429.1
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12674.1	242697	16303.5
Std Dev:	34.9323	2423.84	117.78

%RSD:	0.275619	0.998709	0.72242
Repeat:1	12648.7	240461	16195.5
Repeat:2	12714	242359	16285.9
Repeat:3	12659.7	245273	16429.1

Sample Name	**Acquisition date**
MXL23C	12/20/2012 12:28:20PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00434625	0.0360295	0.0077824	4.48691	0.299881
Std Dev:	3.51372e-005	0.000498701	5.46105e-005	0.074559	0.00458205
%RSD:	0.80845	1.38414	0.701719	1.6617	1.52796
Repeat:1	0.00436013	0.0363573	0.00778399	4.41071	0.298655
Repeat:2	0.00437232	0.0362757	0.00783619	4.4903	0.304951
Repeat:3	0.00430629	0.0354556	0.007727	4.55971	0.296037
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.131788	7.47064	0.102567	0.113014	0.0184749
Std Dev:	0.000710699	0.0665572	0.000676108	0.000929389	0.000155047
%RSD:	0.539273	0.890916	0.659189	0.822369	0.839229
Repeat:1	0.131583	7.48057	0.103343	0.114085	0.0183145
Repeat:2	0.132579	7.53168	0.102106	0.112418	0.018624
Repeat:3	0.131203	7.39968	0.102251	0.112539	0.0184863
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0324287	0.0056224	1.631	0.0705296	0.12768
Std Dev:	0.000128403	0.000203909	0.0115705	0.000599642	0.00135615
%RSD:	0.395954	3.62672	0.709409	0.8502	1.06215
Repeat:1	0.0324559	0.00560848	1.62877	0.0699344	0.128204
Repeat:2	0.0325412	0.00542581	1.64352	0.0705208	0.128695
Repeat:3	0.0322888	0.00583292	1.6207	0.0711336	0.126139
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0478545	0.21206	0.0178325	6.2956	0.376626
Std Dev:	2.13422e-005	0.00108981	0.00039186	0.0500604	0.00213405
%RSD:	0.044598	0.513915	2.19745	0.795164	0.566623
Repeat:1	0.0478601	0.213309	0.0179389	6.28656	0.379091
Repeat:2	0.0478725	0.211302	0.0181602	6.34957	0.3754
Repeat:3	0.047831	0.211568	0.0173984	6.25068	0.375389
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.248757	0.00076423	0.0179479	0.041858	0.00703867
Std Dev:	0.00142472	4.67734e-006	0.000113619	0.000222073	5.62501e-005
%RSD:	0.572735	0.612034	0.633049	0.530538	0.799158
Repeat:1	0.250365	0.000759444	0.0180538	0.0421137	0.00709999
Repeat:2	0.247654	0.000764454	0.017962	0.0417473	0.00698946
Repeat:3	0.248252	0.000768791	0.0178278	0.0417131	0.00702657
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0573879	0.109024	2.10084	0.0310718	0.0208215
Std Dev:	0.000266896	0.000551895	0.0174872	0.000361225	6.81289e-005
%RSD:	0.465073	0.506217	0.83239	1.16255	0.327205
Repeat:1	0.0572462	0.109653	2.11587	0.030979	0.020894
Repeat:2	0.0576957	0.108797	2.10499	0.0314704	0.0208117
Repeat:3	0.0572217	0.108621	2.08165	0.0307661	0.0207589

Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.0255043	0.873592	12403	238907	16241.3
Std Dev:	9.03707e-005	0.0044412	120.503	2423.27	275.401
%RSD:	0.354335	0.508384	0.971564	1.01431	1.69569
Repeat:1	0.0255042	0.878719	12306.9	241014	16254.4
Repeat:2	0.0255948	0.870944	12364	236259	15959.5
Repeat:3	0.0254141	0.871112	12538.2	239449	16509.8

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0503616	1.96734	0.102739	151.729	0.103028
Std Dev:	0.000390987	0.0288802	0.000691661	2.52129	0.00169805
%RSD:	0.776359	1.46798	0.673219	1.66171	1.64815
Repeat:1	0.0505159	1.98628	0.102754	149.152	0.102574
Repeat:2	0.050652	1.98164	0.103424	151.843	0.104907
Repeat:3	0.0499171	1.9341	0.102041	154.191	0.101603
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0523597	50.3508	0.0509639	0.101435	0.208862
Std Dev:	0.00028212	0.448918	0.000335448	0.000833655	0.00174769
%RSD:	0.538811	0.891581	0.658208	0.821859	0.836767
Repeat:1	0.052278	50.4177	0.0513492	0.102396	0.207055
Repeat:2	0.0526737	50.7624	0.0507368	0.100899	0.210543
Repeat:3	0.0521275	49.8721	0.0508056	0.101011	0.208989
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.245539	1.03902	51.6142	0.0997087	9.67023
Std Dev:	0.000980996	0.0364411	0.365819	0.000832645	0.102512
%RSD:	0.399527	3.50725	0.708756	0.835078	1.06008
Repeat:1	0.245747	1.03647	51.5438	0.0988854	9.70991
Repeat:2	0.2464	1.00393	52.0101	0.0996904	9.74697
Repeat:3	0.244471	1.07667	51.2887	0.10055	9.55381
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.10485	0.497366	51.4442	50.7663	0.522513
Std Dev:	4.59221e-005	0.00255706	1.1235	0.403335	0.00295397
%RSD:	0.043798	0.514121	2.18393	0.794494	0.565338
Repeat:1	0.104861	0.500297	51.7495	50.6934	0.525924
Repeat:2	0.104889	0.495588	52.3835	51.2011	0.520816
Repeat:3	0.104799	0.496213	50.1996	50.4044	0.5208
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.14678	0.10739	0.100716	0.501501	0.143665
Std Dev:	0.0294795	0.000646444	0.000636485	0.00271978	0.00117289
%RSD:	0.572775	0.601961	0.631958	0.542329	0.816408
Repeat:1	5.18006	0.106728	0.101313	0.504633	0.144942
Repeat:2	5.12395	0.107422	0.10079	0.50013	0.142636
Repeat:3	5.13633	0.108019	0.100046	0.49974	0.143416
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.61917	0.51049	0.50565	0.0970117	0.393431
Std Dev:	0.0262175	0.00258667	0.00420272	0.00109026	0.00128145
%RSD:	0.466573	0.506703	0.831152	1.12384	0.32571
Repeat:1	5.60525	0.513438	0.509265	0.0967273	0.394795
Repeat:2	5.64942	0.509428	0.506645	0.098216	0.393247
Repeat:3	5.60286	0.508603	0.501038	0.0960919	0.392252
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.201267	0.527809	12403	238907	16241.3
Std Dev:	0.00071144	0.00269246	120.503	2423.27	275.401
%RSD:	0.35348	0.51012	0.971564	1.01431	1.69569
Repeat:1	0.201266	0.530917	12306.9	241014	16254.4
Repeat:2	0.201979	0.526195	12364	236259	15959.5
Repeat:3	0.200556	0.526315	12538.2	239449	16509.8
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	12403	238907	16241.3
Std Dev:	120.503	2423.27	275.401
%RSD:	0.971564	1.01431	1.69569
Repeat:1	12306.9	241014	16254.4
Repeat:2	12364	236259	15959.5
Repeat:3	12538.2	239449	16509.8

Sample Name	Acquisition date
MXL23L	12/20/2012 12:33:11PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	0.00433776	0.0356772	0.00779167	4.49512	0.301376
Std Dev:	7.65279e-005	0.000937539	7.51965e-005	0.0791299	0.00245849
%RSD:	1.76423	2.62784	0.965088	1.76035	0.815756
Repeat:1	0.00432212	0.036444	0.00785804	4.52016	0.303677
Repeat:2	0.0044209	0.0359555	0.00780698	4.5587	0.301664
Repeat:3	0.00427027	0.034632	0.00771	4.4065	0.298786

Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	0.130811	7.50249	0.102618	0.112961	0.0183287
Std Dev:	0.00185624	0.106769	0.000502129	0.000792605	0.000236244
%RSD:	1.41903	1.42311	0.489318	0.701661	1.28892
Repeat:1	0.132347	7.57396	0.103149	0.113864	0.0185298
Repeat:2	0.131337	7.55375	0.102555	0.112643	0.0183878
Repeat:3	0.128748	7.37976	0.102151	0.112378	0.0180686

Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.0321151	0.00566042	1.6425	0.0714729	0.128636
Std Dev:	0.000487571	0.000227846	0.0194839	0.00161343	0.00213129
%RSD:	1.5182	4.02525	1.18624	2.2574	1.65684
Repeat:1	0.0325805	0.00592219	1.66035	0.0727172	0.129575
Repeat:2	0.0321569	0.00550671	1.64543	0.0720514	0.130136

Repeat:3	0.031608	0.00555237	1.62171	0.0696499	0.126196
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0475152	0.212347	0.0179255	6.31294	0.376685
Std Dev:	0.000724895	0.00148314	0.00010511	0.0789012	0.00278992
%RSD:	1.52561	0.698449	0.586369	1.24983	0.74065
Repeat:1	0.0481215	0.213982	0.0178139	6.3787	0.379732
Repeat:2	0.0477118	0.211971	0.0180226	6.33467	0.376069
Repeat:3	0.0467123	0.211089	0.0179401	6.22545	0.374255
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.24883	0.0007671	0.0179539	0.0420708	0.00704386
Std Dev:	0.00177171	1.80617e-005	0.000269378	0.00042765	9.07795e-005
%RSD:	0.712017	2.35454	1.50039	1.0165	1.28878
Repeat:1	0.250548	0.000784005	0.0182177	0.0424918	0.00710251
Repeat:2	0.248932	0.000769224	0.0176793	0.0420839	0.00708976
Repeat:3	0.247009	0.00074807	0.0179647	0.0416368	0.00693929
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0609997	0.109107	2.10803	0.0311717	0.0208629
Std Dev:	0.000999406	0.000836001	0.0301676	0.000152193	0.000137594
%RSD:	1.63838	0.766219	1.43108	0.488242	0.659516
Repeat:1	0.0611096	0.109926	2.13208	0.0313388	0.0209979
Repeat:2	0.0619397	0.10914	2.11784	0.0311352	0.020868
Repeat:3	0.05995	0.108255	2.07418	0.0310411	0.0207229
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0253617	0.834057	12321	237805	16151.6
Std Dev:	0.000419986	0.00614625	90.421	4520.49	378.271
%RSD:	1.65599	0.73691	0.733876	1.90092	2.34201
Repeat:1	0.0257043	0.840789	12225.1	237452	16186.5
Repeat:2	0.0254876	0.832636	12333.2	233470	15757
Repeat:3	0.0248931	0.828746	12404.8	242491	16511.2

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0502665	1.94691	0.102861	152.007	0.103582
Std Dev:	0.000851921	0.0542266	0.000956201	2.67586	0.000910939
%RSD:	1.69481	2.78526	0.929607	1.76036	0.879437
Repeat:1	0.0500948	1.99124	0.103704	152.853	0.104435
Repeat:2	0.0511911	1.96306	0.103057	154.157	0.103689
Repeat:3	0.0495134	1.88645	0.101822	149.01	0.102622
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0519717	50.5656	0.0509885	0.101391	0.207214
Std Dev:	0.000736547	0.720139	0.000245751	0.000711079	0.00266457
%RSD:	1.41721	1.42417	0.481973	0.701325	1.28591
Repeat:1	0.0525811	51.0476	0.051248	0.1022	0.209482
Repeat:2	0.0521807	50.9113	0.0509583	0.101106	0.207879
Repeat:3	0.0511532	49.7377	0.0507593	0.100866	0.204279
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.243142	1.04577	51.9777	0.101009	9.74253
Std Dev:	0.00373223	0.0408362	0.616015	0.00221839	0.161121
%RSD:	1.535	3.90488	1.18515	2.19624	1.65379

Repeat:1	0.246705	1.09271	52.542	0.102721	9.81356
Repeat:2	0.243459	1.01835	52.0706	0.101803	9.85593
Repeat:3	0.239261	1.02627	51.3206	0.0985026	9.5581
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.104104	0.498041	51.711	50.906	0.522598
Std Dev:	0.00158908	0.00347995	0.300917	0.635704	0.0038629
%RSD:	1.52644	0.698729	0.581921	1.24878	0.739172
Repeat:1	0.105433	0.501877	51.3919	51.4358	0.526816
Repeat:2	0.104534	0.497158	51.9896	51.0811	0.521745
Repeat:3	0.102344	0.495087	51.7516	50.2011	0.519233
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.1483	0.107787	0.100701	0.504102	0.14377
Std Dev:	0.0366626	0.0025178	0.0015077	0.00513795	0.00189091
%RSD:	0.712131	2.33591	1.49719	1.01923	1.31523
Repeat:1	5.18387	0.110143	0.102177	0.509164	0.144995
Repeat:2	5.15041	0.108084	0.0991635	0.504251	0.144723
Repeat:3	5.11063	0.105134	0.100764	0.498892	0.141593
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.97408	0.510882	0.507378	0.0973124	0.394217
Std Dev:	0.0981802	0.00391824	0.00724898	0.000455574	0.00258521
%RSD:	1.64344	0.766955	1.42871	0.468156	0.655784
Repeat:1	5.98485	0.514721	0.513157	0.0978152	0.396754
Repeat:2	6.06643	0.511038	0.509733	0.0971951	0.394313
Repeat:3	5.87096	0.506889	0.499244	0.096927	0.391586
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.20014	0.503653	12321	237805	16151.6
Std Dev:	0.00331994	0.00371385	90.421	4520.49	378.271
%RSD:	1.65881	0.737383	0.733876	1.90092	2.34201
Repeat:1	0.20285	0.507725	12225.1	237452	16186.5
Repeat:2	0.201133	0.502783	12333.2	233470	15757
Repeat:3	0.196437	0.500451	12404.8	242491	16511.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12321	237805	16151.6
Std Dev:	90.421	4520.49	378.271
%RSD:	0.733876	1.90092	2.34201
Repeat:1	12225.1	237452	16186.5
Repeat:2	12333.2	233470	15757
Repeat:3	12404.8	242491	16511.2

Sample Name	**Acquisition date**
MW21TA	12/20/2012 12:38:05PM

Analyst Name **Method Name**

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-7.9949e-005	0.0308397	-0.00118508	3.76371	0.100216
Std Dev:	2.39093e-005	0.000404774	4.91438e-005	0.0459157	0.00124614
%RSD:	29.9057	1.31251	4.14687	1.21996	1.24345
Repeat:1	-5.34835e-005	0.0312528	-0.00116007	3.81119	0.101552
Repeat:2	-8.63745e-005	0.0304438	-0.0012417	3.7604	0.100012
Repeat:3	-9.9989e-005	0.0308225	-0.00115347	3.71954	0.0990847
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	1.00863e-005	0.238378	-2.26504e-005	0.451453	0.0390853
Std Dev:	2.28517e-005	0.00337662	8.98836e-005	0.00374769	0.000574584
%RSD:	226.562	1.4165	396.83	0.830139	1.47008
Repeat:1	1.62104e-005	0.242241	-5.69974e-005	0.455079	0.0396934
Repeat:2	-1.52035e-005	0.236906	-9.02959e-005	0.451685	0.0390109
Repeat:3	2.92519e-005	0.235988	7.93422e-005	0.447595	0.0385514
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.0203525	0.0121153	0.0396796	-0.000251726	0.00474459
Std Dev:	0.000246195	0.000361427	0.00249821	0.0012461	0.000240831
%RSD:	1.20965	2.98323	6.29595	495.024	5.0759
Repeat:1	0.0206149	0.0125141	0.0423287	9.39484e-005	0.00502186
Repeat:2	0.0203163	0.0120223	0.0393439	-0.00163417	0.00458759
Repeat:3	0.0201265	0.0118094	0.0373663	0.000785046	0.00462431
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.0189121	0.0330266	0.00201969	0.824579	0.0753995
Std Dev:	0.000318584	0.000156714	0.000104599	0.00972169	0.000613578
%RSD:	1.68456	0.47451	5.17896	1.17899	0.813769
Repeat:1	0.0192421	0.0330723	0.00196796	0.835798	0.0759223
Repeat:2	0.0188878	0.0331553	0.00195105	0.819304	0.0755521
Repeat:3	0.0186063	0.0328521	0.00214008	0.818635	0.074724
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.0114705	0.0437912	1.05871	0.00136218	0.00031061
Std Dev:	0.000146384	0.000684912	0.00779169	5.4542e-005	4.39665e-005
%RSD:	1.27618	1.56404	0.73596	4.00403	14.1549
Repeat:1	0.0116209	0.0445522	1.0669	0.00141507	0.000361202
Repeat:2	0.0113285	0.0435971	1.05784	0.00136534	0.000288973
Repeat:3	0.0114621	0.0432243	1.05139	0.00130612	0.000281655
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	6.89958	0.00347534	0.0421093	0.00687321	-0.000331059
Std Dev:	0.0791588	5.08713e-005	0.00123208	6.34083e-005	4.89462e-005
%RSD:	1.1473	1.46378	2.92591	0.922542	14.7847
Repeat:1	6.99087	0.0035335	0.0425811	0.00693593	-0.000345604
Repeat:2	6.85782	0.00343913	0.0430357	0.00687457	-0.000371083
Repeat:3	6.85005	0.0034534	0.040711	0.00680914	-0.000276488
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.000256587	2.37208	12647.9	243911	16073.6
Std Dev:	4.91579e-006	0.0160511	115.537	4004.45	481.506
%RSD:	1.91584	0.67667	0.91349	1.64176	2.99564
Repeat:1	0.000250977	2.38835	12556	239447	15523.3
Repeat:2	0.000260142	2.37163	12610	245100	16279.9
Repeat:3	0.000258641	2.35626	12777.6	247187	16417.5

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R

Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0010159	1.68025	0.0034907	127.272	0.029036
Std Dev:	0.000265659	0.0234756	0.000702504	1.5527	0.000461583
%RSD:	26.1502	1.39715	20.1251	1.21998	1.58969
Repeat:1	0.00130995	1.70421	0.00400136	128.878	0.0295307
Repeat:2	0.00094452	1.65729	0.00268954	127.161	0.0289605
Repeat:3	0.00079322	1.67926	0.00378119	125.779	0.0286168
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	6.34179e-005	1.57025	6.98898e-005	0.407377	0.440477
Std Dev:	9.07902e-006	0.0227748	4.72205e-005	0.00338723	0.00647162
%RSD:	14.3162	1.45039	67.5643	0.831473	1.46923
Repeat:1	6.5857e-005	1.5963	4.811e-005	0.410669	0.447325
Repeat:2	5.33684e-005	1.56032	3.74899e-005	0.40756	0.439643
Repeat:3	7.10281e-005	1.55413	0.000124069	0.403902	0.434462
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.153155	2.16931	1.30207	0.00264854	0.37311
Std Dev:	0.00188762	0.0644517	0.078985	0.00172159	0.0182041
%RSD:	1.23249	2.97107	6.06613	65.0014	4.87902
Repeat:1	0.155166	2.24045	1.38582	0.00312573	0.39407
Repeat:2	0.152876	2.15266	1.29145	0.000738693	0.361247
Repeat:3	0.151422	2.11481	1.22892	0.00408119	0.364014
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0414237	0.0772922	6.05473	6.68642	0.113849
Std Dev:	0.000698452	0.000367706	0.299615	0.0783273	0.000926061
%RSD:	1.68612	0.475735	4.94845	1.17144	0.813409
Repeat:1	0.0421472	0.0773996	5.90674	6.77681	0.114684
Repeat:2	0.0413706	0.0775943	5.8579	6.64392	0.114011
Repeat:3	0.0407533	0.0768828	6.39954	6.63853	0.112853
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.255747	6.08918	5.79211	0.00579704	-0.00307759
Std Dev:	0.00321753	0.0952295	0.042331	0.000538561	0.00084323
%RSD:	1.25809	1.56391	0.730838	9.29027	27.3991
Repeat:1	0.25911	6.19499	5.83644	0.00630671	-0.00210765
Repeat:2	0.252698	6.0622	5.78779	0.00585079	-0.00348872
Repeat:3	0.255435	6.01036	5.75211	0.00523362	-0.00363639
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	677.912	0.0157978	0.0109595	0.0240964	-0.00117829
Std Dev:	7.77791	0.000238428	0.000296243	0.000192201	0.000917851
%RSD:	1.14733	1.50925	2.70307	0.797632	77.897
Repeat:1	686.883	0.0160704	0.0110728	0.0242858	-0.00139731
Repeat:2	673.809	0.015628	0.0111825	0.024102	-0.00196682
Repeat:3	673.046	0.0156949	0.0106234	0.0239015	-0.00017074
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.0020687	1.41874	12647.9	243911	16073.6
Std Dev:	3.10381e-005	0.00950456	115.537	4004.45	481.506
%RSD:	1.50037	0.66993	0.91349	1.64176	2.99564
Repeat:1	0.00203467	1.4283	12556	239447	15523.3
Repeat:2	0.00209546	1.41863	12610	245100	16279.9
Repeat:3	0.00207598	1.40929	12777.6	247187	16417.5
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	12647.9	243911	16073.6
Std Dev:	115.537	4004.45	481.506
%RSD:	0.91349	1.64176	2.99564
Repeat:1	12556	239447	15523.3
Repeat:2	12610	245100	16279.9
Repeat:3	12777.6	247187	16417.5

Sample Name	Acquisition date
MW21TA	12/20/2012 12:43:03PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-0.000131459	0.0309723	-0.00116842	3.79231	0.0987219
Std Dev:	3.97422e-005	0.000258269	4.92389e-005	0.044748	0.00093847
%RSD:	30.2317	0.833869	4.21415	1.17997	0.95062
Repeat:1	-0.00016494	0.0312561	-0.00122506	3.84391	0.0986582
Repeat:2	-8.75393e-005	0.030751	-0.00113581	3.76881	0.0996906
Repeat:3	-0.000141897	0.0309099	-0.00114439	3.76419	0.0978169
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	2.889e-005	0.237898	-1.41666e-005	0.455878	0.0396719
Std Dev:	4.07696e-006	0.0008745	1.13618e-005	0.00242789	8.94011e-005
%RSD:	14.112	0.367595	80.2013	0.532575	0.225351
Repeat:1	3.02258e-005	0.238857	-2.13948e-005	0.458677	0.0397544
Repeat:2	3.21315e-005	0.237146	-2.00342e-005	0.454616	0.0396843
Repeat:3	2.43127e-005	0.23769	-1.07066e-006	0.45434	0.0395769
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.0206356	0.0119026	0.0316543	-0.00151415	0.0047993
Std Dev:	5.85168e-005	1.82867e-005	0.000269843	0.000419392	0.00014394
%RSD:	0.283572	0.153636	0.85247	27.6981	2.9992
Repeat:1	0.0205686	0.0119174	0.0314318	-0.00186616	0.00491479
Repeat:2	0.0206619	0.0119084	0.0315766	-0.00162617	0.00463804
Repeat:3	0.0206764	0.0118822	0.0319544	-0.00105012	0.00484506
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.0191955	0.0331548	0.0022331	0.820068	0.0759527
Std Dev:	5.80331e-005	0.000270564	0.00023772	0.00140386	0.000422219
%RSD:	0.302327	0.816062	10.6453	0.171188	0.555897
Repeat:1	0.0192112	0.0334669	0.00198637	0.818934	0.0764342
Repeat:2	0.0191312	0.0330115	0.00246065	0.821638	0.0757785
Repeat:3	0.0192441	0.0329861	0.00225229	0.819632	0.0756455
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A

Avg. of Repeats:	0.0114956	0.0444567	1.06904	0.00143052	0.000374864
Std Dev:	0.000164949	0.000143279	0.00505273	0.000115808	3.07192e-005
%RSD:	1.43489	0.322289	0.472641	8.09553	8.19474
Repeat:1	0.0116856	0.044548	1.07484	0.00142422	0.000352091
Repeat:2	0.0113896	0.0445305	1.06667	0.00154934	0.000409803
Repeat:3	0.0114114	0.0442915	1.06561	0.00131798	0.000362699
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	6.88065	0.00353305	0.0419732	0.00723082	-0.000325603
Std Dev:	0.00398996	4.29231e-005	0.000399476	0.00017982	1.28358e-005
%RSD:	0.0579881	1.2149	0.95174	2.48686	3.94216
Repeat:1	6.88525	0.00349469	0.0422906	0.00736913	-0.000335217
Repeat:2	6.87807	0.00352506	0.0421043	0.00729578	-0.000330565
Repeat:3	6.87864	0.00357941	0.0415246	0.00702754	-0.000311027
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000297887	2.39144	12500.2	240677	15952.3
Std Dev:	2.79424e-005	0.0116277	43.2662	115.39	32.3775
%RSD:	9.38019	0.486222	0.346125	0.0479438	0.202964
Repeat:1	0.000296354	2.40465	12534.9	240784	15931
Repeat:2	0.000326565	2.38691	12514	240691	15989.6
Repeat:3	0.000270743	2.38276	12451.7	240555	15936.4

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000443792	1.68793	0.00367387	128.239	0.0284823
Std Dev:	0.000441742	0.0149652	0.000614622	1.5132	0.000347757
%RSD:	99.5382	0.886601	16.7295	1.17998	1.22096
Repeat:1	7.17383e-005	1.70437	0.00296701	129.984	0.0284587
Repeat:2	0.000932008	1.6751	0.0040822	127.445	0.0288413
Repeat:3	0.000327629	1.68432	0.00397242	127.289	0.028147
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	7.08187e-005	1.56701	7.6735e-005	0.411316	0.447094
Std Dev:	1.57684e-006	0.00589837	5.81325e-006	0.00217096	0.00100792
%RSD:	2.22659	0.37641	7.57574	0.527807	0.225439
Repeat:1	7.13513e-005	1.57348	7.30309e-005	0.413819	0.448024
Repeat:2	7.20602e-005	1.56194	7.37389e-005	0.410187	0.447234
Repeat:3	6.90445e-005	1.56561	8.34351e-005	0.409943	0.446023
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.155319	2.13102	1.04833	0.000904413	0.377249
Std Dev:	0.000447034	0.0031751	0.00853153	0.000579476	0.0108848
%RSD:	0.287816	0.148995	0.81382	64.0721	2.88532
Repeat:1	0.154807	2.13348	1.0413	0.000417984	0.385987
Repeat:2	0.155521	2.13213	1.04587	0.000749718	0.365056
Repeat:3	0.15563	2.12743	1.05782	0.00154554	0.380703
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0420463	0.0775932	6.66626	6.65008	0.114594
Std Dev:	0.000127292	0.000634837	0.681411	0.0113108	0.000589564
%RSD:	0.302742	0.81816	10.2218	0.170086	0.514482

Repeat:1	0.0420806	0.0783254	5.95895	6.64094	0.115266
Repeat:2	0.0419053	0.0772568	7.31842	6.66273	0.114349
Repeat:3	0.0421528	0.0771974	6.72142	6.64656	0.114165
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.256215	6.18173	5.84974	0.00649878	-0.00172418
Std Dev:	0.00342605	0.019924	0.0280141	0.00138936	0.000642803
%RSD:	1.33718	0.322305	0.478895	21.3788	37.2816
Repeat:1	0.260162	6.19443	5.88191	0.0064045	-0.00220293
Repeat:2	0.254015	6.19199	5.8366	0.00793287	-0.000993591
Repeat:3	0.254467	6.15877	5.83071	0.00515895	-0.00197602
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	676.053	0.0160683	0.0109268	0.0251826	-0.00110969
Std Dev:	0.392018	0.000201175	9.60591e-005	0.000548888	0.000247389
%RSD:	0.0579863	1.252	0.879112	2.17964	22.2935
Repeat:1	676.504	0.0158885	0.0110031	0.0256072	-0.00129872
Repeat:2	675.799	0.0160308	0.0109584	0.0253777	-0.00120065
Repeat:3	675.855	0.0162855	0.010819	0.0245628	-0.000829699
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.00239993	1.43063	12500.2	240677	15952.3
Std Dev:	0.000220874	0.00708139	43.2662	115.39	32.3775
%RSD:	9.20336	0.494985	0.346125	0.0479438	0.202964
Repeat:1	0.00238923	1.43867	12534.9	240784	15931
Repeat:2	0.00262596	1.42787	12514	240691	15989.6
Repeat:3	0.0021846	1.42534	12451.7	240555	15936.4
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12500.2	240677	15952.3
Std Dev:	43.2662	115.39	32.3775
%RSD:	0.346125	0.0479438	0.202964
Repeat:1	12534.9	240784	15931
Repeat:2	12514	240691	15989.6
Repeat:3	12451.7	240555	15936.4

Sample Name	**Acquisition date**
MXLTX	12/20/2012 12:48:01PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.000881348	0.00347975	-0.00031201	0.102736	0.0546334
Std Dev:	1.16606e-005	0.000226034	9.42837e-005	0.000809003	0.00117571
%RSD:	1.32305	6.49569	30.2181	0.787461	2.152
Repeat:1	0.000867976	0.00372841	-0.000285548	0.103239	0.0546346
Repeat:2	0.000886662	0.00342411	-0.000233785	0.103165	0.0558086
Repeat:3	0.000889404	0.00328673	-0.000416697	0.101802	0.0534571

Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-9.39746e-005	0.182327	0.000714077	0.0012471	0.000560708
Std Dev:	2.69802e-005	0.00101255	5.76918e-005	3.59003e-005	1.43383e-005
%RSD:	28.7101	0.555348	8.07922	2.87871	2.55718
Repeat:1	-0.000108519	0.183071	0.000755924	0.00125875	0.000564433
Repeat:2	-6.28429e-005	0.182735	0.000738042	0.00120682	0.000572816
Repeat:3	-0.000110562	0.181174	0.000648265	0.00127573	0.000544874
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.00421989	0.00220266	0.0217484	-0.00259922	0.00535526
Std Dev:	2.90055e-005	0.000120125	0.00138397	0.00087226	5.57245e-005
%RSD:	0.687354	5.45361	6.36356	33.5585	1.04056
Repeat:1	0.00421502	0.00227993	0.0233186	-0.00237288	0.00533264
Repeat:2	0.00425102	0.00226379	0.0212207	-0.00356234	0.00541874
Repeat:3	0.00419362	0.00206427	0.020706	-0.00186244	0.00531441
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.0133399	0.000474812	0.00173815	0.399996	0.0131473
Std Dev:	0.000117618	9.51731e-005	0.000105576	0.00330894	0.000191755
%RSD:	0.8817	20.0444	6.07405	0.827243	1.45852
Repeat:1	0.0134712	0.000584624	0.00166881	0.401842	0.0129337
Repeat:2	0.0133044	0.000423642	0.00168598	0.401969	0.0133046
Repeat:3	0.0132442	0.000416171	0.00185965	0.396176	0.0132036
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.00668738	3.78626e-005	0.001302	0.000472165	0.046715
Std Dev:	3.7235e-005	1.08988e-005	0.000150127	9.45676e-005	0.000310739
%RSD:	0.556796	28.785	11.5305	20.0285	0.66518
Repeat:1	0.00672901	4.79379e-005	0.00144759	0.000370605	0.0469855
Repeat:2	0.00665726	2.62943e-005	0.00131069	0.000488201	0.0463756
Repeat:3	0.00667586	3.93556e-005	0.00114771	0.000557689	0.0467838
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.132458	0.0142558	0.00752405	0.00110602	-0.000151851
Std Dev:	0.0290141	0.000148538	0.000390828	5.69858e-005	5.06892e-005
%RSD:	21.9044	1.04195	5.19438	5.15234	33.3809
Repeat:1	0.161083	0.0143738	0.00796908	0.00105255	-0.000198404
Repeat:2	0.133221	0.014089	0.00723666	0.00109954	-0.0001593
Repeat:3	0.10307	0.0143046	0.00736641	0.00116597	-9.78495e-005
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.000104711	0.231036	12525.4	241281	15887.7
Std Dev:	1.61999e-005	0.00184422	154.62	5497.49	332.662
%RSD:	15.4711	0.798241	1.23446	2.27846	2.09384
Repeat:1	9.39606e-005	0.233165	12361.2	236624	15730.4
Repeat:2	9.6829e-005	0.229994	12546.6	239874	15662.8
Repeat:3	0.000123344	0.229949	12668.3	247345	16269.8

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0116963	0.0954188	0.000493242	3.47303	0.0121498
Std Dev:	0.000129642	0.0131051	0.00123577	0.0273646	0.000435625
%RSD:	1.1084	13.7343	250.541	0.787918	3.58544
Repeat:1	0.0115477	0.109834	0.000884885	3.49008	0.0121502
Repeat:2	0.0117553	0.0921963	0.00148574	3.48755	0.0125852
Repeat:3	0.011786	0.0842255	-0.000890895	3.44147	0.011714
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A

Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.24542e-005	1.19219	0.000544758	0.00122136	0.0067231
Std Dev:	1.07271e-005	0.00682949	2.71586e-005	3.24868e-005	0.000159655
%RSD:	47.7733	0.572851	4.98543	2.65989	2.37473
Repeat:1	1.66948e-005	1.19721	0.000564553	0.00124911	0.00676232
Repeat:2	3.48309e-005	1.19495	0.000555925	0.00118562	0.00685949
Repeat:3	1.5837e-005	1.18442	0.000513796	0.00122934	0.00654749
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0296149	0.422648	0.735141	-0.000589104	0.418357
Std Dev:	0.000222818	0.0214871	0.0437566	0.00120518	0.00421114
%RSD:	0.752384	5.08393	5.95213	204.579	1.00659
Repeat:1	0.0295784	0.436465	0.784785	-0.000276468	0.41665
Repeat:2	0.0298537	0.433586	0.718456	-0.0019198	0.423154
Repeat:3	0.0294126	0.397892	0.702182	0.000428954	0.415268
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0292103	0.000914546	5.23046	3.26556	0.0195512
Std Dev:	0.000258023	0.000223309	0.302517	0.02666	0.000243536
%RSD:	0.883327	24.4175	5.78375	0.816398	1.24563
Repeat:1	0.0294984	0.0011722	5.03182	3.28044	0.0192891
Repeat:2	0.0291321	0.000794482	5.08094	3.28146	0.0197705
Repeat:3	0.0290004	0.000776954	5.57863	3.23479	0.019594
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.137758	0.00588359	0.00600771	0.00341835	0.970147
Std Dev:	0.000829009	0.00151476	0.000460915	0.00114435	0.00646454
%RSD:	0.601785	25.7456	7.67205	33.4766	0.666346
Repeat:1	0.1387	0.00728141	0.00644849	0.00219126	0.975756
Repeat:2	0.137137	0.00427414	0.00604565	0.00360737	0.963077
Repeat:3	0.137439	0.00609523	0.005529	0.00445642	0.971608
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	12.9978	0.0663244	0.00264466	0.00665117	-0.00117406
Std Dev:	2.85085	0.00069618	9.39701e-005	0.000172705	0.00093317
%RSD:	21.9334	1.04966	3.55321	2.59661	79.4823
Repeat:1	15.8104	0.0668774	0.00275165	0.00648888	-0.00202951
Repeat:2	13.0728	0.0655426	0.0025755	0.00663195	-0.00131375
Repeat:3	10.1101	0.0665531	0.00260682	0.00683268	-0.000178919
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000271019	0.1393	12525.4	241281	15887.7
Std Dev:	0.000126616	0.00103009	154.62	5497.49	332.662
%RSD:	46.7184	0.739472	1.23446	2.27846	2.09384
Repeat:1	0.000187097	0.140488	12361.2	236624	15730.4
Repeat:2	0.000209301	0.138659	12546.6	239874	15662.8
Repeat:3	0.000416659	0.138753	12668.3	247345	16269.8
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	12525.4	241281	15887.7
Std Dev:	154.62	5497.49	332.662
%RSD:	1.23446	2.27846	2.09384
Repeat:1	12361.2	236624	15730.4
Repeat:2	12546.6	239874	15662.8
Repeat:3	12668.3	247345	16269.8

Sample Name	Acquisition date
MXLT1	12/20/2012 12:52:54PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	0.000889873	0.00405653	-0.000230374	0.0984896	0.0548416
Std Dev:	1.38781e-005	0.000261059	3.25344e-005	0.000562393	0.00106939
%RSD:	1.55956	6.43551	14.1225	0.571018	1.94996
Repeat:1	0.000896061	0.00385995	-0.000236389	0.098861	0.0536976
Repeat:2	0.000899582	0.00395692	-0.00025948	0.0987652	0.0558162
Repeat:3	0.000873978	0.00435273	-0.000195251	0.0978426	0.055011
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.000123637	0.16689	0.000288756	0.00169027	0.000779987
Std Dev:	1.33916e-005	0.000996965	0.000107548	4.12694e-005	2.10206e-005
%RSD:	10.8314	0.597377	37.2455	2.44159	2.69499
Repeat:1	-0.00012706	0.167457	0.000347736	0.0017245	0.000769942
Repeat:2	-0.000134984	0.167475	0.000353911	0.00164444	0.000765874
Repeat:3	-0.000108866	0.165739	0.000164621	0.00170185	0.000804146
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.00343416	0.00217596	0.016933	-0.00127288	0.00279219
Std Dev:	6.94314e-006	0.000292245	0.00162198	0.00137575	7.13199e-005
%RSD:	0.202179	13.4306	9.5788	108.082	2.55426
Repeat:1	0.00343213	0.00198961	0.018733	-0.00262714	0.00270985
Repeat:2	0.00344189	0.00251278	0.0155849	0.000123394	0.00283467
Repeat:3	0.00342845	0.00202549	0.0164811	-0.00131489	0.00283204
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.0116537	0.000562452	0.00135719	0.369085	0.0066789
Std Dev:	5.87902e-005	5.72524e-005	0.000331897	0.00207747	7.99737e-005
%RSD:	0.504476	10.1791	24.4547	0.56287	1.19741
Repeat:1	0.0117094	0.000531514	0.00100816	0.369844	0.00677123
Repeat:2	0.0116595	0.000628517	0.00166878	0.370676	0.00663164
Repeat:3	0.0115923	0.000527324	0.00139462	0.366735	0.00663382
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.00504644	3.32956e-005	0.000651529	0.000627744	0.0447329
Std Dev:	1.38107e-005	1.34683e-005	0.000137763	7.27087e-005	0.000349461
%RSD:	0.273673	40.4507	21.1445	11.5825	0.781217
Repeat:1	0.00503286	4.73036e-005	0.000524265	0.000550292	0.0450107
Repeat:2	0.00504601	3.21419e-005	0.000797814	0.000638409	0.0448476
Repeat:3	0.00506047	2.04412e-005	0.000632509	0.000694532	0.0443406
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.0347208	0.00973121	0.00637815	0.00112714	-0.000177989
Std Dev:	0.00334945	4.07827e-005	0.000126741	0.000147408	0.00011475

%RSD:	9.64682	0.419092	1.98711	13.0781	64.4704
Repeat:1	0.0379774	0.00972875	0.00647476	0.000969409	-0.000266287
Repeat:2	0.0348993	0.00977317	0.00623464	0.00126141	-0.000219399
Repeat:3	0.0312856	0.00969172	0.00642504	0.00115058	-4.82818e-005
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000130046	0.148113	12697.9	243946	16054.7
Std Dev:	1.97454e-005	0.00147723	142.977	936.596	127.846
%RSD:	15.1834	0.997366	1.12599	0.383935	0.796319
Repeat:1	0.000152836	0.149603	12555.3	243156	15934.8
Repeat:2	0.000118059	0.148088	12697.1	243703	16040
Repeat:3	0.000119244	0.146649	12841.3	244981	16189.2

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0117912	0.128857	0.0013384	3.32945	0.0122269
Std Dev:	0.000154259	0.0151421	0.00040628	0.0190247	0.000396148
%RSD:	1.30825	11.7511	30.3556	0.571406	3.23996
Repeat:1	0.0118601	0.117455	0.00126709	3.342	0.0118031
Repeat:2	0.011899	0.123079	0.000972498	3.33879	0.0125879
Repeat:3	0.0116145	0.146038	0.00177562	3.30756	0.0122898
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.06326e-005	1.08808	0.000333549	0.00155974	0.00920537
Std Dev:	5.32496e-006	0.00672438	5.17717e-005	3.84123e-005	0.000237366
%RSD:	50.0816	0.618006	15.5215	2.46274	2.57856
Repeat:1	9.23656e-006	1.0919	0.000365038	0.00159329	0.00909187
Repeat:2	6.14466e-006	1.09202	0.000361812	0.00151784	0.00904607
Repeat:3	1.65165e-005	1.08031	0.000273797	0.00156808	0.00947818
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0236041	0.417844	0.582894	0.00124494	0.224628
Std Dev:	5.65839e-005	0.0522889	0.0512816	0.00190074	0.00539153
%RSD:	0.239721	12.514	8.79775	152.677	2.4002
Repeat:1	0.023586	0.384508	0.639805	-0.000626171	0.218404
Repeat:2	0.0236675	0.478108	0.540272	0.00317398	0.227841
Repeat:3	0.0235588	0.390915	0.568607	0.00118702	0.22764
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0255114	0.00112018	4.13838	3.01652	0.0104722
Std Dev:	0.000129101	0.000134334	0.951296	0.0167381	0.000113864
%RSD:	0.506053	11.9922	22.9872	0.554882	1.0873
Repeat:1	0.0256341	0.00104759	3.13801	3.02263	0.0106037
Repeat:2	0.0255233	0.00127519	5.03152	3.02934	0.0104082
Repeat:3	0.0253767	0.00103776	4.2456	2.99758	0.0104048
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.103554	0.00526697	0.00365077	0.00519624	0.928954
Std Dev:	0.000276361	0.00187142	0.000780602	0.000875015	0.00727789
%RSD:	0.266876	35.5313	21.3818	16.8394	0.78345

Repeat:1	0.103282	0.00721435	0.00290205	0.00426264	0.934735
Repeat:2	0.103547	0.00510445	0.00445976	0.00532845	0.931347
Repeat:3	0.103834	0.00348211	0.0035905	0.00599762	0.920781
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.39437	0.0451183	0.00237008	0.00672207	-0.00174605
Std Dev:	0.329108	0.000191144	3.05067e-005	0.00044523	0.00216208
%RSD:	9.69571	0.42365	1.28716	6.62341	123.827
Repeat:1	3.71435	0.0451068	0.00239328	0.00624556	-0.00340952
Repeat:2	3.41192	0.045315	0.00233552	0.00712746	-0.00252653
Repeat:3	3.05683	0.0449332	0.00238144	0.00679319	0.000697902
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000473629	0.0891233	12697.9	243946	16054.7
Std Dev:	0.000154865	0.000890439	142.977	936.596	127.846
%RSD:	32.6977	0.999109	1.12599	0.383935	0.796319
Repeat:1	0.00065241	0.0900256	12555.3	243156	15934.8
Repeat:2	0.000380897	0.0890989	12697.1	243703	16040
Repeat:3	0.000387578	0.0882452	12841.3	244981	16189.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12697.9	243946	16054.7
Std Dev:	142.977	936.596	127.846
%RSD:	1.12599	0.383935	0.796319
Repeat:1	12555.3	243156	15934.8
Repeat:2	12697.1	243703	16040
Repeat:3	12841.3	244981	16189.2

Sample Name	**Acquisition date**
CCV2	12/20/2012 12:57:48PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.089575	0.423117	0.0385979	0.060198	5.51903
Std Dev:	0.000752804	0.00251281	0.000226763	0.000466397	0.0343629
%RSD:	0.840418	0.59388	0.587502	0.774772	0.622625
Repeat:1	0.0903729	0.422054	0.0388332	0.0605125	5.50242
Repeat:2	0.0894748	0.42131	0.0383807	0.0604193	5.49613
Repeat:3	0.0888773	0.425986	0.0385797	0.0596621	5.55854
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	5.22065	7.42921	1.0183	2.22303	0.178729
Std Dev:	0.0576029	0.049737	0.00513811	0.0100895	0.00147157
%RSD:	1.10337	0.669479	0.504576	0.453862	0.823348
Repeat:1	5.18154	7.42594	1.02328	2.23259	0.179753
Repeat:2	5.2868	7.38119	1.01302	2.21248	0.179392
Repeat:3	5.19361	7.48051	1.01861	2.224	0.177043
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.249844	0.133017	1.65431	1.45831	0.644898

Std Dev:	0.00151533	0.000691023	0.0114054	0.00903389	0.0063597
%RSD:	0.606513	0.519499	0.689436	0.619476	0.986167
Repeat:1	0.251104	0.132562	1.64755	1.45267	0.647719
Repeat:2	0.250264	0.132677	1.64791	1.45353	0.637615
Repeat:3	0.248162	0.133812	1.66748	1.46873	0.649359
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.914325	0.840026	0.0175617	6.33199	1.47146
Std Dev:	0.0136871	0.00443506	0.00069917	0.0398712	0.007604
%RSD:	1.49696	0.527967	3.98122	0.629679	0.516767
Repeat:1	0.921415	0.844289	0.0177237	6.31221	1.47751
Repeat:2	0.923013	0.835437	0.0167957	6.30588	1.46292
Repeat:3	0.898548	0.840353	0.0181656	6.37789	1.47394
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0966198	0.00371067	0.0897346	0.0432743	0.0233618
Std Dev:	0.000579325	3.18371e-005	0.000374567	0.000383691	5.72752e-005
%RSD:	0.599593	0.857987	0.417416	0.886647	0.245166
Repeat:1	0.0971152	0.00373804	0.0901575	0.0433081	0.0233349
Repeat:2	0.0959828	0.00371824	0.0894445	0.0428749	0.023323
Repeat:3	0.0967615	0.00367573	0.0896018	0.04364	0.0234276
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0277513	0.430844	8.44599	0.638052	0.0527076
Std Dev:	0.000458954	0.00179344	0.041353	0.0036997	0.000109341
%RSD:	1.65381	0.416263	0.489617	0.579843	0.207447
Repeat:1	0.0280697	0.432493	8.467	0.635143	0.0528208
Repeat:2	0.027959	0.428934	8.39835	0.636798	0.0526026
Repeat:3	0.0272252	0.431104	8.47262	0.642216	0.0526996
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.249634	3.23592	12415	240841	16028
Std Dev:	0.00170112	0.0146842	70.2492	2229.17	69.9018
%RSD:	0.681443	0.453787	0.565842	0.925578	0.436123
Repeat:1	0.250868	3.24959	12356.2	239253	16091.6
Repeat:2	0.250341	3.2204	12492.8	239880	16039.3
Repeat:3	0.247694	3.23778	12395.9	243389	15953.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.998862	24.343	0.495518	2.04218	2.03699
Std Dev:	0.00837483	0.145944	0.00286617	0.0157198	0.0127333
%RSD:	0.838437	0.599532	0.578419	0.769759	0.625103
Repeat:1	1.00774	24.281	0.498505	2.05278	2.03084
Repeat:2	0.997753	24.2384	0.49279	2.04963	2.02851
Repeat:3	0.991096	24.5098	0.49526	2.02412	2.05163
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.07308	50.0713	0.503738	1.98436	2.01622
Std Dev:	0.0228767	0.335468	0.00254916	0.00902718	0.0165939
%RSD:	1.10351	0.669981	0.506049	0.454917	0.823018
Repeat:1	2.05755	50.0492	0.506214	1.99293	2.02777
Repeat:2	2.09935	49.7474	0.501121	1.97493	2.02369
Repeat:3	2.06235	50.4173	0.503878	1.9852	1.99721
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**

Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.91214	23.8038	52.3513	2.01708	48.782
Std Dev:	0.011572	0.122956	0.360601	0.0124769	0.48081
%RSD:	0.605185	0.51654	0.68881	0.618562	0.985629
Repeat:1	1.92177	23.7223	52.1375	2.00929	48.9954
Repeat:2	1.91535	23.7438	52.1488	2.01048	48.2315
Repeat:3	1.8993	23.9452	52.7677	2.03147	49.1192
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.00616	1.97079	50.2196	51.0595	2.03873
Std Dev:	0.0300512	0.0104062	2.00262	0.321241	0.0105272
%RSD:	1.49794	0.528021	3.98771	0.629151	0.516364
Repeat:1	2.02173	1.98079	50.6882	50.9001	2.0471
Repeat:2	2.02524	1.96002	48.0243	50.8491	2.02691
Repeat:3	1.97152	1.97156	51.9464	51.4293	2.04217
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.00899	0.519632	0.505613	0.492741	0.484393
Std Dev:	0.0120417	0.00442436	0.00209978	0.00486709	0.00122517
%RSD:	0.59939	0.851441	0.415294	0.987759	0.252929
Repeat:1	2.01929	0.523444	0.507981	0.492974	0.483814
Repeat:2	1.99575	0.520671	0.503978	0.487761	0.483565
Repeat:3	2.01192	0.51478	0.504879	0.497487	0.485801
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.67789	2.01882	2.03183	1.94746	0.982847
Std Dev:	0.0449685	0.00840565	0.00994355	0.0112769	0.00201276
%RSD:	1.67925	0.416364	0.48939	0.57906	0.204789
Repeat:1	2.709	2.02655	2.03688	1.93858	0.984913
Repeat:2	2.69835	2.00987	2.02037	1.94364	0.980892
Repeat:3	2.62633	2.02004	2.03823	1.96015	0.982736
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	1.97228	1.9569	12415	240841	16028
Std Dev:	0.0134461	0.00888815	70.2492	2229.17	69.9018
%RSD:	0.681753	0.454196	0.565842	0.925578	0.436123
Repeat:1	1.98204	1.96518	12356.2	239253	16091.6
Repeat:2	1.97786	1.94751	12492.8	239880	16039.3
Repeat:3	1.95694	1.958	12395.9	243389	15953.1
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12415	240841	16028
Std Dev:	70.2492	2229.17	69.9018
%RSD:	0.565842	0.925578	0.436123
Repeat:1	12356.2	239253	16091.6
Repeat:2	12492.8	239880	16039.3
Repeat:3	12395.9	243389	15953.1

Sample Name	Acquisition date
CCB2	12/20/2012 1:02:44PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-0.000228478	0.00170425	-0.000233621	0.000836263	0.0246941
Std Dev:	3.66313e-005	0.000327961	1.28386e-005	6.44836e-005	0.00188807
%RSD:	16.0327	19.2437	5.49547	7.71093	7.64584
Repeat:1	-0.000261753	0.00208292	-0.000221358	0.00089788	0.0268627
Repeat:2	-0.000189225	0.00151904	-0.000232539	0.000841657	0.0238041
Repeat:3	-0.000234456	0.0015108	-0.000246966	0.000769251	0.0234154
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.000107598	0.00540229	-0.000421841	-2.93122e-005	-5.43807e-006
Std Dev:	3.69258e-005	0.000302408	5.10432e-005	1.30104e-005	1.46132e-005
%RSD:	34.3184	5.59778	12.1001	44.3855	268.721
Repeat:1	-0.000123044	0.00507172	-0.000366865	-3.36372e-005	-2.16459e-005
Repeat:2	-6.54571e-005	0.005665	-0.000467731	-3.96093e-005	6.73115e-006
Repeat:3	-0.000134293	0.00547015	-0.000430927	-1.46902e-005	-1.39949e-006
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.000300062	-2.01838e-005	0.00762437	-0.00167805	-0.000217214
Std Dev:	4.53667e-005	0.000241514	0.00173117	0.00079684	4.72927e-005
%RSD:	15.1191	1196.57	22.7057	47.4862	21.7724
Repeat:1	0.000341469	-0.00029155	0.00961972	-0.00230711	-0.000266544
Repeat:2	0.00025157	5.9826e-005	0.00673084	-0.00194504	-0.000212837
Repeat:3	0.000307146	0.000171172	0.00652253	-0.000781996	-0.000172263
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	4.00797e-005	0.000255045	0.000425694	-0.00146675	-0.00071001
Std Dev:	1.87239e-005	6.30065e-005	0.000319209	0.00173773	0.000235992
%RSD:	46.7165	24.7041	74.9856	118.475	33.2378
Repeat:1	1.90743e-005	0.000309453	0.000458069	0.000479807	-0.000550059
Repeat:2	5.50165e-005	0.000186012	9.15311e-005	-0.00201823	-0.000598925
Repeat:3	4.61484e-005	0.000269669	0.000727482	-0.00286182	-0.000981045
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	6.57054e-005	1.85748e-006	-2.99506e-005	0.00024448	0.00012735
Std Dev:	3.20721e-005	3.64544e-006	4.036e-005	0.000110807	6.85441e-005
%RSD:	48.812	196.258	134.755	45.3237	53.8233
Repeat:1	6.7608e-005	5.83173e-006	1.22288e-005	0.000236785	0.000187675
Repeat:2	3.27243e-005	1.07168e-006	-3.38764e-005	0.000358933	0.000141561
Repeat:3	9.67838e-005	-1.33098e-006	-6.82043e-005	0.00013772	5.28146e-005
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.00478729	0.000155882	-0.0038502	-0.000929431	-0.000159956
Std Dev:	0.000288023	6.55477e-005	0.000392156	0.000168498	8.64164e-005
%RSD:	6.01641	42.0496	10.1854	18.1291	54.0251
Repeat:1	0.00510411	0.000223502	-0.00378219	-0.00098131	-0.000142029
Repeat:2	0.00454127	0.00015152	-0.00427191	-0.00106589	-8.39092e-005
Repeat:3	0.0047165	9.26243e-005	-0.00349649	-0.000741094	-0.00025393
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	4.55261e-005	0.00173654	12732	244033	16361.7
Std Dev:	4.48066e-005	1.93697e-005	46.2932	2000.74	364.412
%RSD:	98.4197	1.11542	0.363597	0.819865	2.22723
Repeat:1	9.59141e-005	0.00175819	12717	241728	15960.9

Repeat:2	1.01625e-005	0.00173059	12783.9	245316	16451
Repeat:3	3.05016e-005	0.00172085	12695.1	245055	16673.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000636409	-0.00752103	0.00120705	0.0270772	0.00105653
Std Dev:	0.000406786	0.0190087	0.000160914	0.00216698	0.00069978
%RSD:	63.919	252.741	13.3312	8.00298	66.2338
Repeat:1	-0.00100583	0.0144266	0.00136039	0.0291447	0.00186027
Repeat:2	-0.000200461	-0.0182518	0.00122126	0.0272642	0.00072671
Repeat:3	-0.000702931	-0.0187378	0.0010395	0.0248228	0.000582608
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.7142e-005	-0.00113701	8.72184e-006	1.98589e-005	0.000352832
Std Dev:	1.47059e-005	0.0020397	2.77626e-005	1.06222e-005	0.000164659
%RSD:	85.7889	179.392	318.312	53.4884	46.6678
Repeat:1	1.09272e-005	-0.00336668	3.92633e-005	1.70524e-005	0.000170221
Repeat:2	3.39349e-005	0.000634941	-1.49858e-005	1.09217e-005	0.00048999
Repeat:3	6.56373e-006	-0.00067929	1.88805e-006	3.16025e-005	0.000398284
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000402502	0.0249433	0.288586	0.000701497	-0.00284773
Std Dev:	0.000345521	0.0431971	0.0547336	0.00110091	0.00357396
%RSD:	85.8432	173.181	18.9661	156.937	125.502
Repeat:1	-8.90243e-005	-0.023591	0.351672	-0.000167585	-0.00657478
Repeat:2	-0.000772978	0.0392454	0.260336	0.000332596	-0.00251881
Repeat:3	-0.000345505	0.0591757	0.25375	0.00193948	0.000550401
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.44104e-005	0.000398896	1.46803	0.0309937	0.000189468
Std Dev:	4.0644e-005	0.000147835	0.914856	0.0140009	0.000326161
%RSD:	166.503	37.0611	62.3185	45.1732	172.146
Repeat:1	-2.11184e-005	0.000526556	1.56081	0.0466771	0.000410207
Repeat:2	5.70379e-005	0.000236921	0.510321	0.0265504	0.000343366
Repeat:3	3.73117e-005	0.00043321	2.33296	0.0197537	-0.000185168
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000459668	0.000899797	0.000230095	0.000611852	-0.00027829
Std Dev:	0.000664184	0.000509676	0.000223244	0.00133838	0.00142447
%RSD:	144.492	56.6434	97.0224	218.742	511.863
Repeat:1	0.000500639	0.00145573	0.000462835	0.000524167	0.000973925
Repeat:2	-0.000224053	0.000789078	0.000209706	0.00199191	1.92192e-005
Repeat:3	0.00110242	0.000454581	1.77452e-005	-0.000680525	-0.00182802
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.453149	0.000239863	-7.92123e-005	0.000490604	-0.0014218
Std Dev:	0.0282924	0.000307214	9.43332e-005	0.000509997	0.0016297
%RSD:	6.24351	128.079	119.089	103.953	114.622

Repeat:1	0.484269	0.000556789	-6.28326e-005	0.000331991	-0.00108399
Repeat:2	0.428979	0.000219419	-0.000180663	7.87611e-005	1.25264e-005
Repeat:3	0.4462	-5.66176e-005	5.85838e-006	0.00106106	-0.00319392
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	-0.000213225	2.23385e-005	12732	244033	16361.7
Std Dev:	0.000352044	1.36346e-005	46.2932	2000.74	364.412
%RSD:	165.104	61.0363	0.363597	0.819865	2.22723
Repeat:1	0.00018258	3.65714e-005	12717	241728	15960.9
Repeat:2	-0.000491368	2.10505e-005	12783.9	245316	16451
Repeat:3	-0.000330888	9.39362e-006	12695.1	245055	16673.1
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12732	244033	16361.7
Std Dev:	46.2932	2000.74	364.412
%RSD:	0.363597	0.819865	2.22723
Repeat:1	12717	241728	15960.9
Repeat:2	12783.9	245316	16451
Repeat:3	12695.1	245055	16673.1

Sample Name	**Acquisition date**
MXLT3	12/20/2012 1:07:45PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.000823611	0.00480878	-0.000313186	0.0696757	0.0570945
Std Dev:	3.04837e-005	0.000231751	7.31003e-006	0.000594535	0.00122933
%RSD:	3.70123	4.81934	2.33408	0.853289	2.15314
Repeat:1	0.000837509	0.00477648	-0.000320594	0.070241	0.0579144
Repeat:2	0.00084467	0.00505499	-0.000312987	0.0697303	0.0576881
Repeat:3	0.000788655	0.00459488	-0.000305978	0.0690557	0.055681
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-0.000110228	0.189124	0.00952585	0.00396009	0.000983297
Std Dev:	3.93355e-006	0.00107721	0.000163261	4.01581e-005	3.11651e-005
%RSD:	3.56855	0.56958	1.71388	1.01407	3.16945
Repeat:1	-0.000114262	0.189925	0.00970733	0.00391474	0.000975646
Repeat:2	-0.000106403	0.189549	0.00947931	0.00397442	0.00101758
Repeat:3	-0.00011002	0.1879	0.00939091	0.00399112	0.00095667
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0041881	0.00469939	0.0178088	-0.00186749	0.0042312
Std Dev:	5.56776e-005	0.000112477	0.000810294	0.000977811	0.000126923
%RSD:	1.32942	2.39343	4.54997	52.3595	2.99968
Repeat:1	0.00423965	0.00480237	0.018637	-0.00239915	0.00409419
Repeat:2	0.00419559	0.00471645	0.0177716	-0.000739043	0.00425466
Repeat:3	0.00412906	0.00457936	0.0170177	-0.00246429	0.00434476
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0176915	0.000812474	0.00152289	0.383979	0.0146049
Std Dev:	0.000198789	2.10962e-005	0.000334498	0.00176781	9.23431e-005
%RSD:	1.12364	2.59654	21.9646	0.460393	0.632273

Repeat:1	0.0177946	0.000790217	0.00147477	0.385906	0.0146952
Repeat:2	0.0178175	0.000832177	0.00187885	0.383597	0.0145106
Repeat:3	0.0174623	0.000815029	0.00121507	0.382432	0.014609
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0048249	3.21616e-005	0.00111814	0.000419619	0.0343015
Std Dev:	5.10398e-005	6.05596e-007	0.000174952	2.18034e-005	0.000248408
%RSD:	1.05784	1.88297	15.6467	5.19601	0.724189
Repeat:1	0.00487542	3.22834e-005	0.000916123	0.000394526	0.0344618
Repeat:2	0.00482592	3.26971e-005	0.00121805	0.000430397	0.0344274
Repeat:3	0.00477335	3.15044e-005	0.00122023	0.000433935	0.0340154
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0215135	0.017157	0.00639648	0.00228467	-0.000220746
Std Dev:	0.000547714	0.000176584	0.00135601	5.47909e-005	2.67219e-005
%RSD:	2.5459	1.02923	21.1993	2.3982	12.1053
Repeat:1	0.0212535	0.0172772	0.0077551	0.00234758	-0.000211786
Repeat:2	0.0221428	0.0172395	0.0050431	0.00225901	-0.000199655
Repeat:3	0.0211442	0.0169543	0.00639123	0.00224741	-0.000250796
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000169233	0.228558	12589.6	243823	15748.5
Std Dev:	3.21327e-005	0.00183338	230.027	3805.59	282.91
%RSD:	18.9872	0.802151	1.82711	1.5608	1.79643
Repeat:1	0.000182149	0.230326	12366.9	239687	15585.8
Repeat:2	0.000192898	0.228682	12575.8	244605	15584.5
Repeat:3	0.000132652	0.226665	12826.3	247177	16075.2

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0110552	0.17246	0.000287014	2.35523	0.0130604
Std Dev:	0.000338941	0.0134339	9.14142e-005	0.0201115	0.000455487
%RSD:	3.0659	7.78958	31.8501	0.85391	3.48753
Repeat:1	0.0112097	0.170586	0.000193427	2.37435	0.0133642
Repeat:2	0.0112893	0.186733	0.000291525	2.35708	0.0132804
Repeat:3	0.0106665	0.160062	0.000376089	2.33425	0.0125367
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.58917e-005	1.23804	0.00488516	0.00356976	0.011498
Std Dev:	1.55679e-006	0.00726565	7.97155e-005	3.64431e-005	0.000351348
%RSD:	9.79628	0.586867	1.63179	1.02088	3.05573
Repeat:1	1.4269e-005	1.24344	0.00497393	0.00352852	0.0114117
Repeat:2	1.73729e-005	1.2409	0.00486186	0.0035831	0.0118845
Repeat:3	1.60331e-005	1.22978	0.0048197	0.00359765	0.0111979
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0294042	0.869249	0.610582	0.000421166	0.333404
Std Dev:	0.000427356	0.0201383	0.0256188	0.00135091	0.00959393
%RSD:	1.45338	2.31674	4.19579	320.755	2.87757
Repeat:1	0.0298	0.887681	0.636768	-0.000313454	0.323047
Repeat:2	0.0294616	0.872309	0.609408	0.0019802	0.335177
Repeat:3	0.0289511	0.847755	0.585571	-0.000403248	0.341988
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**

Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.038759	0.00170682	4.61315	3.13651	0.0214501
Std Dev:	0.000436273	4.9499e-005	0.958874	0.0142432	0.00012766
%RSD:	1.12561	2.90008	20.7857	0.454109	0.595148
Repeat:1	0.0389853	0.0016546	4.47516	3.15204	0.0215753
Repeat:2	0.0390356	0.00175305	5.63354	3.13344	0.0213201
Repeat:3	0.0382561	0.00171281	3.73075	3.12406	0.0214549
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0989395	0.00510157	0.0064091	0.00272961	0.711685
Std Dev:	0.00105558	8.48666e-005	0.000968973	0.000260993	0.00517603
%RSD:	1.06689	1.66354	15.1187	9.56154	0.727293
Repeat:1	0.0999833	0.00511784	0.00529031	0.00242969	0.715026
Repeat:2	0.0989627	0.00517712	0.00695648	0.00285403	0.714306
Repeat:3	0.0978726	0.00500975	0.0069805	0.00290511	0.705722
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.09671	0.079922	0.00237299	0.0102469	-0.00257285
Std Dev:	0.053816	0.000827629	0.000326142	0.000167112	0.00050378
%RSD:	2.56669	1.03555	13.7439	1.63085	19.5806
Repeat:1	2.07116	0.0804857	0.00269972	0.0104393	-0.00240411
Repeat:2	2.15854	0.0803086	0.00204744	0.010164	-0.00217511
Repeat:3	2.06042	0.0789719	0.00237181	0.0101375	-0.00313934
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000799712	0.138172	12589.6	243823	15748.5
Std Dev:	0.00025444	0.00111498	230.027	3805.59	282.91
%RSD:	31.8165	0.806948	1.82711	1.5608	1.79643
Repeat:1	0.000902006	0.139251	12366.9	239687	15585.8
Repeat:2	0.000987086	0.138243	12575.8	244605	15584.5
Repeat:3	0.000510045	0.137024	12826.3	247177	16075.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12589.6	243823	15748.5
Std Dev:	230.027	3805.59	282.91
%RSD:	1.82711	1.5608	1.79643
Repeat:1	12366.9	239687	15585.8
Repeat:2	12575.8	244605	15584.5
Repeat:3	12826.3	247177	16075.2

Sample Name	**Acquisition date**
MXLT3A	12/20/2012 1:12:40PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00520127	0.0381323	0.00739137	0.0951839	0.331667
Std Dev:	4.95643e-005	0.000197312	1.71364e-005	0.000507875	0.000631144

%RSD:	0.952928	0.51744	0.231844	0.533572	0.190295
Repeat:1	0.00525488	0.0382121	0.00738246	0.095578	0.331355
Repeat:2	0.00519182	0.0382772	0.00738051	0.0953631	0.332393
Repeat:3	0.00515711	0.0379076	0.00741112	0.0946108	0.331253
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.132875	7.62898	0.111048	0.116205	0.0190796
Std Dev:	0.000455807	0.0239664	0.000169988	0.000212567	5.47319e-005
%RSD:	0.343035	0.314149	0.153076	0.182923	0.28686
Repeat:1	0.133183	7.64031	0.111136	0.116451	0.0191312
Repeat:2	0.133089	7.64517	0.110852	0.11609	0.0190854
Repeat:3	0.132351	7.60144	0.111156	0.116076	0.0190222
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0363737	0.00972176	1.63456	0.0707235	0.131376
Std Dev:	0.000110286	0.000155771	0.00453771	0.000643891	0.000947274
%RSD:	0.303203	1.6023	0.27761	0.910434	0.721043
Repeat:1	0.0364698	0.00960588	1.63096	0.0713424	0.132454
Repeat:2	0.036398	0.00989883	1.63966	0.0707708	0.130995
Repeat:3	0.0362533	0.00966056	1.63306	0.0700573	0.130678
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0642256	0.211393	0.0189678	6.65581	0.387808
Std Dev:	0.000223466	0.000317965	0.00079153	0.0203196	0.001206
%RSD:	0.347939	0.150414	4.17303	0.305291	0.310979
Repeat:1	0.0643721	0.211655	0.0196798	6.6594	0.389195
Repeat:2	0.0643362	0.211039	0.0181155	6.67409	0.387229
Repeat:3	0.0639684	0.211486	0.019108	6.63393	0.387001
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.237015	0.000758101	0.0184167	0.0399386	0.0404287
Std Dev:	0.000443268	7.90374e-006	2.71222e-005	0.000215092	0.000292776
%RSD:	0.187021	1.04257	0.14727	0.538555	0.724178
Repeat:1	0.237526	0.000758607	0.0184458	0.0400971	0.0406973
Repeat:2	0.236771	0.000749957	0.018412	0.040025	0.0404722
Repeat:3	0.236746	0.00076574	0.0183921	0.0396938	0.0401166
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0688814	0.121122	2.14095	0.0338788	0.0202829
Std Dev:	0.000588125	0.000294877	0.004755	0.000348266	9.47056e-005
%RSD:	0.853822	0.243455	0.222098	1.02798	0.466922
Repeat:1	0.0691751	0.121455	2.14573	0.0342809	0.0201893
Repeat:2	0.0692648	0.121017	2.14089	0.033678	0.0203787
Repeat:3	0.0682043	0.120893	2.13622	0.0336774	0.0202808
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0256397	1.0211	12623.7	245019	16047.6
Std Dev:	7.15826e-005	0.00182565	104.127	2512.3	132.706
%RSD:	0.279187	0.178793	0.824854	1.02535	0.826953
Repeat:1	0.0256464	1.0232	12522.1	242298	15898.9
Repeat:2	0.0257077	1.02011	12618.7	245510	16090
Repeat:3	0.025565	1.01997	12730.2	247250	16154

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0598636	2.08929	0.0978569	3.21865	0.114805
Std Dev:	0.000550953	0.0114375	0.000214155	0.017175	0.000233799
%RSD:	0.920348	0.547434	0.218845	0.533609	0.203649
Repeat:1	0.0604593	2.09391	0.0977443	3.23196	0.114689

Repeat:2	0.059759	2.0977	0.0977225	3.22472	0.115074
Repeat:3	0.0593724	2.07627	0.0981039	3.19926	0.114651
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0527909	51.4187	0.0551202	0.104269	0.215677
Std Dev:	0.000180929	0.161649	8.63822e-005	0.000188933	0.000617149
%RSD:	0.342728	0.314379	0.156716	0.181198	0.286145
Repeat:1	0.0529136	51.4951	0.0551652	0.104487	0.216259
Repeat:2	0.052876	51.528	0.0550207	0.104166	0.215742
Repeat:3	0.0525831	51.233	0.0551749	0.104154	0.21503
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.275774	1.7724	51.7269	0.0999606	9.94958
Std Dev:	0.00084454	0.0278987	0.143467	0.000887552	0.0716054
%RSD:	0.306244	1.57406	0.277355	0.887902	0.719683
Repeat:1	0.276509	1.75166	51.6131	0.100815	10.0311
Repeat:2	0.275961	1.80412	51.888	0.100024	9.92078
Repeat:3	0.274851	1.76142	51.6795	0.0990429	9.89685
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.140776	0.495802	54.6981	53.6685	0.538043
Std Dev:	0.000489822	0.000746056	2.26859	0.163714	0.00167096
%RSD:	0.347945	0.150474	4.14747	0.305047	0.310563
Repeat:1	0.141097	0.496416	56.7389	53.6974	0.539963
Repeat:2	0.141019	0.494972	52.2554	53.8158	0.537242
Repeat:3	0.140212	0.49602	55.1001	53.4922	0.536923
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	4.90396	0.106523	0.103185	0.478323	0.839289
Std Dev:	0.00917112	0.00109918	0.000147337	0.00259259	0.00609829
%RSD:	0.187015	1.03187	0.142789	0.542016	0.726602
Repeat:1	4.91454	0.106594	0.103346	0.480232	0.844883
Repeat:2	4.89892	0.10539	0.103152	0.479366	0.840197
Repeat:3	4.89841	0.107585	0.103057	0.475371	0.832788
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	6.74858	0.567192	0.515286	0.10553	0.383268
Std Dev:	0.0577849	0.00138205	0.0011424	0.00105308	0.00178584
%RSD:	0.856254	0.243666	0.221702	0.9979	0.465951
Repeat:1	6.77743	0.568752	0.516436	0.106746	0.381502
Repeat:2	6.78625	0.566703	0.515271	0.104927	0.385073
Repeat:3	6.68205	0.566121	0.514151	0.104917	0.383229
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.202362	0.6176	12623.7	245019	16047.6
Std Dev:	0.000565505	0.00109751	104.127	2512.3	132.706
%RSD:	0.279452	0.177706	0.824854	1.02535	0.826953

Repeat:1	0.202414	0.618867	12522.1	242298	15898.9
Repeat:2	0.202899	0.617008	12618.7	245510	16090
Repeat:3	0.201772	0.616927	12730.2	247250	16154
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12623.7	245019	16047.6
Std Dev:	104.127	2512.3	132.706
%RSD:	0.824854	1.02535	0.826953
Repeat:1	12522.1	242298	15898.9
Repeat:2	12618.7	245510	16090
Repeat:3	12730.2	247250	16154

Sample Name	**Acquisition date**
MXLT3A	12/20/2012 1:17:24PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00522431	0.03857	0.00739905	0.0968874	0.334826
Std Dev:	5.00678e-005	0.000347117	7.75289e-005	0.000594844	0.00212544
%RSD:	0.958362	0.899966	1.04782	0.613954	0.63479
Repeat:1	0.00528124	0.0381713	0.00743197	0.0975244	0.337239
Repeat:2	0.0051871	0.0388049	0.00731049	0.0967912	0.333232
Repeat:3	0.0052046	0.0387338	0.00745469	0.0963465	0.334006
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.134851	7.75988	0.111131	0.1165	0.0193703
Std Dev:	0.000584034	0.00461019	0.000638865	0.000827838	6.67169e-005
%RSD:	0.433094	0.0594106	0.574875	0.71059	0.344429
Repeat:1	0.135468	7.76507	0.111819	0.117401	0.0194374
Repeat:2	0.134779	7.75831	0.110557	0.115774	0.0193694
Repeat:3	0.134307	7.75626	0.111018	0.116325	0.019304
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0360208	0.00984288	1.66575	0.0716971	0.132838
Std Dev:	0.000204788	0.000188289	0.0056979	0.00233723	0.000826755
%RSD:	0.568528	1.91294	0.342063	3.25986	0.622377
Repeat:1	0.0362327	0.00996713	1.66288	0.0726276	0.132793
Repeat:2	0.0360057	0.00962624	1.66205	0.0690379	0.133687
Repeat:3	0.035824	0.00993527	1.67231	0.0734258	0.132035
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0645824	0.213275	0.0193862	6.78225	0.389309
Std Dev:	0.000351833	0.00113926	0.000185812	0.0118007	0.00255848
%RSD:	0.544781	0.534176	0.958476	0.173993	0.657186
Repeat:1	0.0649767	0.214553	0.0191778	6.78404	0.391956
Repeat:2	0.0644699	0.212366	0.0195347	6.76966	0.38685
Repeat:3	0.0643006	0.212906	0.0194461	6.79305	0.389121
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.239091	0.000762582	0.0185304	0.0402402	0.0403756
Std Dev:	0.00161406	2.85037e-005	0.000179611	0.000392019	0.000262186
%RSD:	0.67508	3.73779	0.969279	0.974196	0.649366
Repeat:1	0.240925	0.000746731	0.0187159	0.0406378	0.040652
Repeat:2	0.237885	0.000745527	0.0183573	0.039854	0.0401304

Repeat:3	0.238464	0.000795488	0.0185179	0.040229	0.0403445
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0680206	0.12263	2.15748	0.0349968	0.0203355
Std Dev:	0.000193799	0.000734474	0.00191267	0.000256169	0.000102808
%RSD:	0.284913	0.598933	0.0886529	0.731977	0.505561
Repeat:1	0.068059	0.123475	2.15721	0.0347458	0.0203838
Repeat:2	0.0678105	0.122139	2.15951	0.0349869	0.0202174
Repeat:3	0.0681923	0.122278	2.15572	0.0352578	0.0204052
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0259574	1.02563	12431.4	239330	15633.8
Std Dev:	0.000177553	0.00718686	100.601	2263.14	47.148
%RSD:	0.684016	0.700724	0.809249	0.945618	0.301577
Repeat:1	0.0260959	1.03353	12315.5	236829	15579.4
Repeat:2	0.0260191	1.01947	12496.1	239924	15659.7
Repeat:3	0.0257572	1.02391	12482.6	241236	15662.4

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0601216	2.11452	0.0979551	3.27626	0.115975
Std Dev:	0.000556967	0.020208	0.00098161	0.0201201	0.000787541
%RSD:	0.926401	0.955678	1.0021	0.614117	0.67906
Repeat:1	0.0607551	2.0913	0.0983715	3.29782	0.116869
Repeat:2	0.0597086	2.12818	0.096834	3.27299	0.115385
Repeat:3	0.0599013	2.12407	0.09866	3.25798	0.115671
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0535755	52.3016	0.0551585	0.104531	0.218956
Std Dev:	0.000231692	0.0310951	0.00031524	0.000743272	0.000752819
%RSD:	0.43246	0.0594533	0.571517	0.711054	0.343822
Repeat:1	0.0538202	52.3366	0.0554984	0.105341	0.219714
Repeat:2	0.0535466	52.291	0.0548758	0.10388	0.218946
Repeat:3	0.0533595	52.2772	0.0551012	0.104372	0.218208
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.273079	1.79419	52.7129	0.101293	10.0602
Std Dev:	0.00156605	0.0336307	0.180149	0.00322907	0.0624817
%RSD:	0.573479	1.87442	0.341754	3.18786	0.621079
Repeat:1	0.274701	1.81643	52.6223	0.102578	10.0568
Repeat:2	0.272961	1.7555	52.596	0.0976188	10.1243
Repeat:3	0.271575	1.81065	52.9203	0.103681	9.99948
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.141557	0.500218	55.898	54.6872	0.540116
Std Dev:	0.000772051	0.00267311	0.532142	0.0950775	0.00354293
%RSD:	0.545398	0.534389	0.951988	0.173857	0.655957
Repeat:1	0.142423	0.503217	55.3013	54.7016	0.543782
Repeat:2	0.14131	0.498085	56.3234	54.5857	0.53671
Repeat:3	0.140939	0.499352	56.0692	54.7742	0.539857
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**

Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	4.94693	0.107151	0.103837	0.481932	0.838186
Std Dev:	0.0333967	0.00396304	0.00100063	0.00474006	0.00546396
%RSD:	0.675099	3.69855	0.963655	0.983553	0.651879
Repeat:1	4.98487	0.104946	0.104872	0.486735	0.843944
Repeat:2	4.92198	0.104781	0.102875	0.477258	0.833074
Repeat:3	4.93395	0.111726	0.103762	0.481802	0.837539
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	6.66398	0.574264	0.519254	0.108919	0.384252
Std Dev:	0.0190484	0.00344239	0.000460015	0.000779844	0.00193787
%RSD:	0.285841	0.599445	0.0885915	0.715987	0.504322
Repeat:1	6.66774	0.578221	0.519189	0.108155	0.385157
Repeat:2	6.64333	0.571961	0.519743	0.108887	0.382028
Repeat:3	6.68086	0.572609	0.51883	0.109714	0.385573
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.204874	0.620344	12431.4	239330	15633.8
Std Dev:	0.00140314	0.00436496	100.601	2263.14	47.148
%RSD:	0.684879	0.703635	0.809249	0.945618	0.301577
Repeat:1	0.205971	0.62514	12315.5	236829	15579.4
Repeat:2	0.205358	0.616603	12496.1	239924	15659.7
Repeat:3	0.203293	0.619291	12482.6	241236	15662.4
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	12431.4	239330	15633.8
Std Dev:	100.601	2263.14	47.148
%RSD:	0.809249	0.945618	0.301577
Repeat:1	12315.5	236829	15579.4
Repeat:2	12496.1	239924	15659.7
Repeat:3	12482.6	241236	15662.4

Sample Name	Acquisition date
MXLT5	12/20/2012 1:22:08PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	0.000226195	0.00214597	-0.000213094	0.00577873	0.080901
Std Dev:	2.57293e-005	0.000236146	3.03878e-005	0.000215066	0.00319981
%RSD:	11.3748	11.0042	14.2603	3.72168	3.95521
Repeat:1	0.000236717	0.00241861	-0.000182507	0.00589506	0.0835633
Repeat:2	0.000196872	0.00200535	-0.000243278	0.00553056	0.0773511
Repeat:3	0.000244995	0.00201396	-0.000213497	0.00591058	0.0817886
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-0.000128094	0.0471395	-0.000372875	9.91402e-005	0.000285377
Std Dev:	2.02232e-005	0.00233066	8.42535e-005	0.00012367	4.79001e-005
%RSD:	15.7878	4.94419	22.5957	124.742	16.7849
Repeat:1	-0.00013976	0.0491211	-0.000436855	5.52871e-005	0.000304416

Repeat:2	-0.000104742	0.0445717	-0.000277414	3.37254e-006	0.000230884
Repeat:3	-0.00013978	0.0477257	-0.000404356	0.000238761	0.000320829
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.000987022	0.000926914	0.0138447	-0.00143129	0.000514576
Std Dev:	1.29914e-005	8.51804e-005	0.00122727	0.000662295	0.000111088
%RSD:	1.31623	9.18968	8.86449	46.2726	21.5883
Repeat:1	0.000975429	0.00101285	0.0150806	-0.000877415	0.000630471
Repeat:2	0.00100106	0.000925391	0.0126262	-0.0021649	0.000409017
Repeat:3	0.000984574	0.000842505	0.0138274	-0.00125155	0.000504241
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00415205	0.000276411	0.000573079	0.10141	0.00119935
Std Dev:	0.000122794	7.61263e-005	0.00012171	0.00517684	0.000103702
%RSD:	2.95742	27.541	21.2379	5.10487	8.64651
Repeat:1	0.00420057	0.000337256	0.00059791	0.10654	0.0013027
Repeat:2	0.00401241	0.00030093	0.000680458	0.0961872	0.0010953
Repeat:3	0.00424318	0.000191046	0.000440868	0.101503	0.00120004
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.00111049	6.15735e-006	0.000124197	0.000565963	0.00388273
Std Dev:	7.11639e-005	1.67701e-005	0.000270122	6.18929e-005	0.000173429
%RSD:	6.40833	272.36	217.495	10.9359	4.46666
Repeat:1	0.00108855	2.29422e-005	0.000295947	0.000613238	0.00379842
Repeat:2	0.00105288	6.12784e-006	-0.000187161	0.000495909	0.00376758
Repeat:3	0.00119004	-1.0598e-005	0.000263806	0.000588742	0.0040822
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.00547595	0.0199827	0.000503257	-0.000406077	-0.000166778
Std Dev:	0.000303118	0.000682081	0.00110298	0.000146339	2.83228e-005
%RSD:	5.53545	3.41335	219.168	36.0372	16.9823
Repeat:1	0.00576875	0.0196904	0.00166867	-0.000458666	-0.000155435
Repeat:2	0.00516347	0.0194955	-0.000524326	-0.000518853	-0.000145885
Repeat:3	0.00549562	0.0207623	0.000365424	-0.000240711	-0.000199014
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	8.64419e-005	2.59939	13150.6	252747	16471.2
Std Dev:	3.63226e-005	0.064912	198.509	7021.06	671.29
%RSD:	42.0197	2.4972	1.50951	2.7779	4.07554
Repeat:1	0.000101909	2.57614	13237.3	248646	15771.5
Repeat:2	0.000112471	2.5493	13291.1	260854	17109.9
Repeat:3	4.49458e-005	2.67272	12923.5	248741	16532.2

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00441617	0.0180863	0.00148109	0.194267	0.0218843
Std Dev:	0.000285727	0.0136892	0.000386252	0.00727204	0.00118572
%RSD:	6.47002	75.6886	26.0789	3.74332	5.41813
Repeat:1	0.00453319	0.0338904	0.00186975	0.198206	0.0228708
Repeat:2	0.00409051	0.00992576	0.00109729	0.185875	0.0205689
Repeat:3	0.00462481	0.0104426	0.00147624	0.19872	0.0222133
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	8.93437e-006	0.280374	2.13222e-005	0.00013073	0.0036315
Std Dev:	7.99586e-006	0.01572	4.20289e-005	0.000109626	0.000540085
%RSD:	89.4955	5.60679	197.113	83.857	14.8722
Repeat:1	4.27612e-006	0.29374	-1.14539e-005	9.20499e-005	0.00384616

Repeat:2	1.81671e-005	0.263055	6.87058e-005	4.56867e-005	0.00301709
Repeat:3	4.35992e-006	0.284328	6.71472e-006	0.000254452	0.00403125
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00486507	0.194419	0.485253	0.0010382	0.0524657
Std Dev:	9.885e-005	0.0152583	0.038802	0.000914794	0.00839734
%RSD:	2.03183	7.84812	7.99624	88.1138	16.0054
Repeat:1	0.0047772	0.209804	0.524327	0.00180323	0.0612274
Repeat:2	0.00497209	0.194163	0.446728	2.48935e-005	0.0444876
Repeat:3	0.00484591	0.179291	0.484705	0.00128647	0.0516821
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00904842	0.000449028	1.89071	0.859867	0.0028399
Std Dev:	0.000269506	0.000178619	0.349036	0.0417096	0.000144204
%RSD:	2.97849	39.779	18.4606	4.85071	5.07779
Repeat:1	0.00915464	0.000591791	1.96201	0.901198	0.00298359
Repeat:2	0.00874199	0.000506559	2.19859	0.817789	0.00269518
Repeat:3	0.00924864	0.000248733	1.51152	0.860614	0.00284095
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0220693	0.00149483	0.00107942	0.00468134	0.0779634
Std Dev:	0.00147109	0.00233269	0.00149689	0.000742024	0.0036117
%RSD:	6.66575	156.05	138.675	15.8507	4.63256
Repeat:1	0.0216172	0.00382983	0.00202976	0.00524538	0.0762079
Repeat:2	0.0208774	0.00149021	-0.000646078	0.00384075	0.0755651
Repeat:3	0.0237134	-0.000835536	0.00185457	0.00495787	0.0821173
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.520835	0.093166	0.000965092	0.0020769	-0.00155149
Std Dev:	0.0297839	0.00319683	0.000265146	0.000447573	0.000533816
%RSD:	5.71849	3.43133	27.4737	21.55	34.4066
Repeat:1	0.549607	0.091796	0.00124527	0.00191583	-0.00133749
Repeat:2	0.490133	0.0908825	0.000718105	0.00173217	-0.00115788
Repeat:3	0.522765	0.0968195	0.0009319	0.00258272	-0.00215911
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000118299	1.58598	13150.6	252747	16471.2
Std Dev:	0.00028708	0.0396337	198.509	7021.06	671.29
%RSD:	242.673	2.49901	1.50951	2.7779	4.07554
Repeat:1	0.000241395	1.57177	13237.3	248646	15771.5
Repeat:2	0.000323305	1.5554	13291.1	260854	17109.9
Repeat:3	-0.000209802	1.63075	12923.5	248741	16532.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	13150.6	252747	16471.2
Std Dev:	198.509	7021.06	671.29
%RSD:	1.50951	2.7779	4.07554

Repeat:1	13237.3	248646	15771.5
Repeat:2	13291.1	260854	17109.9
Repeat:3	12923.5	248741	16532.2

Sample Name	**Acquisition date**
MXLT7	12/20/2012 1:27:05PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.000933688	0.0178872	0.000225668	2.94545	0.10385
Std Dev:	3.74037e-005	0.000430874	7.73827e-005	0.0248211	0.00105742
%RSD:	4.00602	2.40884	34.2905	0.842693	1.01821
Repeat:1	0.000969212	0.0183792	0.000199335	2.94503	0.105066
Repeat:2	0.0009372	0.0177052	0.000164889	2.97047	0.103338
Repeat:3	0.000894653	0.0175771	0.000312781	2.92084	0.103146
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-5.40309e-005	0.715467	0.000138314	0.00077604	0.00234098
Std Dev:	1.89995e-005	0.00517334	0.000171393	7.70973e-005	3.64541e-005
%RSD:	35.1642	0.723072	123.916	9.93471	1.55721
Repeat:1	-4.59903e-005	0.718681	0.000322155	0.000778237	0.00236647
Repeat:2	-7.57287e-005	0.718221	0.000109856	0.000852014	0.00235726
Repeat:3	-4.03737e-005	0.7095	-1.70684e-005	0.000697867	0.00229923
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00741627	0.00541076	0.0250869	-0.000824079	0.00764899
Std Dev:	0.00011058	7.66624e-005	0.000496392	0.00047602	0.000152373
%RSD:	1.49104	1.41685	1.97869	57.7638	1.99206
Repeat:1	0.00753899	0.00543048	0.0249361	-0.000998082	0.00750416
Repeat:2	0.00738544	0.00547563	0.0256412	-0.000285539	0.00763487
Repeat:3	0.00732437	0.00532616	0.0246835	-0.00118862	0.00780793
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0140415	0.000757534	0.00276558	0.925558	0.0098765
Std Dev:	0.000145008	5.45803e-005	0.000158835	0.00640207	0.000120559
%RSD:	1.03271	7.205	5.74328	0.691698	1.22067
Repeat:1	0.0142012	0.000795461	0.00267603	0.929568	0.0100147
Repeat:2	0.0140052	0.00069498	0.00294897	0.928932	0.00979297
Repeat:3	0.0139181	0.000782162	0.00267174	0.918175	0.00982181
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0127811	5.96246e-005	0.00100354	0.000573823	0.22966
Std Dev:	0.00015838	1.39132e-005	8.0258e-005	2.56582e-005	0.00200539
%RSD:	1.23917	23.3346	7.9975	4.47145	0.873199
Repeat:1	0.0129634	4.9985e-005	0.00109585	0.000557526	0.231864
Repeat:2	0.0127029	5.33141e-005	0.000964488	0.000560544	0.229172
Repeat:3	0.012677	7.55748e-005	0.00095028	0.000603399	0.227943
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.06397	0.034367	0.0307883	0.00823048	-0.000234191
Std Dev:	0.000497915	0.000225949	0.00044807	0.000403327	8.55338e-005
%RSD:	0.778358	0.657459	1.45532	4.90041	36.5231
Repeat:1	0.0636082	0.0346252	0.0313037	0.00777206	-0.000137522
Repeat:2	0.0645378	0.0342701	0.0305701	0.00838856	-0.000264993
Repeat:3	0.0637639	0.0342056	0.0304912	0.00853083	-0.000300058
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**

Avg. of Repeats:	0.000189181	0.168168	11448.9	221320	15224.6
Std Dev:	5.53566e-005	0.0013049	150.684	2535.75	199.153
%RSD:	29.2612	0.775954	1.31615	1.14574	1.3081
Repeat:1	0.000186693	0.169649	11281.6	218954	15069.8
Repeat:2	0.00013511	0.167662	11491	221008	15154.7
Repeat:3	0.00024574	0.167191	11574	223997	15449.3

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0122785	0.930883	0.00722314	99.6022	0.0303862
Std Dev:	0.000415398	0.0249869	0.00097766	0.839352	0.000391829
%RSD:	3.38313	2.68422	13.5351	0.842704	1.2895
Repeat:1	0.0126732	0.959413	0.00688966	99.588	0.0308368
Repeat:2	0.0123172	0.920345	0.00645585	100.449	0.0301964
Repeat:3	0.0118451	0.912892	0.00832391	98.77	0.0301254
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.81775e-005	4.78814	0.000213144	0.000717612	0.0268027
Std Dev:	7.46479e-006	0.0348934	8.44423e-005	6.93147e-005	0.000410999
%RSD:	19.5529	0.728746	39.6175	9.65908	1.53342
Repeat:1	4.13745e-005	4.80982	0.000304058	0.000721906	0.0270901
Repeat:2	2.96466e-005	4.80672	0.000198207	0.000784681	0.0269861
Repeat:3	4.35113e-005	4.74789	0.000137167	0.000646251	0.0263319
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0541262	0.996743	0.840693	0.0018095	0.591738
Std Dev:	0.000845008	0.0136895	0.0156942	0.000657342	0.0115171
%RSD:	1.56118	1.37342	1.86682	36.3272	1.94632
Repeat:1	0.0550637	1.00027	0.835923	0.00156878	0.580792
Repeat:2	0.0538916	1.00832	0.858218	0.00255328	0.590669
Repeat:3	0.0534233	0.981636	0.827937	0.00130646	0.603752
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0307419	0.00157791	8.17444	7.50001	0.0149499
Std Dev:	0.000318389	0.000128064	0.455205	0.0515812	0.000166289
%RSD:	1.03568	8.11608	5.56864	0.687749	1.11231
Repeat:1	0.0310926	0.0016669	7.91826	7.53231	0.0151407
Repeat:2	0.0306622	0.00143114	8.70001	7.52719	0.0148354
Repeat:3	0.030471	0.00163569	7.90506	7.44052	0.0148737
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.2636	0.0089742	0.00528423	0.0045156	4.78146
Std Dev:	0.00327512	0.00193371	0.000450334	0.000317041	0.0417778
%RSD:	1.24246	21.5475	8.52223	7.021	0.873745
Repeat:1	0.267369	0.00763612	0.00580273	0.0043163	4.82738
Repeat:2	0.261983	0.00809522	0.00505912	0.00434932	4.7713
Repeat:3	0.261448	0.0111913	0.00499083	0.0048812	4.7457
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**

Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	6.26839	0.160583	0.00820436	0.0282992	-0.00276857
Std Dev:	0.0489262	0.001059	0.00010756	0.00122975	0.00161261
%RSD:	0.780522	0.659468	1.31101	4.34551	58.247
Repeat:1	6.23284	0.161794	0.0083281	0.026902	-0.00094624
Repeat:2	6.32419	0.160129	0.00815168	0.0287785	-0.00334831
Repeat:3	6.24814	0.159827	0.00813329	0.0292172	-0.00401116
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000964165	0.101079	11448.9	221320	15224.6
Std Dev:	0.000435768	0.000795462	150.684	2535.75	199.153
%RSD:	45.1964	0.786974	1.31615	1.14574	1.3081
Repeat:1	0.0009462	0.101983	11281.6	218954	15069.8
Repeat:2	0.000537658	0.100766	11491	221008	15154.7
Repeat:3	0.00140864	0.100487	11574	223997	15449.3
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	11448.9	221320	15224.6
Std Dev:	150.684	2535.75	199.153
%RSD:	1.31615	1.14574	1.3081
Repeat:1	11281.6	218954	15069.8
Repeat:2	11491	221008	15154.7
Repeat:3	11574	223997	15449.3

Sample Name	Acquisition date
MXLT9	12/20/2012 1:32:06PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	0.00101175	0.0203721	0.000237846	2.73969	0.0996286
Std Dev:	2.39517e-006	0.000244664	1.26682e-005	0.00617656	0.00189821
%RSD:	0.236736	1.20098	5.3262	0.225447	1.90529
Repeat:1	0.00101438	0.0200985	0.000233046	2.73405	0.0989796
Repeat:2	0.00101117	0.0205698	0.000252213	2.73873	0.101766
Repeat:3	0.00100969	0.020448	0.00022828	2.74629	0.09814
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-8.79959e-005	0.669777	0.000526784	0.00553756	0.00230984
Std Dev:	4.63545e-005	0.00261834	0.000182835	6.32828e-005	1.38355e-005
%RSD:	52.678	0.390928	34.7078	1.14279	0.598983
Repeat:1	-0.000113508	0.671495	0.00073744	0.00546876	0.00232469
Repeat:2	-3.44896e-005	0.671073	0.000409339	0.00559328	0.00230752
Repeat:3	-0.00011599	0.666764	0.000433574	0.00555066	0.00229731
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00828601	0.00704055	0.0271203	-0.00150654	0.00473653
Std Dev:	2.91861e-005	0.000527609	0.000874608	0.000495497	0.000122379
%RSD:	0.352233	7.49385	3.22492	32.8898	2.58372
Repeat:1	0.00831349	0.00759713	0.0272148	-0.001896	0.00466122
Repeat:2	0.00828917	0.00697684	0.0279438	-0.000948824	0.00487774
Repeat:3	0.00825537	0.0065477	0.0262022	-0.00167479	0.00467064

Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.0158899	0.000825831	0.00314177	0.97593	0.00808271
Std Dev:	1.79778e-005	3.80226e-005	0.000597818	0.00284125	9.30454e-005
%RSD:	0.11314	4.60416	19.0281	0.291133	1.15117
Repeat:1	0.0158906	0.000792558	0.00264885	0.978681	0.00819004
Repeat:2	0.0159075	0.000867275	0.00380675	0.976103	0.0080248
Repeat:3	0.0158715	0.000817661	0.00296971	0.973006	0.00803329
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.0118591	5.08722e-005	0.00115087	0.000831612	0.305755
Std Dev:	0.000105593	2.674e-006	0.000132333	9.17199e-005	0.000999451
%RSD:	0.890394	5.25631	11.4985	11.0292	0.32688
Repeat:1	0.0118547	5.24007e-005	0.00101439	0.000772087	0.306857
Repeat:2	0.0119669	4.77845e-005	0.0011596	0.000785513	0.305503
Repeat:3	0.0117558	5.24313e-005	0.00127863	0.000937237	0.304906
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.0267656	0.0247455	0.0338921	0.00825675	-0.00015421
Std Dev:	0.000192753	8.89325e-005	0.000657861	0.000377672	0.000104358
%RSD:	0.720151	0.359389	1.94104	4.5741	67.6727
Repeat:1	0.0265676	0.0248467	0.0346484	0.00786005	-3.55962e-005
Repeat:2	0.0267768	0.02471	0.033452	0.00829824	-0.00023192
Repeat:3	0.0269526	0.0246798	0.033576	0.00861197	-0.000195113
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.000269869	0.234094	11485.4	222973	15367.6
Std Dev:	2.76477e-005	0.000737741	66.149	764.992	142.922
%RSD:	10.2449	0.315147	0.575939	0.343088	0.930022
Repeat:1	0.000249949	0.234927	11416.8	222179	15202.6
Repeat:2	0.000258224	0.233831	11490.6	223033	15447.6
Repeat:3	0.000301434	0.233524	11548.8	223706	15452.7

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0131464	1.07497	0.00731597	92.6446	0.0288208
Std Dev:	2.64709e-005	0.0141845	0.000160637	0.208835	0.000703376
%RSD:	0.201354	1.31953	2.19571	0.225416	2.44051
Repeat:1	0.0131755	1.0591	0.00725946	92.4539	0.02858
Repeat:2	0.01314	1.08643	0.00749722	92.6121	0.029613
Repeat:3	0.0131238	1.07936	0.00719122	92.8678	0.0282695
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.45566e-005	4.47997	0.000386682	0.00494607	0.0264543
Std Dev:	1.84274e-005	0.0176603	8.51291e-005	5.5875e-005	0.000155735
%RSD:	75.0404	0.394207	22.0153	1.12968	0.588692
Repeat:1	1.44553e-005	4.49156	0.000484476	0.00488564	0.0266215
Repeat:2	4.58258e-005	4.48871	0.000329173	0.00499585	0.0264283
Repeat:3	1.33887e-005	4.45964	0.000346395	0.00495673	0.0263133
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0607982	1.2881	0.90498	0.000871235	0.3716
Std Dev:	0.000227973	0.0943969	0.0276521	0.000684525	0.00925108
%RSD:	0.374968	7.32837	3.05555	78.5694	2.48953
Repeat:1	0.0610134	1.38768	0.907969	0.000332981	0.365907

Repeat:2	0.0608217	1.27669	0.931017	0.00164165	0.382274
Repeat:3	0.0605593	1.19993	0.875955	0.000639078	0.366619
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0347991	0.00173816	9.25278	7.90585	0.0124274
Std Dev:	3.89202e-005	8.92142e-005	1.71344	0.0228919	0.000130318
%RSD:	0.111843	5.13269	18.5181	0.289556	1.04863
Repeat:1	0.0347996	0.00166009	7.84041	7.92801	0.0125778
Repeat:2	0.0348377	0.0018354	11.1589	7.90724	0.0123471
Repeat:3	0.0347599	0.00171899	8.75906	7.88229	0.0123574
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.244431	0.00776693	0.00658668	0.0075209	6.36677
Std Dev:	0.00218393	0.000370723	0.000736016	0.00111088	0.0208294
%RSD:	0.893475	4.77309	11.1743	14.7706	0.327158
Repeat:1	0.244338	0.00797529	0.00582725	0.00679908	6.38973
Repeat:2	0.24666	0.0073389	0.00663599	0.0069635	6.36152
Repeat:3	0.242295	0.00798658	0.0072968	0.00880011	6.34908
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.61279	0.115488	0.00895399	0.0283761	-0.00131014
Std Dev:	0.0189216	0.000416816	0.000158147	0.00114925	0.0019676
%RSD:	0.72419	0.360916	1.76621	4.05004	150.182
Repeat:1	2.59335	0.115963	0.00913577	0.0271725	0.000926184
Repeat:2	2.61388	0.115322	0.00884804	0.028494	-0.00277555
Repeat:3	2.63114	0.11518	0.00887816	0.0294619	-0.00208104
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.00161127	0.141466	11485.4	222973	15367.6
Std Dev:	0.000214064	0.000444909	66.149	764.992	142.922
%RSD:	13.2855	0.314499	0.575939	0.343088	0.930022
Repeat:1	0.00145888	0.14197	11416.8	222179	15202.6
Repeat:2	0.00151892	0.1413	11490.6	223033	15447.6
Repeat:3	0.001856	0.141128	11548.8	223706	15452.7
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11485.4	222973	15367.6
Std Dev:	66.149	764.992	142.922
%RSD:	0.575939	0.343088	0.930022
Repeat:1	11416.8	222179	15202.6
Repeat:2	11490.6	223033	15447.6
Repeat:3	11548.8	223706	15452.7

Sample Name	**Acquisition date**
MXLVC	12/20/2012 1:37:06PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	0.0010331	0.0248558	3.71983e-006	2.59612	0.158332
Std Dev:	7.32469e-005	0.000162102	8.38247e-005	0.0661554	0.0012401
%RSD:	7.09002	0.652169	2253.45	2.54824	0.783225
Repeat:1	0.00109089	0.0247348	8.671e-005	2.63365	0.158086
Repeat:2	0.00105769	0.02504	-8.09151e-005	2.63497	0.159677
Repeat:3	0.000950721	0.0247927	5.36455e-006	2.51973	0.157233
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-6.53801e-005	0.798082	0.00821469	0.00220965	0.00351082
Std Dev:	1.86504e-005	0.00374952	0.000123348	7.90436e-005	0.000100036
%RSD:	28.5261	0.469816	1.50155	3.57721	2.84935
Repeat:1	-8.65013e-005	0.80072	0.00834975	0.00230077	0.00350091
Repeat:2	-5.11782e-005	0.799735	0.00818633	0.0021596	0.00361544
Repeat:3	-5.84607e-005	0.79379	0.008108	0.00216857	0.00341611
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.00859948	0.00835559	0.0250902	-0.000904526	0.00622571
Std Dev:	0.000140941	0.000270187	0.000870532	0.00115016	0.000247567
%RSD:	1.63895	3.2336	3.4696	127.156	3.97653
Repeat:1	0.00872684	0.00826546	0.0254908	-0.00198333	0.00625719
Repeat:2	0.00862353	0.008142	0.0256884	-0.00103595	0.00645604
Repeat:3	0.00844806	0.00865933	0.0240915	0.000305703	0.00596391
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.0150388	0.00141404	0.00312998	1.1562	0.0187341
Std Dev:	0.000227471	5.48576e-005	0.000547034	0.0103958	0.00014982
%RSD:	1.51256	3.87951	17.4772	0.89913	0.799719
Repeat:1	0.0151719	0.00138171	0.00323912	1.16682	0.0187819
Repeat:2	0.0151684	0.00147737	0.00253661	1.15573	0.0188542
Repeat:3	0.0147762	0.00138302	0.00361423	1.14605	0.0185662
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.0119498	4.72206e-005	0.00134164	0.000403613	0.280068
Std Dev:	0.000185618	2.24415e-005	0.000205997	8.80804e-005	0.000663108
%RSD:	1.55331	47.5249	15.3542	21.823	0.236767
Repeat:1	0.0120291	7.07822e-005	0.00157721	0.000470516	0.280832
Repeat:2	0.0120826	2.60985e-005	0.00125237	0.000303821	0.27973
Repeat:3	0.0117377	4.4781e-005	0.00119533	0.000436504	0.279642
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.00716779	0.027525	0.0393944	0.0104144	-0.000155328
Std Dev:	0.000104754	0.000211888	0.000604803	0.000413048	4.95732e-005
%RSD:	1.46145	0.769799	1.53525	3.96612	31.9152
Repeat:1	0.00710569	0.0276861	0.0397991	0.0107849	-0.000114549
Repeat:2	0.00728874	0.027604	0.0386992	0.00996904	-0.000140927
Repeat:3	0.00710895	0.027285	0.039685	0.0104893	-0.000210507
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.000256559	0.225126	11663.3	226962	15780.3
Std Dev:	1.47745e-005	0.00108591	90.5652	4333.66	172.41
%RSD:	5.75872	0.482359	0.776495	1.90942	1.09257
Repeat:1	0.000246329	0.226217	11567.7	225151	15666.1
Repeat:2	0.000273497	0.225114	11674.4	223828	15696
Repeat:3	0.00024985	0.224046	11747.8	231908	15978.6

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm

Avg. of Repeats:	0.0133836	1.33495	0.00434597	87.7896	0.0505736
Std Dev:	0.000813911	0.00939497	0.00106036	2.23709	0.000459665
%RSD:	6.08141	0.703768	24.3986	2.54824	0.908904
Repeat:1	0.0140256	1.32794	0.00539553	89.0588	0.0504824
Repeat:2	0.013657	1.34563	0.00327513	89.1034	0.051072
Repeat:3	0.0124682	1.33129	0.00436724	85.2065	0.0501663
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.3556e-005	5.34536	0.00418334	0.00194999	0.0399982
Std Dev:	7.38925e-006	0.0252899	6.30704e-005	6.88067e-005	0.00112816
%RSD:	22.0206	0.473119	1.50766	3.52857	2.82052
Repeat:1	2.51843e-005	5.36316	0.00425137	0.00202941	0.0398865
Repeat:2	3.9169e-005	5.35652	0.00417182	0.00190827	0.0411781
Repeat:3	3.63147e-005	5.31641	0.00412682	0.00191229	0.0389301
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0632182	1.52359	0.840798	0.00169	0.484177
Std Dev:	0.00107591	0.0483404	0.0275233	0.00158943	0.0187137
%RSD:	1.70189	3.17279	3.27347	94.0493	3.86506
Repeat:1	0.0641927	1.50746	0.853464	0.000199254	0.486555
Repeat:2	0.0633983	1.48539	0.859708	0.00150825	0.501588
Repeat:3	0.0620636	1.57794	0.809222	0.00336249	0.464388
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0329268	0.00311829	9.21879	9.35829	0.0271672
Std Dev:	0.000499638	0.000128715	1.56776	0.0837583	0.000206383
%RSD:	1.51742	4.12774	17.0061	0.895016	0.759676
Repeat:1	0.033219	0.00304244	9.53122	9.44388	0.027233
Repeat:2	0.0332115	0.0032669	7.51834	9.35451	0.0273326
Repeat:3	0.0323499	0.00304552	10.6068	9.27649	0.0269359
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.246261	0.00727647	0.00790848	0.00212408	5.83168
Std Dev:	0.00383945	0.00311966	0.00114633	0.00108136	0.0138126
%RSD:	1.5591	42.8733	14.495	50.9096	0.236854
Repeat:1	0.2479	0.0105527	0.00921936	0.00293666	5.8476
Repeat:2	0.249008	0.00434137	0.00741208	0.000896737	5.82464
Repeat:3	0.241874	0.00693538	0.00709402	0.00253886	5.82281
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.687202	0.128516	0.0102688	0.0349362	-0.00133093
Std Dev:	0.0102847	0.000993092	0.000145545	0.00125431	0.000934815
%RSD:	1.4966	0.772739	1.41736	3.59028	70.2375
Repeat:1	0.681097	0.129271	0.0103659	0.0360639	-0.000561467
Repeat:2	0.699076	0.128886	0.0101014	0.0335853	-0.00106006
Repeat:3	0.681433	0.127391	0.010339	0.0351594	-0.00237127
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**

Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.00152593	0.135945	11663.3	226962	15780.3
Std Dev:	0.000117684	0.000665608	90.5652	4333.66	172.41
%RSD:	7.71225	0.489616	0.776495	1.90942	1.09257
Repeat:1	0.00144352	0.13661	11567.7	225151	15666.1
Repeat:2	0.00166071	0.135945	11674.4	223828	15696
Repeat:3	0.00147357	0.135279	11747.8	231908	15978.6
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	11663.3	226962	15780.3
Std Dev:	90.5652	4333.66	172.41
%RSD:	0.776495	1.90942	1.09257
Repeat:1	11567.7	225151	15666.1
Repeat:2	11674.4	223828	15696
Repeat:3	11747.8	231908	15978.6

Sample Name	Acquisition date
MXLVE	12/20/2012 1:42:06PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	0.000940255	0.0215241	0.000173855	2.69603	0.109847
Std Dev:	7.51177e-006	0.000363657	6.43073e-005	0.0174054	0.00181291
%RSD:	0.798907	1.68953	36.989	0.645593	1.6504
Repeat:1	0.000941282	0.0218229	9.96196e-005	2.71538	0.111936
Repeat:2	0.000932282	0.0216303	0.000212469	2.69106	0.108681
Repeat:3	0.0009472	0.0211192	0.000209477	2.68165	0.108924
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-4.3292e-005	0.749922	0.0143619	0.00138629	0.0026147
Std Dev:	1.56192e-005	0.00831524	0.000200296	0.00024303	2.27384e-005
%RSD:	36.0788	1.10881	1.39463	17.531	0.869636
Repeat:1	-4.90601e-005	0.755714	0.014563	0.00111097	0.0025948
Repeat:2	-2.56091e-005	0.753658	0.0143603	0.00157101	0.00260983
Repeat:3	-5.5207e-005	0.740394	0.0141624	0.00147688	0.00263948
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.00977957	0.0172781	0.0441012	-0.00141313	0.00620013
Std Dev:	9.1915e-005	0.000121277	0.000866587	0.000556621	0.000204212
%RSD:	0.939867	0.701911	1.965	39.3894	3.29368
Repeat:1	0.00986265	0.0172595	0.0450302	-0.00136626	0.00631813
Repeat:2	0.00979525	0.0174077	0.0433146	-0.0019917	0.00631794
Repeat:3	0.00968083	0.0171673	0.0439588	-0.000881418	0.00596433
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.0185366	0.000986365	0.00364014	1.07365	0.0143295
Std Dev:	0.000155705	8.63117e-005	0.000183563	0.00692936	6.61297e-005
%RSD:	0.839988	8.75048	5.04275	0.645401	0.461494
Repeat:1	0.0186349	0.000913715	0.00367862	1.08152	0.0142793
Repeat:2	0.0186178	0.00108178	0.00344039	1.071	0.0143047
Repeat:3	0.0183571	0.000963603	0.00380142	1.06844	0.0144044
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.0119294	7.28425e-005	0.00122877	0.000449942	0.250224

Std Dev:	0.000140852	6.50793e-006	3.81458e-005	7.24882e-005	0.00193568
%RSD:	1.18071	8.93424	3.10439	16.1105	0.773581
Repeat:1	0.0120919	6.56066e-005	0.00126863	0.000512795	0.25245
Repeat:2	0.0118434	7.47044e-005	0.00122505	0.000370644	0.24894
Repeat:3	0.0118528	7.82166e-005	0.00119261	0.000466388	0.249282
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0323407	0.0348002	0.0380641	0.00987942	-0.000214429
Std Dev:	0.000607898	0.000231939	0.0006501	0.000281323	6.84432e-005
%RSD:	1.87967	0.666489	1.70791	2.84757	31.9188
Repeat:1	0.0318743	0.0350619	0.0387083	0.0100797	-0.000249799
Repeat:2	0.0321196	0.0347184	0.038076	0.00955779	-0.000135538
Repeat:3	0.0330282	0.0346202	0.0374082	0.0100008	-0.00025795
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000239227	0.190658	11451.5	221831	15711.9
Std Dev:	2.56901e-005	0.000981838	126.328	2913.12	174.487
%RSD:	10.7388	0.514974	1.10316	1.31321	1.11054
Repeat:1	0.000211154	0.191792	11306.7	218491	15652
Repeat:2	0.000244961	0.190092	11508.2	223154	15575.2
Repeat:3	0.000261565	0.19009	11539.5	223848	15908.4

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0123518	1.14177	0.00660125	91.1686	0.0326019
Std Dev:	8.34974e-005	0.0210927	0.000815119	0.588581	0.000671814
%RSD:	0.675992	1.84737	12.348	0.645596	2.06066
Repeat:1	0.012363	1.1591	0.00566027	91.823	0.0333759
Repeat:2	0.0122633	1.14792	0.0070903	91.0006	0.0321698
Repeat:3	0.0124292	1.11829	0.00705317	90.6824	0.0322599
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	4.23464e-005	5.02053	0.00712524	0.00121672	0.029886
Std Dev:	6.20328e-006	0.056085	9.86932e-005	0.000218544	0.000256381
%RSD:	14.6489	1.11711	1.38512	17.9617	0.857861
Repeat:1	4.01008e-005	5.0596	0.0072251	0.000969284	0.0296616
Repeat:2	4.93598e-005	5.04573	0.00712285	0.00138337	0.0298311
Repeat:3	3.75787e-005	4.95627	0.00702776	0.00129751	0.0301655
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.072346	3.12014	1.44186	0.000992187	0.482232
Std Dev:	0.000703825	0.021694	0.0273986	0.000769664	0.0154361
%RSD:	0.97286	0.69529	1.90022	77.5724	3.20096
Repeat:1	0.0729819	3.11681	1.47123	0.00105635	0.491149
Repeat:2	0.0724663	3.1433	1.41699	0.000192451	0.491139
Repeat:3	0.0715898	3.1003	1.43736	0.00172776	0.464408
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0405876	0.00211483	10.6833	8.6932	0.0211295
Std Dev:	0.000341423	0.000202517	0.525793	0.0558297	9.21691e-005
%RSD:	0.8412	9.57607	4.92161	0.642222	0.43621
Repeat:1	0.0408034	0.00194436	10.7934	8.75656	0.0210596

Repeat:2	0.0407654	0.00233869	10.1112	8.67182	0.021095
Repeat:3	0.0401939	0.00206142	11.1454	8.65122	0.021234
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.245901	0.0107748	0.00691411	0.00296614	5.21007
Std Dev:	0.00291103	0.000903554	0.000220181	0.000878328	0.040325
%RSD:	1.18382	8.38582	3.18451	29.6118	0.773981
Repeat:1	0.249261	0.00977003	0.00714284	0.00373279	5.25645
Repeat:2	0.244124	0.0110338	0.00689588	0.0020078	5.18332
Repeat:3	0.24432	0.0115206	0.00670361	0.00315784	5.19044
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.16094	0.162614	0.00995206	0.0333075	-0.00242891
Std Dev:	0.0597254	0.00108707	0.000155846	0.000855811	0.00128952
%RSD:	1.88948	0.668501	1.56597	2.56943	53.0905
Repeat:1	3.11512	0.16384	0.0101066	0.033917	-0.0030942
Repeat:2	3.13921	0.16223	0.00995466	0.0323291	-0.000942616
Repeat:3	3.22849	0.16177	0.00979494	0.0336763	-0.00324992
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.00143743	0.114683	11451.5	221831	15711.9
Std Dev:	0.000203123	0.000600457	126.328	2913.12	174.487
%RSD:	14.131	0.52358	1.10316	1.31321	1.11054
Repeat:1	0.00121492	0.115376	11306.7	218491	15652
Repeat:2	0.00148445	0.114338	11508.2	223154	15575.2
Repeat:3	0.00161291	0.114334	11539.5	223848	15908.4
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11451.5	221831	15711.9
Std Dev:	126.328	2913.12	174.487
%RSD:	1.10316	1.31321	1.11054
Repeat:1	11306.7	218491	15652
Repeat:2	11508.2	223154	15575.2
Repeat:3	11539.5	223848	15908.4

Sample Name	**Acquisition date**
MXK40	12/20/2012 1:47:06PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000190495	0.00373711	-0.000290752	0.00999721	0.0364871
Std Dev:	1.14553e-005	3.00044e-005	3.30761e-005	0.000441689	0.000821641
%RSD:	6.01342	0.802876	11.376	4.41812	2.25187
Repeat:1	-0.000179067	0.00371314	-0.000328007	0.0104535	0.0361875
Repeat:2	-0.000201977	0.00377076	-0.000264839	0.00996628	0.0374165
Repeat:3	-0.000190443	0.00372744	-0.00027941	0.0095718	0.0358573
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**

Avg. of Repeats:	-7.68313e-005	0.182524	0.00204339	0.000492126	0.000512658
Std Dev:	4.83782e-006	0.000687179	4.36924e-005	2.08376e-005	4.26858e-007
%RSD:	6.29667	0.376487	2.13824	4.2342	0.0832638
Repeat:1	-7.80468e-005	0.183318	0.00204073	0.000498286	0.000512342
Repeat:2	-8.09454e-005	0.182124	0.00208835	0.000468902	0.000513143
Repeat:3	-7.15016e-005	0.18213	0.00200109	0.000509188	0.000512488
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00302773	0.00318866	0.0164309	-0.00132686	0.00603974
Std Dev:	1.6714e-005	0.000171302	0.000467724	0.000969246	0.00036285
%RSD:	0.55203	5.37222	2.8466	73.0483	6.00771
Repeat:1	0.00302823	0.0030069	0.0159691	-0.000406367	0.00645651
Repeat:2	0.00301077	0.00334712	0.0169044	-0.00233843	0.00586857
Repeat:3	0.00304418	0.00321196	0.0164193	-0.00123577	0.00579414
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0395835	0.000249738	0.000579668	0.082398	0.00813336
Std Dev:	0.000147979	4.69384e-005	0.000173376	0.000518253	8.35998e-005
%RSD:	0.373841	18.7951	29.9096	0.628963	1.02786
Repeat:1	0.0397533	0.000297845	0.000423311	0.0825725	0.00804946
Repeat:2	0.0394821	0.000204063	0.000766122	0.0828065	0.00821666
Repeat:3	0.0395151	0.000247304	0.00054957	0.081815	0.00813395
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.00476886	2.44765e-005	0.000704825	0.000586955	0.00914082
Std Dev:	2.82096e-005	7.62357e-006	0.000149075	5.66399e-005	0.00010918
%RSD:	0.591537	31.1465	21.1507	9.64979	1.19442
Repeat:1	0.00474222	2.93714e-005	0.000874065	0.000642503	0.00917275
Repeat:2	0.00476594	2.83653e-005	0.000647442	0.000589077	0.00901924
Repeat:3	0.00479841	1.56927e-005	0.000592969	0.000529283	0.00923048
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0228227	0.00510456	0.0035722	-0.000369782	-0.000140318
Std Dev:	0.000184246	2.88346e-005	0.00083084	7.72865e-005	6.99217e-005
%RSD:	0.807293	0.564879	23.2585	20.9005	49.8309
Repeat:1	0.0226164	0.00510804	0.00355674	-0.000288053	-0.000203686
Repeat:2	0.022881	0.00507414	0.0027492	-0.000379607	-0.000151963
Repeat:3	0.0229708	0.00513149	0.00441067	-0.000441687	-6.53049e-005
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000104201	0.401788	12761.7	248239	16510
Std Dev:	2.2052e-005	0.00166111	78.5988	622.009	87.1445
%RSD:	21.163	0.413429	0.615898	0.250568	0.527829
Repeat:1	0.000127099	0.403457	12692.5	247736	16576.6
Repeat:2	0.000102397	0.400135	12847.2	248047	16542
Repeat:3	8.31059e-005	0.401773	12745.4	248935	16411.4

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000213965	0.110356	0.000554024	0.337054	0.00542488
Std Dev:	0.00012738	0.0017435	0.0004204	0.0149295	0.00030441
%RSD:	59.5332	1.57989	75.8812	4.4294	5.61136
Repeat:1	-8.68079e-005	0.108959	8.05375e-005	0.352475	0.00531395
Repeat:2	-0.000341568	0.11231	0.000883471	0.336018	0.0057692
Repeat:3	-0.000213521	0.109798	0.000698064	0.32267	0.0051915
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm

Avg. of Repeats:	2.92618e-005	1.19352	0.00119159	0.000488074	0.00619139
Std Dev:	1.94357e-006	0.00463492	2.08466e-005	1.89313e-005	4.69676e-006
%RSD:	6.64202	0.388339	1.74948	3.87878	0.0758596
Repeat:1	2.87426e-005	1.19887	0.00119243	0.000493439	0.00618798
Repeat:2	2.76305e-005	1.19083	0.001212	0.000467039	0.00619675
Repeat:3	3.14122e-005	1.19087	0.00117034	0.000503744	0.00618945
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0205018	0.59912	0.56702	0.00116878	0.470088
Std Dev:	0.000126951	0.0306441	0.0147878	0.00133906	0.0274274
%RSD:	0.619217	5.11484	2.60799	114.569	5.83452
Repeat:1	0.0205038	0.56661	0.552419	0.00244046	0.501591
Repeat:2	0.0203738	0.627473	0.581988	-0.00022877	0.457149
Repeat:3	0.0206277	0.603278	0.566653	0.00129466	0.451524
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0868175	0.000386443	1.91151	0.70669	0.0124782
Std Dev:	0.000324818	0.000110134	0.497054	0.00417555	0.000116718
%RSD:	0.374139	28.4994	26.0032	0.59086	0.935375
Repeat:1	0.0871902	0.000499321	1.46319	0.708096	0.0123611
Repeat:2	0.0865948	0.000279275	2.44602	0.709981	0.0125945
Repeat:3	0.0866675	0.000380733	1.82532	0.701992	0.0124791
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0977764	0.00403498	0.00408568	0.00470283	0.187466
Std Dev:	0.000583584	0.00106036	0.000831208	0.000684918	0.00227277
%RSD:	0.596856	26.2791	20.3444	14.564	1.21236
Repeat:1	0.0972256	0.00471661	0.00502943	0.00537482	0.188128
Repeat:2	0.0977155	0.00457501	0.00376519	0.00472797	0.184936
Repeat:3	0.098388	0.00281332	0.00346243	0.00400568	0.189334
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.22535	0.0234337	0.00169412	0.00217744	-0.00104218
Std Dev:	0.0181087	0.000135144	0.000199839	0.000236667	0.00131902
%RSD:	0.813749	0.576708	11.796	10.8691	126.564
Repeat:1	2.20506	0.0234501	0.00169035	0.00242861	-0.00223763
Repeat:2	2.23108	0.0232912	0.0014962	0.00214509	-0.00126174
Repeat:3	2.23989	0.02356	0.00189582	0.00195861	0.000372847
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000276123	0.244031	12761.7	248239	16510
Std Dev:	0.000173116	0.00101955	78.5988	622.009	87.1445
%RSD:	62.6953	0.417796	0.615898	0.250568	0.527829
Repeat:1	0.00045548	0.245056	12692.5	247736	16576.6
Repeat:2	0.000262883	0.243017	12847.2	248047	16542
Repeat:3	0.000110007	0.244021	12745.4	248935	16411.4
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	12761.7	248239	16510
Std Dev:	78.5988	622.009	87.1445
%RSD:	0.615898	0.250568	0.527829
Repeat:1	12692.5	247736	16576.6
Repeat:2	12847.2	248047	16542
Repeat:3	12745.4	248935	16411.4

Sample Name	Acquisition date
MXLT3P	12/20/2012 1:52:01PM

Analyst Name	Method Name
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	1.96556e-006	0.00226183	-0.00026838	0.0168055	0.0309737
Std Dev:	2.37254e-005	0.00026246	2.4294e-005	0.000235025	0.00047447
%RSD:	1207.06	11.6039	9.0521	1.3985	1.53185
Repeat:1	1.69837e-005	0.00218626	-0.000283674	0.017013	0.0314462
Repeat:2	1.42993e-005	0.00204544	-0.000281099	0.0168533	0.0309777
Repeat:3	-2.53863e-005	0.00255378	-0.000240367	0.0165503	0.0304973
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.000123144	0.0425671	0.00153553	0.000766107	0.000196118
Std Dev:	5.28442e-005	0.000418223	2.24416e-005	0.000102166	3.18534e-005
%RSD:	42.9126	0.982503	1.46148	13.3357	16.2419
Repeat:1	-0.000127218	0.0430064	0.00150982	0.000829837	0.000171419
Repeat:2	-6.83802e-005	0.0425212	0.00155114	0.000820216	0.000232071
Repeat:3	-0.000173833	0.0421737	0.00154565	0.000648267	0.000184865
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.00104753	0.00107747	0.00384042	-0.00170869	0.000636811
Std Dev:	2.16188e-005	0.000307839	0.000269019	0.000864494	0.000348009
%RSD:	2.06379	28.5706	7.00494	50.5941	54.6488
Repeat:1	0.00107139	0.000757846	0.00366044	-0.00100191	0.000939034
Repeat:2	0.00104194	0.00137199	0.00371115	-0.00145158	0.000256339
Repeat:3	0.00102925	0.00110257	0.00414967	-0.00267257	0.000715061
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.00355869	0.000207068	0.000272967	0.0755609	0.00243905
Std Dev:	4.70557e-005	4.27878e-005	0.000372808	0.00150054	3.91627e-005
%RSD:	1.32227	20.6636	136.577	1.98587	1.60566
Repeat:1	0.00360399	0.000158379	-0.000154713	0.0763176	0.00248189
Repeat:2	0.00356203	0.000238681	0.000444338	0.0765326	0.0024051
Repeat:3	0.00351006	0.000224145	0.000529275	0.0738327	0.00243014
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.00105887	-2.1458e-007	0.000338006	0.000346731	0.00682909
Std Dev:	3.31852e-005	9.29942e-006	0.000160605	9.02031e-005	1.4099e-005
%RSD:	3.13402	4333.78	47.5155	26.0153	0.206454
Repeat:1	0.00104148	-4.35621e-006	0.000186767	0.000283555	0.00684246
Repeat:2	0.001038	1.04361e-005	0.000506573	0.000306602	0.00681436
Repeat:3	0.00109714	-6.72365e-006	0.000320677	0.000450035	0.00683043
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.0040202	0.00366162	-0.00130228	-0.000240453	-0.000175572
Std Dev:	0.000160506	4.16536e-005	0.000207764	0.000198445	3.36006e-005
%RSD:	3.99248	1.13757	15.9539	82.5298	19.1377

Repeat:1	0.00418249	0.00370128	-0.00139104	-5.76382e-005	-0.000176993
Repeat:2	0.00386155	0.00361822	-0.00106488	-0.000212216	-0.000141284
Repeat:3	0.00401655	0.00366536	-0.00145091	-0.000451504	-0.00020844
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	5.87618e-005	0.0502721	12795.8	247821	16601.1
Std Dev:	1.1552e-005	0.000254032	75.26	1438.73	169.9
%RSD:	19.659	0.505314	0.58816	0.580552	1.02342
Repeat:1	7.15741e-005	0.0505651	12726.1	246556	16482.1
Repeat:2	4.91413e-005	0.0501137	12785.8	247521	16525.5
Repeat:3	5.55701e-005	0.0501374	12875.6	249386	16795.7

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00192437	0.0248132	0.000777996	0.567157	0.00338296
Std Dev:	0.000263656	0.0152199	0.000307604	0.00793985	0.000175913
%RSD:	13.7009	61.3382	39.5381	1.39994	5.19999
Repeat:1	0.00209132	0.0204316	0.000581891	0.574154	0.00355821
Repeat:2	0.00206136	0.0122646	0.000619577	0.568789	0.00338428
Repeat:3	0.00162041	0.0417433	0.00113252	0.558528	0.00320639
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.09454e-005	0.249534	0.000966221	0.000724263	0.00262504
Std Dev:	2.09935e-005	0.00282085	7.73311e-006	9.02629e-005	0.000359062
%RSD:	191.802	1.13045	0.800346	12.4627	13.6783
Repeat:1	9.30815e-006	0.252497	0.000957296	0.000780665	0.00234665
Repeat:2	3.27096e-005	0.249224	0.000970427	0.000771966	0.00303032
Repeat:3	-9.18157e-006	0.246881	0.000970939	0.000620157	0.00249815
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00533017	0.221307	0.16895	0.000655405	0.061703
Std Dev:	0.000163437	0.0550757	0.00850548	0.00119435	0.0263035
%RSD:	3.06626	24.8865	5.03431	182.231	42.6292
Repeat:1	0.00550966	0.164121	0.16326	0.00163184	0.0845453
Repeat:2	0.00529092	0.273997	0.164863	0.00101063	0.0329456
Repeat:3	0.00518993	0.225804	0.178728	-0.000676258	0.067618
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00774547	0.000286326	1.03021	0.651603	0.00455709
Std Dev:	0.000103515	0.000100395	1.06892	0.0120898	5.34234e-005
%RSD:	1.33645	35.0631	103.757	1.8554	1.17231
Repeat:1	0.00784523	0.000172085	-0.196026	0.657699	0.00461557
Repeat:2	0.00775259	0.0003605	1.52152	0.659432	0.00451083
Repeat:3	0.00763857	0.000326394	1.76514	0.637679	0.00454489
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0209968	0.000608452	0.00228536	0.00184819	0.139348
Std Dev:	0.000686501	0.00129103	0.000892499	0.00109148	0.000288799
%RSD:	3.26955	212.182	39.0529	59.0568	0.207251
Repeat:1	0.0206369	3.36796e-005	0.00144486	0.00109058	0.139621

Repeat:2	0.0205651	0.00208705	0.00322207	0.00135473	0.139046
Repeat:3	0.0217884	-0.00029537	0.00218916	0.00309926	0.139376
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.377798	0.0166708	0.000531123	0.00258738	-0.00172031
Std Dev:	0.0157613	0.000195225	4.99712e-005	0.000609218	0.000633257
%RSD:	4.17189	1.17106	9.40859	23.5457	36.8106
Repeat:1	0.393734	0.0168567	0.000509743	0.00315039	-0.00174691
Repeat:2	0.362218	0.0164674	0.000588227	0.00267113	-0.00107417
Repeat:3	0.377442	0.0166884	0.000495398	0.00194062	-0.00233985
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	-0.000100783	0.0296055	12795.8	247821	16601.1
Std Dev:	8.84162e-005	0.000162233	75.26	1438.73	169.9
%RSD:	87.7294	0.547982	0.58816	0.580552	1.02342
Repeat:1	-2.67175e-006	0.0297926	12726.1	246556	16482.1
Repeat:2	-0.000174294	0.0295036	12785.8	247521	16525.5
Repeat:3	-0.000125383	0.0295204	12875.6	249386	16795.7
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12795.8	247821	16601.1
Std Dev:	75.26	1438.73	169.9
%RSD:	0.58816	0.580552	1.02342
Repeat:1	12726.1	246556	16482.1
Repeat:2	12785.8	247521	16525.5
Repeat:3	12875.6	249386	16795.7

Sample Name	**Acquisition date**
CCV3	12/20/2012 1:56:56PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0896362	0.415745	0.0383984	0.0603117	5.47181
Std Dev:	0.000672041	0.000254189	0.000165809	0.000415208	0.0144878
%RSD:	0.749743	0.0611406	0.431813	0.688436	0.264771
Repeat:1	0.0903551	0.415975	0.0384581	0.060742	5.48706
Repeat:2	0.0895296	0.415788	0.038211	0.0602797	5.45822
Repeat:3	0.0890237	0.415472	0.0385261	0.0599135	5.47016
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	5.16795	7.32974	1.00949	2.20024	0.175779
Std Dev:	0.0123945	0.0205363	0.00274205	0.00460904	0.000924697
%RSD:	0.239834	0.280177	0.271627	0.209479	0.526058
Repeat:1	5.18133	7.35346	1.01155	2.20449	0.176429
Repeat:2	5.16564	7.31822	1.00638	2.19534	0.176187
Repeat:3	5.15687	7.31756	1.01055	2.2009	0.17472
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.245957	0.130167	1.64434	1.44971	0.635884
Std Dev:	0.0014683	0.000253234	0.00200234	0.00281792	0.00225257

%RSD:	0.596974	0.194546	0.121772	0.194378	0.354243
Repeat:1	0.247563	0.130369	1.64629	1.45087	0.638228
Repeat:2	0.245622	0.13025	1.64229	1.4465	0.635688
Repeat:3	0.244684	0.129883	1.64444	1.45176	0.633736
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.900025	0.830631	0.0173431	6.26142	1.46882
Std Dev:	0.00496264	0.00270208	0.000182286	0.0118286	0.003528
%RSD:	0.55139	0.325304	1.05106	0.188913	0.240192
Repeat:1	0.905716	0.832875	0.017239	6.27445	1.47177
Repeat:2	0.89776	0.827632	0.0175535	6.25135	1.46491
Repeat:3	0.896599	0.831387	0.0172366	6.25847	1.46978
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0967483	0.00369382	0.088944	0.0430982	0.0232045
Std Dev:	0.00029535	2.33918e-005	0.000242146	3.94525e-005	0.000113157
%RSD:	0.305277	0.633269	0.272246	0.0915408	0.48765
Repeat:1	0.0970846	0.00371003	0.089091	0.0431247	0.0233329
Repeat:2	0.0966288	0.00370442	0.0886645	0.0430529	0.0231613
Repeat:3	0.0965314	0.003667	0.0890765	0.0431171	0.0231193
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0208423	0.42649	8.31158	0.62518	0.0517203
Std Dev:	0.000301422	0.00104688	0.0352385	0.000750642	9.95858e-005
%RSD:	1.4462	0.245464	0.423969	0.120068	0.192547
Repeat:1	0.0209531	0.427445	8.35094	0.625915	0.0516885
Repeat:2	0.0210727	0.425371	8.30083	0.624415	0.0516405
Repeat:3	0.0205012	0.426655	8.28297	0.625209	0.0518319
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.245467	3.19832	12465.8	243987	16292.9
Std Dev:	0.000969205	0.00752154	20.1967	1188.16	39.6244
%RSD:	0.394841	0.235171	0.162016	0.486978	0.243201
Repeat:1	0.246319	3.20464	12443.4	243681	16288.9
Repeat:2	0.24567	3.19	12482.5	242981	16255.3
Repeat:3	0.244412	3.20032	12471.6	245298	16334.3

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.999515	23.9168	0.492921	2.04586	2.0195
Std Dev:	0.00747362	0.0145579	0.00208244	0.0140506	0.00536862
%RSD:	0.747725	0.0608692	0.422471	0.686785	0.265839
Repeat:1	1.00751	23.9298	0.493686	2.06042	2.02515
Repeat:2	0.998332	23.9194	0.490564	2.04477	2.01446
Repeat:3	0.992703	23.9011	0.494512	2.03238	2.01888
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.05216	49.4004	0.499403	1.96405	1.98294
Std Dev:	0.0049211	0.138514	0.00136052	0.00412017	0.0104265
%RSD:	0.239802	0.28039	0.272429	0.209779	0.525811
Repeat:1	2.05747	49.5604	0.50042	1.96784	1.99028
Repeat:2	2.05124	49.3227	0.497857	1.95967	1.98755
Repeat:3	2.04776	49.3182	0.49993	1.96464	1.97101
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm

Avg. of Repeats:	1.88233	23.2934	52.036	2.00521	48.1005
Std Dev:	0.0112361	0.0456916	0.0633074	0.00389254	0.170288
%RSD:	0.596926	0.196157	0.121661	0.194122	0.354026
Repeat:1	1.89462	23.3296	52.0977	2.00681	48.2777
Repeat:2	1.87977	23.3085	51.9712	2.00077	48.0856
Repeat:3	1.87259	23.2421	52.0391	2.00804	47.9381
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.97479	1.94875	49.6023	50.4909	2.03508
Std Dev:	0.0108915	0.00634001	0.522844	0.0953028	0.00488191
%RSD:	0.551528	0.325337	1.05407	0.188753	0.239888
Repeat:1	1.98728	1.95401	49.3043	50.5958	2.03917
Repeat:2	1.96982	1.94171	50.206	50.4097	2.02967
Repeat:3	1.96727	1.95052	49.2966	50.4671	2.03641
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.01149	0.517245	0.501211	0.491107	0.4811
Std Dev:	0.00613088	0.00325376	0.00136406	0.000570175	0.00235279
%RSD:	0.304792	0.629056	0.272152	0.1161	0.489044
Repeat:1	2.01848	0.519505	0.502049	0.491317	0.483769
Repeat:2	2.00898	0.518715	0.499637	0.490462	0.480206
Repeat:3	2.00702	0.513516	0.501947	0.491543	0.479326
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.9994	1.99842	1.9995	1.90823	0.964372
Std Dev:	0.0295856	0.00490661	0.00847444	0.00228911	0.00188803
%RSD:	1.47972	0.245525	0.423827	0.11996	0.195778
Repeat:1	2.0102	2.00289	2.00897	1.91046	0.96374
Repeat:2	2.02207	1.99317	1.99692	1.90589	0.962881
Repeat:3	1.96593	1.99919	1.99262	1.90832	0.966495
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	1.93936	1.93408	12465.8	243987	16292.9
Std Dev:	0.00766024	0.00455703	20.1967	1188.16	39.6244
%RSD:	0.394989	0.235617	0.162016	0.486978	0.243201
Repeat:1	1.94609	1.9379	12443.4	243681	16288.9
Repeat:2	1.94096	1.92904	12482.5	242981	16255.3
Repeat:3	1.93102	1.93531	12471.6	245298	16334.3
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12465.8	243987	16292.9
Std Dev:	20.1967	1188.16	39.6244
%RSD:	0.162016	0.486978	0.243201
Repeat:1	12443.4	243681	16288.9
Repeat:2	12482.5	242981	16255.3
Repeat:3	12471.6	245298	16334.3

Sample Name **Acquisition date**

	Analyst Name	Method Name
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-0.000233787	0.001579	-0.000346458	0.00114235	0.0243162
Std Dev:	3.43206e-005	0.000428067	7.33306e-005	5.97774e-005	0.00143229
%RSD:	14.6803	27.11	21.1658	5.23283	5.89028
Repeat:1	-0.000273249	0.00192762	-0.000263679	0.00118286	0.0256948
Repeat:2	-0.000210902	0.00110123	-0.000372417	0.0011705	0.0244182
Repeat:3	-0.00021721	0.00170815	-0.000403277	0.0010737	0.0228356
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.000104825	0.00545137	-0.000550377	2.37093e-005	-2.92972e-005
Std Dev:	7.57703e-006	0.000342539	0.000133188	0.00018927	1.88007e-005
%RSD:	7.22824	6.28354	24.1995	798.294	64.1723
Repeat:1	-0.000113021	0.00512909	-0.000400267	0.000200877	-4.36075e-005
Repeat:2	-0.00010338	0.00541391	-0.000654406	4.59482e-005	-8.00424e-006
Repeat:3	-9.8075e-005	0.00581109	-0.000596456	-0.000175698	-3.62799e-005
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.000264271	9.46601e-005	0.00643427	-0.000499439	-0.000260901
Std Dev:	1.61149e-005	0.000255393	0.000833875	0.00107044	9.30015e-005
%RSD:	6.09789	269.8	12.9599	214.329	35.6463
Repeat:1	0.000280687	-0.000200196	0.00734998	0.00067604	-0.000364318
Repeat:2	0.000263648	0.000237592	0.0062342	-0.000756226	-0.000234249
Repeat:3	0.000248476	0.000246585	0.00571862	-0.00141813	-0.000184135
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	4.64767e-005	0.000243822	-0.000144156	-4.28092e-005	-0.000858777
Std Dev:	2.18095e-005	0.000164177	0.00039	0.00210021	0.000100778
%RSD:	46.9257	67.3349	270.54	4905.97	11.7351
Repeat:1	2.13251e-005	0.000416675	-1.10149e-006	0.00236724	-0.000746226
Repeat:2	5.79553e-005	0.000224815	-0.000585484	-0.00101415	-0.000889453
Repeat:3	6.01497e-005	8.99755e-005	0.000154116	-0.00148152	-0.000940653
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	6.64601e-005	-2.54635e-006	6.09896e-005	0.000263572	1.75016e-005
Std Dev:	5.6291e-005	1.29406e-005	0.000109422	0.000135814	4.37893e-005
%RSD:	84.699	508.202	179.41	51.5281	250.201
Repeat:1	0.000126102	-1.74889e-005	-3.69419e-005	0.000263765	3.09608e-005
Repeat:2	5.90171e-005	4.92227e-006	4.08165e-005	0.00039929	-3.14374e-005
Repeat:3	1.42608e-005	4.92754e-006	0.000179094	0.000127662	5.29815e-005
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.00119788	0.0001744	-0.00390022	-0.000878765	-0.000167608
Std Dev:	7.50128e-005	3.74977e-005	0.000154848	0.000310372	4.34563e-005
%RSD:	6.26212	21.501	3.97024	35.3191	25.9273
Repeat:1	0.0011819	0.000150454	-0.0040221	-0.000554504	-0.000117686
Repeat:2	0.0012796	0.000217614	-0.00372598	-0.000908717	-0.000196961
Repeat:3	0.00113215	0.000155132	-0.00395259	-0.00117308	-0.000188177
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	7.46438e-005	0.00170289	12792.9	246743	16593.8
Std Dev:	9.30716e-006	0.000106735	167.057	3122.74	330.32
%RSD:	12.4688	6.26787	1.30585	1.26559	1.99063
Repeat:1	8.29143e-005	0.00181917	12629.1	244148	16506.5
Repeat:2	7.64519e-005	0.00168014	12786.7	245872	16315.8

Repeat:3	6.45653e-005	0.00160937	12963	250208	16958.9

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000695219	-0.0147887	-0.000227856	0.037435	0.000916437
Std Dev:	0.000381328	0.0248206	0.000925793	0.00201244	0.000530872
%RSD:	54.85	167.834	406.307	5.37583	57.9278
Repeat:1	-0.00113367	0.00541741	0.000817036	0.0387873	0.00142745
Repeat:2	-0.000440904	-0.0424943	-0.000554743	0.0383954	0.000954151
Repeat:3	-0.000511082	-0.00728939	-0.00094586	0.0351223	0.000367714
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.81963e-005	-0.000805997	-5.64226e-005	6.45987e-005	8.40798e-005
Std Dev:	3.02293e-006	0.00231037	6.90498e-005	0.000168217	0.000211872
%RSD:	16.6128	286.648	122.38	260.402	251.989
Repeat:1	1.49287e-005	-0.00297967	2.15781e-005	0.000222051	-7.70149e-005
Repeat:2	1.87671e-005	-0.00105862	-0.000109734	8.43783e-005	0.000324083
Repeat:3	2.08932e-005	0.00162031	-8.11125e-005	-0.000112633	5.17156e-006
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000674803	0.0455011	0.250959	0.00232986	-0.00615009
Std Dev:	0.000121693	0.0457037	0.0263643	0.00147896	0.00702503
%RSD:	18.0339	100.445	10.5054	63.4784	114.226
Repeat:1	-0.000551535	-0.00726475	0.279911	0.00395394	-0.0139621
Repeat:2	-0.000678017	0.0710753	0.244634	0.00197509	-0.00413615
Repeat:3	-0.000794858	0.0726928	0.228333	0.00106056	-0.000351984
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.82698e-005	0.000372563	-0.165472	0.0424664	-2.0396e-005
Std Dev:	4.72847e-005	0.000385217	1.11794	0.0169213	0.000138118
%RSD:	123.556	103.396	675.608	39.8464	677.182
Repeat:1	-1.62609e-005	0.000778137	0.244184	0.0618841	0.000133764
Repeat:2	6.31601e-005	0.000327965	-1.43046	0.0346403	-6.20848e-005
Repeat:3	6.79104e-005	1.1586e-005	0.689855	0.0308747	-0.000132867
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000465246	0.000286821	0.000780392	0.00084856	-0.00256141
Std Dev:	0.00116648	0.00179648	0.000605637	0.0016391	0.000911338
%RSD:	250.724	626.343	77.6067	193.162	35.5796
Repeat:1	0.00170107	-0.00178758	0.000240444	0.000853815	-0.00228555
Repeat:2	0.000311279	0.00132233	0.000665481	0.00248502	-0.0035788
Repeat:3	-0.000616608	0.00132572	0.00143525	-0.000793159	-0.00181986
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.100465	0.000326656	-9.12482e-005	0.000652474	-0.00156966
Std Dev:	0.00737057	0.000175747	3.7242e-005	0.000947018	0.000819667
%RSD:	7.33642	53.802	40.814	145.143	52.2194
Repeat:1	0.0988841	0.000214424	-0.00012054	0.00163942	-0.000628088

Repeat:2	0.108498	0.000529196	-4.93358e-005	0.000566805	-0.00212374
Repeat:3	0.0940139	0.000236348	-0.000103869	-0.000248799	-0.00195715
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	1.68253e-005	2.14261e-005	12792.9	246743	16593.8
Std Dev:	7.16847e-005	6.83725e-005	167.057	3122.74	330.32
%RSD:	426.054	319.109	1.30585	1.26559	1.99063
Repeat:1	7.94832e-005	9.49571e-005	12629.1	244148	16506.5
Repeat:2	3.23386e-005	9.55426e-006	12786.7	245872	16315.8
Repeat:3	-6.13459e-005	-4.02331e-005	12963	250208	16958.9
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12792.9	246743	16593.8
Std Dev:	167.057	3122.74	330.32
%RSD:	1.30585	1.26559	1.99063
Repeat:1	12629.1	244148	16506.5
Repeat:2	12786.7	245872	16315.8
Repeat:3	12963	250208	16958.9

Sample Name	**Acquisition date**
MXK43	12/20/2012 2:06:50PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000210572	0.00390202	-0.00016709	0.00639296	0.0490948
Std Dev:	3.60914e-005	0.000225796	3.76127e-005	4.20835e-005	0.00118782
%RSD:	17.1397	5.78664	22.5105	0.658278	2.41945
Repeat:1	-0.000173687	0.00385566	-0.00021052	0.00644077	0.0490517
Repeat:2	-0.000212217	0.003703	-0.000145668	0.00636154	0.0479291
Repeat:3	-0.000245813	0.0041474	-0.000145082	0.00637657	0.0503035
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-5.97947e-005	0.255558	0.00251589	0.00341392	0.000609755
Std Dev:	2.34157e-005	0.000221544	0.000123518	5.96101e-005	4.50046e-005
%RSD:	39.1602	0.0866902	4.90952	1.74609	7.38077
Repeat:1	-8.59335e-005	0.255664	0.00248509	0.00336856	0.00057539
Repeat:2	-4.07364e-005	0.255304	0.00241069	0.00339175	0.000593177
Repeat:3	-5.27141e-005	0.255707	0.00265189	0.00348143	0.000660697
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00329838	0.00312678	0.0149712	-0.00178467	0.00736769
Std Dev:	3.14458e-005	0.000119781	0.00206659	0.000796362	0.000177971
%RSD:	0.95337	3.83082	13.8038	44.6223	2.41556
Repeat:1	0.00328212	0.00298867	0.0159265	-0.00148908	0.00716428
Repeat:2	0.0032784	0.00320223	0.0163873	-0.00117837	0.00744409
Repeat:3	0.00333463	0.00318945	0.0125998	-0.00268656	0.00749471
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00627962	0.000317363	0.000420013	0.0462164	0.00671925
Std Dev:	6.61033e-005	3.34714e-005	0.000409554	0.000641089	0.000108282
%RSD:	1.05266	10.5467	97.5096	1.38715	1.61152
Repeat:1	0.00621207	0.000354714	0.000812611	0.0463882	0.00677146

Repeat:2	0.00628261	0.000290083	-4.61541e-006	0.045507	0.00659475
Repeat:3	0.00634418	0.000307292	0.000452045	0.0467542	0.00679153
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.00393994	1.69635e-005	0.000316679	0.000594049	0.00590341
Std Dev:	6.77389e-005	8.82975e-006	3.78819e-005	8.22351e-005	0.000101624
%RSD:	1.71929	52.0515	11.9622	13.8432	1.72145
Repeat:1	0.00399232	8.78467e-006	0.000276765	0.000510712	0.00601812
Repeat:2	0.00386344	2.6325e-005	0.000352134	0.000596298	0.00582465
Repeat:3	0.00396405	1.57808e-005	0.000321137	0.000675136	0.00586745
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.00814072	0.0109787	0.00566523	-0.000433247	-0.000154807
Std Dev:	6.81181e-005	5.85145e-005	0.000879213	0.000212874	0.000107652
%RSD:	0.836758	0.532982	15.5195	49.1345	69.5396
Repeat:1	0.00821086	0.0110351	0.00661173	-0.000676615	-0.000251231
Repeat:2	0.00813646	0.0109828	0.00550994	-0.000281659	-3.86553e-005
Repeat:3	0.00807483	0.0109183	0.004874	-0.000341468	-0.000174535
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	9.79448e-005	0.694142	12499.1	240281	15786.6
Std Dev:	2.23166e-005	0.00523323	80.2765	898.624	134.02
%RSD:	22.7849	0.753914	0.642257	0.373988	0.848948
Repeat:1	8.68433e-005	0.694817	12430.5	239944	15938
Repeat:2	8.33561e-005	0.688604	12587.4	241300	15738.6
Repeat:3	0.000123635	0.699005	12479.5	239600	15683.2

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000437096	0.119916	0.00209176	0.215166	0.0100969
Std Dev:	0.000400921	0.0130902	0.000477553	0.00141618	0.000440166
%RSD:	91.7236	10.9161	22.8303	0.658178	4.35943
Repeat:1	-2.73036e-005	0.117227	0.00154035	0.216775	0.010081
Repeat:2	-0.000455472	0.108379	0.00236323	0.214108	0.00966487
Repeat:3	-0.000828513	0.134142	0.00237169	0.214615	0.0105448
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.60378e-005	1.68613	0.00142552	0.00308978	0.00728778
Std Dev:	9.29307e-006	0.00149428	6.10491e-005	5.24314e-005	0.00050743
%RSD:	25.787	0.088622	4.28257	1.69693	6.96275
Repeat:1	2.56745e-005	1.68684	0.00141191	0.00305096	0.00690037
Repeat:2	4.36303e-005	1.68441	0.00137243	0.00306896	0.00710079
Repeat:3	3.88086e-005	1.68713	0.00149223	0.00314942	0.00786217
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0225713	0.58788	0.520868	0.000528875	0.570463
Std Dev:	0.000241327	0.0214346	0.0653385	0.00110027	0.0134512
%RSD:	1.06918	3.64608	12.5442	208.041	2.35794
Repeat:1	0.0224445	0.563165	0.551071	0.00093726	0.555089
Repeat:2	0.0224198	0.601376	0.565641	0.00136657	0.576237
Repeat:3	0.0228496	0.5991	0.445892	-0.000717201	0.580064
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm

Avg. of Repeats:	0.0137078	0.000545116	1.45463	0.415176	0.0105016
Std Dev:	0.000144743	7.85354e-005	1.17417	0.00516524	0.000150106
%RSD:	1.05592	14.4071	80.7191	1.24411	1.42937
Repeat:1	0.01356	0.000632753	2.58023	0.416559	0.0105737
Repeat:2	0.0137141	0.000481108	0.23728	0.40946	0.010329
Repeat:3	0.0138493	0.000521486	1.54639	0.419508	0.010602
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0805938	0.00299383	0.00212159	0.00484018	0.120087
Std Dev:	0.00140136	0.00122681	0.000210512	0.000984575	0.00211527
%RSD:	1.7388	40.9778	9.92239	20.3417	1.76144
Repeat:1	0.0816779	0.00185701	0.00189922	0.00384075	0.122475
Repeat:2	0.0790114	0.00429421	0.0023178	0.00487061	0.118448
Repeat:3	0.0810921	0.00283026	0.00214774	0.00580919	0.119339
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.782697	0.0509652	0.00219262	0.00198156	-0.00133903
Std Dev:	0.00669205	0.000274251	0.000211473	0.000653842	0.00203055
%RSD:	0.854998	0.538114	9.64474	32.9964	151.644
Repeat:1	0.789587	0.0512294	0.00242028	0.00123445	-0.00315737
Repeat:2	0.782282	0.0509843	0.00215529	0.00244938	0.000852075
Repeat:3	0.776222	0.0506819	0.0020023	0.00226083	-0.00171178
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000227866	0.422606	12499.1	240281	15786.6
Std Dev:	0.000176762	0.00319189	80.2765	898.624	134.02
%RSD:	77.5728	0.755287	0.642257	0.373988	0.848948
Repeat:1	0.000139606	0.423016	12430.5	239944	15938
Repeat:2	0.000112615	0.419229	12587.4	241300	15738.6
Repeat:3	0.000431378	0.425573	12479.5	239600	15683.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12499.1	240281	15786.6
Std Dev:	80.2765	898.624	134.02
%RSD:	0.642257	0.373988	0.848948
Repeat:1	12430.5	239944	15938
Repeat:2	12587.4	241300	15738.6
Repeat:3	12479.5	239600	15683.2

Sample Name	**Acquisition date**
MXK43A	12/20/2012 2:11:46PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00430168	0.0378365	0.0076805	0.0349484	0.326523
Std Dev:	4.86237e-005	0.00039426	4.2084e-005	0.000281942	0.00158508
%RSD:	1.13034	1.04201	0.547933	0.806737	0.48544

Repeat:1	0.00432646	0.0381235	0.00772889	0.0352729	0.328294
Repeat:2	0.00433293	0.0379991	0.00765245	0.0347631	0.325236
Repeat:3	0.00424566	0.037387	0.00766016	0.0348093	0.32604
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.133248	7.80368	0.106232	0.116431	0.0190282
Std Dev:	0.00133775	0.0330359	0.000702098	0.000769619	0.000148363
%RSD:	1.00395	0.423338	0.660911	0.661011	0.779702
Repeat:1	0.134792	7.83925	0.106933	0.117318	0.0191956
Repeat:2	0.132424	7.79783	0.105529	0.115951	0.0189763
Repeat:3	0.132529	7.77395	0.106233	0.116023	0.0189128
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0348607	0.00838772	1.67979	0.0715978	0.136514
Std Dev:	0.0001479	2.89429e-005	0.00211584	0.00146877	0.000911749
%RSD:	0.424261	0.345062	0.125959	2.05141	0.667877
Repeat:1	0.0349759	0.00838405	1.68213	0.0699054	0.137197
Repeat:2	0.0349122	0.0083608	1.67801	0.0725389	0.136867
Repeat:3	0.0346939	0.00841833	1.67924	0.0723492	0.135479
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0533771	0.215106	0.0180654	6.44887	0.38591
Std Dev:	0.000515485	0.00131162	0.000298993	0.0189386	0.0031958
%RSD:	0.965742	0.609754	1.65506	0.293673	0.828121
Repeat:1	0.0538685	0.216605	0.0178624	6.47021	0.38959
Repeat:2	0.0534223	0.214167	0.017925	6.44236	0.383837
Repeat:3	0.0528405	0.214547	0.0184087	6.43404	0.384302
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.247962	0.000752211	0.0182958	0.0414081	0.0126521
Std Dev:	0.00148808	6.56432e-006	0.000304456	0.000310285	6.83749e-005
%RSD:	0.600125	0.87267	1.66407	0.749334	0.540423
Repeat:1	0.249653	0.000759644	0.018565	0.0416903	0.0127262
Repeat:2	0.24685	0.000749779	0.0183572	0.0410758	0.0125914
Repeat:3	0.247384	0.00074721	0.0179654	0.0414581	0.0126388
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0587773	0.119432	2.13911	0.0320516	0.0204208
Std Dev:	0.000125853	0.000645338	0.0113365	0.000121907	0.000114635
%RSD:	0.214119	0.540337	0.529962	0.380345	0.561363
Repeat:1	0.0588735	0.120176	2.14563	0.0319872	0.0204952
Repeat:2	0.0588236	0.11902	2.14568	0.0321922	0.0202888
Repeat:3	0.0586349	0.119101	2.12602	0.0319754	0.0204785
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0256278	1.48261	12206.9	235174	15398.5
Std Dev:	0.000192951	0.00829929	156.267	3339.95	142.832
%RSD:	0.752896	0.559777	1.28015	1.4202	0.927566
Repeat:1	0.0258378	1.49186	12027.8	231412	15240.5
Repeat:2	0.0255876	1.47583	12277.4	236318	15518.5
Repeat:3	0.0254582	1.48013	12315.5	237792	15436.6

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0498673	2.07194	0.101478	1.18166	0.112899
Std Dev:	0.000541195	0.0227995	0.000532863	0.0095371	0.000587371
%RSD:	1.08527	1.10039	0.525102	0.807095	0.520261
Repeat:1	0.0501439	2.08847	0.102091	1.19263	0.113555
Repeat:2	0.0502143	2.08143	0.101124	1.17539	0.112422

Repeat:3	0.0492437	2.04593	0.101219	1.17695	0.11272
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0529394	52.597	0.0527451	0.104487	0.215101
Std Dev:	0.000531009	0.222822	0.00034814	0.000691463	0.00167371
%RSD:	1.00305	0.42364	0.660043	0.66177	0.778104
Repeat:1	0.0535521	52.8369	0.0530929	0.105284	0.216989
Repeat:2	0.0526121	52.5576	0.0523966	0.104055	0.214516
Repeat:3	0.0526539	52.3966	0.0527457	0.104121	0.213799
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.264178	1.53371	53.1568	0.101151	10.3381
Std Dev:	0.00113126	0.00514305	0.0668957	0.00203229	0.0689346
%RSD:	0.42822	0.335334	0.125846	2.00917	0.666801
Repeat:1	0.265059	1.53309	53.2307	0.098809	10.3898
Repeat:2	0.264573	1.5289	53.1004	0.102452	10.3647
Repeat:3	0.262902	1.53913	53.1393	0.102192	10.2598
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.116959	0.504514	52.1152	52.0012	0.535384
Std Dev:	0.00113076	0.00307751	0.856724	0.152587	0.00442485
%RSD:	0.966806	0.609995	1.6439	0.293431	0.826481
Repeat:1	0.118037	0.508031	51.5341	52.1731	0.54048
Repeat:2	0.117058	0.50231	51.7124	51.9487	0.532515
Repeat:3	0.115782	0.503203	53.0991	51.8817	0.533157
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.13039	0.105717	0.102653	0.496075	0.26064
Std Dev:	0.0307937	0.000916277	0.00169516	0.00373892	0.00142402
%RSD:	0.600222	0.866725	1.65135	0.7537	0.546358
Repeat:1	5.16537	0.106755	0.104154	0.499464	0.262182
Repeat:2	5.10737	0.105379	0.102989	0.492064	0.259374
Repeat:3	5.11843	0.105018	0.100815	0.496697	0.260363
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.75574	0.559275	0.514833	0.0999643	0.385858
Std Dev:	0.0123511	0.00302462	0.00272498	0.000374029	0.00215883
%RSD:	0.214588	0.540811	0.529295	0.374162	0.559489
Repeat:1	5.76517	0.562761	0.516398	0.0997667	0.387252
Repeat:2	5.76028	0.557342	0.516414	0.100396	0.383371
Repeat:3	5.74175	0.557722	0.511686	0.0997306	0.38695
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.202271	0.899469	12206.9	235174	15398.5
Std Dev:	0.0015265	0.00503933	156.267	3339.95	142.832
%RSD:	0.754681	0.560256	1.28015	1.4202	0.927566
Repeat:1	0.203932	0.905087	12027.8	231412	15240.5

Repeat:2	0.20195	0.895348	12277.4	236318	15518.5
Repeat:3	0.20093	0.897971	12315.5	237792	15436.6
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12206.9	235174	15398.5
Std Dev:	156.267	3339.95	142.832
%RSD:	1.28015	1.4202	0.927566
Repeat:1	12027.8	231412	15240.5
Repeat:2	12277.4	236318	15518.5
Repeat:3	12315.5	237792	15436.6

Sample Name	**Acquisition date**
MXK43A	12/20/2012 2:16:32PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00431194	0.0371156	0.00760391	0.0346005	0.3257
Std Dev:	0.0001042	0.00017572	0.000111538	6.6824e-005	0.00276449
%RSD:	2.41655	0.473441	1.46685	0.19313	0.848784
Repeat:1	0.00440105	0.0370033	0.00771607	0.0346576	0.327102
Repeat:2	0.0043374	0.0370253	0.007493	0.034617	0.327483
Repeat:3	0.00419737	0.0373181	0.00760266	0.034527	0.322515
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.131555	7.72207	0.105269	0.115588	0.0187585
Std Dev:	0.000505876	0.0317563	0.000402506	0.000326848	4.2251e-005
%RSD:	0.384535	0.411241	0.382359	0.282769	0.225236
Repeat:1	0.132013	7.74574	0.105603	0.115915	0.0187269
Repeat:2	0.131639	7.73449	0.105382	0.115588	0.0188065
Repeat:3	0.131012	7.68598	0.104822	0.115261	0.0187422
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0343714	0.008189	1.69168	0.0720827	0.13516
Std Dev:	0.00016327	0.000136821	0.00506603	0.000917528	0.000619372
%RSD:	0.475017	1.67079	0.299466	1.27288	0.458251
Repeat:1	0.0345486	0.00829287	1.69513	0.0730905	0.135377
Repeat:2	0.0343384	0.00803397	1.69406	0.0712957	0.135642
Repeat:3	0.0342271	0.00824016	1.68587	0.0718619	0.134461
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0527142	0.214026	0.0177965	6.42322	0.384992
Std Dev:	0.000153981	0.000498359	0.000493141	0.0321008	0.00164689
%RSD:	0.292106	0.232849	2.77101	0.499761	0.427772
Repeat:1	0.0528572	0.214599	0.0183647	6.43639	0.386578
Repeat:2	0.0527343	0.213693	0.0174804	6.44665	0.385108
Repeat:3	0.0525512	0.213787	0.0175442	6.38663	0.38329
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.248531	0.000773723	0.0181101	0.0414523	0.0126162
Std Dev:	0.000717504	1.43044e-005	0.000207298	0.000107809	0.000122917
%RSD:	0.288698	1.84878	1.14466	0.26008	0.974284
Repeat:1	0.249352	0.000759996	0.0183052	0.0415608	0.0125391
Repeat:2	0.248214	0.000788542	0.0181327	0.0413452	0.0125514
Repeat:3	0.248027	0.00077263	0.0178924	0.0414507	0.0127579

Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.0577539	0.11889	2.11897	0.0314486	0.020219
Std Dev:	0.000225563	0.000292092	0.00619775	8.12756e-005	3.35978e-005
%RSD:	0.390558	0.245682	0.292488	0.258439	0.166169
Repeat:1	0.057509	0.119139	2.12095	0.0314567	0.0202527
Repeat:2	0.0579532	0.118963	2.12394	0.0315256	0.0201855
Repeat:3	0.0577997	0.118569	2.11203	0.0313636	0.020219
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.0252082	1.47538	12245.8	237991	15557.3
Std Dev:	4.91408e-005	0.00306262	82.2229	1339.38	17.2618
%RSD:	0.19494	0.207582	0.67144	0.562784	0.110956
Repeat:1	0.0252247	1.4789	12179.5	236467	15576.7
Repeat:2	0.0252469	1.4738	12220	238978	15551.6
Repeat:3	0.0251529	1.47342	12337.8	238529	15543.6

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0499785	2.03026	0.100502	1.16988	0.112594
Std Dev:	0.00115814	0.0102107	0.00141071	0.00226046	0.00102445
%RSD:	2.31728	0.502926	1.40366	0.193222	0.909861
Repeat:1	0.0509688	2.02372	0.10192	1.17182	0.113114
Repeat:2	0.0502617	2.02504	0.0990989	1.17043	0.113255
Repeat:3	0.0487051	2.04203	0.100487	1.1674	0.111414
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0522675	52.0466	0.052271	0.103735	0.21206
Std Dev:	0.000200847	0.214192	0.000199487	0.000292717	0.000476253
%RSD:	0.384268	0.411538	0.381639	0.282179	0.224584
Repeat:1	0.0524496	52.2062	0.0524353	0.104028	0.211704
Repeat:2	0.052301	52.1304	0.0523287	0.103734	0.212601
Repeat:3	0.0520521	51.8032	0.052049	0.103442	0.211875
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.260431	1.49802	53.5329	0.101829	10.2357
Std Dev:	0.00124963	0.0244651	0.160171	0.00126645	0.0468185
%RSD:	0.479832	1.63316	0.299201	1.2437	0.457404
Repeat:1	0.261788	1.51659	53.6417	0.103219	10.2521
Repeat:2	0.260177	1.4703	53.608	0.100741	10.2721
Repeat:3	0.259328	1.50717	53.349	0.101528	10.1829
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.115505	0.501981	51.3439	51.7945	0.534114
Std Dev:	0.000337504	0.00116932	1.41386	0.258635	0.00228101
%RSD:	0.292198	0.232942	2.75371	0.499348	0.427064
Repeat:1	0.115819	0.503325	52.9731	51.9006	0.53631
Repeat:2	0.115549	0.501199	50.438	51.9832	0.534275
Repeat:3	0.115148	0.501418	50.6207	51.4997	0.531756
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Units:	ppm	ppm	ppm	ppm	ppm

Avg. of Repeats:	5.14214	0.108704	0.101624	0.496651	0.25989
Std Dev:	0.0148451	0.00198911	0.00115537	0.00131253	0.00256143
%RSD:	0.288694	1.82985	1.1369	0.264277	0.985586
Repeat:1	5.15913	0.106795	0.102714	0.497974	0.258287
Repeat:2	5.13558	0.110764	0.101746	0.495349	0.258538
Repeat:3	5.1317	0.108552	0.100413	0.496631	0.262844
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.6552	0.556733	0.509995	0.0981369	0.382062
Std Dev:	0.0221605	0.001369	0.00148877	0.000244704	0.000632932
%RSD:	0.39186	0.245899	0.291918	0.249349	0.165662
Repeat:1	5.63114	0.557899	0.51047	0.098152	0.382694
Repeat:2	5.67477	0.557075	0.511189	0.0983738	0.381428
Repeat:3	5.6597	0.555226	0.508327	0.097885	0.382062
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.198954	0.895081	12245.8	237991	15557.3
Std Dev:	0.000387543	0.00185013	82.2229	1339.38	17.2618
%RSD:	0.194791	0.206699	0.67144	0.562784	0.110956
Repeat:1	0.199086	0.897214	12179.5	236467	15576.7
Repeat:2	0.199258	0.89412	12220	238978	15551.6
Repeat:3	0.198517	0.893909	12337.8	238529	15543.6
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12245.8	237991	15557.3
Std Dev:	82.2229	1339.38	17.2618
%RSD:	0.67144	0.562784	0.110956
Repeat:1	12179.5	236467	15576.7
Repeat:2	12220	238978	15551.6
Repeat:3	12337.8	238529	15543.6

Sample Name	**Acquisition date**
MXK46	12/20/2012 2:21:19PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000193472	0.00356899	-0.000252201	0.00984269	0.036432
Std Dev:	2.24103e-005	0.000424203	5.10615e-005	9.42405e-005	0.0017222
%RSD:	11.5832	11.8858	20.2464	0.957466	4.72716
Repeat:1	-0.000195755	0.00312768	-0.000193392	0.00990235	0.0384186
Repeat:2	-0.000214654	0.00360556	-0.000277943	0.00989168	0.0355167
Repeat:3	-0.000170008	0.00397372	-0.000285267	0.00973405	0.0353607
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-0.000121884	0.187615	0.000702676	0.00163407	0.00118491
Std Dev:	8.43288e-006	0.000216514	4.47029e-005	0.000110246	1.20793e-005
%RSD:	6.91876	0.115403	6.36181	6.74671	1.01943
Repeat:1	-0.00012556	0.187595	0.000743534	0.00161906	0.00119537
Repeat:2	-0.000112237	0.187841	0.000709566	0.00175106	0.00118766

Repeat:3	-0.000127855	0.187409	0.000654928	0.0015321	0.00117169
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0029667	0.00120742	0.0247098	-0.00153681	0.00495234
Std Dev:	4.11261e-005	8.57751e-005	0.0027767	0.000820234	0.000337111
%RSD:	1.38626	7.10401	11.2372	53.3724	6.8071
Repeat:1	0.00294032	0.00125194	0.0269385	-0.0010794	0.00530778
Repeat:2	0.00294569	0.00126178	0.0255916	-0.00248376	0.00463718
Repeat:3	0.00301409	0.00110854	0.0215993	-0.00104728	0.00491206
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.003173	0.000411843	0.000902983	0.0977857	0.0143131
Std Dev:	2.51997e-005	4.53645e-005	3.29692e-005	0.00107574	0.000148799
%RSD:	0.794192	11.015	3.65114	1.1001	1.0396
Repeat:1	0.003196	0.000461819	0.000906865	0.098485	0.0144011
Repeat:2	0.00317694	0.000400446	0.000933839	0.0983251	0.0143969
Repeat:3	0.00314607	0.000373263	0.000868245	0.0965469	0.0141413
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.00445964	1.56744e-005	0.000629801	0.000568889	0.000340801
Std Dev:	3.01729e-005	1.38126e-005	7.93425e-005	6.80357e-005	3.23767e-005
%RSD:	0.676576	88.1222	12.598	11.9594	9.50017
Repeat:1	0.0044648	1.98986e-005	0.000585033	0.000647268	0.000315545
Repeat:2	0.00448691	2.68817e-005	0.00072141	0.000525068	0.000329557
Repeat:3	0.00442723	2.42949e-007	0.000582959	0.000534332	0.000377301
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0286451	0.0104245	0.00997174	-0.000307146	-0.000189339
Std Dev:	5.45335e-005	0.000135587	0.000665856	9.32819e-005	5.09683e-005
%RSD:	0.190376	1.30066	6.67743	30.3705	26.919
Repeat:1	0.0285916	0.0105717	0.0107362	-0.000284478	-0.000159209
Repeat:2	0.0286432	0.010397	0.00951852	-0.000409673	-0.000248186
Repeat:3	0.0287006	0.0103047	0.00966048	-0.000227288	-0.000160622
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000107984	0.240015	12419.9	239493	15254
Std Dev:	2.39261e-005	0.00271557	173.591	2691.4	73.5764
%RSD:	22.1571	1.13142	1.39768	1.12379	0.482343
Repeat:1	8.05309e-005	0.242445	12268.2	237750	15283.6
Repeat:2	0.000124395	0.240516	12382.3	238137	15170.2
Repeat:3	0.000119026	0.237083	12609.2	242593	15308.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000247016	0.100596	0.00105085	0.331703	0.00540553
Std Dev:	0.00024902	0.0245987	0.000646679	0.00319198	0.000638163
%RSD:	100.811	24.4529	61.5385	0.962298	11.8057
Repeat:1	-0.00027257	0.0750065	0.0017956	0.333724	0.00614166
Repeat:2	-0.000482274	0.102715	0.000725492	0.333363	0.00506633
Repeat:3	1.37947e-005	0.124067	0.000631469	0.328024	0.0050086
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.13635e-005	1.22786	0.000551096	0.00151481	0.0137723
Std Dev:	3.33086e-006	0.00146035	2.1264e-005	9.88674e-005	0.000136195
%RSD:	29.3119	0.118935	3.85848	6.52673	0.988909
Repeat:1	9.94737e-006	1.22773	0.000570838	0.00150131	0.0138903
Repeat:2	1.51684e-005	1.22938	0.000553869	0.00161973	0.0138033

Repeat:3	8.97468e-006	1.22647	0.000528582	0.00142338	0.0136233
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0200125	0.244548	0.828769	0.000878191	0.387901
Std Dev:	0.00031384	0.0153388	0.0877897	0.00113326	0.0254817
%RSD:	1.56822	6.2723	10.5928	129.045	6.56912
Repeat:1	0.0198113	0.252506	0.899235	0.00151015	0.414768
Repeat:2	0.0198521	0.254273	0.856648	-0.000430133	0.364079
Repeat:3	0.0203741	0.226866	0.730426	0.00155455	0.384855
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0068943	0.000766798	2.838	0.830667	0.0210408
Std Dev:	5.50102e-005	0.000106441	0.0946322	0.00866722	0.000206486
%RSD:	0.797908	13.8812	3.33447	1.0434	0.981357
Repeat:1	0.00694435	0.00088406	2.84913	0.836301	0.0211626
Repeat:2	0.00690314	0.000740057	2.92658	0.835014	0.0211574
Repeat:3	0.0068354	0.000676278	2.7383	0.820687	0.0208024
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0913997	0.00281865	0.00360308	0.00440611	0.00415926
Std Dev:	0.00062419	0.00191899	0.000440237	0.000821599	0.000673189
%RSD:	0.682924	68.082	12.2184	18.6468	16.1853
Repeat:1	0.0915068	0.00340373	0.00335399	0.00535252	0.00363384
Repeat:2	0.0919634	0.004377	0.00411138	0.00387583	0.00392586
Repeat:3	0.0907288	0.000675219	0.00334385	0.00398998	0.00491809
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.79735	0.0483676	0.00323303	0.00236127	-0.00196704
Std Dev:	0.00535602	0.000635479	0.000160158	0.00028492	0.00096209
%RSD:	0.191467	1.31385	4.95381	12.0664	48.9107
Repeat:1	2.79209	0.0490576	0.00341691	0.00243029	-0.0013985
Repeat:2	2.79716	0.0482388	0.00312401	0.00204818	-0.00307786
Repeat:3	2.8028	0.0478063	0.00315818	0.00260534	-0.00142475
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000301506	0.145228	12419.9	239493	15254
Std Dev:	0.000188477	0.00165529	173.591	2691.4	73.5764
%RSD:	62.5121	1.13979	1.39768	1.12379	0.482343
Repeat:1	8.53637e-005	0.14671	12268.2	237750	15283.6
Repeat:2	0.000431616	0.145532	12382.3	238137	15170.2
Repeat:3	0.000387537	0.143441	12609.2	242593	15308.1
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12419.9	239493	15254
Std Dev:	173.591	2691.4	73.5764
%RSD:	1.39768	1.12379	0.482343
Repeat:1	12268.2	237750	15283.6

Repeat:2	12382.3	238137	15170.2	
Repeat:3	12609.2	242593	15308.1	

Sample Name	**Acquisition date**
MXK48	12/20/2012 2:26:13PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000205509	0.00195247	-0.000168037	0.00258759	0.0283524
Std Dev:	2.04592e-005	5.78692e-005	1.08412e-005	3.50849e-005	0.00129163
%RSD:	9.95534	2.96389	6.45168	1.35589	4.55562
Repeat:1	-0.00018221	0.00189384	-0.0001563	0.00261939	0.0276829
Repeat:2	-0.000213781	0.00195403	-0.000177676	0.00259344	0.027533
Repeat:3	-0.000220538	0.00200955	-0.000170136	0.00254996	0.0298413
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-0.000144607	0.0249502	-0.00037943	0.00502347	5.72588e-005
Std Dev:	4.83722e-005	0.000382883	3.01295e-005	2.52693e-005	1.78778e-005
%RSD:	33.4508	1.53459	7.94072	0.503025	31.2228
Repeat:1	-0.000194902	0.0251734	-0.00034599	0.00499866	7.78986e-005
Repeat:2	-9.84192e-005	0.0251691	-0.000404463	0.00504917	4.7279e-005
Repeat:3	-0.0001405	0.0245081	-0.000387838	0.00502258	4.65989e-005
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00142908	0.000154415	0.0079903	-0.00163162	0.000484141
Std Dev:	7.92935e-006	0.000246266	0.000867999	0.000854772	0.000166677
%RSD:	0.554856	159.483	10.8632	52.3879	34.4273
Repeat:1	0.00142645	-6.22717e-005	0.00848105	-0.00100697	0.000514701
Repeat:2	0.00143799	0.000103285	0.00850175	-0.00260576	0.000633423
Repeat:3	0.00142281	0.000422232	0.00698809	-0.00128213	0.000304299
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00038715	0.000235696	0.000371646	0.01285	-0.000511608
Std Dev:	2.00594e-005	2.04799e-005	0.000259871	0.00106222	0.000159188
%RSD:	5.18129	8.68912	69.9243	8.26635	31.1152
Repeat:1	0.00040328	0.000237693	0.000252333	0.0124873	-0.000554165
Repeat:2	0.000393481	0.000255105	0.000192857	0.014046	-0.000645191
Repeat:3	0.000364689	0.000214291	0.000669748	0.0120166	-0.000335467
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.00103998	1.75129e-007	0.000211194	0.000539259	0.000123814
Std Dev:	1.9468e-005	1.49452e-005	0.000252342	9.05877e-005	6.24422e-005
%RSD:	1.87196	8533.82	119.484	16.7985	50.4325
Repeat:1	0.00104542	1.7373e-005	0.000298084	0.000643861	0.000152185
Repeat:2	0.00101837	-7.18481e-006	0.000408612	0.000486885	0.000167033
Repeat:3	0.00105615	-9.66279e-006	-7.31121e-005	0.000487032	5.22229e-005
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.00328902	0.00954119	-0.00288446	-0.000827228	-0.000199691
Std Dev:	8.32028e-005	0.000103749	0.000236812	1.17639e-005	5.32247e-005
%RSD:	2.52971	1.08738	8.20992	1.42208	26.6536
Repeat:1	0.00332903	0.00958629	-0.00262368	-0.000828212	-0.00014851
Repeat:2	0.00319337	0.00942252	-0.00294362	-0.000815004	-0.000195815
Repeat:3	0.00334466	0.00961476	-0.00308608	-0.00083847	-0.000254747
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	9.18445e-005	0.0534154	12554.8	242481	15509.5

Std Dev:	2.30932e-005	0.000161777	44.6689	1661.08	120.01
%RSD:	25.1438	0.302866	0.355792	0.685035	0.773784
Repeat:1	7.59034e-005	0.0536008	12511.1	241561	15371
Repeat:2	8.13028e-005	0.0533424	12552.8	241483	15579.1
Repeat:3	0.000118327	0.0533029	12600.4	244398	15578.5

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000380886	0.00686659	0.00203685	0.0863054	0.00241209
Std Dev:	0.000227234	0.00335287	0.000136761	0.00117146	0.00047851
%RSD:	59.6593	48.8286	6.71434	1.35734	19.838
Repeat:1	-0.000122081	0.00346918	0.00218423	0.0873674	0.0021641
Repeat:2	-0.000472869	0.00695755	0.00191403	0.0864999	0.00210848
Repeat:3	-0.000547708	0.0101731	0.0020123	0.0850488	0.00296369
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.36902e-006	0.130711	2.74417e-005	0.0045312	0.00105985
Std Dev:	1.92041e-005	0.00258249	1.67553e-005	2.23923e-005	0.000201691
%RSD:	810.637	1.97573	61.0578	0.494181	19.0302
Repeat:1	-1.75799e-005	0.132216	4.66164e-005	0.00450943	0.00129269
Repeat:2	2.07298e-005	0.132187	1.56208e-005	0.00455416	0.000947361
Repeat:3	3.9572e-006	0.127729	2.0088e-005	0.00453	0.000939481
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00823644	0.055906	0.300155	0.000763663	0.0501641
Std Dev:	5.96221e-005	0.0440724	0.0274432	0.00118097	0.0125989
%RSD:	0.723882	78.833	9.14299	154.646	25.1154
Repeat:1	0.0082138	0.0171294	0.315671	0.00162666	0.052474
Repeat:2	0.00830407	0.0467521	0.316326	-0.000582233	0.0614482
Repeat:3	0.00819146	0.103836	0.268469	0.00124656	0.03657
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000785269	0.000353497	1.31324	0.146343	0.000464721
Std Dev:	4.43829e-005	4.8053e-005	0.744981	0.00855829	0.000221646
%RSD:	5.65194	13.5936	56.7284	5.8481	47.6944
Repeat:1	0.000821073	0.000358182	0.971183	0.143421	0.000404753
Repeat:2	0.000799121	0.000399037	0.800718	0.15598	0.000279228
Repeat:3	0.000735611	0.000303274	2.16782	0.139629	0.00071018
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0206046	0.000666423	0.00159668	0.00427847	-0.000348336
Std Dev:	0.000402581	0.00207896	0.00140339	0.00109133	0.00129742
%RSD:	1.95384	311.958	87.8942	25.5075	372.463
Repeat:1	0.0207172	0.00305867	0.00207967	0.00553862	0.000239272
Repeat:2	0.0201577	-0.000356711	0.0026948	0.00364586	0.000551319
Repeat:3	0.0209388	-0.000702691	1.55811e-005	0.00365092	-0.0018356
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm

Avg. of Repeats:	0.305885	0.0442277	0.000151755	0.000800798	-0.00219389
Std Dev:	0.00817703	0.00048626	5.69403e-005	3.88148e-005	0.00100436
%RSD:	2.67323	1.09945	37.5213	4.84702	45.7796
Repeat:1	0.30981	0.0444391	0.000214465	0.000799271	-0.00122813
Repeat:2	0.296486	0.0436715	0.00013751	0.000840354	-0.00212071
Repeat:3	0.31136	0.0445725	0.000103289	0.000762769	-0.00323283
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000153883	0.0315619	12554.8	242481	15509.5
Std Dev:	0.000183651	0.000103759	44.6689	1661.08	120.01
%RSD:	119.345	0.328749	0.355792	0.685035	0.773784
Repeat:1	2.69352e-005	0.0316798	12511.1	241561	15371
Repeat:2	7.02478e-005	0.0315213	12552.8	241483	15579.1
Repeat:3	0.000364465	0.0314845	12600.4	244398	15578.5
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12554.8	242481	15509.5
Std Dev:	44.6689	1661.08	120.01
%RSD:	0.355792	0.685035	0.773784
Repeat:1	12511.1	241561	15371
Repeat:2	12552.8	241483	15579.1
Repeat:3	12600.4	244398	15578.5

Sample Name	**Acquisition date**
MXK5A	12/20/2012 2:31:09PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000229296	0.00185855	-0.0003032	0.00131001	0.0289938
Std Dev:	3.82335e-005	0.000101193	4.53445e-005	4.26953e-005	0.000914939
%RSD:	16.6743	5.44471	14.9553	3.25916	3.15563
Repeat:1	-0.000260042	0.00174426	-0.000355523	0.00135548	0.0287191
Repeat:2	-0.000241361	0.00193675	-0.000278718	0.00130376	0.0300147
Repeat:3	-0.000186486	0.00189464	-0.000275359	0.00127078	0.0282477
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-9.64481e-005	0.0145368	-0.000562367	-0.000129922	3.77423e-005
Std Dev:	4.51944e-005	0.000483016	0.000114962	1.45777e-005	2.55532e-005
%RSD:	46.8588	3.32272	20.4425	11.2204	67.7045
Repeat:1	-0.000148402	0.0141351	-0.000475063	-0.000145935	5.16537e-005
Repeat:2	-7.47318e-005	0.0150727	-0.000519417	-0.000117422	8.25166e-006
Repeat:3	-6.62108e-005	0.0144024	-0.00069262	-0.000126409	5.33215e-005
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00064133	6.57539e-005	0.00699888	-0.00163611	-0.000170971
Std Dev:	4.99223e-005	0.000136624	0.000792299	0.00097854	0.000201206
%RSD:	7.78419	207.782	11.3204	59.8091	117.685
Repeat:1	0.000586819	1.42912e-005	0.00768165	-0.000727683	1.80827e-005
Repeat:2	0.000684823	0.000220636	0.00613014	-0.00150841	-0.000148544
Repeat:3	0.000652347	-3.76655e-005	0.00718485	-0.00267223	-0.00038245
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**

Avg. of Repeats:	0.000334438	0.000102948	0.000432388	0.00183404	-0.000653054
Std Dev:	4.89117e-006	4.93283e-005	0.000203283	0.000735656	3.60536e-005
%RSD:	1.4625	47.9158	47.0139	40.1113	5.5208
Repeat:1	0.000336882	0.000106859	0.000432818	0.00267405	-0.000637858
Repeat:2	0.000328807	5.17807e-005	0.000635455	0.00130463	-0.000627078
Repeat:3	0.000337626	0.000150204	0.000228891	0.00152343	-0.000694213
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.00148997	-5.81484e-006	1.23504e-005	0.000477494	0.00015097
Std Dev:	4.55784e-005	4.75828e-006	0.000124167	3.64935e-005	7.75158e-005
%RSD:	3.05901	81.83	1005.37	7.64272	51.3451
Repeat:1	0.00149277	-1.05067e-005	-9.64217e-005	0.000513648	0.000216711
Repeat:2	0.00153409	-5.94495e-006	0.000147631	0.000478163	6.54945e-005
Repeat:3	0.00144306	-9.92842e-007	-1.41581e-005	0.00044067	0.000170706
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.00285737	0.0199502	-0.00358669	-0.000541939	-0.000130818
Std Dev:	0.000105777	0.000290538	0.000699934	0.000397031	7.22227e-005
%RSD:	3.70189	1.45632	19.5148	73.2612	55.2083
Repeat:1	0.00275458	0.0202774	-0.00279757	-0.000176452	-8.11024e-005
Repeat:2	0.00285164	0.0198507	-0.00413249	-0.000964366	-0.000213662
Repeat:3	0.0029659	0.0197224	-0.00383001	-0.000484999	-9.76908e-005
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000101186	0.0143204	12429.2	240925	15615.9
Std Dev:	4.70236e-005	0.000169071	116.79	2414.76	67.8451
%RSD:	46.4726	1.18063	0.939643	1.00229	0.434463
Repeat:1	0.00015368	0.0144987	12322.7	238141	15553.8
Repeat:2	6.29189e-005	0.0143002	12410.9	242182	15605.4
Repeat:3	8.6958e-005	0.0141624	12554.1	242452	15688.3

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000645145	0.00142544	0.000324333	0.0431019	0.00264982
Std Dev:	0.000424702	0.00587688	0.000574247	0.00144428	0.000338971
%RSD:	65.8305	412.284	177.055	3.35086	12.7922
Repeat:1	-0.000986453	-0.00521135	-0.000338319	0.0446365	0.00254806
Repeat:2	-0.000779455	0.00596959	0.000634948	0.0429001	0.00302802
Repeat:3	-0.000169526	0.00351809	0.000676369	0.0417691	0.00237339
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.1481e-005	0.0604737	-6.21214e-005	-7.37948e-005	0.000839782
Std Dev:	1.80198e-005	0.00325787	5.62223e-005	1.49026e-005	0.000288238
%RSD:	83.8872	5.38725	90.504	20.1946	34.323
Repeat:1	7.63403e-007	0.0577647	-1.82001e-005	-9.00339e-005	0.000996687
Repeat:2	3.01668e-005	0.0640886	-4.26799e-005	-6.07451e-005	0.000507131
Repeat:3	3.35129e-005	0.0595676	-0.000125484	-7.06053e-005	0.00101553
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00221034	0.0403496	0.26881	0.000758519	0.000643388
Std Dev:	0.000381615	0.0244348	0.0250498	0.00135197	0.0152076
%RSD:	17.265	60.5577	9.31878	178.238	2363.67
Repeat:1	0.00179396	0.0311652	0.290397	0.00201364	0.0149332
Repeat:2	0.00254343	0.0680458	0.241343	0.000934893	0.00233706

Repeat:3	0.00229363	0.0218378	0.27469	-0.000672978	-0.0153401
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000670371	4.20236e-005	1.4869	0.0575881	0.00026678
Std Dev:	1.10404e-005	0.000115741	0.582986	0.00592715	5.0535e-005
%RSD:	1.64691	275.42	39.2081	10.2923	18.9426
Repeat:1	0.00067565	5.11993e-005	1.48773	0.0643561	0.000287322
Repeat:2	0.000657682	-7.80324e-005	2.06947	0.0533227	0.000303809
Repeat:3	0.000677781	0.000152904	0.903501	0.0550855	0.000209209
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0299079	-0.000166661	0.000492283	0.00366496	0.000216558
Std Dev:	0.000941772	0.000662141	0.000688273	0.000445463	0.00161299
%RSD:	3.1489	397.298	139.812	12.1547	744.831
Repeat:1	0.0299655	-0.000819282	-0.000110248	0.00410408	0.00158539
Repeat:2	0.0308196	-0.000185307	0.00124237	0.00367738	-0.00156169
Repeat:3	0.0289387	0.000504606	0.000344731	0.00321341	0.00062598
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.263521	0.0930133	-1.6448e-005	0.00167121	-0.00087381
Std Dev:	0.0103934	0.00136172	0.00016838	0.00121223	0.00136212
%RSD:	3.94406	1.464	1023.71	72.5362	155.883
Repeat:1	0.253417	0.0945468	0.000173383	0.00278568	6.34328e-005
Repeat:2	0.262965	0.0925473	-0.000147764	0.000380508	-0.00243631
Repeat:3	0.274181	0.0919458	-7.49628e-005	0.00184744	-0.000248555
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000225795	0.00769456	12429.2	240925	15615.9
Std Dev:	0.000369858	0.000102562	116.79	2414.76	67.8451
%RSD:	163.803	1.33292	0.939643	1.00229	0.434463
Repeat:1	0.000638918	0.00780481	12322.7	238141	15553.8
Repeat:2	-7.45324e-005	0.0076769	12410.9	242182	15605.4
Repeat:3	0.000112999	0.00760198	12554.1	242452	15688.3
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12429.2	240925	15615.9
Std Dev:	116.79	2414.76	67.8451
%RSD:	0.939643	1.00229	0.434463
Repeat:1	12322.7	238141	15553.8
Repeat:2	12410.9	242182	15605.4
Repeat:3	12554.1	242452	15688.3

Sample Name	**Acquisition date**
MXLTW	12/20/2012 2:36:07PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	0.00115859	0.040623	0.000264288	3.9372	0.880768
Std Dev:	3.65299e-005	0.000248404	8.90404e-005	0.00622219	0.00636805
%RSD:	3.15296	0.611487	33.6907	0.158036	0.723012
Repeat:1	0.00113939	0.0407845	0.000365946	3.9301	0.887468
Repeat:2	0.00120072	0.0407476	0.000226784	3.94168	0.880041
Repeat:3	0.00113567	0.040337	0.000200135	3.93983	0.874795
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	0.00319707	0.984187	0.00209254	-0.00925377	0.00819804
Std Dev:	2.74934e-005	0.00959385	0.000140534	0.000372209	0.000132197
%RSD:	0.859956	0.9748	6.71593	4.02224	1.61254
Repeat:1	0.00321404	0.995254	0.00199202	-0.00944916	0.00832366
Repeat:2	0.00316534	0.979076	0.00203248	-0.00948759	0.00821035
Repeat:3	0.00321181	0.97823	0.00225313	-0.00882455	0.00806013
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.00366622	0.0070269	0.032252	7.03019e-005	0.016983
Std Dev:	5.19326e-005	0.000136093	0.000533765	0.000889115	0.000349633
%RSD:	1.41652	1.93674	1.65499	1264.71	2.05873
Repeat:1	0.00369395	0.00690323	0.0320459	0.00105906	0.0172182
Repeat:2	0.0036984	0.00700476	0.032858	-0.000663441	0.0171495
Repeat:3	0.00360631	0.0071727	0.0318519	-0.000184712	0.0165812
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.0220711	0.0274699	0.000525802	0.210661	0.0646281
Std Dev:	0.000311878	0.000122007	0.000539862	0.00242993	0.000233512
%RSD:	1.41306	0.444147	102.674	1.15348	0.361316
Repeat:1	0.0223536	0.027593	0.00112011	0.212732	0.0648962
Repeat:2	0.0221233	0.0274677	0.000391578	0.211265	0.0645186
Repeat:3	0.0217365	0.027349	6.5715e-005	0.207986	0.0644695
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.00990852	0.000119918	0.0221791	0.00140048	0.0893485
Std Dev:	0.000113889	2.48861e-005	0.000197164	0.000122312	0.000364225
%RSD:	1.14941	20.7526	0.888965	8.73363	0.407645
Repeat:1	0.00978683	0.000109013	0.021996	0.00147793	0.0897391
Repeat:2	0.0100125	0.000102346	0.0223878	0.00146403	0.0890181
Repeat:3	0.00992621	0.000148395	0.0221533	0.00125947	0.0892884
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	15.972	0.00210473	0.186169	0.0491009	-0.000748584
Std Dev:	0.182416	0.000118337	0.00167256	0.000511825	8.53919e-005
%RSD:	1.1421	5.62243	0.898414	1.04239	11.4071
Repeat:1	16.182	0.00223761	0.187845	0.049582	-0.000788179
Repeat:2	15.8814	0.00201071	0.18616	0.0485631	-0.00080699
Repeat:3	15.8526	0.00206588	0.1845	0.0491575	-0.000650581
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.00580235	0.206162	12647.2	243263	15243.7
Std Dev:	8.071e-005	0.000978119	157.321	5531.61	213.28
%RSD:	1.39099	0.474442	1.24392	2.27392	1.39913
Repeat:1	0.00588165	0.207268	12540.3	239199	15003.1
Repeat:2	0.00580512	0.205807	12573.4	241027	15409.3
Repeat:3	0.0057203	0.205411	12827.8	249563	15318.8

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0148137	2.24696	0.0390413	133.14	0.318283

Std Dev:	0.000405963	0.0143867	0.00148598	0.210415	0.00235985
%RSD:	2.74046	0.640275	3.80617	0.158041	0.741429
Repeat:1	0.0146008	2.2563	0.0407419	132.899	0.320766
Repeat:2	0.0152818	2.25419	0.0383886	133.291	0.318014
Repeat:3	0.0145584	2.23039	0.0379934	133.228	0.31607
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00132038	6.60061	0.00116752	0.000989699	0.0912998
Std Dev:	1.09188e-005	0.0647091	6.81689e-005	0.000289355	0.00147533
%RSD:	0.826943	0.980349	5.83879	29.2367	1.61591
Repeat:1	0.00132699	6.67526	0.00111905	0.000936932	0.0926958
Repeat:2	0.00130777	6.56614	0.00113804	0.000730358	0.0914474
Repeat:3	0.00132636	6.56044	0.00124547	0.00130181	0.0897562
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0255923	1.28828	1.06723	0.003018	1.298
Std Dev:	0.000395614	0.0243017	0.0168759	0.00122748	0.0264303
%RSD:	1.54583	1.88637	1.58128	40.6721	2.03624
Repeat:1	0.0258046	1.26619	1.06071	0.00438295	1.31578
Repeat:2	0.0258364	1.28434	1.08639	0.00200477	1.31059
Repeat:3	0.0251358	1.31431	1.05458	0.00266627	1.26763
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0483561	0.0642543	1.71987	1.7401	0.109508
Std Dev:	0.000684571	0.00028627	1.5473	0.0195778	0.000537955
%RSD:	1.41569	0.445526	89.9659	1.1251	0.491246
Repeat:1	0.0489763	0.0645432	3.42308	1.75679	0.110127
Repeat:2	0.0484705	0.0642491	1.33565	1.74496	0.10925
Repeat:3	0.0476215	0.0639707	0.400886	1.71855	0.109148
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.248327	0.0151601	-0.0816594	0.012995	1.84281
Std Dev:	0.00191987	0.00347077	0.0032526	0.00145436	0.00742618
%RSD:	0.773123	22.8942	3.98313	11.1917	0.402982
Repeat:1	0.246389	0.0136144	-0.0853762	0.0139079	1.85074
Repeat:2	0.250229	0.0127306	-0.079334	0.0137593	1.83601
Repeat:3	0.248362	0.0191351	-0.0802678	0.0113179	1.84168
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1569.35	0.00937389	0.0455593	0.152947	-4.88268e-006
Std Dev:	17.9238	0.000554632	0.00040172	0.00155588	0.00154798
%RSD:	1.14211	5.91678	0.881753	1.01727	31703.5
Repeat:1	1589.98	0.00999668	0.0459618	0.154405	-0.000587123
Repeat:2	1560.45	0.00893321	0.0455576	0.151309	-0.00117732
Repeat:3	1557.62	0.00919179	0.0451584	0.153127	0.00174979
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----

Avg. of Repeats:	0.0452869	0.0612241	12647.2	243263	15243.7
Std Dev:	0.000637324	0.000151158	157.321	5531.61	213.28
%RSD:	1.4073	0.246894	1.24392	2.27392	1.39913
Repeat:1	0.0459123	0.0610653	12540.3	239199	15003.1
Repeat:2	0.04531	0.0613663	12573.4	241027	15409.3
Repeat:3	0.0446383	0.0612407	12827.8	249563	15318.8
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12647.2	243263	15243.7
Std Dev:	157.321	5531.61	213.28
%RSD:	1.24392	2.27392	1.39913
Repeat:1	12540.3	239199	15003.1
Repeat:2	12573.4	241027	15409.3
Repeat:3	12827.8	249563	15318.8

Sample Name	**Acquisition date**
MXLT0	12/20/2012 2:41:03PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.000757099	0.0447438	0.000621541	4.05726	0.61587
Std Dev:	3.64043e-005	0.000482081	3.8115e-005	0.0393687	0.00102187
%RSD:	4.80839	1.07743	6.13234	0.970326	0.165922
Repeat:1	0.000798531	0.0453003	0.000651337	4.10267	0.615644
Repeat:2	0.000742535	0.0444529	0.000634695	4.03276	0.616986
Repeat:3	0.000730232	0.0444782	0.000578592	4.03635	0.614981
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.00328606	1.05426	0.00152195	-0.0105741	0.00493053
Std Dev:	1.99812e-005	0.00711301	0.000140761	3.82446e-005	2.57701e-005
%RSD:	0.60806	0.674694	9.24873	0.361681	0.522665
Repeat:1	0.00330808	1.06089	0.00135942	-0.0105637	0.00493964
Repeat:2	0.00326909	1.05514	0.00160282	-0.0105422	0.0049505
Repeat:3	0.003281	1.04674	0.00160363	-0.0106165	0.00490144
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00353881	0.00726862	0.0407738	0.0014522	0.0166361
Std Dev:	5.72798e-005	0.000447823	0.00118999	0.000359483	0.000486817
%RSD:	1.61862	6.16105	2.91853	24.7544	2.92627
Repeat:1	0.00360117	0.00748571	0.0397344	0.00114184	0.0170014
Repeat:2	0.00352673	0.00756653	0.0420718	0.00136865	0.0168235
Repeat:3	0.00348854	0.00675363	0.0405151	0.0018461	0.0160834
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.026671	0.0289627	0.000502907	0.230336	0.1526
Std Dev:	0.000200173	0.000278347	0.000392257	0.000819064	0.000834048
%RSD:	0.750527	0.961054	77.998	0.355596	0.546557
Repeat:1	0.0268734	0.0292571	0.000374699	0.231171	0.153269
Repeat:2	0.0266665	0.0287039	0.000943226	0.229534	0.151666
Repeat:3	0.0264731	0.028927	0.000190795	0.230302	0.152867
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0110722	0.000144903	0.0242128	0.00130453	0.112828
Std Dev:	0.000168545	2.87244e-005	0.000292638	5.43292e-005	0.000822832

%RSD:	1.52223	19.8232	1.20861	4.16467	0.729282
Repeat:1	0.0112529	0.000119695	0.024012	0.00136211	0.113509
Repeat:2	0.0109192	0.000176176	0.0245486	0.00125418	0.111914
Repeat:3	0.0110446	0.000138838	0.0240779	0.0012973	0.11306
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	17.1284	0.00280084	0.209424	0.0551571	-0.000784093
Std Dev:	0.443816	5.87118e-005	0.000596623	0.000754047	7.34285e-005
%RSD:	2.59112	2.09622	0.284888	1.36709	9.36477
Repeat:1	17.2657	0.00284375	0.209993	0.0555094	-0.000699801
Repeat:2	17.4873	0.00273393	0.209475	0.0556706	-0.000834175
Repeat:3	16.6321	0.00282483	0.208803	0.0542914	-0.000818301
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0061054	0.220433	12549.7	240901	15422.6
Std Dev:	1.29194e-005	0.00154689	31.5789	2146.52	176.462
%RSD:	0.211606	0.70175	0.25163	0.891036	1.14417
Repeat:1	0.00611992	0.222134	12514.5	239142	15348.4
Repeat:2	0.00609517	0.21911	12575.5	240269	15295.4
Repeat:3	0.0061011	0.220055	12559	243293	15624.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0103542	2.4858	0.0457713	137.199	0.220122
Std Dev:	0.000404601	0.0279401	0.001324	1.3313	0.000378473
%RSD:	3.9076	1.12399	2.89265	0.970339	0.171938
Repeat:1	0.0108147	2.51805	0.0464195	138.735	0.220038
Repeat:2	0.0101923	2.46894	0.0466464	136.371	0.220535
Repeat:3	0.0100556	2.4704	0.0442481	136.492	0.219792
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00135525	7.07323	0.000891526	0.000463254	0.0543424
Std Dev:	7.9149e-006	0.0479762	7.22439e-005	0.00029096	0.000246762
%RSD:	0.584019	0.678278	8.1034	62.8078	0.454088
Repeat:1	0.00136397	7.11795	0.000808319	0.000552083	0.0544317
Repeat:2	0.00134852	7.07919	0.000927973	0.000699445	0.0545321
Repeat:3	0.00135324	7.02255	0.000938286	0.000138234	0.0540634
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0246403	1.33169	1.33666	0.00492015	1.27182
Std Dev:	0.000443483	0.0801126	0.0376236	0.000497381	0.0367986
%RSD:	1.79983	6.01586	2.81475	10.1091	2.89337
Repeat:1	0.0251209	1.37053	1.3038	0.00449069	1.29944
Repeat:2	0.024553	1.38497	1.3777	0.00480463	1.28598
Repeat:3	0.024247	1.23956	1.32848	0.00546512	1.23005
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0584536	0.0677569	1.64746	1.89862	0.232776
Std Dev:	0.000438262	0.000653098	1.12388	0.00659917	0.000996893
%RSD:	0.74976	0.963884	68.2187	0.347578	0.428262
Repeat:1	0.0588971	0.0684478	1.27975	1.90535	0.233864
Repeat:2	0.058443	0.0671496	2.90913	1.89216	0.231907

Repeat:3	0.0580208	0.0676733	0.753498	1.89834	0.232558
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.275596	0.0184728	-0.0852371	0.0125528	2.3308
Std Dev:	0.00356813	0.00396432	0.00488311	0.000658032	0.0173523
%RSD:	1.2947	21.4603	5.72885	5.24211	0.74448
Repeat:1	0.279714	0.0149493	-0.0881172	0.0132479	2.34486
Repeat:2	0.273415	0.0227653	-0.0879952	0.0119395	2.31141
Repeat:3	0.273659	0.0177038	-0.0795991	0.0124709	2.33612
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1682.97	0.0126365	0.051148	0.17142	0.000250574
Std Dev:	43.6082	0.000275175	0.000143024	0.00229502	0.00148188
%RSD:	2.59114	2.17763	0.279627	1.33883	591.393
Repeat:1	1696.46	0.0128376	0.0512845	0.172495	0.00194818
Repeat:2	1718.24	0.0123229	0.0511604	0.17298	-0.000412289
Repeat:3	1634.21	0.0127489	0.0509992	0.168784	-0.000784164
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.0476261	0.0646892	12549.7	240901	15422.6
Std Dev:	0.000102751	0.0020225	31.5789	2146.52	176.462
%RSD:	0.215745	3.12649	0.25163	0.891036	1.14417
Repeat:1	0.0477419	0.0651791	12514.5	239142	15348.4
Repeat:2	0.0475458	0.0624668	12575.5	240269	15295.4
Repeat:3	0.0475906	0.0664218	12559	243293	15624.1
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12549.7	240901	15422.6
Std Dev:	31.5789	2146.52	176.462
%RSD:	0.25163	0.891036	1.14417
Repeat:1	12514.5	239142	15348.4
Repeat:2	12575.5	240269	15295.4
Repeat:3	12559	243293	15624.1

Sample Name	**Acquisition date**
MXLT2	12/20/2012 2:46:09PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.000490723	0.0355171	0.000216226	4.09957	0.509686
Std Dev:	3.40529e-005	0.000763788	3.43787e-005	0.0103745	0.00518069
%RSD:	6.93932	2.15048	15.8994	0.253064	1.01645
Repeat:1	0.000462959	0.0363215	0.000176529	4.0889	0.514882
Repeat:2	0.000528719	0.0354282	0.000235988	4.10962	0.509656
Repeat:3	0.000480493	0.0348017	0.000236162	4.10019	0.50452
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.00276027	1.08654	0.0807774	-0.00850462	0.00771544

Std Dev:	3.70644e-005	0.0127536	0.00061337	0.000278069	2.3777e-006
%RSD:	1.34278	1.17378	0.759333	3.26962	0.0308174
Repeat:1	0.00280286	1.09927	0.0814565	-0.00852362	0.00771813
Repeat:2	0.00274263	1.0866	0.0806123	-0.00877271	0.00771459
Repeat:3	0.00273533	1.07376	0.0802636	-0.00821754	0.0077136
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00374724	0.00666504	0.0335274	-0.000271708	0.0151982
Std Dev:	7.46528e-005	0.000283305	0.000409133	0.000987463	0.000417088
%RSD:	1.99221	4.25061	1.22029	363.428	2.74432
Repeat:1	0.00381427	0.00671214	0.0339823	0.000829891	0.0156797
Repeat:2	0.00376065	0.00692185	0.0334105	-0.00107735	0.0149675
Repeat:3	0.00366679	0.00636114	0.0331895	-0.00056767	0.0149475
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0310423	0.0251056	0.000695048	0.224232	0.246774
Std Dev:	9.84034e-005	0.000225409	0.000404143	0.00152843	0.0023083
%RSD:	0.316997	0.897844	58.146	0.681631	0.935387
Repeat:1	0.0311503	0.0252958	0.000350757	0.225299	0.249175
Repeat:2	0.031019	0.0251644	0.000594377	0.222481	0.246576
Repeat:3	0.0309577	0.0248566	0.00114001	0.224915	0.244572
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.00856941	0.000106838	0.0204878	0.00131371	0.0744058
Std Dev:	0.000207021	2.32013e-005	0.000219244	0.000161186	0.000646931
%RSD:	2.41581	21.7163	1.07012	12.2695	0.869463
Repeat:1	0.008807	0.00010639	0.0207343	0.00149969	0.0750569
Repeat:2	0.00847348	8.3864e-005	0.0203148	0.00121444	0.0743975
Repeat:3	0.00842776	0.00013026	0.0204142	0.00122699	0.0737631
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	14.0822	0.00202724	0.163051	0.0431527	-0.000680025
Std Dev:	0.165142	7.87494e-005	0.0019247	0.000481947	5.98233e-005
%RSD:	1.1727	3.88457	1.18043	1.11684	8.79722
Repeat:1	14.2552	0.002118	0.164481	0.0429766	-0.000742877
Repeat:2	14.0652	0.0019866	0.163808	0.0436979	-0.000623779
Repeat:3	13.9262	0.00197711	0.160862	0.0427835	-0.000673419
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.00519505	0.203965	12370.3	236720	14821.9
Std Dev:	2.26197e-005	0.00197519	109.452	953.15	225.451
%RSD:	0.435409	0.9684	0.884797	0.402648	1.52107
Repeat:1	0.00522044	0.206021	12244	236428	14935.8
Repeat:2	0.00517704	0.203792	12437	235948	14967.7
Repeat:3	0.00518768	0.202082	12429.9	237786	14562.2

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00738844	1.95109	0.0347123	138.63	0.180774
Std Dev:	0.000378271	0.0442779	0.000196662	0.350831	0.00191969
%RSD:	5.11977	2.26939	0.56655	0.253069	1.06193
Repeat:1	0.00708008	1.99773	0.0345497	138.269	0.182699
Repeat:2	0.00781053	1.94594	0.0349309	138.97	0.180763
Repeat:3	0.00727471	1.90962	0.0346563	138.651	0.17886
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00114787	7.29099	0.0402167	0.000570723	0.0860424

Std Dev:	1.4686e-005	0.0860213	0.000302923	0.000222416	1.16603e-005
%RSD:	1.27941	1.17983	0.753226	38.971	0.0135518
Repeat:1	0.00116475	7.37683	0.0405531	0.000657136	0.0860557
Repeat:2	0.00114089	7.29135	0.0401317	0.000318068	0.0860344
Repeat:3	0.00113798	7.20479	0.0399654	0.000736965	0.086037
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0261884	1.2233	1.10755	0.00253512	1.16303
Std Dev:	0.000574022	0.050704	0.0129354	0.00136337	0.0315305
%RSD:	2.1919	4.14485	1.16793	53.7795	2.71106
Repeat:1	0.0267011	1.23174	1.12194	0.00405581	1.19943
Repeat:2	0.0262957	1.26926	1.10386	0.00142204	1.14559
Repeat:3	0.0255682	1.16891	1.09687	0.00212751	1.14407
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0680522	0.0587069	2.21167	1.84944	0.359696
Std Dev:	0.000215374	0.000528888	1.15847	0.0123145	0.00339354
%RSD:	0.316484	0.900895	52.3799	0.665853	0.943447
Repeat:1	0.0682886	0.0591532	1.22511	1.85803	0.363227
Repeat:2	0.0680007	0.0588448	1.92259	1.83533	0.359402
Repeat:3	0.0678672	0.0581228	3.4873	1.85495	0.356459
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.2154	0.0135659	-0.0667881	0.012033	1.53335
Std Dev:	0.00471696	0.00323669	0.00138424	0.00194949	0.013318
%RSD:	2.18986	23.859	2.07259	16.2012	0.868553
Repeat:1	0.220792	0.0134818	-0.0676432	0.0142824	1.54675
Repeat:2	0.21337	0.0103721	-0.0675301	0.0108325	1.5332
Repeat:3	0.212038	0.0168439	-0.0651911	0.0109842	1.52011
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1383.66	0.00901068	0.0399918	0.1348	-0.000195181
Std Dev:	16.2264	0.000369089	0.00046213	0.00147164	0.00104988
%RSD:	1.17272	4.09613	1.15556	1.09172	537.901
Repeat:1	1400.66	0.00943609	0.0403351	0.134266	-0.00124538
Repeat:2	1382	0.00882023	0.0401741	0.136464	0.000854381
Repeat:3	1368.34	0.00877572	0.0394664	0.133669	-0.000194541
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.040497	0.0658783	12370.3	236720	14821.9
Std Dev:	0.000179191	0.000537174	109.452	953.15	225.451
%RSD:	0.442479	0.815403	0.884797	0.402648	1.52107
Repeat:1	0.0406985	0.0664341	12244	236428	14935.8
Repeat:2	0.0403553	0.065839	12437	235948	14967.7
Repeat:3	0.0404373	0.0653619	12429.9	237786	14562.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**

Avg. of Repeats:	12370.3	236720	14821.9
Std Dev:	109.452	953.15	225.451
%RSD:	0.884797	0.402648	1.52107
Repeat:1	12244	236428	14935.8
Repeat:2	12437	235948	14967.7
Repeat:3	12429.9	237786	14562.2

Sample Name	**Acquisition date**
MXLT2P	12/20/2012 2:51:05PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-7.21071e-005	0.00899463	-0.000171343	0.896736	0.122657
Std Dev:	1.39389e-005	0.000686995	4.21132e-005	0.00553937	0.00139575
%RSD:	19.3308	7.63783	24.5782	0.617726	1.13793
Repeat:1	-6.21116e-005	0.00978718	-0.000218755	0.901568	0.122496
Repeat:2	-8.803e-005	0.00856905	-0.000138276	0.897949	0.124126
Repeat:3	-6.61796e-005	0.00862765	-0.000156999	0.89069	0.121349
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.000492335	0.222129	0.0161983	-0.00177957	0.00153524
Std Dev:	1.88025e-005	0.00250681	8.49978e-005	0.000158601	8.15431e-006
%RSD:	3.81905	1.12854	0.524732	8.91232	0.531142
Repeat:1	0.000470639	0.224884	0.0162962	-0.00196018	0.00153858
Repeat:2	0.000502481	0.221523	0.0161554	-0.00166303	0.00152595
Repeat:3	0.000503886	0.219982	0.0161433	-0.00171549	0.0015412
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.000961343	0.0014255	0.00709204	-0.00253802	0.0028222
Std Dev:	3.18001e-005	0.00032078	0.000499074	0.000918624	0.000151578
%RSD:	3.30788	22.5029	7.0371	36.1945	5.37091
Repeat:1	0.000945166	0.00105552	0.00729419	-0.00222705	0.00293866
Repeat:2	0.000940885	0.0016258	0.00745833	-0.00181525	0.00287711
Repeat:3	0.00099798	0.0015952	0.00652361	-0.00357177	0.00265081
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00623904	0.00512366	0.000633886	0.0381511	0.0501501
Std Dev:	2.96641e-005	9.2578e-005	0.000230986	0.00125846	0.000566307
%RSD:	0.475459	1.80687	36.4396	3.29863	1.12922
Repeat:1	0.00624484	0.00516269	0.000887842	0.0369312	0.0503614
Repeat:2	0.00626538	0.00501796	0.000577507	0.0380772	0.0495085
Repeat:3	0.0062069	0.00519033	0.000436309	0.0394449	0.0505804
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.00180571	1.95261e-005	0.00399956	0.000478035	0.0154762
Std Dev:	7.01067e-005	8.32211e-006	0.000110125	2.26986e-005	0.000194928
%RSD:	3.88249	42.6204	2.75342	4.7483	1.25954
Repeat:1	0.0017929	2.52249e-005	0.00412003	0.00048838	0.0155808
Repeat:2	0.0017429	2.33774e-005	0.00397458	0.000493719	0.0152513
Repeat:3	0.00188134	9.97595e-006	0.00390407	0.000452007	0.0155965
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	2.85121	0.000529928	0.0286662	0.00792824	-0.000259272
Std Dev:	0.0370418	6.13441e-005	0.000557854	0.000298181	8.84735e-005
%RSD:	1.29916	11.5759	1.94603	3.761	34.1238
Repeat:1	2.89133	0.000459116	0.028719	0.00818166	-0.000312699

Repeat:2	2.84398	0.000566883	0.0291958	0.00759967	-0.00030797
Repeat:3	2.81831	0.000563783	0.0280839	0.0080034	-0.000157149
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.00107529	0.0462908	12245.7	233295	14385.5
Std Dev:	3.49678e-005	0.000797258	130.49	2701.54	70.8159
%RSD:	3.25194	1.72228	1.0656	1.15799	0.492273
Repeat:1	0.0011052	0.0466847	12172.8	233369	14320.1
Repeat:2	0.00103685	0.0453733	12396.4	230557	14375.6
Repeat:3	0.00108382	0.0468145	12168	235959	14460.7

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0011078	0.414815	0.00761933	30.3229	0.0373574
Std Dev:	0.000155108	0.0398326	0.000476186	0.187305	0.00051719
%RSD:	14.0015	9.60249	6.24972	0.617702	1.38444
Repeat:1	0.00121906	0.460769	0.00709517	30.4863	0.0372978
Repeat:2	0.000930621	0.390148	0.00802527	30.3639	0.0379017
Repeat:3	0.00117372	0.393529	0.00773755	30.1184	0.0368725
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000253757	1.46065	0.00823781	9.82918e-005	0.0174481
Std Dev:	7.5072e-006	0.016908	4.59637e-005	0.000123945	9.21097e-005
%RSD:	2.95842	1.15757	0.55796	126.099	0.527905
Repeat:1	0.000245093	1.47923	0.00829079	-4.00308e-005	0.017482
Repeat:2	0.000257848	1.45656	0.00821406	0.000199272	0.0173439
Repeat:3	0.000258331	1.44617	0.00820857	0.000135634	0.0175185
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00470168	0.284056	0.271755	-0.00050858	0.227024
Std Dev:	0.000245011	0.0573772	0.015779	0.00126903	0.0114559
%RSD:	5.21114	20.1992	5.80633	249.525	5.04612
Repeat:1	0.00457452	0.217878	0.278147	-7.92205e-005	0.235828
Repeat:2	0.0045464	0.319872	0.283336	0.000490075	0.231172
Repeat:3	0.00498413	0.314419	0.253783	-0.00193659	0.214072
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0136265	0.0118224	2.05909	0.350193	0.074017
Std Dev:	6.50716e-005	0.00021722	0.661901	0.0101394	0.000783905
%RSD:	0.477537	1.83737	32.1453	2.89537	1.05909
Repeat:1	0.0136399	0.0119139	2.78671	0.340365	0.0743558
Repeat:2	0.0136839	0.0115743	1.89786	0.349598	0.0731207
Repeat:3	0.0135558	0.0119788	1.4927	0.360617	0.0745746
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0443436	0.00296738	-0.0139832	0.00313514	0.316693
Std Dev:	0.00140385	0.00115537	0.00013872	0.00027516	0.00405385
%RSD:	3.16586	38.9357	0.992046	8.77664	1.28006
Repeat:1	0.0441894	0.00375968	-0.0138267	0.00325925	0.318827
Repeat:2	0.0430232	0.00350079	-0.0140319	0.00332638	0.312018

Repeat:3	0.0458182	0.00164167	-0.014091	0.00281979	0.319234
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	280.135	0.00199297	0.00772722	0.0274764	-0.00106318
Std Dev:	3.63962	0.000287512	0.000134114	0.000907708	0.00164536
%RSD:	1.29924	14.4263	1.7356	3.30359	154.759
Repeat:1	284.077	0.00166109	0.00773973	0.0282457	-0.00203812
Repeat:2	279.425	0.00216618	0.00785464	0.0264753	-0.00198792
Repeat:3	276.903	0.00215165	0.00758729	0.0277083	0.000836505
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.00792808	0.0155665	12245.7	233295	14385.5
Std Dev:	0.000273781	0.000492933	130.49	2701.54	70.8159
%RSD:	3.45331	3.16662	1.0656	1.15799	0.492273
Repeat:1	0.00816113	0.015651	12172.8	233369	14320.1
Repeat:2	0.00762657	0.0150368	12396.4	230557	14375.6
Repeat:3	0.00799655	0.0160118	12168	235959	14460.7
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12245.7	233295	14385.5
Std Dev:	130.49	2701.54	70.8159
%RSD:	1.0656	1.15799	0.492273
Repeat:1	12172.8	233369	14320.1
Repeat:2	12396.4	230557	14375.6
Repeat:3	12168	235959	14460.7

Sample Name	**Acquisition date**
CCV4	12/20/2012 2:55:58PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.090995	0.412224	0.0387468	0.0608944	5.77834
Std Dev:	0.000983465	0.00457961	0.000567627	0.000721483	0.0608929
%RSD:	1.08079	1.11095	1.46496	1.18481	1.05381
Repeat:1	0.0920602	0.417077	0.0394004	0.0616245	5.84058
Repeat:2	0.0908033	0.411616	0.0384631	0.0608769	5.77556
Repeat:3	0.0901215	0.407979	0.038377	0.0601818	5.71889
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	5.23433	7.24172	1.02103	2.21779	0.17898
Std Dev:	0.0344435	0.0776527	0.0139708	0.0298039	0.00208218
%RSD:	0.658031	1.0723	1.3683	1.34386	1.16336
Repeat:1	5.27361	7.32322	1.03639	2.25001	0.181137
Repeat:2	5.20929	7.23336	1.01761	2.21214	0.178822
Repeat:3	5.22008	7.16859	1.00908	2.19121	0.176982
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.247262	0.124745	1.7869	1.57326	0.612853
Std Dev:	0.00364345	0.00144113	0.0110002	0.015188	0.0082177
%RSD:	1.47352	1.15526	0.615606	0.965388	1.34089

Repeat:1	0.251047	0.126408	1.7989	1.58916	0.621207
Repeat:2	0.246961	0.123976	1.7845	1.5717	0.612572
Repeat:3	0.243779	0.123852	1.77729	1.55891	0.604779
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.917828	0.83484	0.0170074	6.7368	1.48523
Std Dev:	0.0132938	0.0118637	0.000197681	0.0609956	0.0209374
%RSD:	1.4484	1.42108	1.16232	0.905409	1.40971
Repeat:1	0.932066	0.84778	0.0172357	6.80179	1.50846
Repeat:2	0.915679	0.832262	0.0168966	6.72782	1.47941
Repeat:3	0.90574	0.824477	0.0168901	6.6808	1.46782
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0976267	0.00381529	0.0899278	0.0434893	0.0233626
Std Dev:	0.00116621	5.3785e-005	0.00110185	0.000542124	0.000253493
%RSD:	1.19456	1.40972	1.22527	1.24657	1.08504
Repeat:1	0.098945	0.00387739	0.0911387	0.0440935	0.0236553
Repeat:2	0.0972057	0.00378383	0.0896602	0.0433291	0.0232222
Repeat:3	0.0967295	0.00378464	0.0889843	0.0430453	0.0232104
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0875996	0.430704	8.59265	0.623611	0.0521046
Std Dev:	0.0150178	0.00627751	0.108534	0.00688504	0.000765514
%RSD:	17.1437	1.4575	1.2631	1.10406	1.46919
Repeat:1	0.102998	0.437666	8.70026	0.629834	0.0528142
Repeat:2	0.0868078	0.428972	8.59449	0.624784	0.0522062
Repeat:3	0.0729934	0.425475	8.48321	0.616214	0.0512933
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.248597	3.21703	12185.6	235698	14678
Std Dev:	0.00321365	0.0424652	172.202	2798.47	148.83
%RSD:	1.29271	1.32001	1.41316	1.18731	1.01396
Repeat:1	0.251861	3.26389	12002.3	232638	14511.4
Repeat:2	0.248494	3.20611	12210.4	236329	14724.7
Repeat:3	0.245436	3.1811	12344	238127	14797.8

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.01463	23.7118	0.497473	2.06521	2.13309
Std Dev:	0.0109487	0.264397	0.00723686	0.0244754	0.0225641
%RSD:	1.07908	1.11504	1.45472	1.18513	1.05781
Repeat:1	1.02649	23.992	0.505804	2.09	2.15615
Repeat:2	1.0125	23.6767	0.493877	2.06457	2.13206
Repeat:3	1.00491	23.4667	0.492739	2.04106	2.11106
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.07851	48.8067	0.505193	1.97979	2.01905
Std Dev:	0.0136754	0.523756	0.00691377	0.0266252	0.0234839
%RSD:	0.657941	1.07312	1.36854	1.34485	1.16312
Repeat:1	2.09411	49.3564	0.512793	2.00858	2.04337
Repeat:2	2.06857	48.7503	0.503507	1.97473	2.01726
Repeat:3	2.07286	48.3135	0.499277	1.95605	1.99651
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.89225	22.3234	56.5432	2.17591	46.3597

Std Dev:	0.0279083	0.25741	0.34779	0.020976	0.621467
%RSD:	1.47488	1.15309	0.615088	0.964012	1.34053
Repeat:1	1.92124	22.6204	56.9226	2.19788	46.9916
Repeat:2	1.88994	22.1861	56.4674	2.17375	46.3384
Repeat:3	1.86557	22.1638	56.2395	2.15609	45.7492
QC Status Pass/Fail:	Pass	Fail	Fail	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.0139	1.95862	48.6415	54.321	2.05787
Std Dev:	0.0291719	0.0278364	0.564516	0.49144	0.0290075
%RSD:	1.44852	1.42122	1.16056	0.904696	1.40959
Repeat:1	2.04515	1.98899	49.2933	54.8446	2.09006
Repeat:2	2.00919	1.95257	48.3217	54.2486	2.04981
Repeat:3	1.98738	1.93431	48.3096	53.8698	2.03375
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.0299	0.534147	0.505867	0.495263	0.484218
Std Dev:	0.0243211	0.00751103	0.00602519	0.00625549	0.00527091
%RSD:	1.19814	1.40617	1.19106	1.26306	1.08854
Repeat:1	2.05739	0.54282	0.512496	0.502255	0.490303
Repeat:2	2.02116	0.52977	0.504382	0.493337	0.481285
Repeat:3	2.01117	0.529851	0.500723	0.490197	0.481065
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	8.55825	2.01817	2.06712	1.90342	0.971537
Std Dev:	1.47518	0.0294219	0.0260999	0.0209793	0.0142829
%RSD:	17.237	1.45785	1.26263	1.10219	1.47013
Repeat:1	10.0708	2.0508	2.09299	1.92238	0.984748
Repeat:2	8.48049	2.01005	2.06756	1.907	0.973481
Repeat:3	7.12349	1.99366	2.0408	1.88089	0.956381
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	1.96407	1.94515	12185.6	235698	14678
Std Dev:	0.0253971	0.0256285	172.202	2798.47	148.83
%RSD:	1.29309	1.31756	1.41316	1.18731	1.01396
Repeat:1	1.98987	1.97344	12002.3	232638	14511.4
Repeat:2	1.96324	1.93855	12210.4	236329	14724.7
Repeat:3	1.9391	1.92347	12344	238127	14797.8
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12185.6	235698	14678
Std Dev:	172.202	2798.47	148.83
%RSD:	1.41316	1.18731	1.01396
Repeat:1	12002.3	232638	14511.4
Repeat:2	12210.4	236329	14724.7
Repeat:3	12344	238127	14797.8

Sample Name	**Acquisition date**
CCB4	12/20/2012 3:00:51PM

	Analyst Name	Method Name
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-0.00023294	0.00179566	-0.000312344	0.000994737	0.0280638
Std Dev:	4.75806e-005	0.000149549	6.39427e-005	8.33007e-005	0.000894558
%RSD:	20.4261	8.32836	20.4718	8.37414	3.18759
Repeat:1	-0.000257502	0.00188967	-0.0003775	0.00107055	0.0289924
Repeat:2	-0.000178098	0.00162321	-0.000249688	0.0010081	0.0279912
Repeat:3	-0.000263221	0.00187411	-0.000309844	0.000905561	0.0272077
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.000119507	0.00502428	-0.000440266	3.45917e-005	-1.61974e-005
Std Dev:	2.304e-005	0.000220651	8.43269e-005	0.000131688	1.47215e-005
%RSD:	19.2791	4.39168	19.1536	380.694	90.888
Repeat:1	-9.35316e-005	0.00476952	-0.000398003	2.89591e-005	-3.01214e-005
Repeat:2	-0.000127516	0.00515427	-0.000385428	-9.419e-005	-7.9067e-007
Repeat:3	-0.000137474	0.00514907	-0.000537368	0.000169006	-1.76801e-005
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.000283358	-1.94534e-005	0.00731597	-0.00276072	-8.28492e-005
Std Dev:	2.37455e-005	0.000193582	0.00108871	0.00105207	0.000165141
%RSD:	8.38003	995.105	14.8812	38.1086	199.327
Repeat:1	0.000265716	0.000198574	0.00849402	-0.00371764	-0.000190144
Repeat:2	0.000310357	-8.57815e-005	0.00634691	-0.00293041	-0.000165721
Repeat:3	0.000274003	-0.000171152	0.00710699	-0.00163412	0.000107317
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	2.66535e-005	0.000233753	0.000168035	-0.00141268	-0.000866486
Std Dev:	1.62069e-005	4.54403e-005	0.000155014	0.000287713	0.000130332
%RSD:	60.8057	19.4395	92.2511	20.3665	15.0414
Repeat:1	2.81778e-005	0.000187718	0.000124889	-0.00134459	-0.00087595
Repeat:2	9.73837e-006	0.000234967	0.000340051	-0.00116512	-0.000991828
Repeat:3	4.20444e-005	0.000278574	3.91646e-005	-0.00172833	-0.000731681
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.000113763	-5.37849e-006	0.000290397	0.000228415	7.67718e-005
Std Dev:	6.12352e-005	1.03951e-005	6.38667e-005	9.8267e-005	8.82239e-005
%RSD:	53.8269	193.272	21.9929	43.0212	114.917
Repeat:1	0.000184424	6.05281e-006	0.000293852	0.000266576	3.32483e-005
Repeat:2	8.06892e-005	-7.92354e-006	0.000352466	0.000301878	0.0001783
Repeat:3	7.6177e-005	-1.42647e-005	0.000224873	0.000116792	1.87669e-005
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.0185082	0.000100482	-0.00408196	-0.000666548	-0.000123852
Std Dev:	0.00226234	7.17082e-005	0.00047942	0.000341215	6.24069e-005
%RSD:	12.2234	71.3645	11.7448	51.1914	50.3883
Repeat:1	0.0209283	1.76999e-005	-0.00371202	-0.000611534	-0.000146565
Repeat:2	0.01815	0.00014344	-0.00391028	-0.00103193	-5.32694e-005
Repeat:3	0.0164464	0.000140305	-0.00462358	-0.000356182	-0.000171721
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	3.90088e-005	0.00168737	12437.6	239780	14658.8
Std Dev:	4.77276e-005	5.11896e-005	106.112	3840.67	116.284
%RSD:	122.351	3.0337	0.853157	1.60175	0.793275
Repeat:1	7.20418e-005	0.00172678	12316	237723	14529.3
Repeat:2	6.06962e-005	0.00162951	12511.7	237406	14754.4
Repeat:3	-1.57116e-005	0.00170582	12485.1	244211	14692.6

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000686038	-0.00221783	0.000237364	0.0324361	0.00230521
Std Dev:	0.000528852	0.0086754	0.000805662	0.00282749	0.00033139
%RSD:	77.0879	391.166	339.421	8.7171	14.3757
Repeat:1	-0.000958756	0.00323057	-0.000581127	0.0350129	0.00264921
Repeat:2	-7.64947e-005	-0.0122221	0.00102955	0.0328841	0.00227836
Repeat:3	-0.00102286	0.002338	0.000263666	0.0294114	0.00198807
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.24227e-005	-0.00368661	-4.37185e-007	8.35432e-005	0.000230148
Std Dev:	9.09261e-006	0.00148825	4.04044e-005	0.000115409	0.000166203
%RSD:	73.1934	40.3692	9241.96	138.143	72.2158
Repeat:1	2.26862e-005	-0.00540498	1.79116e-005	7.91609e-005	7.27565e-005
Repeat:2	9.20693e-006	-0.00280989	2.75369e-005	-2.96121e-005	0.000403945
Repeat:3	5.37502e-006	-0.00284496	-4.67601e-005	0.000201081	0.000213741
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000529404	0.0250677	0.278835	-0.000794295	0.00730775
Std Dev:	0.000179684	0.0346538	0.0344212	0.00145353	0.0124834
%RSD:	33.9408	138.241	12.3446	182.996	170.824
Repeat:1	-0.000661687	0.0640925	0.316081	-0.00211635	-0.000803451
Repeat:2	-0.000324835	0.0132159	0.248197	-0.00102874	0.00104386
Repeat:3	-0.00060169	-0.00210537	0.272228	0.000762211	0.0216828
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-5.19617e-006	0.000348937	0.729161	0.0314294	-1.1237e-005
Std Dev:	3.55058e-005	0.000106619	0.444713	0.0023181	0.000179425
%RSD:	683.307	30.5553	60.9897	7.37557	1596.74
Repeat:1	-2.17397e-006	0.000240923	0.60547	0.031978	-2.04297e-005
Repeat:2	-4.21165e-005	0.000351785	1.22263	0.0334239	-0.000185889
Repeat:3	2.87019e-005	0.000454103	0.359387	0.0288862	0.000172608
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00149102	-0.000108021	0.00183315	0.000419191	-0.00134542
Std Dev:	0.00127171	0.00144439	0.000342527	0.00118759	0.00183742
%RSD:	85.2912	1337.14	18.6851	283.306	136.569
Repeat:1	0.00295839	0.00148055	0.00182011	0.000883089	-0.0022511
Repeat:2	0.000806038	-0.000462314	0.00218202	0.00130482	0.000769024
Repeat:3	0.000708636	-0.0013423	0.00149734	-0.000930335	-0.00255416
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.80133	-1.97911e-005	-0.000134932	0.00129563	-0.000729779
Std Dev:	0.222297	0.000336088	0.000115323	0.00104254	0.00117651
%RSD:	12.3407	1698.18	85.4675	80.4659	161.214
Repeat:1	2.03913	-0.000407779	-4.59335e-005	0.001464	-0.00115681
Repeat:2	1.76613	0.00018155	-9.36473e-005	0.00017915	0.000600606

Repeat:3	1.59874	0.000166857	-0.000265215	0.00224373	-0.00163314
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	-0.000265476	-5.7653e-005	12437.6	239780	14658.8
Std Dev:	0.000378069	3.00089e-005	106.112	3840.67	116.284
%RSD:	142.412	52.0509	0.853157	1.60175	0.793275
Repeat:1	-3.7991e-006	-4.58067e-005	12316	237723	14529.3
Repeat:2	-9.36925e-005	-9.17769e-005	12511.7	237406	14754.4
Repeat:3	-0.000698937	-3.53754e-005	12485.1	244211	14692.6
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12437.6	239780	14658.8
Std Dev:	106.112	3840.67	116.284
%RSD:	0.853157	1.60175	0.793275
Repeat:1	12316	237723	14529.3
Repeat:2	12511.7	237406	14754.4
Repeat:3	12485.1	244211	14692.6

Sample Name	**Acquisition date**
MXLT2A	12/20/2012 3:05:50PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00493093	0.0667062	0.00791959	3.97212	0.793832
Std Dev:	0.000134743	0.00118983	2.06787e-005	0.164666	0.0102687
%RSD:	2.73261	1.78369	0.261108	4.14555	1.29356
Repeat:1	0.00503142	0.0679969	0.00791771	4.12462	0.803923
Repeat:2	0.00498356	0.0664686	0.00789992	3.99421	0.794178
Repeat:3	0.00477782	0.065653	0.00794114	3.79752	0.783394
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.13021	8.16986	0.178713	0.102579	0.0253089
Std Dev:	0.00540814	0.124046	0.00159758	0.00115293	0.00111144
%RSD:	4.1534	1.51834	0.893933	1.12394	4.39151
Repeat:1	0.134412	8.27319	0.180324	0.103582	0.0261038
Repeat:2	0.132109	8.20411	0.17713	0.101319	0.0257839
Repeat:3	0.124108	8.03229	0.178686	0.102835	0.0240388
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.034853	0.011285	1.77592	0.0798219	0.131955
Std Dev:	0.00119614	0.000377991	0.0252673	0.00273225	0.00232414
%RSD:	3.43197	3.34949	1.42277	3.42293	1.76131
Repeat:1	0.0357554	0.0115559	1.7995	0.0829009	0.133319
Repeat:2	0.0353073	0.011446	1.779	0.0788785	0.133275
Repeat:3	0.0334963	0.0108532	1.74925	0.0776864	0.129272
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0755758	0.233797	0.0176991	6.85383	0.611201
Std Dev:	0.00305784	0.00175005	0.000315457	0.0852041	0.0049218
%RSD:	4.04606	0.748532	1.78233	1.24316	0.805267
Repeat:1	0.0776478	0.234759	0.0175481	6.93598	0.615507
Repeat:2	0.0770159	0.231777	0.0174876	6.85963	0.605836

Repeat:3	0.0720638	0.234856	0.0180617	6.76587	0.612261
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.254387	0.000830319	0.0370926	0.0418154	0.0792407
Std Dev:	0.00184568	5.30256e-005	0.000246206	0.000253518	0.000607911
%RSD:	0.725538	6.38617	0.663759	0.606279	0.76717
Repeat:1	0.255362	0.000886245	0.0373757	0.0418577	0.079182
Repeat:2	0.252259	0.000823941	0.0369283	0.0415434	0.0786642
Repeat:3	0.255541	0.000780771	0.0369739	0.0420452	0.0798758
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	13.3073	0.106095	2.32277	0.0726699	0.0188636
Std Dev:	0.232208	0.000686007	0.0339537	0.000883287	0.000208663
%RSD:	1.74497	0.6466	1.46178	1.21548	1.10617
Repeat:1	13.5166	0.106772	2.34788	0.0735153	0.0190164
Repeat:2	13.3478	0.1054	2.33628	0.0727413	0.0186259
Repeat:3	13.0575	0.106111	2.28414	0.0717531	0.0189486
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0296909	0.998316	12237.7	237137	14433
Std Dev:	0.00116642	0.00746535	205.011	12278.5	84.7693
%RSD:	3.92853	0.747794	1.67524	5.17781	0.58733
Repeat:1	0.0304723	1.00335	12001.3	227441	14460.5
Repeat:2	0.0302502	0.989739	12366.3	233026	14337.9
Repeat:3	0.0283502	1.00186	12345.5	250943	14500.6

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0568856	3.74442	0.130642	134.321	0.286066
Std Dev:	0.00150473	0.068822	0.000352087	5.56836	0.00380503
%RSD:	2.64518	1.83799	0.269504	4.14556	1.33012
Repeat:1	0.0580072	3.81908	0.131045	139.478	0.289805
Repeat:2	0.0574739	3.73065	0.130488	135.068	0.286194
Repeat:3	0.0551756	3.68352	0.130394	128.417	0.282198
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0517261	55.0669	0.0886817	0.0997542	0.28463
Std Dev:	0.00214603	0.836672	0.000791734	0.00106521	0.0125098
%RSD:	4.14883	1.51937	0.892782	1.06783	4.39509
Repeat:1	0.0533938	55.7639	0.0894767	0.100772	0.293575
Repeat:2	0.0524796	55.2979	0.0878932	0.0986468	0.289981
Repeat:3	0.049305	54.139	0.0886752	0.0998443	0.270335
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.264286	2.0541	56.1961	0.112476	9.99401
Std Dev:	0.00915725	0.068124	0.798866	0.00376417	0.175646
%RSD:	3.4649	3.31649	1.42157	3.34663	1.75751
Repeat:1	0.271195	2.10283	56.9418	0.11672	10.0971
Repeat:2	0.267763	2.08321	56.2936	0.111169	10.0937
Repeat:3	0.253899	1.97626	55.353	0.10954	9.7912
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.165688	0.54837	51.0314	55.2639	0.863164

Std Dev:	0.00670955	0.00410622	0.903684	0.686487	0.0068708
%RSD:	4.04951	0.748805	1.77084	1.2422	0.796006
Repeat:1	0.170234	0.550626	50.599	55.9258	0.869375
Repeat:2	0.168848	0.54363	50.4251	55.3106	0.855783
Repeat:3	0.157982	0.550854	52.07	54.5552	0.864333
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.29998	0.114755	0.0367001	0.499593	1.63484
Std Dev:	0.0380732	0.00734608	0.00221429	0.00321986	0.0128214
%RSD:	0.718366	6.40154	6.03348	0.644497	0.784261
Repeat:1	5.32072	0.122508	0.0355914	0.499958	1.63341
Repeat:2	5.25604	0.113858	0.0352591	0.496206	1.62279
Repeat:3	5.32317	0.107898	0.0392497	0.502615	1.64831
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1307.52	0.496762	0.558982	0.22377	0.366915
Std Dev:	22.8161	0.00321524	0.00815844	0.00268157	0.00394239
%RSD:	1.74499	0.647238	1.45952	1.19836	1.07447
Repeat:1	1328.09	0.499938	0.565016	0.226337	0.369942
Repeat:2	1311.5	0.493509	0.56223	0.223987	0.362457
Repeat:3	1282.98	0.49684	0.5497	0.220987	0.368346
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.234362	0.549748	12237.7	237137	14433
Std Dev:	0.00921619	0.00466703	205.011	12278.5	84.7693
%RSD:	3.93246	0.84894	1.67524	5.17781	0.58733
Repeat:1	0.240539	0.551942	12001.3	227441	14460.5
Repeat:2	0.238778	0.544388	12366.3	233026	14337.9
Repeat:3	0.223768	0.552914	12345.5	250943	14500.6
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12237.7	237137	14433
Std Dev:	205.011	12278.5	84.7693
%RSD:	1.67524	5.17781	0.58733
Repeat:1	12001.3	227441	14460.5
Repeat:2	12366.3	233026	14337.9
Repeat:3	12345.5	250943	14500.6

Sample Name	**Acquisition date**
MXLT2A	12/20/2012 3:10:41PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0050101	0.0658236	0.00773053	4.01153	0.798638
Std Dev:	0.000157191	0.00094609	0.000205926	0.0671473	0.0112944
%RSD:	3.13748	1.43731	2.6638	1.67386	1.4142
Repeat:1	0.00517494	0.0665879	0.00794926	4.08464	0.81106

Repeat:2	0.00499348	0.0661175	0.00770193	3.99734	0.795868
Repeat:3	0.00486187	0.0647655	0.0075404	3.95262	0.788986
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.132246	8.12584	0.175718	0.100763	0.0256448
Std Dev:	0.00255547	0.142264	0.00403027	0.0020981	0.000459355
%RSD:	1.93236	1.75076	2.2936	2.08221	1.79122
Repeat:1	0.134966	8.27163	0.179305	0.10233	0.0261268
Repeat:2	0.131875	8.1185	0.176492	0.10158	0.0255957
Repeat:3	0.129896	7.98738	0.171357	0.0983795	0.025212
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.035183	0.0110127	1.80778	0.0801785	0.130178
Std Dev:	0.000785537	0.000129804	0.0150571	0.000447361	0.00331582
%RSD:	2.23272	1.17868	0.832909	0.557956	2.54715
Repeat:1	0.0360489	0.0109385	1.82295	0.0805382	0.133395
Repeat:2	0.0349839	0.0111625	1.80755	0.0803199	0.130367
Repeat:3	0.0345161	0.010937	1.79284	0.0796776	0.126771
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0764018	0.230005	0.0178052	6.97316	0.599369
Std Dev:	0.00185337	0.0048336	0.000859369	0.0700959	0.0126997
%RSD:	2.42582	2.10152	4.82651	1.00523	2.11884
Repeat:1	0.0784187	0.234018	0.0187804	7.04239	0.609685
Repeat:2	0.0760131	0.231358	0.0171589	6.97485	0.603237
Repeat:3	0.0747736	0.224639	0.0174762	6.90223	0.585185
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.24968	0.000840479	0.0362525	0.0408696	0.0778399
Std Dev:	0.00496627	2.7837e-005	0.000821313	0.000904581	0.00154917
%RSD:	1.98905	3.31204	2.26553	2.21333	1.9902
Repeat:1	0.253698	0.000869963	0.0368151	0.0416388	0.0792813
Repeat:2	0.251215	0.000836825	0.0366324	0.0410971	0.0780366
Repeat:3	0.244128	0.00081465	0.03531	0.039873	0.0762017
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	13.0265	0.104386	2.31983	0.0724349	0.0186432
Std Dev:	0.239666	0.00212783	0.0431122	0.00118507	0.000317356
%RSD:	1.83983	2.03843	1.85842	1.63605	1.70227
Repeat:1	13.2659	0.106214	2.36397	0.0737005	0.0188677
Repeat:2	13.0271	0.104892	2.31771	0.0722527	0.0187817
Repeat:3	12.7865	0.10205	2.27782	0.0713515	0.0182801
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0300567	0.978368	12298.1	233806	14156.3
Std Dev:	0.00063049	0.0195844	286.818	3343.46	135.221
%RSD:	2.09767	2.00174	2.33221	1.43001	0.955205
Repeat:1	0.030707	0.993693	12088	230063	14118.2
Repeat:2	0.0300153	0.985107	12181.4	234857	14044.1
Repeat:3	0.029448	0.956304	12624.9	236497	14306.4

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0577676	3.69338	0.12771	135.654	0.287847
Std Dev:	0.00175075	0.0545039	0.00307392	2.27066	0.00418531
%RSD:	3.03068	1.47572	2.40696	1.67386	1.454
Repeat:1	0.0596035	3.73737	0.130949	138.126	0.29245
Repeat:2	0.0575827	3.71036	0.127346	135.174	0.28682
Repeat:3	0.0561166	3.63241	0.124834	133.662	0.28427

QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.052534	54.7699	0.0871985	0.097958	0.288444
Std Dev:	0.00101391	0.959549	0.00199825	0.00201546	0.00515912
%RSD:	1.93001	1.75196	2.29161	2.05748	1.7886
Repeat:1	0.0536135	55.7533	0.0889778	0.0995034	0.293857
Repeat:2	0.0523869	54.7204	0.087581	0.0986922	0.287891
Repeat:3	0.0516017	53.8361	0.0850366	0.0956783	0.283584
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.266806	2.00563	57.2034	0.112973	9.85955
Std Dev:	0.00601264	0.0231706	0.476056	0.000604439	0.250761
%RSD:	2.25356	1.15528	0.832217	0.535028	2.54333
Repeat:1	0.273434	1.99254	57.6831	0.113456	10.1028
Repeat:2	0.265285	2.03239	57.196	0.113169	9.87388
Repeat:3	0.261701	1.99197	56.731	0.112295	9.60194
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.167504	0.539472	51.3347	56.2253	0.846446
Std Dev:	0.00406538	0.0113413	2.46394	0.564761	0.0178572
%RSD:	2.42704	2.10229	4.79975	1.00446	2.10966
Repeat:1	0.171928	0.548888	54.1311	56.7831	0.861012
Repeat:2	0.16665	0.542647	49.4825	56.239	0.851803
Repeat:3	0.163933	0.526882	50.3905	55.6538	0.826524
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.20181	0.116202	0.0356334	0.488075	1.60593
Std Dev:	0.103411	0.00384712	0.00214308	0.0108791	0.0320364
%RSD:	1.98799	3.31072	6.01427	2.22899	1.99489
Repeat:1	5.28561	0.120277	0.0357055	0.497304	1.63572
Repeat:2	5.23357	0.115696	0.0377395	0.49084	1.61003
Repeat:3	5.08624	0.112633	0.0334551	0.47608	1.57204
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1279.93	0.488752	0.55828	0.22305	0.362536
Std Dev:	23.5489	0.00997287	0.01036	0.00359005	0.006142
%RSD:	1.83986	2.04048	1.8557	1.60952	1.69418
Repeat:1	1303.45	0.497324	0.568886	0.226882	0.366942
Repeat:2	1279.99	0.491127	0.557768	0.222503	0.365147
Repeat:3	1256.35	0.477807	0.548185	0.219765	0.35552
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.237244	0.538771	12298.1	233806	14156.3
Std Dev:	0.00498651	0.010934	286.818	3343.46	135.221
%RSD:	2.10185	2.02944	2.33221	1.43001	0.955205
Repeat:1	0.242384	0.547074	12088	230063	14118.2
Repeat:2	0.23692	0.542858	12181.4	234857	14044.1

Repeat:3	0.232427	0.526383	12624.9	236497	14306.4
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12298.1	233806	14156.3
Std Dev:	286.818	3343.46	135.221
%RSD:	2.33221	1.43001	0.955205
Repeat:1	12088	230063	14118.2
Repeat:2	12181.4	234857	14044.1
Repeat:3	12624.9	236497	14306.4

Sample Name	**Acquisition date**
MXLT4	12/20/2012 3:15:32PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00117714	0.0163241	-0.00259386	4.10988	0.176295
Std Dev:	8.5306e-005	0.000201497	2.61012e-005	0.0114521	0.00227073
%RSD:	7.24692	1.23435	1.00627	0.278648	1.28803
Repeat:1	0.00125713	0.0161	-0.00256579	4.11961	0.178886
Repeat:2	0.00108736	0.0164904	-0.00259837	4.11276	0.174652
Repeat:3	0.00118692	0.016382	-0.00261741	4.09726	0.175346
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.000177929	0.101925	-0.000540457	-0.0120778	0.00162366
Std Dev:	3.33832e-005	0.000130873	5.78456e-005	0.000220623	1.9918e-005
%RSD:	18.7621	0.128401	10.7031	1.82667	1.22674
Repeat:1	0.000158251	0.102041	-0.000587678	-0.0123325	0.00162995
Repeat:2	0.000159063	0.101783	-0.000475935	-0.0119453	0.00160135
Repeat:3	0.000216474	0.101951	-0.000557758	-0.0119557	0.00163967
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00147463	0.00216803	0.0247095	-0.00145893	0.00162786
Std Dev:	3.39603e-005	0.000255547	0.00195009	0.000956723	8.23174e-005
%RSD:	2.30297	11.7871	7.89206	65.5771	5.05679
Repeat:1	0.00151028	0.00188341	0.0264535	-0.000704304	0.00170092
Repeat:2	0.00144265	0.00237777	0.0250712	-0.00113751	0.00164399
Repeat:3	0.00147096	0.0022429	0.0226039	-0.00253497	0.00153867
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.012348	0.0229462	0.000487225	0.167997	-0.00791897
Std Dev:	6.73307e-005	0.000129836	0.000225969	0.00108374	0.000199722
%RSD:	0.545274	0.565828	46.3788	0.645092	2.52207
Repeat:1	0.0124253	0.0230893	0.000505705	0.169248	-0.00777721
Repeat:2	0.0123018	0.0228358	0.000703387	0.167347	-0.00783232
Repeat:3	0.012317	0.0229134	0.000252583	0.167396	-0.00814739
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	-0.000777033	5.6185e-005	0.0197259	0.000934916	0.00161219
Std Dev:	1.9899e-005	1.41297e-005	0.00016771	9.22535e-005	7.36459e-005
%RSD:	2.5609	25.1485	0.850203	9.86758	4.56807
Repeat:1	-0.000770038	7.18687e-005	0.0198205	0.000830767	0.00161477
Repeat:2	-0.000761576	4.44489e-005	0.0198249	0.000967613	0.00168451
Repeat:3	-0.000799485	5.22374e-005	0.0195322	0.00100637	0.00153729
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**

Avg. of Repeats:	13.8481	0.00415778	0.019898	0.00840655	-0.000815991
Std Dev:	0.07868	0.0001329	0.000570021	0.000410611	5.73048e-005
%RSD:	0.568165	3.19642	2.86472	4.88442	7.02272
Repeat:1	13.9057	0.00410514	0.020216	0.00793649	-0.000835224
Repeat:2	13.8801	0.00430894	0.0192399	0.00858788	-0.000751544
Repeat:3	13.7585	0.00405926	0.020238	0.00869528	-0.000861205
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.00042305	0.0388543	12216.9	232499	13810.3
Std Dev:	4.27156e-005	0.000377909	89.2721	2861.17	85.2528
%RSD:	10.0971	0.972632	0.730725	1.23062	0.617313
Repeat:1	0.000407705	0.0392109	12114.1	229195	13815.8
Repeat:2	0.000390126	0.0384582	12262.2	234143	13722.4
Repeat:3	0.000471318	0.0388937	12274.5	234158	13892.7

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0149852	0.839011	-0.00146595	138.979	0.0572332
Std Dev:	0.000948001	0.0116915	0.000469753	0.387255	0.000841588
%RSD:	6.32625	1.39349	32.0443	0.278644	1.47045
Repeat:1	0.015874	0.826011	-0.000999844	139.308	0.0581936
Repeat:2	0.0139874	0.848663	-0.00145873	139.076	0.0566244
Repeat:3	0.0150942	0.842361	-0.00193927	138.552	0.0568818
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000129925	0.649894	-7.7112e-005	-0.00257064	0.0173754
Std Dev:	1.31917e-005	0.000882717	2.60811e-005	0.000169571	0.000229201
%RSD:	10.1532	0.135825	33.8224	6.59645	1.31911
Repeat:1	0.000122135	0.650678	-9.70982e-005	-0.00276074	0.0174409
Repeat:2	0.000122485	0.648938	-4.76089e-005	-0.00243497	0.0171205
Repeat:3	0.000145157	0.650067	-8.66288e-005	-0.00251619	0.0175647
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00863826	0.416818	0.828761	0.000994465	0.137248
Std Dev:	0.000255762	0.045714	0.0616553	0.00132181	0.00622398
%RSD:	2.96081	10.9674	7.43946	132.917	4.53484
Repeat:1	0.00890613	0.365898	0.883899	0.00203705	0.142774
Repeat:2	0.00839663	0.454325	0.840195	0.00143855	0.138464
Repeat:3	0.00861202	0.430231	0.762189	-0.000492205	0.130506
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0270367	0.0536401	1.64039	1.39636	0.00646465
Std Dev:	0.000148245	0.00030464	0.647829	0.00873162	0.000368847
%RSD:	0.548311	0.567933	39.4923	0.625314	5.7056
Repeat:1	0.0272068	0.0539758	1.69382	1.40644	0.00672752
Repeat:2	0.0269348	0.0533813	2.25985	1.39112	0.00662342
Repeat:3	0.0269685	0.0535633	0.967505	1.39152	0.006043
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0214302	0.00651191	-0.068073	0.00869079	0.0170677

Std Dev:	0.000618156	0.00196076	0.000188719	0.00111594	0.0014748
%RSD:	2.88451	30.1104	0.27723	12.8404	8.64108
Repeat:1	0.0217354	0.00868486	-0.0682883	0.0074297	0.0170603
Repeat:2	0.0218363	0.00487471	-0.0679362	0.00909206	0.0185462
Repeat:3	0.0207188	0.00597616	-0.0679945	0.0095506	0.0155966
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1360.66	0.0189963	0.00562633	0.0289411	-0.00289131
Std Dev:	7.7309	0.000622886	0.000137097	0.00125276	0.00111664
%RSD:	0.568172	3.27899	2.4367	4.32867	38.6204
Repeat:1	1366.33	0.0187496	0.00570282	0.0275074	-0.00320825
Repeat:2	1363.81	0.0197047	0.00546806	0.0294913	-0.00165047
Repeat:3	1351.85	0.0185346	0.00570812	0.0298245	-0.00381522
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.00282022	-0.0318191	12216.9	232499	13810.3
Std Dev:	0.000336888	0.00037713	89.2721	2861.17	85.2528
%RSD:	11.9455	1.18523	0.730725	1.23062	0.617313
Repeat:1	0.00269878	-0.031826	12114.1	229195	13815.8
Repeat:2	0.00256088	-0.0321928	12262.2	234143	13722.4
Repeat:3	0.00320099	-0.0314386	12274.5	234158	13892.7
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12216.9	232499	13810.3
Std Dev:	89.2721	2861.17	85.2528
%RSD:	0.730725	1.23062	0.617313
Repeat:1	12114.1	229195	13815.8
Repeat:2	12262.2	234143	13722.4
Repeat:3	12274.5	234158	13892.7

Sample Name	**Acquisition date**
MXLT6	12/20/2012 3:20:33PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00259719	0.339318	0.00884066	4.06861	1.88796
Std Dev:	1.76627e-005	0.00218948	0.000139177	0.0541722	0.0122342
%RSD:	0.68007	0.64526	1.57428	1.33147	0.648011
Repeat:1	0.00261374	0.34064	0.00868034	4.13116	1.89665
Repeat:2	0.0025786	0.340523	0.00891113	4.03833	1.89325
Repeat:3	0.00259923	0.336791	0.00893051	4.03636	1.87397
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.0203618	1.8723	0.0283006	0.0115126	0.0129348
Std Dev:	0.000142584	0.011557	0.000241267	0.00022925	8.47406e-005
%RSD:	0.700252	0.617262	0.852517	1.99129	0.655136
Repeat:1	0.0204579	1.8743	0.0284772	0.0116963	0.0130266
Repeat:2	0.0204295	1.88272	0.0283988	0.011586	0.0128596
Repeat:3	0.020198	1.85987	0.0280257	0.0112557	0.0129182

Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.0123468	0.0409534	0.155409	0.0222888	0.0174218
Std Dev:	7.32253e-005	0.000352062	0.00123795	0.000907627	0.00014847
%RSD:	0.593072	0.859666	0.796575	4.07211	0.852211
Repeat:1	0.0124274	0.040722	0.155055	0.0231397	0.0173117
Repeat:2	0.0123285	0.0407796	0.156786	0.0223934	0.0175906
Repeat:3	0.0122844	0.0413586	0.154388	0.0213335	0.017363
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.036046	0.0387742	0.000843689	0.34472	0.165937
Std Dev:	0.000180885	0.000216907	0.000633161	0.00107863	0.00100163
%RSD:	0.501818	0.559409	75.0468	0.312901	0.603617
Repeat:1	0.0362411	0.0389087	0.000520811	0.34551	0.166709
Repeat:2	0.0360131	0.0388899	0.0015732	0.345159	0.166298
Repeat:3	0.0358838	0.038524	0.000437055	0.343491	0.164805
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	0.0547573	0.000570656	0.032499	0.0024904	0.0539437
Std Dev:	0.000265481	1.05316e-005	7.66477e-005	0.000113683	0.000300211
%RSD:	0.484831	1.84553	0.235846	4.56482	0.556527
Repeat:1	0.0550509	0.000582533	0.0324923	0.00248861	0.0542794
Repeat:2	0.0546871	0.000562454	0.0325788	0.00237763	0.053851
Repeat:3	0.0545341	0.000566982	0.0324259	0.00260498	0.0537008
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	14.0324	0.00479231	0.937032	0.450271	-0.000610509
Std Dev:	0.101424	3.33036e-005	0.00343235	0.00286753	3.39382e-005
%RSD:	0.722783	0.694939	0.3663	0.636847	5.559
Repeat:1	14.0985	0.00483053	0.938894	0.452224	-0.000612726
Repeat:2	14.0832	0.00477687	0.939131	0.451609	-0.000575517
Repeat:3	13.9157	0.00476953	0.933071	0.446979	-0.000643285
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.0282674	0.618266	12184.7	230842	13216.5
Std Dev:	0.000174811	0.00264149	52.1669	788.515	241.37
%RSD:	0.618417	0.427241	0.428135	0.341583	1.82627
Repeat:1	0.0284393	0.621066	12214.5	230929	13485.3
Repeat:2	0.0282733	0.617912	12124.4	231583	13145.8
Repeat:3	0.0280898	0.615819	12215.1	230013	13018.4

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0309429	19.564	0.14412	137.585	0.691494
Std Dev:	0.000196702	0.126931	0.00164573	1.83187	0.00453374
%RSD:	0.635694	0.648799	1.14191	1.33144	0.655645
Repeat:1	0.031128	19.6407	0.14222	139.7	0.694716
Repeat:2	0.0307363	19.6339	0.145109	136.561	0.693457
Repeat:3	0.0309644	19.4175	0.145031	136.495	0.68631
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00810164	12.5908	0.0137584	0.0162102	0.144891
Std Dev:	5.63717e-005	0.0779502	0.00012386	0.000249709	0.00095323
%RSD:	0.695806	0.619104	0.900244	1.54044	0.657894
Repeat:1	0.00813952	12.6043	0.0138489	0.0164034	0.14592
Repeat:2	0.00812853	12.6611	0.0138092	0.016299	0.144038
Repeat:3	0.00803686	12.507	0.0136173	0.0159283	0.144715

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0936997	7.36699	4.96105	0.0336254	1.33148
Std Dev:	0.000564551	0.0629443	0.0391399	0.00125317	0.011224
%RSD:	0.602511	0.85441	0.788944	3.72684	0.842973
Repeat:1	0.0943202	7.32564	4.94983	0.0348007	1.32317
Repeat:2	0.0935626	7.33589	5.00457	0.0337688	1.34425
Repeat:3	0.0932163	7.43943	4.92874	0.0323067	1.32704
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0789664	0.0907782	2.22058	2.82021	0.247716
Std Dev:	0.000397698	0.000508938	1.81356	0.0086905	0.00150463
%RSD:	0.50363	0.560639	81.6704	0.308151	0.607401
Repeat:1	0.0793952	0.0910938	1.29296	2.82658	0.248862
Repeat:2	0.0788943	0.0910497	4.31032	2.82374	0.248274
Repeat:3	0.0786097	0.0901911	1.05846	2.81031	0.246012
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.17068	0.0794345	0.00194488	0.0256338	1.10765
Std Dev:	0.00571263	0.00146329	0.000996258	0.00136606	0.00617511
%RSD:	0.487976	1.84213	51.2246	5.32913	0.557496
Repeat:1	1.17693	0.0810842	0.00106613	0.0255964	1.11457
Repeat:2	1.16937	0.0782932	0.00174131	0.0242868	1.10567
Repeat:3	1.16573	0.078926	0.0030272	0.0270181	1.10271
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1378.77	0.0219702	0.226102	1.37619	0.00134893
Std Dev:	9.96565	0.00015609	0.000824833	0.00873964	0.000707286
%RSD:	0.722791	0.710462	0.364807	0.635061	52.433
Repeat:1	1385.27	0.0221494	0.226549	1.38215	0.00135881
Repeat:2	1383.76	0.0218979	0.226606	1.38026	0.00205123
Repeat:3	1367.3	0.0218635	0.22515	1.36616	0.00063676
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.221853	0.31926	12184.7	230842	13216.5
Std Dev:	0.00137161	0.0012929	52.1669	788.515	241.37
%RSD:	0.618252	0.404967	0.428135	0.341583	1.82627
Repeat:1	0.223204	0.320712	12214.5	230929	13485.3
Repeat:2	0.221894	0.318837	12124.4	231583	13145.8
Repeat:3	0.220461	0.318232	12215.1	230013	13018.4
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12184.7	230842	13216.5
Std Dev:	52.1669	788.515	241.37
%RSD:	0.428135	0.341583	1.82627
Repeat:1	12214.5	230929	13485.3
Repeat:2	12124.4	231583	13145.8

Repeat:3	12215.1	230013	13018.4	200

Sample Name	**Acquisition date**
MXLT8	12/20/2012 3:25:26PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00131052	0.137723	0.00312322	4.13971	0.798892
Std Dev:	1.23128e-005	0.00120952	0.000112077	0.0516934	0.00381321
%RSD:	0.939535	0.878227	3.58852	1.24872	0.477312
Repeat:1	0.0013018	0.137463	0.0032038	4.11647	0.797333
Repeat:2	0.00130515	0.139041	0.00299523	4.19894	0.803238
Repeat:3	0.0013246	0.136664	0.00317062	4.10371	0.796107
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.00823293	0.84773	0.00322092	-0.00375944	0.00606979
Std Dev:	0.000145726	0.00570461	0.000138468	0.000174413	4.83421e-005
%RSD:	1.77004	0.672928	4.29902	4.63934	0.796437
Repeat:1	0.0083141	0.848446	0.00334378	-0.00355829	0.00606382
Repeat:2	0.00831999	0.853043	0.00307088	-0.00385157	0.00612084
Repeat:3	0.00806469	0.841701	0.0032481	-0.00386847	0.00602472
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00597949	0.0193167	0.0746496	0.00752739	0.00784307
Std Dev:	5.60396e-005	0.000175712	0.0011582	0.00132485	0.000338487
%RSD:	0.937197	0.909637	1.55152	17.6004	4.31575
Repeat:1	0.00601548	0.0194844	0.0745976	0.00739341	0.00816056
Repeat:2	0.00600807	0.0193318	0.0758329	0.00627462	0.00788174
Repeat:3	0.00591492	0.019134	0.0735182	0.00891414	0.0074869
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0216806	0.0283724	0.000332942	0.253844	0.0198396
Std Dev:	0.000298827	0.000368678	0.000284779	0.000996721	0.000706825
%RSD:	1.37831	1.29943	85.534	0.392651	3.5627
Repeat:1	0.0219221	0.028725	0.000661769	0.253354	0.0206074
Repeat:2	0.0217733	0.0284026	0.000170372	0.254991	0.0196952
Repeat:3	0.0213464	0.0279895	0.000166684	0.253187	0.0192161
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0238506	0.000247779	0.0256114	0.00151853	0.046627
Std Dev:	0.00027181	1.39175e-005	6.78042e-005	4.8412e-005	0.00032362
%RSD:	1.13964	5.61688	0.264743	3.18808	0.694061
Repeat:1	0.0241549	0.000262001	0.0256317	0.001546	0.046998
Repeat:2	0.0237652	0.000247149	0.0255357	0.00154697	0.0464805
Repeat:3	0.0236318	0.000234188	0.0256667	0.00146264	0.0464026
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	13.7712	0.00319902	0.406833	0.180879	-0.000795057
Std Dev:	0.110608	0.000155995	0.00316407	0.00103293	5.62218e-005
%RSD:	0.803183	4.87634	0.777732	0.571064	7.07141
Repeat:1	13.818	0.0030195	0.409233	0.18139	-0.000730498
Repeat:2	13.8507	0.00327598	0.40802	0.181556	-0.000833249
Repeat:3	13.6449	0.00330158	0.403248	0.17969	-0.000821425
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0119827	0.35618	12245.6	232940	13081.8
Std Dev:	0.000136389	0.00353735	263.298	2434.23	138.527

%RSD:	1.13822	0.993136	2.15014	1.045	1.05893
Repeat:1	0.0121129	0.359485	12099.7	231470	13216.3
Repeat:2	0.0119943	0.356605	12087.6	231601	12939.6
Repeat:3	0.0118409	0.352449	12549.6	235750	13089.5

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0165413	7.87672	0.0709571	139.988	0.287937
Std Dev:	0.000135988	0.0701234	0.0013229	1.74806	0.00141302
%RSD:	0.822108	0.890262	1.86437	1.24872	0.49074
Repeat:1	0.0164452	7.86161	0.0720695	139.203	0.287359
Repeat:2	0.0164818	7.95317	0.0694943	141.991	0.289547
Repeat:3	0.0166969	7.81538	0.0713074	138.771	0.286904
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00331056	5.68023	0.00157581	0.00387236	0.0675118
Std Dev:	5.76816e-005	0.0384767	6.82064e-005	0.000188778	0.000535564
%RSD:	1.74235	0.677379	4.32834	4.87501	0.79329
Repeat:1	0.00334259	5.68506	0.00163482	0.00407759	0.06744
Repeat:2	0.00334512	5.71607	0.00150113	0.00383336	0.0680796
Repeat:3	0.00324397	5.63957	0.00159148	0.00370612	0.0670158
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0438609	3.4896	2.4077	0.0133346	0.60718
Std Dev:	0.000433901	0.031486	0.0366184	0.001831	0.0255951
%RSD:	0.989265	0.902282	1.52089	13.7312	4.2154
Repeat:1	0.0441398	3.51965	2.40605	0.0131494	0.631188
Repeat:2	0.0440819	3.49231	2.44511	0.0116032	0.610104
Repeat:3	0.043361	3.45685	2.37193	0.0152511	0.580249
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0474836	0.0663719	1.02671	2.08802	0.0448942
Std Dev:	0.000655316	0.000865047	0.815932	0.00803055	0.00106957
%RSD:	1.38009	1.30333	79.4703	0.3846	2.38242
Repeat:1	0.048013	0.0671993	1.96886	2.08408	0.0460129
Repeat:2	0.047687	0.0664428	0.560056	2.09726	0.0447879
Repeat:3	0.0467507	0.0654736	0.551226	2.08273	0.0438817
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.530624	0.0336888	-0.0338443	0.0150118	0.955167
Std Dev:	0.00580905	0.00192454	0.00173557	0.000578344	0.00669287
%RSD:	1.09476	5.71269	5.12809	3.8526	0.700701
Repeat:1	0.53705	0.0356582	-0.0343321	0.0153455	0.962852
Repeat:2	0.529076	0.0335958	-0.0352838	0.0153458	0.952036
Repeat:3	0.525746	0.0318125	-0.031917	0.014344	0.950614
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1353.11	0.0145027	0.0986441	0.554809	-0.00248292

Std Dev:	10.8681	0.000731131	0.000760726	0.0031477	0.00108444
%RSD:	0.803194	5.04134	0.771183	0.567348	43.6759
Repeat:1	1357.7	0.0136613	0.0992211	0.556365	-0.00123121
Repeat:2	1360.92	0.0148634	0.0989292	0.556876	-0.00313917
Repeat:3	1340.7	0.0149834	0.097782	0.551186	-0.00307838
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.0937807	0.161751	12245.6	232940	13081.8
Std Dev:	0.00107609	0.00179671	263.298	2434.23	138.527
%RSD:	1.14746	1.11079	2.15014	1.045	1.05893
Repeat:1	0.0948086	0.163573	12099.7	231470	13216.3
Repeat:2	0.0938713	0.1617	12087.6	231601	12939.6
Repeat:3	0.0926622	0.15998	12549.6	235750	13089.5
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12245.6	232940	13081.8
Std Dev:	263.298	2434.23	138.527
%RSD:	2.15014	1.045	1.05893
Repeat:1	12099.7	231470	13216.3
Repeat:2	12087.6	231601	12939.6
Repeat:3	12549.6	235750	13089.5

Sample Name	**Acquisition date**
MXLVA	12/20/2012 3:30:21PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0143364	0.128675	0.00335685	4.1003	0.831768
Std Dev:	4.5849e-005	0.00105111	3.79993e-005	0.0484121	0.00271056
%RSD:	0.319809	0.816873	1.13199	1.1807	0.32588
Repeat:1	0.0143867	0.12751	0.00336832	4.0451	0.828673
Repeat:2	0.0143253	0.128965	0.00331444	4.13554	0.833716
Repeat:3	0.0142971	0.129551	0.0033878	4.12025	0.832917
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.00814272	0.778069	0.0726947	-0.00212873	0.0106498
Std Dev:	6.28079e-005	0.00222307	0.000235083	0.000296097	6.61055e-005
%RSD:	0.771338	0.285717	0.323384	13.9096	0.62072
Repeat:1	0.00807397	0.775514	0.0725444	-0.00216851	0.0106293
Repeat:2	0.0081571	0.779127	0.072574	-0.00240292	0.0105964
Repeat:3	0.00819709	0.779564	0.0729656	-0.00181475	0.0107237
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0071821	0.0217047	0.0659687	0.00770819	0.00858873
Std Dev:	3.11025e-005	0.000155494	0.000269566	0.000508961	0.000170636
%RSD:	0.433056	0.716407	0.408627	6.60286	1.98674
Repeat:1	0.00715467	0.0216921	0.0656695	0.00731688	0.00849564
Repeat:2	0.00717573	0.021556	0.0660441	0.00828358	0.00878567
Repeat:3	0.00721589	0.0218662	0.0661925	0.0075241	0.00848489
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0268974	0.028338	0.000283902	0.230337	0.0889811

Std Dev:	0.000105364	0.000122052	0.000257461	0.00158224	0.00027828
%RSD:	0.391727	0.430701	90.6866	0.686923	0.312747
Repeat:1	0.0268733	0.028214	0.000572221	0.230978	0.0892952
Repeat:2	0.0268061	0.028342	7.69704e-005	0.231499	0.0887652
Repeat:3	0.0270127	0.028458	0.000202514	0.228535	0.088883
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0227479	0.00027737	0.02419	0.00166228	0.126456
Std Dev:	5.48757e-005	3.25016e-005	0.000259858	9.43219e-005	0.000309481
%RSD:	0.241234	11.7178	1.07424	5.67427	0.244735
Repeat:1	0.0227381	0.000313109	0.0238906	0.00175546	0.126768
Repeat:2	0.0226986	0.000249581	0.0243575	0.00156686	0.126149
Repeat:3	0.022807	0.00026942	0.0243218	0.0016645	0.12645
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	12.5465	0.00414489	0.387951	0.174761	-0.000634575
Std Dev:	0.0696607	6.43635e-005	0.00152493	0.000282133	7.84394e-005
%RSD:	0.55522	1.55284	0.393073	0.16144	12.3609
Repeat:1	12.467	0.00413664	0.387422	0.174879	-0.000620748
Repeat:2	12.5755	0.00421298	0.386761	0.174965	-0.000563969
Repeat:3	12.597	0.00408505	0.38967	0.174439	-0.000719009
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0121889	0.257903	12170.7	231383	12945.5
Std Dev:	5.56975e-005	0.000557303	63.2144	1797.95	376.97
%RSD:	0.456951	0.216091	0.519401	0.777043	2.91199
Repeat:1	0.0121321	0.258536	12231.9	233398	13379.6
Repeat:2	0.0121914	0.257488	12174.4	229943	12755.8
Repeat:3	0.0122434	0.257683	12105.6	230808	12701

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.161286	7.35203	0.0716148	138.656	0.300118
Std Dev:	0.00050912	0.0609389	0.000487838	1.6371	0.00100445
%RSD:	0.315664	0.828872	0.681196	1.1807	0.334683
Repeat:1	0.161845	7.28444	0.0716036	136.789	0.298971
Repeat:2	0.161162	7.36885	0.0711327	139.848	0.30084
Repeat:3	0.16085	7.40279	0.0721082	139.33	0.300544
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00327439	5.21038	0.0360123	0.00463591	0.119275
Std Dev:	2.48563e-005	0.0149943	0.000114946	0.000279825	0.000742569
%RSD:	0.759112	0.287777	0.319184	6.03602	0.622567
Repeat:1	0.00324718	5.19315	0.035938	0.00455257	0.119052
Repeat:2	0.0032801	5.21752	0.0359542	0.00440723	0.11867
Repeat:3	0.0032959	5.22047	0.0361447	0.00494794	0.120104
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0530677	3.91693	2.13324	0.0135914	0.663541
Std Dev:	0.000238358	0.0278157	0.00852276	0.00070305	0.0128976
%RSD:	0.449158	0.710141	0.399522	5.17276	1.94375
Repeat:1	0.0528581	3.91464	2.12378	0.013051	0.656501
Repeat:2	0.053018	3.89033	2.13562	0.0143863	0.678426
Repeat:3	0.053327	3.94582	2.14031	0.0133369	0.655695

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.05893	0.0662912	0.894474	1.89863	0.139273
Std Dev:	0.000231121	0.000286376	0.737945	0.0127481	0.000310871
%RSD:	0.392196	0.431998	82.5004	0.671434	0.22321
Repeat:1	0.0588773	0.0660002	1.72076	1.9038	0.139615
Repeat:2	0.0587298	0.0663006	0.301036	1.90799	0.139007
Repeat:3	0.059183	0.0665728	0.661632	1.88411	0.139197
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.504449	0.0379191	-0.0260187	0.0157807	2.61943
Std Dev:	0.00120847	0.0045241	0.000605274	0.0011352	0.00650226
%RSD:	0.239562	11.9309	2.3263	7.19361	0.248232
Repeat:1	0.504026	0.0428947	-0.0266613	0.0169101	2.62601
Repeat:2	0.503508	0.0340528	-0.0254594	0.0146398	2.61301
Repeat:3	0.505812	0.0368098	-0.0259354	0.0157922	2.61927
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1232.77	0.0189359	0.094107	0.536146	-0.000452607
Std Dev:	6.84467	0.000301664	0.000366726	0.000860152	0.00146601
%RSD:	0.555227	1.59308	0.389691	0.160432	323.904
Repeat:1	1224.96	0.0188972	0.0939799	0.536502	-0.000253204
Repeat:2	1235.62	0.019255	0.0938207	0.536771	0.000903495
Repeat:3	1237.73	0.0186554	0.0945204	0.535165	-0.00200811
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.0954969	0.105966	12170.7	231383	12945.5
Std Dev:	0.000441343	0.00060208	63.2144	1797.95	376.97
%RSD:	0.462154	0.568184	0.519401	0.777043	2.91199
Repeat:1	0.0950473	0.106661	12231.9	233398	13379.6
Repeat:2	0.0955139	0.105605	12174.4	229943	12755.8
Repeat:3	0.0959295	0.105631	12105.6	230808	12701
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12170.7	231383	12945.5
Std Dev:	63.2144	1797.95	376.97
%RSD:	0.519401	0.777043	2.91199
Repeat:1	12231.9	233398	13379.6
Repeat:2	12174.4	229943	12755.8
Repeat:3	12105.6	230808	12701

Sample Name	**Acquisition date**
MXLVD	12/20/2012 3:35:15PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**

Avg. of Repeats:	0.00316537	0.260676	0.00729872	4.10017	1.56276
Std Dev:	1.60501e-005	0.000409234	6.71495e-005	0.029407	0.00165425
%RSD:	0.507055	0.15699	0.920017	0.717215	0.105854
Repeat:1	0.00317786	0.260339	0.00723561	4.07956	1.56153
Repeat:2	0.00317098	0.261131	0.00736929	4.0871	1.56212
Repeat:3	0.00314727	0.260556	0.00729126	4.13385	1.56464
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.0172746	1.43179	0.019581	0.00952557	0.0183678
Std Dev:	8.12697e-005	0.00467751	0.000342742	0.000181967	7.08944e-005
%RSD:	0.470458	0.326689	1.75038	1.9103	0.385971
Repeat:1	0.0173052	1.43217	0.0199489	0.009634	0.0184046
Repeat:2	0.0171824	1.43627	0.0195232	0.00962723	0.0182861
Repeat:3	0.0173361	1.42694	0.0192708	0.00931549	0.0184128
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0118967	0.0387935	0.126895	0.0197254	0.0138976
Std Dev:	0.000114782	0.000344904	0.000596282	0.000984215	6.72787e-005
%RSD:	0.964823	0.889075	0.469902	4.98959	0.484101
Repeat:1	0.0119212	0.0390425	0.127282	0.0208459	0.013822
Repeat:2	0.0117717	0.0383999	0.126208	0.0190009	0.01392
Repeat:3	0.0119973	0.0389382	0.127195	0.0193293	0.0139509
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0382586	0.0330868	0.000958209	0.300544	0.0947496
Std Dev:	0.000316434	0.000246431	0.000322674	0.00110777	0.000697918
%RSD:	0.827092	0.744801	33.6747	0.368588	0.736591
Repeat:1	0.0385235	0.0333678	0.000852841	0.299462	0.0955173
Repeat:2	0.0379082	0.0329852	0.00070139	0.301676	0.094578
Repeat:3	0.0383442	0.0329074	0.0013204	0.300496	0.0941535
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0473288	0.000468587	0.0300939	0.00237044	0.0594832
Std Dev:	0.00030686	8.1584e-006	0.000107625	7.42337e-005	0.000546766
%RSD:	0.648358	1.74107	0.35763	3.13164	0.919194
Repeat:1	0.0476525	0.000476319	0.0301853	0.00241262	0.060075
Repeat:2	0.0472917	0.000469379	0.0299753	0.00228472	0.0593777
Repeat:3	0.0470421	0.000460061	0.0301209	0.00241397	0.0589969
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	12.7641	0.00634076	0.825375	0.365154	-0.00061636
Std Dev:	0.0303425	0.000215315	0.00522184	0.000957281	9.80981e-005
%RSD:	0.237718	3.39573	0.632662	0.262158	15.9157
Repeat:1	12.7293	0.00643001	0.828617	0.364375	-0.000563996
Repeat:2	12.7777	0.0064971	0.828158	0.364865	-0.000555554
Repeat:3	12.7852	0.00609517	0.819352	0.366223	-0.000729529
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0259296	0.452495	11871.3	226311	12422.8
Std Dev:	0.000168977	0.00221093	120.235	1823.31	98.3024
%RSD:	0.651675	0.48861	1.01282	0.805667	0.791307
Repeat:1	0.0258978	0.454919	11984.1	228356	12514.7
Repeat:2	0.0257788	0.451977	11884.9	224855	12434.4
Repeat:3	0.0261123	0.450589	11744.8	225721	12319.2

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0372417	15.0042	0.12221	138.652	0.57099
Std Dev:	0.000177442	0.0237561	0.000891447	0.994431	0.000612971

%RSD:	0.476462	0.158329	0.72944	0.717212	0.107352
Repeat:1	0.0373803	14.9847	0.121345	137.956	0.570531
Repeat:2	0.0373031	15.0307	0.123125	138.21	0.570752
Repeat:3	0.0370417	14.9973	0.122159	139.791	0.571686
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00687922	9.61963	0.00945698	0.0141337	0.206276
Std Dev:	3.20387e-005	0.0315491	0.000168873	0.000157641	0.000800277
%RSD:	0.465732	0.327965	1.78569	1.11535	0.387964
Repeat:1	0.00689143	9.62218	0.00963657	0.0142147	0.206694
Repeat:2	0.00684287	9.64984	0.00943299	0.0142345	0.205353
Repeat:3	0.00690336	9.58689	0.00930139	0.0139521	0.206781
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0899532	6.97969	4.05952	0.0301283	1.06495
Std Dev:	0.000883312	0.0617645	0.0188524	0.00135984	0.00507842
%RSD:	0.981969	0.884918	0.4644	4.51351	0.476869
Repeat:1	0.0901406	7.02423	4.07176	0.0316764	1.05924
Repeat:2	0.0889912	6.90918	4.03781	0.0291269	1.06664
Repeat:3	0.0907278	7.00567	4.069	0.0295816	1.06897
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0838313	0.0774336	2.6369	2.46429	0.147579
Std Dev:	0.000693998	0.000578212	0.924051	0.00892528	0.000931569
%RSD:	0.827851	0.74672	35.0431	0.362185	0.631233
Repeat:1	0.0844123	0.0780928	2.33584	2.45556	0.148602
Repeat:2	0.0830628	0.0771952	1.90093	2.4734	0.147356
Repeat:3	0.0840189	0.0770126	3.67394	2.4639	0.14678
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.01348	0.0650571	0.00458026	0.0229888	1.22426
Std Dev:	0.00626971	0.00113804	0.000899574	0.000883041	0.011421
%RSD:	0.618633	1.7493	19.6402	3.84117	0.932888
Repeat:1	1.02008	0.066135	0.00553403	0.0234912	1.23663
Repeat:2	1.01275	0.0651691	0.00374704	0.0219692	1.22204
Repeat:3	1.0076	0.0638672	0.0044597	0.023506	1.21411
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1254.15	0.0292276	0.199275	1.11665	0.000109209
Std Dev:	2.98137	0.00100915	0.00125571	0.00291567	0.0018376
%RSD:	0.237721	3.45274	0.63014	0.261108	1682.65
Repeat:1	1250.73	0.0296459	0.200055	1.11427	0.00106798
Repeat:2	1255.49	0.0299604	0.199944	1.11577	0.00126914
Repeat:3	1256.22	0.0280766	0.197826	1.1199	-0.00200949
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.203661	0.22362	11871.3	226311	12422.8

Std Dev:	0.00133343	0.00146048	120.235	1823.31	98.3024
%RSD:	0.65473	0.653105	1.01282	0.805667	0.791307
Repeat:1	0.203415	0.225227	11984.1	228356	12514.7
Repeat:2	0.202469	0.22326	11884.9	224855	12434.4
Repeat:3	0.205101	0.222373	11744.8	225721	12319.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11871.3	226311	12422.8
Std Dev:	120.235	1823.31	98.3024
%RSD:	1.01282	0.805667	0.791307
Repeat:1	11984.1	228356	12514.7
Repeat:2	11884.9	224855	12434.4
Repeat:3	11744.8	225721	12319.2

Sample Name	**Acquisition date**
MXK4W	12/20/2012 3:40:08PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000218423	0.0170584	-0.00267309	4.17074	0.0918933
Std Dev:	3.6055e-005	0.000132189	8.40636e-005	0.0367855	0.00290811
%RSD:	16.507	0.774924	3.14481	0.881989	3.16466
Repeat:1	-0.000241735	0.0171009	-0.00276072	4.15054	0.095176
Repeat:2	-0.000176894	0.0171641	-0.00259312	4.2132	0.0896393
Repeat:3	-0.000236639	0.0169101	-0.00266543	4.14849	0.0908647
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-8.33298e-007	0.0805212	0.00910481	0.0921042	0.0443347
Std Dev:	4.23605e-005	0.000360244	0.00034462	0.00228832	9.18778e-005
%RSD:	5083.48	0.44739	3.78503	2.48449	0.207237
Repeat:1	2.18421e-005	0.0809296	0.00917175	0.0937066	0.0444384
Repeat:2	2.53627e-005	0.0802486	0.00941105	0.0931225	0.0442635
Repeat:3	-4.97048e-005	0.0803854	0.00873163	0.0894835	0.0443022
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00542531	0.00129237	0.0167079	0.012148	0.00114147
Std Dev:	8.21688e-005	9.87663e-005	0.00120562	0.000524705	0.000155029
%RSD:	1.51455	7.64226	7.21588	4.31926	13.5816
Repeat:1	0.00549448	0.00124612	0.0163745	0.0119076	0.00123259
Repeat:2	0.00544698	0.00140578	0.0157041	0.0127499	0.00122935
Repeat:3	0.00533448	0.00122521	0.0180451	0.0117866	0.000962464
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00612967	0.0258477	0.0151805	6.66734	0.00888888
Std Dev:	4.07082e-005	0.000472731	0.000161176	0.0256856	0.000363538
%RSD:	0.664117	1.82891	1.06173	0.385246	4.0898
Repeat:1	0.00617584	0.0261441	0.015366	6.64779	0.0092192
Repeat:2	0.00611424	0.0260966	0.0150751	6.65779	0.00894807
Repeat:3	0.00609893	0.0253026	0.0151003	6.69643	0.00849938
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	-0.000546708	0.00486475	0.132272	0.0015879	0.00112392
Std Dev:	6.28895e-005	2.0431e-005	0.00304312	0.000135814	3.18379e-005
%RSD:	11.5033	0.419981	2.30066	8.55303	2.83276

Repeat:1	-0.000474106	0.00484143	0.134421	0.0014402	0.00113627
Repeat:2	-0.000584359	0.00487949	0.133604	0.0017074	0.00114773
Repeat:3	-0.000581658	0.00487333	0.128789	0.0016161	0.00108776
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	12.8633	-0.000350744	0.0133965	0.00425961	-0.000819766
Std Dev:	0.0309868	3.12907e-005	0.000236757	0.000716324	0.00011428
%RSD:	0.240893	8.92125	1.7673	16.8167	13.9406
Repeat:1	12.8842	-0.000386722	0.0133447	0.004875	-0.000689497
Repeat:2	12.8277	-0.000335636	0.0136549	0.00347328	-0.000903132
Repeat:3	12.878	-0.000329874	0.01319	0.00443054	-0.000866669
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	8.36201e-005	0.112843	12211.2	229969	12788.8
Std Dev:	3.37923e-005	0.0024385	280.195	2591.91	79.6686
%RSD:	40.4117	2.16097	2.29458	1.12707	0.622956
Repeat:1	5.1077e-005	0.114627	11960.5	227108	12757
Repeat:2	8.12467e-005	0.113838	12159.4	232160	12879.5
Repeat:3	0.000118536	0.110064	12513.7	230638	12729.9

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000524271	0.881479	-0.00359206	141.036	0.0259575
Std Dev:	0.000400521	0.00764576	0.00101014	1.24394	0.00107767
%RSD:	76.3958	0.867379	28.1215	0.882002	4.15169
Repeat:1	-0.000783688	0.883935	-0.00465923	140.353	0.0271739
Repeat:2	-6.29842e-005	0.887596	-0.00265075	142.472	0.0251222
Repeat:3	-0.000726141	0.872908	-0.0034662	140.284	0.0255764
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.93606e-005	0.505529	0.00471967	0.0899364	0.499085
Std Dev:	1.68708e-005	0.00242979	0.000169971	0.00204019	0.0010339
%RSD:	28.4208	0.480644	3.60133	2.26848	0.207158
Repeat:1	6.84185e-005	0.508283	0.00475347	0.0913776	0.500252
Repeat:2	6.97679e-005	0.50369	0.00487021	0.0908297	0.498285
Repeat:3	3.98955e-005	0.504613	0.00453534	0.087602	0.498716
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.038835	0.253856	0.575777	0.0197961	0.100565
Std Dev:	0.000629128	0.0176062	0.0381177	0.000724957	0.0117312
%RSD:	1.62	6.93551	6.62023	3.66212	11.6653
Repeat:1	0.0393656	0.245472	0.565236	0.0194639	0.107461
Repeat:2	0.0389995	0.274087	0.544038	0.0206276	0.107215
Repeat:3	0.03814	0.242009	0.618055	0.0192968	0.0870199
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0133884	0.0604482	43.7791	53.7614	0.0286081
Std Dev:	8.93073e-005	0.00110919	0.461461	0.206948	0.000502615
%RSD:	0.66705	1.83494	1.05407	0.384939	1.7569
Repeat:1	0.0134897	0.0611435	44.3104	53.6039	0.0290893
Repeat:2	0.0133542	0.0610321	43.4781	53.6845	0.0286484
Repeat:3	0.0133212	0.059169	43.549	53.9958	0.0280865

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0235242	0.675328	0.569728	0.00735983	0.00785889
Std Dev:	0.00135675	0.00284366	0.0170225	0.00166187	0.000682147
%RSD:	5.76744	0.421078	2.98782	22.5804	8.67994
Repeat:1	0.0250873	0.672083	0.581402	0.00555124	0.0080949
Repeat:2	0.022651	0.677384	0.577586	0.00881964	0.0083917
Repeat:3	0.0228344	0.676518	0.550196	0.0077086	0.00709008
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1263.9	-0.00213463	0.00406401	0.0157407	-0.00426216
Std Dev:	3.04468	0.000146656	5.69552e-005	0.00218244	0.00216941
%RSD:	0.240896	6.87032	1.40145	13.865	50.8994
Repeat:1	1265.95	-0.00230326	0.00405152	0.0176152	-0.00179413
Repeat:2	1260.4	-0.00206382	0.00412617	0.0133448	-0.0058676
Repeat:3	1265.34	-0.00203682	0.00401434	0.016262	-0.00512475
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000691456	0.0167198	12211.2	229969	12788.8
Std Dev:	0.000265321	0.00151985	280.195	2591.91	79.6686
%RSD:	38.3713	9.09013	2.29458	1.12707	0.622956
Repeat:1	0.000434737	0.0177232	11960.5	227108	12757
Repeat:2	0.000675018	0.017465	12159.4	232160	12879.5
Repeat:3	0.000964614	0.0149712	12513.7	230638	12729.9
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12211.2	229969	12788.8
Std Dev:	280.195	2591.91	79.6686
%RSD:	2.29458	1.12707	0.622956
Repeat:1	11960.5	227108	12757
Repeat:2	12159.4	232160	12879.5
Repeat:3	12513.7	230638	12729.9

Sample Name	**Acquisition date**
MXK42	12/20/2012 3:45:07PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000232532	0.0132837	-0.00232024	4.18592	0.0882024
Std Dev:	7.51868e-005	0.000420452	8.84161e-005	0.0316934	0.00113112
%RSD:	32.334	3.16516	3.81065	0.757144	1.28242
Repeat:1	-0.000296516	0.0134838	-0.00230892	4.21061	0.0870305
Repeat:2	-0.000251359	0.0135668	-0.00223803	4.19697	0.0892878
Repeat:3	-0.000149721	0.0128006	-0.00241377	4.15018	0.088289
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	1.92727e-005	0.0770921	0.00145861	0.076845	0.0437706
Std Dev:	1.92162e-005	0.000925028	0.000124293	0.000252472	0.000346186

%RSD:	99.7069	1.1999	8.52136	0.328547	0.790912
Repeat:1	4.00858e-005	0.0781219	0.00134949	0.0769694	0.0441659
Repeat:2	2.2049e-006	0.0768225	0.00143243	0.0765544	0.043624
Repeat:3	1.55273e-005	0.0763318	0.00159391	0.0770111	0.0435218
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00419653	0.00191322	0.0146762	0.0116714	0.00117857
Std Dev:	3.30763e-005	6.41456e-005	0.000449987	0.000217601	8.51681e-005
%RSD:	0.788184	3.35276	3.0661	1.86441	7.22636
Repeat:1	0.00422569	0.00184063	0.0151591	0.0119218	0.00125868
Repeat:2	0.00416059	0.00196227	0.0146008	0.0115634	0.00118793
Repeat:3	0.0042033	0.00193676	0.0142687	0.0115288	0.00108912
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00777922	0.0242556	0.0151458	6.87187	0.00641529
Std Dev:	3.60607e-005	0.000214123	0.000385558	0.0238725	0.000123211
%RSD:	0.463552	0.882775	2.54563	0.347394	1.92058
Repeat:1	0.00780187	0.0244933	0.0151891	6.89773	0.00636805
Repeat:2	0.00779816	0.024196	0.015508	6.86721	0.0063227
Repeat:3	0.00773764	0.0240777	0.0147405	6.85068	0.00655514
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.000806184	0.00470797	0.128889	0.00171001	0.000980283
Std Dev:	2.94805e-005	6.02111e-005	9.79623e-005	0.00019252	4.19834e-005
%RSD:	3.6568	1.27892	0.0760053	11.2584	4.28279
Repeat:1	0.000827382	0.00477091	0.12894	0.00184466	0.000978393
Repeat:2	0.000772518	0.00470208	0.12895	0.0014895	0.000939276
Repeat:3	0.000818651	0.00465092	0.128776	0.00179586	0.00102318
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	11.992	-0.000314416	0.0134057	0.00435864	-0.000730628
Std Dev:	0.0712672	4.70777e-005	0.000448486	0.000405171	4.66433e-005
%RSD:	0.594291	14.9731	3.34549	9.29581	6.384
Repeat:1	12.0681	-0.000263563	0.0132355	0.0044728	-0.000745137
Repeat:2	11.981	-0.000356479	0.0130672	0.00469449	-0.000678454
Repeat:3	11.9268	-0.000323205	0.0139143	0.00390864	-0.000768291
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000151585	0.104159	11828.7	224045	11948
Std Dev:	3.08689e-005	0.000660741	33.8911	2589.7	103.376
%RSD:	20.3641	0.634357	0.286515	1.15588	0.865214
Repeat:1	0.000185549	0.10473	11867.2	221059	11963.2
Repeat:2	0.000125236	0.104313	11815.5	225394	12043
Repeat:3	0.000143971	0.103435	11803.5	225681	11837.9

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.00068029	0.662661	-0.000840567	141.549	0.0245894
Std Dev:	0.000835373	0.0243741	0.00119491	1.07174	0.00041912
%RSD:	122.797	3.67822	142.156	0.757149	1.70447
Repeat:1	-0.00139106	0.674242	-0.000541047	142.384	0.0241552
Repeat:2	-0.000889662	0.679086	0.000176093	141.923	0.0249916
Repeat:3	0.000239854	0.634656	-0.00215675	140.341	0.0246215
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	6.72383e-005	0.4824	0.000919639	0.0757873	0.492808
Std Dev:	7.58169e-006	0.00623918	6.11913e-005	0.000233187	0.00389697

%RSD:	11.2758	1.29336	6.65384	0.307686	0.790768
Repeat:1	7.5449e-005	0.489346	0.000866379	0.0759435	0.497259
Repeat:2	6.05024e-005	0.480581	0.000906058	0.0755193	0.491156
Repeat:3	6.57634e-005	0.477272	0.00098648	0.0758991	0.490009
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0294427	0.365915	0.511541	0.0191379	0.103325
Std Dev:	0.000251798	0.0114756	0.0142271	0.000300548	0.00644313
%RSD:	0.855212	3.13614	2.78122	1.57043	6.23576
Repeat:1	0.0296654	0.352931	0.52681	0.0194838	0.109387
Repeat:2	0.0291695	0.374698	0.509157	0.0189888	0.104031
Repeat:3	0.0294934	0.370116	0.498657	0.018941	0.0965587
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0170082	0.0567126	43.6795	55.4093	0.024156
Std Dev:	7.91287e-005	0.000502406	1.10482	0.19234	0.000131043
%RSD:	0.465238	0.885881	2.52937	0.347125	0.542487
Repeat:1	0.017058	0.0572702	43.8035	55.6176	0.0241794
Repeat:2	0.0170497	0.0565726	44.7171	55.3717	0.0240148
Repeat:3	0.016917	0.056295	42.5179	55.2385	0.0242738
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0490845	0.653632	0.562129	0.00895695	0.00572993
Std Dev:	0.000692388	0.00836444	0.000615267	0.00229323	0.000905918
%RSD:	1.4106	1.27969	0.109453	25.6027	15.8103
Repeat:1	0.0497357	0.662374	0.561436	0.0105013	0.00561461
Repeat:2	0.0483572	0.652815	0.562613	0.00632194	0.0048872
Repeat:3	0.0491607	0.645705	0.562337	0.0100477	0.00668799
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1178.28	-0.00196437	0.00406644	0.0160377	-0.0032029
Std Dev:	7.00252	0.000220648	0.000107908	0.00122968	0.000889978
%RSD:	0.594299	11.2325	2.65362	7.66748	27.7866
Repeat:1	1185.76	-0.00172602	0.00402543	0.016383	-0.00341863
Repeat:2	1177.2	-0.00216151	0.00398505	0.0170578	-0.00222489
Repeat:3	1171.88	-0.00200556	0.00418884	0.0146722	-0.00396518
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.00122149	0.014861	11828.7	224045	11948
Std Dev:	0.000247467	0.000163604	33.8911	2589.7	103.376
%RSD:	20.2595	1.10089	0.286515	1.15588	0.865214
Repeat:1	0.00149415	0.0149096	11867.2	221059	11963.2
Repeat:2	0.00101112	0.0149949	11815.5	225394	12043
Repeat:3	0.0011592	0.0146786	11803.5	225681	11837.9
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11828.7	224045	11948

Std Dev:	33.8911	2589.7	103.376
%RSD:	0.286515	1.15588	0.865214
Repeat:1	11867.2	221059	11963.2
Repeat:2	11815.5	225394	12043
Repeat:3	11803.5	225681	11837.9

Sample Name	**Acquisition date**
MXK42A	12/20/2012 3:50:06PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00427207	0.0425586	0.00519811	4.14281	0.394926
Std Dev:	3.49166e-005	0.000550085	8.50064e-005	0.0312366	0.00271552
%RSD:	0.817324	1.29253	1.63533	0.753995	0.687601
Repeat:1	0.00428657	0.0419256	0.0052414	4.17847	0.391919
Repeat:2	0.00423223	0.0429204	0.00510017	4.12971	0.395659
Repeat:3	0.00429739	0.0428299	0.00525275	4.12026	0.3972
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.130062	6.73479	0.10147	0.184284	0.0612069
Std Dev:	0.000371223	0.04567	0.00067145	0.000533523	0.000240497
%RSD:	0.28542	0.678121	0.661725	0.289511	0.392924
Repeat:1	0.129634	6.78698	0.102155	0.184495	0.0609993
Repeat:2	0.130255	6.70217	0.101441	0.183678	0.0611509
Repeat:3	0.130297	6.71522	0.100813	0.18468	0.0614704
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0357496	0.00652791	2.00961	0.097766	0.10556
Std Dev:	0.000155174	0.000217455	0.0111222	0.00106365	0.00136548
%RSD:	0.434057	3.33115	0.55345	1.08796	1.29356
Repeat:1	0.0356312	0.0064024	2.00461	0.0965841	0.107135
Repeat:2	0.0359253	0.00640234	2.00187	0.0986464	0.104706
Repeat:3	0.0356924	0.00677901	2.02236	0.0980673	0.10484
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.054924	0.240307	0.0308248	14.2286	0.370923
Std Dev:	0.000271484	0.000869844	0.000690671	0.090559	0.00124962
%RSD:	0.49429	0.361971	2.24063	0.636459	0.336896
Repeat:1	0.054643	0.241123	0.031578	14.1595	0.371887
Repeat:2	0.054944	0.240408	0.0306752	14.195	0.371372
Repeat:3	0.0551849	0.239392	0.0302212	14.3311	0.369511
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.25096	0.00533617	0.141754	0.0427429	0.00735917
Std Dev:	0.000816074	2.1239e-005	0.00105483	0.000297328	5.11532e-005
%RSD:	0.325181	0.39802	0.744128	0.69562	0.695094
Repeat:1	0.251477	0.00536032	0.142888	0.0429115	0.00730843
Repeat:2	0.251383	0.00532781	0.141571	0.0429176	0.00741073
Repeat:3	0.250019	0.00532039	0.140803	0.0423996	0.00735836
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	11.6891	0.107589	2.2431	0.0342131	0.0189242
Std Dev:	0.0443474	0.000876712	0.00662299	0.0003952	0.000142975
%RSD:	0.379392	0.814871	0.29526	1.15511	0.755512
Repeat:1	11.6564	0.108489	2.24999	0.0344885	0.0187604
Repeat:2	11.6713	0.10754	2.24254	0.0343906	0.0190239

Repeat:3	11.7396	0.106738	2.23678	0.0337603	0.0189883
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0253733	0.888135	11547.8	215522	11149
Std Dev:	0.000103734	0.00361386	268.245	867.406	140.426
%RSD:	0.408831	0.406904	2.32291	0.402468	1.25955
Repeat:1	0.0252719	0.890677	11327.9	215363	11271.5
Repeat:2	0.0253688	0.88973	11468.8	214745	11179.7
Repeat:3	0.0254792	0.883998	11846.7	216458	10995.7

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.049537	2.34446	0.0936568	140.093	0.138248
Std Dev:	0.000388123	0.0319211	0.00111749	1.05629	0.00100619
%RSD:	0.783501	1.36155	1.19317	0.753994	0.727815
Repeat:1	0.0496975	2.30772	0.0941339	141.298	0.137134
Repeat:2	0.0490944	2.36543	0.09238	139.65	0.13852
Repeat:3	0.0498191	2.36022	0.0944566	139.33	0.13909
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0516741	45.3875	0.0504196	0.172013	0.689583
Std Dev:	0.000147288	0.308037	0.000334866	0.000490493	0.00270688
%RSD:	0.285033	0.678682	0.664158	0.285149	0.392539
Repeat:1	0.0515043	45.7396	0.0507604	0.172183	0.687246
Repeat:2	0.0517507	45.1675	0.0504076	0.17146	0.688954
Repeat:3	0.0517674	45.2555	0.050091	0.172396	0.692549
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.270964	1.19664	63.5848	0.137413	7.99912
Std Dev:	0.0011865	0.0389236	0.351647	0.00147413	0.10323
%RSD:	0.437882	3.25274	0.553036	1.07277	1.29052
Repeat:1	0.270057	1.17413	63.4265	0.135775	8.11817
Repeat:2	0.272306	1.1742	63.34	0.138633	7.93454
Repeat:3	0.270527	1.24158	63.9877	0.137831	7.94464
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.120389	0.563645	88.6977	114.682	0.528271
Std Dev:	0.000596776	0.00204095	1.97984	0.729631	0.00167635
%RSD:	0.495709	0.362099	2.23212	0.636221	0.317328
Repeat:1	0.11977	0.565558	90.857	114.126	0.529564
Repeat:2	0.120434	0.56388	88.2684	114.412	0.528871
Repeat:3	0.120961	0.561497	86.9677	115.508	0.526377
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.22473	0.741506	0.638812	0.503034	0.138915
Std Dev:	0.0167674	0.00295758	0.00636811	0.00364985	0.00105937
%RSD:	0.320924	0.398862	0.996868	0.725568	0.7626
Repeat:1	5.23534	0.744868	0.645536	0.505125	0.137889
Repeat:2	5.23344	0.740348	0.638027	0.505157	0.140005
Repeat:3	5.2054	0.739303	0.632873	0.498819	0.138852

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1148.52	0.503766	0.539918	0.106059	0.366375
Std Dev:	4.35746	0.00410904	0.00159045	0.0012001	0.0027144
%RSD:	0.379399	0.815665	0.294572	1.13153	0.740881
Repeat:1	1145.3	0.507984	0.541571	0.106889	0.363262
Repeat:2	1146.77	0.503539	0.539784	0.106606	0.368245
Repeat:3	1153.48	0.499776	0.538399	0.104683	0.367619
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.200825	0.490549	11547.8	215522	11149
Std Dev:	0.000821957	0.00236892	268.245	867.406	140.426
%RSD:	0.409291	0.482911	2.32291	0.402468	1.25955
Repeat:1	0.200022	0.492215	11327.9	215363	11271.5
Repeat:2	0.200787	0.491596	11468.8	214745	11179.7
Repeat:3	0.201665	0.487837	11846.7	216458	10995.7
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11547.8	215522	11149
Std Dev:	268.245	867.406	140.426
%RSD:	2.32291	0.402468	1.25955
Repeat:1	11327.9	215363	11271.5
Repeat:2	11468.8	214745	11179.7
Repeat:3	11846.7	216458	10995.7

Sample Name	**Acquisition date**
CCV5	12/20/2012 3:54:59PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0905034	0.373854	0.0387717	0.0613747	6.31566
Std Dev:	0.000425081	0.0023356	0.000124242	0.000320747	0.0437575
%RSD:	0.469685	0.624735	0.320445	0.522605	0.692842
Repeat:1	0.0909884	0.376263	0.0387723	0.0617291	6.35809
Repeat:2	0.0901951	0.3737	0.0386472	0.0611044	6.3182
Repeat:3	0.0903268	0.371599	0.0388957	0.0612906	6.27068
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	5.25811	6.56823	1.03197	2.24139	0.181096
Std Dev:	0.0379753	0.056118	0.00289513	0.00478783	0.000858344
%RSD:	0.722224	0.854385	0.280543	0.21361	0.473971
Repeat:1	5.30109	6.62612	1.03531	2.24649	0.182001
Repeat:2	5.22907	6.5645	1.03022	2.237	0.180293
Repeat:3	5.24418	6.51407	1.03039	2.24068	0.180995
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.248465	0.110502	2.05528	1.78562	0.519945
Std Dev:	0.000779089	0.00101054	0.0148829	0.0160759	0.00295299
%RSD:	0.313561	0.914496	0.724133	0.900296	0.567942
Repeat:1	0.249147	0.111605	2.07125	1.80113	0.523028

Repeat:2	0.247616	0.110281	2.05278	1.7867	0.519666
Repeat:3	0.248633	0.10962	2.0418	1.76903	0.517142
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.934149	0.842188	0.0159288	7.59579	1.49071
Std Dev:	0.00267964	0.00261389	0.000471709	0.0528957	0.00429349
%RSD:	0.286854	0.310369	2.96135	0.696381	0.288017
Repeat:1	0.937188	0.844328	0.0159546	7.64854	1.49522
Repeat:2	0.932127	0.839274	0.0163872	7.59608	1.48667
Repeat:3	0.933132	0.842961	0.0154448	7.54275	1.49022
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0976433	0.00384968	0.0908113	0.0433994	0.0234654
Std Dev:	0.000550863	1.29938e-005	0.000535213	0.000248238	4.03637e-005
%RSD:	0.564159	0.33753	0.589368	0.571986	0.172014
Repeat:1	0.0982375	0.00385936	0.0913895	0.043571	0.0234818
Repeat:2	0.0971496	0.00385477	0.0903332	0.0431147	0.0234194
Repeat:3	0.0975429	0.00383492	0.0907111	0.0435123	0.023495
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.110367	0.43516	9.01272	0.590149	0.0527933
Std Dev:	0.012933	0.00122754	0.0488629	0.00468481	9.4013e-005
%RSD:	11.7182	0.282091	0.542155	0.793836	0.178078
Repeat:1	0.124313	0.436489	9.04854	0.594557	0.052878
Repeat:2	0.10802	0.434068	9.03255	0.59066	0.0526922
Repeat:3	0.0987688	0.434922	8.95705	0.585229	0.0528097
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.251779	3.23997	12032.1	231144	12270.9
Std Dev:	0.0011474	0.0100059	77.2605	2166.51	234.342
%RSD:	0.455718	0.308825	0.642119	0.937297	1.90974
Repeat:1	0.253071	3.24914	11971.5	228822	12004.2
Repeat:2	0.250878	3.2293	12005.8	231499	12444.1
Repeat:3	0.25139	3.24147	12119.1	233112	12364.3

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.00919	21.4858	0.497749	2.08057	2.33221
Std Dev:	0.00473084	0.135248	0.00156474	0.010894	0.0162145
%RSD:	0.468775	0.629478	0.314362	0.523608	0.695242
Repeat:1	1.01459	21.6251	0.497805	2.09262	2.34793
Repeat:2	1.00576	21.4772	0.496157	2.07142	2.33315
Repeat:3	1.00723	21.3551	0.499285	2.07768	2.31554
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	Fail
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.08796	44.2641	0.510801	2.00111	2.04292
Std Dev:	0.0150803	0.378507	0.00142434	0.00427425	0.00967894
%RSD:	0.722254	0.855111	0.278844	0.213594	0.47378
Repeat:1	2.10502	44.6546	0.512445	2.00565	2.05312
Repeat:2	2.07642	44.239	0.509933	1.99717	2.03386
Repeat:3	2.08242	43.8988	0.510026	2.00049	2.04177
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.90118	19.7743	65.0285	2.46938	39.3375
Std Dev:	0.00596932	0.18102	0.470548	0.0222049	0.223228

%RSD:	0.31398	0.915431	0.723603	0.899209	0.567469
Repeat:1	1.90642	19.9719	65.5335	2.4908	39.5706
Repeat:2	1.89468	19.7346	64.9495	2.47087	39.3163
Repeat:3	1.90244	19.6165	64.6024	2.44647	39.1257
QC Status Pass/Fail:	Pass	Fail	Fail	Fail	Fail
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.04985	1.97586	45.5777	61.2419	2.06541
Std Dev:	0.00587827	0.00613308	1.34897	0.426179	0.00595711
%RSD:	0.286766	0.3104	2.95972	0.695895	0.288423
Repeat:1	2.05652	1.98089	45.6482	61.6669	2.07168
Repeat:2	2.04541	1.96903	46.89	61.2442	2.05983
Repeat:3	2.04762	1.97768	44.1948	60.8145	2.06472
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.03041	0.53883	0.510481	0.493841	0.48609
Std Dev:	0.0114521	0.00181157	0.002871	0.00287081	0.000839234
%RSD:	0.564027	0.336205	0.562411	0.581323	0.17265
Repeat:1	2.04277	0.540186	0.513535	0.495765	0.48643
Repeat:2	2.02015	0.539533	0.507837	0.490541	0.485134
Repeat:3	2.02831	0.536773	0.51007	0.495217	0.486705
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	10.7945	2.03905	2.1682	1.80141	0.984324
Std Dev:	1.27071	0.00575336	0.0117493	0.0142748	0.00174122
%RSD:	11.7719	0.282159	0.541894	0.792423	0.176895
Repeat:1	12.1647	2.04528	2.17681	1.81484	0.985895
Repeat:2	10.5639	2.03394	2.17297	1.80297	0.982452
Repeat:3	9.65484	2.03794	2.15481	1.78642	0.984625
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	1.98921	1.95923	12032.1	231144	12270.9
Std Dev:	0.00906614	0.00603435	77.2605	2166.51	234.342
%RSD:	0.455766	0.307996	0.642119	0.937297	1.90974
Repeat:1	1.99941	1.96471	11971.5	228822	12004.2
Repeat:2	1.98207	1.95276	12005.8	231499	12444.1
Repeat:3	1.98614	1.96023	12119.1	233112	12364.3
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12032.1	231144	12270.9
Std Dev:	77.2605	2166.51	234.342
%RSD:	0.642119	0.937297	1.90974
Repeat:1	11971.5	228822	12004.2
Repeat:2	12005.8	231499	12444.1
Repeat:3	12119.1	233112	12364.3

Sample Name	**Acquisition date**
CCB5	12/20/2012 3:59:48PM

	Analyst Name	Method Name
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-0.000213346	0.00173706	-0.000300143	0.00169405	0.0301423
Std Dev:	2.78738e-005	0.000386609	1.65601e-005	9.39511e-005	0.00109993
%RSD:	13.0651	22.2565	5.51741	5.54595	3.64913
Repeat:1	-0.000185579	0.00217873	-0.000283532	0.00178445	0.0299347
Repeat:2	-0.000213133	0.00145997	-0.000300245	0.00170079	0.0313313
Repeat:3	-0.000241325	0.00157248	-0.000316652	0.00159691	0.029161
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Avg. of Repeats:	-0.000116426	0.00488637	-0.000515379	4.87636e-006	-2.40049e-005
Std Dev:	1.85732e-005	0.000315233	0.000101204	7.63825e-005	2.0552e-005
%RSD:	15.9528	6.45128	19.6367	1566.38	85.6161
Repeat:1	-9.50186e-005	0.00466463	-0.00048814	-2.69326e-005	-4.22583e-005
Repeat:2	-0.000126009	0.00524723	-0.000430582	9.20229e-005	-1.74442e-006
Repeat:3	-0.000128251	0.00474725	-0.000627414	-5.04613e-005	-2.80118e-005
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.000317511	0.000104952	0.00889588	-0.00340548	-0.000293495
Std Dev:	1.45255e-005	9.62065e-005	0.00192767	0.00236859	6.4691e-005
%RSD:	4.57481	91.6669	21.6693	69.5524	22.0416
Repeat:1	0.000301289	-1.10058e-006	0.01111	-0.00337402	-0.000306329
Repeat:2	0.000321928	0.000186619	0.00759092	-0.00578965	-0.00022335
Repeat:3	0.000329315	0.000129338	0.00798673	-0.00105278	-0.000350808
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	2.51425e-005	0.000253424	0.00041141	0.00376471	-0.000877456
Std Dev:	1.2728e-005	5.09816e-005	0.000827821	0.00275802	0.00012002
%RSD:	50.6234	20.1171	201.216	73.2597	13.6781
Repeat:1	3.82525e-005	0.00026094	-0.000302293	0.00691275	-0.000946487
Repeat:2	1.28344e-005	0.000199101	0.00131895	0.00260785	-0.000947011
Repeat:3	2.43406e-005	0.00030023	0.000217572	0.00177353	-0.00073887
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	8.3637e-005	3.39793e-006	8.58692e-005	0.000206323	2.73285e-005
Std Dev:	1.90595e-006	1.13957e-005	5.93109e-005	0.000114425	3.54922e-005
%RSD:	2.27884	335.372	69.0712	55.4591	129.873
Repeat:1	8.53306e-005	-9.56209e-006	0.000137458	7.56924e-005	2.29441e-005
Repeat:2	8.40074e-005	1.18504e-005	9.90843e-005	0.00025447	6.48092e-005
Repeat:3	8.15731e-005	7.90548e-006	2.10654e-005	0.000288807	-5.76791e-006
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	0.0460648	0.000158448	-0.00513666	-0.000930968	-0.00012209
Std Dev:	0.00450047	3.25598e-005	9.09822e-005	0.000202671	2.03975e-005
%RSD:	9.76988	20.5492	1.77123	21.7699	16.7069
Repeat:1	0.0502837	0.000189219	-0.00511514	-0.000699797	-0.000142703
Repeat:2	0.0465829	0.000124354	-0.00523647	-0.001015	-0.000101915
Repeat:3	0.0413277	0.000161773	-0.00505837	-0.0010781	-0.000121653
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	7.99528e-005	0.00171616	12493.7	235124	12466.5
Std Dev:	1.09504e-005	3.36758e-005	196.109	4576.83	304.689
%RSD:	13.6961	1.96228	1.56967	1.94656	2.44406
Repeat:1	9.22507e-005	0.00175397	12275.9	231191	12350.6
Repeat:2	7.12575e-005	0.0017051	12548.6	234034	12236.8
Repeat:3	7.63503e-005	0.0016894	12656.4	240147	12812.2

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000468038	-0.00562425	0.000446728	0.0560918	0.00307539
Std Dev:	0.000309783	0.022417	0.000217819	0.0031733	0.000407573
%RSD:	66.1876	398.578	48.7586	5.65734	13.2527
Repeat:1	-0.000159417	0.0199857	0.000664096	0.0591424	0.00299852
Repeat:2	-0.000465727	-0.0216882	0.000447627	0.0563244	0.00351593
Repeat:3	-0.000778971	-0.0151702	0.000228462	0.0528086	0.00271173
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.35807e-005	-0.00461681	-3.9179e-005	7.45328e-005	0.000139348
Std Dev:	7.35982e-006	0.0021262	5.01124e-005	6.89225e-005	0.000231785
%RSD:	54.1932	46.0534	127.906	92.4727	166.335
Repeat:1	2.20632e-005	-0.0061124	-2.4404e-005	4.75385e-005	-6.68308e-005
Repeat:2	9.78893e-006	-0.00218286	1.88476e-006	0.000152867	0.000390229
Repeat:3	8.88994e-006	-0.00555518	-9.50178e-005	2.31933e-005	9.46471e-005
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000267595	0.0473446	0.328787	-0.00168509	-0.00861351
Std Dev:	0.000111383	0.0172072	0.0609465	0.00327249	0.00488828
%RSD:	41.6236	36.3445	18.5368	194.203	56.7513
Repeat:1	-0.000392129	0.028375	0.39879	-0.00164159	-0.00958331
Repeat:2	-0.000233159	0.0619482	0.287528	-0.00497911	-0.00331302
Repeat:3	-0.000177497	0.0517106	0.300042	0.00156544	-0.0129442
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-8.55124e-006	0.000395092	1.42711	0.0731434	6.47461e-006
Std Dev:	2.81651e-005	0.00011962	2.37311	0.0222213	0.000161448
%RSD:	329.369	30.2766	166.288	30.3804	2493.55
Repeat:1	2.0449e-005	0.000412728	-0.618999	0.0985071	-8.4588e-005
Repeat:2	-3.57994e-005	0.000267633	4.02868	0.0638226	-8.88704e-005
Repeat:3	-1.03033e-005	0.000504916	0.871647	0.0571006	0.000192882
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000944058	0.00110753	0.000341681	0.00015543	-0.00240058
Std Dev:	5.1413e-005	0.00158272	0.000272627	0.00137966	0.000737834
%RSD:	5.44596	142.905	79.79	887.644	30.7357
Repeat:1	0.000990794	-0.000692564	0.000575693	-0.00141899	-0.00249773
Repeat:2	0.000952393	0.00228098	0.000407032	0.000732026	-0.00161898
Repeat:3	0.000888987	0.00173417	4.23171e-005	0.00115326	-0.00308502
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	4.50897	0.000251892	-0.000388605	0.000486009	-0.000676098
Std Dev:	0.442202	0.000152604	2.19027e-005	0.000624804	0.000382598
%RSD:	9.80717	60.583	5.63625	128.558	56.5891
Repeat:1	4.92351	0.000396108	-0.000383413	0.00120011	-0.00106093
Repeat:2	4.55988	9.20955e-005	-0.000412637	0.000217992	-0.000295776

Repeat:3	4.04351	0.000267473	-0.000369764	3.99269e-005	-0.000671588
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	5.89987e-005	-0.000153409	12493.7	235124	12466.5
Std Dev:	8.50959e-005	1.76425e-005	196.109	4576.83	304.689
%RSD:	144.234	11.5004	1.56967	1.94656	2.44406
Repeat:1	0.000154532	-0.000137304	12275.9	231191	12350.6
Repeat:2	-8.67593e-006	-0.000172265	12548.6	234034	12236.8
Repeat:3	3.11398e-005	-0.000150656	12656.4	240147	12812.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12493.7	235124	12466.5
Std Dev:	196.109	4576.83	304.689
%RSD:	1.56967	1.94656	2.44406
Repeat:1	12275.9	231191	12350.6
Repeat:2	12548.6	234034	12236.8
Repeat:3	12656.4	240147	12812.2

Sample Name	**Acquisition date**
MXK42A	12/20/2012 4:04:47PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00443316	0.0427628	0.00562494	3.99983	0.408586
Std Dev:	3.53683e-005	0.000606501	8.74945e-005	0.0814295	0.00306028
%RSD:	0.797811	1.41829	1.55547	2.03582	0.748994
Repeat:1	0.00446763	0.0430571	0.00570735	4.09378	0.41041
Repeat:2	0.00439696	0.0431659	0.00553312	3.94956	0.410294
Repeat:3	0.00443489	0.0420653	0.00563434	3.95614	0.405053
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.133228	6.54608	0.104785	0.187057	0.0598974
Std Dev:	0.00171957	0.0842856	0.00101487	0.00171742	0.00077942
%RSD:	1.2907	1.28757	0.968528	0.918123	1.30126
Repeat:1	0.135166	6.6335	0.105665	0.188773	0.0607974
Repeat:2	0.132636	6.53943	0.105015	0.187061	0.0594464
Repeat:3	0.131883	6.46532	0.103675	0.185338	0.0594484
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0361149	0.00662912	2.02481	0.103039	0.103067
Std Dev:	0.000273751	0.000324148	0.0238332	0.000383193	0.0010953
%RSD:	0.758001	4.88975	1.17706	0.371892	1.06271
Repeat:1	0.0364275	0.00697224	2.05027	0.10348	0.104329
Repeat:2	0.035918	0.00632805	2.02113	0.102843	0.102493
Repeat:3	0.0359992	0.00658708	2.00303	0.102793	0.102377
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0560353	0.233076	0.0299755	14.1151	0.38367
Std Dev:	0.000404606	0.00149795	0.000720521	0.148045	0.00358539
%RSD:	0.722056	0.642688	2.4037	1.04884	0.934499
Repeat:1	0.0564933	0.234717	0.0300949	14.2602	0.387187
Repeat:2	0.0557263	0.232727	0.0306288	14.121	0.383803

Repeat:3	0.0558863	0.231783	0.0292027	13.9642	0.38002
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.244215	0.00519422	0.139139	0.0416359	0.0075703
Std Dev:	0.00252669	6.70696e-005	0.000888679	0.000319999	9.75193e-005
%RSD:	1.03462	1.29124	0.638701	0.768565	1.28818
Repeat:1	0.247022	0.00527163	0.139911	0.0420054	0.00758151
Repeat:2	0.243501	0.00515349	0.139337	0.0414488	0.00766173
Repeat:3	0.242123	0.00515753	0.138167	0.0414536	0.00746766
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	11.17	0.103934	2.35413	0.0333336	0.0194998
Std Dev:	0.132834	0.000880696	0.0197956	0.000763609	0.000128726
%RSD:	1.1892	0.847361	0.840887	2.29081	0.660142
Repeat:1	11.3046	0.104614	2.37635	0.0342152	0.019483
Repeat:2	11.1664	0.104249	2.34765	0.0329046	0.0196361
Repeat:3	11.039	0.102939	2.33839	0.0328809	0.0193803
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0259545	0.912081	12091.9	227832	11935.1
Std Dev:	0.000303199	0.00545504	129.175	2152.01	39.1316
%RSD:	1.1682	0.598087	1.06828	0.94456	0.32787
Repeat:1	0.0262889	0.917699	12059.7	225510	11926.1
Repeat:2	0.0258771	0.91174	11981.8	229760	11977.9
Repeat:3	0.0256976	0.906805	12234.1	228225	11901.2

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0513308	2.35659	0.0980302	135.257	0.14331
Std Dev:	0.000394282	0.0350819	0.00125818	2.75363	0.00113401
%RSD:	0.76812	1.48867	1.28346	2.03585	0.7913
Repeat:1	0.051716	2.37351	0.0993545	138.434	0.143986
Repeat:2	0.050928	2.38	0.0968507	133.558	0.143943
Repeat:3	0.0513484	2.31625	0.0978855	133.78	0.142
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0529308	44.1148	0.0520666	0.174168	0.674863
Std Dev:	0.000682455	0.568494	0.000501042	0.00161252	0.00877804
%RSD:	1.28934	1.28867	0.962308	0.925843	1.30071
Repeat:1	0.0536997	44.7044	0.0524982	0.175779	0.684999
Repeat:2	0.0526958	44.0699	0.0521845	0.174171	0.669778
Repeat:3	0.0523969	43.57	0.0515172	0.172554	0.669813
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.273756	1.21467	64.0653	0.144717	7.81043
Std Dev:	0.00210015	0.0578207	0.753525	0.000521547	0.082829
%RSD:	0.767162	4.76018	1.17618	0.36039	1.06049
Repeat:1	0.276154	1.27584	64.8702	0.145319	7.90594
Repeat:2	0.272244	1.16091	63.9489	0.144447	7.7671
Repeat:3	0.272869	1.20728	63.3767	0.144386	7.75825
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.12283	0.546677	86.2606	113.768	0.545342

Std Dev:	0.000886524	0.00351471	2.06581	1.19279	0.0051216
%RSD:	0.721747	0.642922	2.39485	1.04844	0.939156
Repeat:1	0.123834	0.550529	86.6036	114.936	0.550372
Repeat:2	0.122153	0.545859	88.1335	113.815	0.545521
Repeat:3	0.122504	0.543644	84.0448	112.552	0.540133
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.08372	0.72183	0.63093	0.4899	0.143824
Std Dev:	0.0526323	0.00931163	0.00329602	0.00371404	0.00195913
%RSD:	1.03531	1.29	0.522406	0.758122	1.36218
Repeat:1	5.14216	0.732577	0.633499	0.494189	0.14393
Repeat:2	5.06893	0.716171	0.632078	0.487737	0.145728
Repeat:3	5.04006	0.716743	0.627214	0.487774	0.141814
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1097.52	0.486636	0.566635	0.10341	0.376804
Std Dev:	13.0518	0.00412772	0.0047558	0.00231448	0.00246508
%RSD:	1.18922	0.848215	0.839306	2.23815	0.654206
Repeat:1	1110.74	0.489823	0.571974	0.106083	0.376579
Repeat:2	1097.16	0.48811	0.565076	0.102096	0.379375
Repeat:3	1084.64	0.481973	0.562854	0.102053	0.37446
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.205383	0.507124	12091.9	227832	11935.1
Std Dev:	0.00240443	0.00275977	129.175	2152.01	39.1316
%RSD:	1.1707	0.544201	1.06828	0.94456	0.32787
Repeat:1	0.208036	0.509976	12059.7	225510	11926.1
Repeat:2	0.204765	0.506928	11981.8	229760	11977.9
Repeat:3	0.203348	0.504467	12234.1	228225	11901.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12091.9	227832	11935.1
Std Dev:	129.175	2152.01	39.1316
%RSD:	1.06828	0.94456	0.32787
Repeat:1	12059.7	225510	11926.1
Repeat:2	11981.8	229760	11977.9
Repeat:3	12234.1	228225	11901.2

Sample Name	**Acquisition date**
MXK44	12/20/2012 4:09:40PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	3.49463e-006	0.0158809	-0.00240774	4.10385	0.0976415
Std Dev:	3.85671e-005	0.00029044	5.88743e-005	0.102933	0.0017489
%RSD:	1103.61	1.82886	2.44521	2.50821	1.79115
Repeat:1	-4.05749e-005	0.0162133	-0.00247562	4.18576	0.0992685

Repeat:2	1.99767e-005	0.0157535	-0.00237702	4.13747	0.0978639
Repeat:3	3.10821e-005	0.015676	-0.00237059	3.98831	0.095792
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	5.98696e-007	0.0628528	0.00889923	0.0812337	0.055073
Std Dev:	4.72664e-005	0.00137734	0.00037659	0.00414339	0.00113801
%RSD:	7894.9	2.19138	4.23171	5.10058	2.06636
Repeat:1	2.6051e-005	0.0637513	0.00906243	0.0846623	0.0562056
Repeat:2	2.96846e-005	0.06354	0.00916668	0.0824092	0.0550837
Repeat:3	-5.39395e-005	0.061267	0.00846856	0.0766296	0.0539297
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00316911	0.0016921	0.0327584	0.0129257	0.00127257
Std Dev:	0.000107226	0.000219741	0.000646045	0.00277013	0.000165626
%RSD:	3.38348	12.9863	1.97215	21.4312	13.0151
Repeat:1	0.00327207	0.00145665	0.032558	0.0159662	0.00142328
Repeat:2	0.0031772	0.00189172	0.0334809	0.0105451	0.00109525
Repeat:3	0.00305807	0.00172793	0.0322363	0.0122657	0.00129917
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00643111	0.0251844	0.0175994	8.60011	0.023799
Std Dev:	0.000129223	0.00109073	0.000622823	0.168849	0.00132677
%RSD:	2.00934	4.33098	3.53889	1.96334	5.57489
Repeat:1	0.00655567	0.0260795	0.017636	8.73372	0.0249548
Repeat:2	0.00643999	0.0255042	0.0182031	8.65626	0.0240919
Repeat:3	0.00629768	0.0239695	0.0169591	8.41033	0.0223502
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	-0.000361634	0.00541929	0.141593	0.00167419	0.000948209
Std Dev:	3.89553e-005	0.000112415	0.00570263	0.0002135	8.01689e-005
%RSD:	10.772	2.07434	4.02749	12.7524	8.45477
Repeat:1	-0.000380857	0.00552171	0.145939	0.00143725	0.00103908
Repeat:2	-0.000387241	0.00543715	0.143703	0.00185163	0.000918075
Repeat:3	-0.000316803	0.00529902	0.135136	0.00173369	0.000887474
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	12.0899	-0.000189333	0.0107422	0.00434959	-0.000732203
Std Dev:	0.257559	0.000132738	0.000119609	0.000455845	5.35405e-005
%RSD:	2.13037	70.1079	1.11346	10.4802	7.31224
Repeat:1	12.28	-0.00028024	0.0108717	0.00486938	-0.000675978
Repeat:2	12.1928	-3.70096e-005	0.0106358	0.00401789	-0.000738055
Repeat:3	11.7967	-0.000250751	0.010719	0.0041615	-0.000782578
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	9.46448e-005	0.0708725	12133.5	226748	11524.9
Std Dev:	5.86768e-006	0.00282027	442.545	5316.48	125.031
%RSD:	6.19969	3.97935	3.64729	2.34467	1.08488
Repeat:1	9.63934e-005	0.0731549	11854	222777	11577.8
Repeat:2	9.94395e-005	0.0717431	11902.8	224678	11382.1
Repeat:3	8.81016e-005	0.0677196	12643.8	232788	11614.8

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00194218	0.81323	-0.00154118	138.774	0.0280873
Std Dev:	0.000428532	0.0167954	0.00054075	3.48077	0.000648143
%RSD:	22.0644	2.06527	35.0868	2.50823	2.3076
Repeat:1	0.00145251	0.832456	-0.00200854	141.544	0.0286904
Repeat:2	0.00212537	0.805822	-0.000948902	139.911	0.0281697
Repeat:3	0.00224868	0.801413	-0.00166609	134.867	0.027402

QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.98839e-005	0.386358	0.00461485	0.0797682	0.620245
Std Dev:	1.87603e-005	0.00928995	0.000186966	0.00385365	0.0128091
%RSD:	31.3277	2.40449	4.0514	4.83107	2.06517
Repeat:1	6.9987e-005	0.392418	0.00469878	0.0829429	0.632999
Repeat:2	7.14274e-005	0.390993	0.00474515	0.0808812	0.620356
Repeat:3	3.82374e-005	0.375662	0.00440063	0.0754805	0.607381
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0215806	0.326069	1.08324	0.0208723	0.110456
Std Dev:	0.000819891	0.0394207	0.0204258	0.00382719	0.0125228
%RSD:	3.7992	12.0897	1.88562	18.3362	11.3374
Repeat:1	0.0223672	0.28373	1.0769	0.025073	0.121873
Repeat:2	0.0216437	0.361715	1.10608	0.0175832	0.0970622
Repeat:3	0.020731	0.332762	1.06673	0.0199607	0.112433
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0140492	0.0588917	50.7168	69.3336	0.0483584
Std Dev:	0.000283866	0.00255923	1.78578	1.36041	0.00213617
%RSD:	2.02051	4.34565	3.52108	1.96213	4.41737
Repeat:1	0.0143229	0.0609919	50.8216	70.4101	0.0501815
Repeat:2	0.0140685	0.0596421	52.4478	69.786	0.0488859
Repeat:3	0.0137562	0.0560412	48.8809	67.8046	0.0460079
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0252147	0.752544	0.631428	0.00610082	0.0049642
Std Dev:	0.000210244	0.0155982	0.0283662	0.00275533	0.00147956
%RSD:	0.833817	2.07274	4.49239	45.1633	29.8046
Repeat:1	0.0253527	0.766762	0.653129	0.00299325	0.00666651
Repeat:2	0.0249727	0.75501	0.641824	0.00824548	0.00423837
Repeat:3	0.0253187	0.735859	0.59933	0.00706372	0.00398772
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1187.9	-0.00137812	0.00342676	0.0158821	-0.00319837
Std Dev:	25.307	0.000622126	2.87467e-005	0.00138483	0.00117647
%RSD:	2.1304	45.1431	0.83889	8.71942	36.7833
Repeat:1	1206.58	-0.00180419	0.00345784	0.0174583	-0.00200461
Repeat:2	1198.01	-0.000664197	0.00340113	0.0148607	-0.00323377
Repeat:3	1159.1	-0.00166598	0.00342129	0.0153273	-0.00435675
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000915285	-0.00605629	12133.5	226748	11524.9
Std Dev:	5.90279e-005	0.000696321	442.545	5316.48	125.031
%RSD:	6.44913	11.4975	3.64729	2.34467	1.08488
Repeat:1	0.000942251	-0.00542283	11854	222777	11577.8
Repeat:2	0.000956013	-0.00594419	11902.8	224678	11382.1

Repeat:3	0.00084759	-0.00680187	12643.8	232788	11614.8
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12133.5	226748	11524.9
Std Dev:	442.545	5316.48	125.031
%RSD:	3.64729	2.34467	1.08488
Repeat:1	11854	222777	11577.8
Repeat:2	11902.8	224678	11382.1
Repeat:3	12643.8	232788	11614.8

Sample Name	**Acquisition date**
MXK47	12/20/2012 4:14:41PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000254312	0.01138	-0.00242852	4.08798	0.0784809
Std Dev:	6.52277e-005	0.000673853	0.000138417	0.0715727	0.00241178
%RSD:	25.6487	5.92136	5.69967	1.75081	3.07308
Repeat:1	-0.000245362	0.0121581	-0.00258014	4.13665	0.0792864
Repeat:2	-0.000194021	0.0109975	-0.00239649	4.12149	0.0757694
Repeat:3	-0.000323552	0.0109846	-0.00230892	4.0058	0.0803868
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-6.26286e-005	0.0342228	0.00603087	-0.0113635	0.000962365
Std Dev:	2.98414e-005	0.000390643	0.000102835	0.000121581	1.65044e-005
%RSD:	47.6482	1.14147	1.70514	1.06992	1.71498
Repeat:1	-8.40623e-005	0.0344697	0.00606838	-0.0113737	0.000979442
Repeat:2	-7.52774e-005	0.0344262	0.00591454	-0.0112372	0.0009465
Repeat:3	-2.85461e-005	0.0337724	0.00610968	-0.0114797	0.000961154
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0011362	0.000758004	0.0149176	-0.00253281	0.000770071
Std Dev:	6.41795e-005	0.000271753	0.001467	0.00102339	0.000260756
%RSD:	5.64862	35.8512	9.83402	40.4053	33.8613
Repeat:1	0.00120846	0.00099474	0.0152532	-0.00288061	0.00106944
Repeat:2	0.00111429	0.000461263	0.0133118	-0.00333697	0.000592474
Repeat:3	0.00108584	0.00081801	0.0161876	-0.00138085	0.000648303
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.00238045	0.020571	-5.02366e-005	0.0297748	-0.00890126
Std Dev:	3.21206e-005	0.00011759	0.000283934	0.00323467	0.00025471
%RSD:	1.34935	0.571631	565.193	10.8638	2.8615
Repeat:1	0.00238165	0.0207018	-0.000343761	0.033341	-0.00862747
Repeat:2	0.00241195	0.020537	-2.99679e-005	0.0289533	-0.00894513
Repeat:3	0.00234774	0.0204742	0.00022302	0.0270301	-0.00913119
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	-0.00130443	3.90359e-005	0.0178552	0.000918234	0.000828717
Std Dev:	0.000105532	1.71799e-005	0.00026019	0.000107091	6.9403e-005
%RSD:	8.09028	44.0106	1.45722	11.6627	8.37475
Repeat:1	-0.00132212	5.73258e-005	0.0180103	0.000864147	0.000869209
Repeat:2	-0.0014	3.65437e-005	0.0180005	0.000848973	0.000748579
Repeat:3	-0.00119117	2.32381e-005	0.0175548	0.00104158	0.000868364
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**

Avg. of Repeats:	11.7648	-0.000363659	0.00472333	0.00300494	-0.000768055
Std Dev:	0.0688506	0.000120397	0.000647624	0.00032974	3.05742e-005
%RSD:	0.585226	33.1072	13.7112	10.9733	3.98073
Repeat:1	11.8235	-0.000482108	0.00439059	0.0026874	-0.00080304
Repeat:2	11.7819	-0.000241404	0.00430971	0.00298176	-0.00074646
Repeat:3	11.689	-0.000367464	0.00546968	0.00334565	-0.000754665
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000118797	0.0460687	12009.8	226682	11202.9
Std Dev:	3.17273e-005	0.000434136	97.0018	1942.79	75.6463
%RSD:	26.7072	0.942368	0.807686	0.857057	0.675239
Repeat:1	8.59987e-005	0.0464441	11932	225314	11284.8
Repeat:2	0.000149332	0.0461686	11979.1	225825	11188.3
Repeat:3	0.00012106	0.0455933	12118.5	228906	11135.6

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000922995	0.55248	-0.00348542	138.238	0.0209876
Std Dev:	0.000724895	0.0390757	0.00162829	2.4203	0.000893597
%RSD:	78.5373	7.07278	46.7171	1.75082	4.25774
Repeat:1	-0.000823769	0.597599	-0.00528744	139.884	0.021286
Repeat:2	-0.000252824	0.53029	-0.00304901	139.371	0.019983
Repeat:3	-0.00169239	0.529551	-0.0021198	135.459	0.0216938
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.48751e-005	0.193253	0.00319946	-0.00313616	0.0101226
Std Dev:	1.18414e-005	0.00263483	4.82223e-005	0.000139049	0.000183672
%RSD:	33.9538	1.36341	1.5072	4.43373	1.81447
Repeat:1	2.64145e-005	0.194918	0.00321527	-0.00310893	0.0103093
Repeat:2	2.98031e-005	0.194625	0.00314532	-0.00301274	0.00994216
Repeat:3	4.84078e-005	0.190215	0.0032378	-0.00328681	0.0101163
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00601551	0.164431	0.519172	-0.000482363	0.0723453
Std Dev:	0.000491788	0.0486176	0.0463814	0.00141396	0.0197124
%RSD:	8.17533	29.5671	8.93373	293.131	27.2477
Repeat:1	0.00656999	0.206776	0.529784	-0.000962911	0.0949767
Repeat:2	0.00584447	0.111339	0.468404	-0.00159341	0.0589206
Repeat:3	0.00563209	0.175179	0.559328	0.00110924	0.0631388
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00515946	0.0480671	0.103915	0.282706	0.00264831
Std Dev:	7.08713e-005	0.000275907	0.813487	0.0260616	0.000429946
%RSD:	1.37362	0.574004	782.836	9.21864	16.2347
Repeat:1	0.00516134	0.0483741	-0.737044	0.311439	0.00309762
Repeat:2	0.00522938	0.0479873	0.16197	0.276087	0.00260654
Repeat:3	0.00508767	0.0478399	0.88682	0.260592	0.00224078
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00475845	0.00441339	-0.0516744	0.00856505	0.00278644

Std Dev:	0.00203881	0.00238194	0.000647518	0.00129416	0.00146545
%RSD:	42.8462	53.9708	1.25307	15.1097	52.5922
Repeat:1	0.00455596	0.00695074	-0.0515679	0.00790562	0.00357598
Repeat:2	0.00282843	0.00406396	-0.0510867	0.00773343	0.00109552
Repeat:3	0.00689095	0.00222546	-0.0523685	0.0100561	0.00368782
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1155.96	-0.00219516	0.001981	0.0124883	-0.00362521
Std Dev:	6.76509	0.000564288	0.000155797	0.00100204	0.000543214
%RSD:	0.585235	25.706	7.86455	8.02384	14.9844
Repeat:1	1161.73	-0.00275032	0.00190095	0.0115236	-0.00423877
Repeat:2	1157.64	-0.00162217	0.0018815	0.0124174	-0.00320557
Repeat:3	1148.51	-0.002213	0.00216055	0.0135239	-0.00343128
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000410895	-0.0191577	12009.8	226682	11202.9
Std Dev:	0.00024781	6.28293e-006	97.0018	1942.79	75.6463
%RSD:	60.3098	0.0327959	0.807686	0.857057	0.675239
Repeat:1	0.000154926	-0.0191633	11932	225314	11284.8
Repeat:2	0.000649648	-0.0191587	11979.1	225825	11188.3
Repeat:3	0.00042811	-0.0191509	12118.5	228906	11135.6
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12009.8	226682	11202.9
Std Dev:	97.0018	1942.79	75.6463
%RSD:	0.807686	0.857057	0.675239
Repeat:1	11932	225314	11284.8
Repeat:2	11979.1	225825	11188.3
Repeat:3	12118.5	228906	11135.6

Sample Name	**Acquisition date**
MXK49	12/20/2012 4:19:43PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000229769	0.01041	-0.00213648	4.13278	0.0848819
Std Dev:	2.7824e-005	0.000177598	4.29534e-005	0.116406	0.00317473
%RSD:	12.1095	1.70604	2.01047	2.81666	3.74018
Repeat:1	-0.000222214	0.0104043	-0.00209052	4.17571	0.0885163
Repeat:2	-0.000260591	0.0105903	-0.00217561	4.22162	0.0826497
Repeat:3	-0.000206504	0.0102353	-0.00214333	4.001	0.0834795
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-5.93351e-005	0.0388606	-0.000974994	-0.010441	0.000894743
Std Dev:	7.2878e-006	0.000141388	7.86104e-005	0.000330136	4.47929e-005
%RSD:	12.2824	0.363834	8.06265	3.1619	5.00623
Repeat:1	-5.25059e-005	0.0388207	-0.000897252	-0.0107302	0.000942548
Repeat:2	-5.84915e-005	0.0390177	-0.000973285	-0.0105116	0.00088794
Repeat:3	-6.7008e-005	0.0387435	-0.00105444	-0.0100813	0.000853741

Element/Wavelength	Cu3247A	Fe2714R	K_7664R	Li6707R	Mg2790R
Avg. of Repeats:	0.000868864	0.000847072	0.0124855	-0.00267711	0.000717443
Std Dev:	3.73e-005	9.05755e-005	0.00172589	0.00250026	0.00020531
%RSD:	4.29296	10.6928	13.8231	93.3941	28.6169
Repeat:1	0.000829258	0.000893135	0.0127258	-0.000743661	0.000696719
Repeat:2	0.00087401	0.000905359	0.0106521	-0.00178705	0.000523281
Repeat:3	0.000903324	0.000742723	0.0140787	-0.00550061	0.000932328
Element/Wavelength	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Avg. of Repeats:	0.00189058	0.0186422	-6.36759e-005	0.0179235	-0.0094702
Std Dev:	5.77313e-005	0.000372881	0.000604119	0.00245702	0.000499446
%RSD:	3.05363	2.0002	948.74	13.7084	5.27388
Repeat:1	0.00193922	0.018944	-0.000436479	0.019615	-0.00980608
Repeat:2	0.00190574	0.0187572	0.000633336	0.0151052	-0.00970825
Repeat:3	0.00182678	0.0182253	-0.000387885	0.0190504	-0.00889626
Element/Wavelength	P_1782A	Pb2203A	XX	Sb2068A	Se1960A
Avg. of Repeats:	-0.00121397	2.04863e-005	0.0157697	0.000773661	0.000738974
Std Dev:	6.22369e-005	2.28649e-005	0.000390394	0.000198184	7.75975e-005
%RSD:	5.12675	111.611	2.4756	25.6164	10.5007
Repeat:1	-0.00126333	-3.45842e-007	0.0160482	0.000745887	0.000804522
Repeat:2	-0.00123451	1.68553e-005	0.0159375	0.000984267	0.000759105
Repeat:3	-0.00114405	4.49493e-005	0.0153235	0.000590829	0.000653295
Element/Wavelength	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Avg. of Repeats:	10.8158	-0.000237056	0.00333943	0.00119945	-0.000664733
Std Dev:	0.0222404	6.09731e-005	0.000942194	0.000341181	0.000110914
%RSD:	0.20563	25.721	28.2142	28.4449	16.6855
Repeat:1	10.8189	-0.00017502	0.00232446	0.000994891	-0.000730508
Repeat:2	10.7921	-0.000296907	0.00350764	0.00101014	-0.000727015
Repeat:3	10.8363	-0.000239241	0.00418618	0.00159331	-0.000536676
Element/Wavelength	V_2924A	Zn2138A	Y_2243A	Y_3710A	Y_3710R
Avg. of Repeats:	0.000136519	0.0271996	12019.5	226394	10971
Std Dev:	9.57271e-006	0.000773469	301.921	4309.15	51.4528
%RSD:	7.01197	2.84368	2.51193	1.90338	0.468991
Repeat:1	0.000132254	0.0278392	11787.7	223166	11007.9
Repeat:2	0.000147483	0.0274198	11909.8	224730	10912.2
Repeat:3	0.000129821	0.02634	12360.9	231288	10992.7

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000650138	0.496325	-0.00165028	139.753	0.0233595
Std Dev:	0.000309118	0.0102836	0.000566519	3.93639	0.00117643
%RSD:	47.5465	2.07195	34.3286	2.81668	5.03618
Repeat:1	-0.000566202	0.495979	-0.00106173	141.204	0.0247063
Repeat:2	-0.000992555	0.506777	-0.00219184	142.757	0.0225324
Repeat:3	-0.000391656	0.486219	-0.00169727	135.297	0.0228399
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.61547e-005	0.224534	-0.000276433	-0.00286751	0.00945208
Std Dev:	2.89046e-006	0.000953642	3.80207e-005	0.000299674	0.000505853
%RSD:	7.9947	0.42472	13.754	10.4507	5.35176
Repeat:1	3.88734e-005	0.224265	-0.000238469	-0.0031221	0.00999099
Repeat:2	3.6472e-005	0.225594	-0.000276318	-0.00294317	0.00937774
Repeat:3	3.31186e-005	0.223744	-0.000314511	-0.00253726	0.00898752

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0039656	0.180358	0.44228	-0.000682196	0.0683135
Std Dev:	0.000285454	0.016227	0.0545669	0.00345437	0.0155104
%RSD:	7.19825	8.99714	12.3377	506.36	22.7047
Repeat:1	0.00366249	0.188615	0.449877	0.00198907	0.0667555
Repeat:2	0.004005	0.190795	0.384312	0.000547501	0.0536408
Repeat:3	0.0042293	0.161663	0.49265	-0.00458316	0.084544
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00408399	0.0435415	0.0670317	0.18722	0.000746716
Std Dev:	0.000126715	0.000874909	1.73189	0.0197962	0.000712055
%RSD:	3.10273	2.00937	2583.69	10.5737	95.3583
Repeat:1	0.00419069	0.0442497	-1.0013	0.200849	0.000284375
Repeat:2	0.00411734	0.0438114	2.06525	0.164513	0.00038907
Repeat:3	0.00394393	0.0425634	-0.862854	0.196299	0.0015667
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00399177	0.00196567	-0.0510592	0.00683223	0.00185148
Std Dev:	0.0013219	0.00317702	0.00238003	0.00239267	0.00163074
%RSD:	33.1157	161.625	4.66131	35.0203	88.0778
Repeat:1	0.00298354	-0.000931327	-0.0495518	0.00648696	0.00321461
Repeat:2	0.00350341	0.00146506	-0.0498228	0.00937879	0.00229496
Repeat:3	0.00548837	0.00536326	-0.053803	0.00463096	4.48695e-005
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1062.71	-0.00160179	0.00164782	0.00698306	-0.00242733
Std Dev:	2.18528	0.000285773	0.000226623	0.00104398	0.00210508
%RSD:	0.205633	17.8409	13.7529	14.9501	86.724
Repeat:1	1063.02	-0.00131103	0.0014037	0.00636389	-0.00366463
Repeat:2	1060.39	-0.0018823	0.00168827	0.0063969	-0.00362064
Repeat:3	1064.73	-0.00161203	0.0018515	0.00818839	3.27234e-006
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000551278	-0.0269392	12019.5	226394	10971
Std Dev:	7.67477e-005	0.000530509	301.921	4309.15	51.4528
%RSD:	13.9218	1.96928	2.51193	1.90338	0.468991
Repeat:1	0.000519623	-0.0265555	11787.7	223166	11007.9
Repeat:2	0.000638789	-0.0267176	11909.8	224730	10912.2
Repeat:3	0.00049542	-0.0275446	12360.9	231288	10992.7
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12019.5	226394	10971
Std Dev:	301.921	4309.15	51.4528
%RSD:	2.51193	1.90338	0.468991
Repeat:1	11787.7	223166	11007.9
Repeat:2	11909.8	224730	10912.2

Repeat:3	12360.9	231288	10992.7	

Sample Name	**Acquisition date**
MXJ05	12/20/2012 4:24:45PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000235813	0.00247579	-8.57477e-005	4.38378	0.0552639
Std Dev:	2.94431e-005	0.000568224	3.10235e-005	0.081756	0.00345602
%RSD:	12.4858	22.9512	36.18	1.86497	6.25367
Repeat:1	-0.000231292	0.00248902	-5.90893e-005	4.47781	0.0578876
Repeat:2	-0.000208892	0.00303729	-7.83536e-005	4.34401	0.0565561
Repeat:3	-0.000267255	0.00190107	-0.0001198	4.32951	0.051348
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-0.000110106	0.0530219	0.000309596	-0.000205172	0.000110324
Std Dev:	9.4342e-006	0.000914551	8.70694e-005	8.43524e-005	3.55033e-005
%RSD:	8.5683	1.72486	28.1235	41.1131	32.1811
Repeat:1	-0.000112105	0.0535792	0.000407645	-0.000297747	7.10287e-005
Repeat:2	-9.98321e-005	0.05352	0.000241311	-0.000185109	0.000119851
Repeat:3	-0.00011838	0.0519664	0.000279833	-0.00013266	0.000140091
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.00157281	0.000527267	0.00594338	-0.00353587	0.00107096
Std Dev:	5.5523e-005	0.000178105	0.000555392	0.00160838	0.000147676
%RSD:	3.53018	33.7788	9.3447	45.4877	13.7891
Repeat:1	0.00162199	0.000552027	0.00578855	-0.00375763	0.00112913
Repeat:2	0.0015126	0.000338078	0.00548184	-0.00182811	0.000903062
Repeat:3	0.00158383	0.000691696	0.00655976	-0.00502186	0.0011807
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.012974	0.000209353	5.24613e-005	0.107564	1.05093e-005
Std Dev:	8.8297e-005	0.000103149	0.000496581	0.00106466	9.72441e-005
%RSD:	0.680568	49.2703	946.566	0.989791	925.313
Repeat:1	0.013033	0.000120274	-0.000319265	0.107486	7.87176e-005
Repeat:2	0.0130165	0.000322365	0.000616422	0.108666	5.36525e-005
Repeat:3	0.0128725	0.000185421	-0.000139773	0.106541	-0.000100842
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.000344271	7.59645e-005	0.00126741	0.000272516	1.36046e-005
Std Dev:	2.42551e-005	1.99008e-005	7.90472e-005	4.72505e-005	4.48814e-005
%RSD:	7.04535	26.1976	6.23691	17.3387	329.899
Repeat:1	0.000337923	7.96477e-005	0.00131383	0.000289456	3.03625e-005
Repeat:2	0.00032382	9.37665e-005	0.00117614	0.00021913	-3.72446e-005
Repeat:3	0.000371068	5.44794e-005	0.00131226	0.000308961	4.76959e-005
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0158886	0.00162981	-0.00275132	-0.000593777	-0.000165796
Std Dev:	0.00124218	9.02509e-005	0.00133197	0.000269782	0.000126361
%RSD:	7.81806	5.53752	48.4121	45.4349	76.2151
Repeat:1	0.0172081	0.00173383	-0.00199875	-0.000700057	-0.000201292
Repeat:2	0.0157158	0.00157237	-0.00428923	-0.000794233	-0.000270613
Repeat:3	0.0147418	0.00158322	-0.00196598	-0.000287041	-2.54824e-005
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	6.02105e-005	0.0367315	12253.7	227778	11080.1
Std Dev:	3.20785e-005	0.00153034	501.542	2894.63	280.772

%RSD:	53.2773	4.1663	4.09298	1.27081	2.53403
Repeat:1	4.41818e-005	0.0380543	11842.5	225841	10879.4
Repeat:2	3.93052e-005	0.0370848	12106.1	226388	10959.9
Repeat:3	9.71444e-005	0.0350554	12812.5	231105	11401

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000717821	0.0372207	0.0031072	148.24	0.0123843
Std Dev:	0.000326976	0.0329529	0.000393632	2.76466	0.00128074
%RSD:	45.5512	88.5338	12.6684	1.86498	10.3416
Repeat:1	-0.000667683	0.0379952	0.00344686	151.42	0.0133566
Repeat:2	-0.00041881	0.0697796	0.00319895	146.896	0.0128633
Repeat:3	-0.00106697	0.0038874	0.0026758	146.405	0.0109331
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.61215e-005	0.32005	0.000364365	-0.000133486	0.00165675
Std Dev:	3.78854e-006	0.0061685	4.25115e-005	7.38328e-005	0.000400475
%RSD:	23.4998	1.92736	11.6673	55.3112	24.1724
Repeat:1	1.53531e-005	0.323809	0.000412697	-0.000215122	0.00121346
Repeat:2	2.02354e-005	0.32341	0.000332766	-0.000113952	0.00176437
Repeat:3	1.27761e-005	0.312931	0.000347632	-7.13842e-005	0.00199242
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00934095	0.122921	0.235439	-0.0018701	0.0945187
Std Dev:	0.000426535	0.031879	0.0175596	0.00222208	0.0111597
%RSD:	4.56629	25.9346	7.45824	118.822	11.8068
Repeat:1	0.00971715	0.12735	0.230544	-0.00217654	0.0989126
Repeat:2	0.00887756	0.0890587	0.220846	0.000489301	0.0818309
Repeat:3	0.00942815	0.152353	0.254927	-0.00392305	0.102813
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0284146	0.000291688	0.398429	0.909452	0.00120329
Std Dev:	0.000194172	0.000242023	1.42357	0.00857794	0.000135896
%RSD:	0.683352	82.9734	357.297	0.943198	11.2937
Repeat:1	0.0285441	8.26775e-005	-0.667026	0.90882	0.00129982
Repeat:2	0.0285084	0.000556852	2.01521	0.918329	0.00126216
Repeat:3	0.0281913	0.000235534	-0.152896	0.901208	0.00104788
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00625066	0.011204	0.00730116	0.000944459	-0.00267018
Std Dev:	0.00049893	0.00277083	0.000435642	0.000572272	0.000937876
%RSD:	7.98204	24.7307	5.96675	60.5926	35.1241
Repeat:1	0.00612179	0.0117157	0.00754162	0.00115862	-0.00232207
Repeat:2	0.00582881	0.0136833	0.00679829	0.000295996	-0.00373234
Repeat:3	0.00680138	0.00821299	0.00756358	0.00137877	-0.00195613
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.54395	0.00714797	0.000181885	0.00151112	-0.00152254

Std Dev:	0.122055	0.000422995	0.000320404	0.0008259	0.0023818
%RSD:	7.90534	5.91769	176.158	54.6547	156.439
Repeat:1	1.67361	0.00763552	0.00036286	0.00119191	-0.00219039
Repeat:2	1.52697	0.00687879	-0.000188057	0.000892471	-0.00349918
Repeat:3	1.43128	0.00692961	0.000370851	0.00244899	0.00112195
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	-9.31972e-005	0.0213126	12253.7	227778	11080.1
Std Dev:	0.000253678	0.000929837	501.542	2894.63	280.772
%RSD:	272.194	4.36284	4.09298	1.27081	2.53403
Repeat:1	-0.000219913	0.0221171	11842.5	225841	10879.4
Repeat:2	-0.000258552	0.0215262	12106.1	226388	10959.9
Repeat:3	0.000198874	0.0202946	12812.5	231105	11401
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12253.7	227778	11080.1
Std Dev:	501.542	2894.63	280.772
%RSD:	4.09298	1.27081	2.53403
Repeat:1	11842.5	225841	10879.4
Repeat:2	12106.1	226388	10959.9
Repeat:3	12812.5	231105	11401

Sample Name	**Acquisition date**
MXJ05A	12/20/2012 4:29:50PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.00427919	0.0329181	0.00778517	4.32485	0.37939
Std Dev:	1.36901e-005	8.17601e-005	8.70075e-005	0.042715	0.00500472
%RSD:	0.319923	0.248374	1.11761	0.987666	1.31915
Repeat:1	0.00426642	0.0330033	0.00787919	4.37383	0.38421
Repeat:2	0.00429364	0.0329106	0.00776881	4.30533	0.379742
Repeat:3	0.00427751	0.0328403	0.0077075	4.29537	0.374219
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.132786	6.62875	0.10474	0.11354	0.018727
Std Dev:	0.00204631	0.0658678	0.000875822	0.000808831	0.000257334
%RSD:	1.54106	0.993669	0.836187	0.712373	1.37413
Repeat:1	0.134861	6.69611	0.105746	0.114408	0.0189752
Repeat:2	0.132726	6.62565	0.104328	0.113407	0.0187445
Repeat:3	0.13077	6.56448	0.104146	0.112807	0.0184614
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.033032	0.00482758	2.15441	0.0924111	0.103304
Std Dev:	0.000499791	2.35271e-005	0.0163233	0.000464392	0.00056773
%RSD:	1.51305	0.487348	0.757668	0.502528	0.54957
Repeat:1	0.0335618	0.00482265	2.17076	0.0922066	0.103935
Repeat:2	0.0329651	0.00485319	2.15435	0.0929426	0.103143
Repeat:3	0.032569	0.00480692	2.13812	0.092084	0.102834
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0606737	0.213528	0.016304	8.07062	0.38149

Std Dev:	0.000444879	0.00211712	0.000474949	0.109604	0.00416694
%RSD:	0.733232	0.991496	2.91309	1.35806	1.09228
Repeat:1	0.0610862	0.215968	0.0168349	8.17246	0.386075
Repeat:2	0.0607326	0.212179	0.0161576	8.08476	0.380462
Repeat:3	0.0602023	0.212437	0.0159195	7.95463	0.377934
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.251303	0.000829776	0.0195969	0.0416117	0.0070195
Std Dev:	0.00235621	4.17826e-005	0.000280049	0.000484762	9.09841e-005
%RSD:	0.937597	5.03541	1.42905	1.16497	1.29616
Repeat:1	0.254001	0.000863682	0.0197805	0.0421679	0.00706598
Repeat:2	0.25026	0.000842548	0.0197356	0.041388	0.00707786
Repeat:3	0.249648	0.000783098	0.0192746	0.0412792	0.00691467
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0495121	0.112033	2.31384	0.029623	0.0207955
Std Dev:	0.000819453	0.000939365	0.0185209	0.000421193	0.000235305
%RSD:	1.65506	0.838471	0.80044	1.42185	1.13152
Repeat:1	0.050392	0.112957	2.32603	0.0298094	0.0210672
Repeat:2	0.0493733	0.112064	2.32295	0.0299188	0.0206626
Repeat:3	0.0487709	0.111079	2.29252	0.0291407	0.0206568
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0255574	0.852299	11918.3	226367	11222.3
Std Dev:	0.000373403	0.00826443	144.432	4601.99	96.7449
%RSD:	1.46104	0.969663	1.21185	2.03298	0.862079
Repeat:1	0.0258888	0.861689	11797.3	222564	11229.5
Repeat:2	0.0256305	0.84908	11879.4	225055	11122.1
Repeat:3	0.0251529	0.846129	12078.2	231483	11315.2

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0496168	1.78682	0.102755	146.248	0.132492
Std Dev:	0.000151554	0.00458077	0.00110384	1.44445	0.00185457
%RSD:	0.305448	0.256365	1.07425	0.987672	1.39976
Repeat:1	0.049477	1.79157	0.103946	147.905	0.134278
Repeat:2	0.0497779	1.78644	0.102551	145.588	0.132622
Repeat:3	0.0495956	1.78243	0.101767	145.252	0.130576
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0527557	44.6723	0.0520632	0.101914	0.211707
Std Dev:	0.000812118	0.444268	0.000434058	0.000726747	0.00290268
%RSD:	1.53939	0.994505	0.833714	0.713097	1.37108
Repeat:1	0.0535795	45.1266	0.0525618	0.102695	0.214507
Repeat:2	0.0527318	44.6514	0.0518582	0.10179	0.211903
Repeat:3	0.0519558	44.2388	0.0517695	0.101258	0.208711
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.25014	0.896681	68.1627	0.130025	7.82786
Std Dev:	0.00382428	0.00427756	0.516087	0.00064103	0.0429681
%RSD:	1.52885	0.477043	0.75714	0.493003	0.548913
Repeat:1	0.254194	0.895887	68.6797	0.129736	7.87561
Repeat:2	0.24963	0.9013	68.1609	0.13076	7.81566
Repeat:3	0.246597	0.892856	67.6475	0.12958	7.79231

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.133016	0.500811	47.0566	65.0675	0.529237
Std Dev:	0.000976054	0.0049675	1.3622	0.883076	0.00576906
%RSD:	0.733788	0.991891	2.89481	1.35717	1.09007
Repeat:1	0.133921	0.506536	48.5794	65.8881	0.535583
Repeat:2	0.133145	0.497646	46.6364	65.1815	0.527816
Repeat:3	0.131982	0.498251	45.9541	64.133	0.524311
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.19943	0.116496	0.10999	0.498508	0.143241
Std Dev:	0.0487603	0.00581279	0.00155553	0.00582706	0.00189452
%RSD:	0.9378	4.98967	1.41425	1.1689	1.32261
Repeat:1	5.25526	0.121216	0.111014	0.505196	0.144208
Repeat:2	5.17784	0.11827	0.110755	0.495802	0.144457
Repeat:3	5.1652	0.110003	0.1082	0.494525	0.141058
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	4.84528	0.524596	0.556938	0.0926106	0.392928
Std Dev:	0.0804896	0.00440269	0.00445081	0.00127293	0.00442998
%RSD:	1.6612	0.839255	0.799158	1.37449	1.12743
Repeat:1	4.93172	0.528924	0.559867	0.0931627	0.398043
Repeat:2	4.83165	0.524741	0.55913	0.0935143	0.390421
Repeat:3	4.77248	0.520122	0.551816	0.0911548	0.39032
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.20169	0.514806	11918.3	226367	11222.3
Std Dev:	0.00295162	0.00499426	144.432	4601.99	96.7449
%RSD:	1.46344	0.970125	1.21185	2.03298	0.862079
Repeat:1	0.204313	0.520482	11797.3	222564	11229.5
Repeat:2	0.202264	0.51285	11879.4	225055	11122.1
Repeat:3	0.198494	0.511086	12078.2	231483	11315.2
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11918.3	226367	11222.3
Std Dev:	144.432	4601.99	96.7449
%RSD:	1.21185	2.03298	0.862079
Repeat:1	11797.3	222564	11229.5
Repeat:2	11879.4	225055	11122.1
Repeat:3	12078.2	231483	11315.2

Sample Name	**Acquisition date**
MXJ05A	12/20/2012 4:34:43PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**

Avg. of Repeats:	0.00434393	0.0329846	0.00782625	4.35634	0.383444
Std Dev:	0.000101983	0.000454433	0.000101372	0.145617	0.00458819
%RSD:	2.34771	1.37771	1.29528	3.34266	1.19657
Repeat:1	0.00444417	0.0332931	0.00782847	4.49235	0.386898
Repeat:2	0.00434734	0.0331979	0.0079265	4.37394	0.385197
Repeat:3	0.00424029	0.0324627	0.00772379	4.20272	0.378238
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	0.135022	6.63306	0.106014	0.114945	0.0189609
Std Dev:	0.00199839	0.099522	0.00161835	0.00178221	0.000279642
%RSD:	1.48004	1.50039	1.52655	1.55049	1.47484
Repeat:1	0.136529	6.68979	0.107553	0.116402	0.0191798
Repeat:2	0.135782	6.69125	0.106161	0.115474	0.0190569
Repeat:3	0.132755	6.51815	0.104327	0.112958	0.0186459
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0336169	0.00476031	2.17956	0.0934839	0.102881
Std Dev:	0.000387598	9.8836e-005	0.0294656	0.00348187	0.00183087
%RSD:	1.15299	2.07625	1.35191	3.72457	1.7796
Repeat:1	0.0338241	0.00487433	2.19854	0.0938893	0.103616
Repeat:2	0.0338569	0.00470766	2.19452	0.0967453	0.104229
Repeat:3	0.0331697	0.00469895	2.14561	0.0898171	0.100796
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0613679	0.215296	0.0159276	8.13294	0.385272
Std Dev:	0.000806181	0.00302437	0.000237179	0.116845	0.00511551
%RSD:	1.31369	1.40475	1.48911	1.43669	1.32776
Repeat:1	0.0619775	0.217887	0.0161621	8.21592	0.390091
Repeat:2	0.0616723	0.216028	0.015933	8.18359	0.385821
Repeat:3	0.0604538	0.211972	0.0156878	7.99932	0.379905
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.252768	0.000850912	0.0197285	0.0419308	0.00710636
Std Dev:	0.00340955	1.56073e-005	0.00054523	0.000548809	9.73554e-005
%RSD:	1.34889	1.83418	2.76367	1.30885	1.36998
Repeat:1	0.256042	0.00086692	0.0202376	0.0425302	0.00714679
Repeat:2	0.253024	0.000835739	0.0197947	0.0418092	0.00717699
Repeat:3	0.249237	0.000850076	0.0191531	0.0414529	0.0069953
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0478033	0.112668	2.34018	0.0298185	0.0209848
Std Dev:	0.000453965	0.00164131	0.0308251	0.000754738	0.000248109
%RSD:	0.949652	1.45677	1.31721	2.53111	1.18232
Repeat:1	0.0479813	0.114231	2.36097	0.0300901	0.021213
Repeat:2	0.0481413	0.112814	2.35479	0.0303998	0.0210209
Repeat:3	0.0472873	0.110958	2.30476	0.0289655	0.0207207
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.0260443	0.862976	11874.9	224721	11197.4
Std Dev:	0.000333574	0.0129361	178.961	5003.34	103.267
%RSD:	1.28079	1.49901	1.50705	2.22647	0.922239
Repeat:1	0.0263178	0.874956	11691.2	220210	11143.8
Repeat:2	0.0261425	0.864713	11884.8	223850	11132.1
Repeat:3	0.0256727	0.849259	12048.7	230102	11316.5

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0503394	1.7905	0.103272	147.313	0.133994
Std Dev:	0.00113533	0.0261382	0.00128382	4.9242	0.00170019

%RSD:	2.25534	1.45983	1.24315	3.34267	1.26885
Repeat:1	0.051455	1.8082	0.1033	151.913	0.135274
Repeat:2	0.0503779	1.80281	0.104541	147.909	0.134644
Repeat:3	0.0491853	1.76047	0.101974	142.119	0.132065
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.0536432	44.7014	0.052696	0.103172	0.214345
Std Dev:	0.00079314	0.671261	0.000801039	0.00159687	0.00315506
%RSD:	1.47855	1.50165	1.52011	1.54778	1.47195
Repeat:1	0.0542411	45.084	0.053458	0.104479	0.216816
Repeat:2	0.0539449	45.0939	0.0527691	0.103644	0.215429
Repeat:3	0.0527434	43.9263	0.051861	0.101392	0.210791
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.254615	0.884761	68.9578	0.131507	7.79587
Std Dev:	0.00296799	0.0177123	0.931602	0.00480136	0.138462
%RSD:	1.16568	2.00193	1.35097	3.65102	1.77609
Repeat:1	0.256202	0.905192	69.5579	0.132062	7.85153
Repeat:2	0.256452	0.875356	69.4309	0.136007	7.89784
Repeat:3	0.251191	0.873736	67.8846	0.126453	7.63824
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.13454	0.504958	45.9781	65.5697	0.53447
Std Dev:	0.00176791	0.00709622	0.680699	0.941415	0.0070805
%RSD:	1.31404	1.40531	1.48049	1.43575	1.32477
Repeat:1	0.135878	0.511038	46.6509	66.2382	0.541141
Repeat:2	0.135207	0.506676	45.9936	65.9778	0.535229
Repeat:3	0.132536	0.497161	45.2897	64.4931	0.527041
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	5.22975	0.11944	0.110756	0.502332	0.14505
Std Dev:	0.0705562	0.00217185	0.00304155	0.00660646	0.00202716
%RSD:	1.34913	1.81836	2.74616	1.31516	1.39756
Repeat:1	5.2975	0.121671	0.113596	0.509555	0.145893
Repeat:2	5.23507	0.117332	0.111127	0.500845	0.14652
Repeat:3	5.15669	0.119316	0.107546	0.496595	0.142738
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	4.67734	0.527569	0.563273	0.0932082	0.396482
Std Dev:	0.0445728	0.00769264	0.00740757	0.00228718	0.00466696
%RSD:	0.952952	1.45813	1.31509	2.45384	1.17709
Repeat:1	4.6948	0.534896	0.568272	0.0940258	0.400774
Repeat:2	4.71054	0.528254	0.566785	0.0949743	0.39716
Repeat:3	4.62668	0.519557	0.554763	0.0906246	0.391514
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.205538	0.521298	11874.9	224721	11197.4

Std Dev:	0.00264021	0.00783826	178.961	5003.34	103.267
%RSD:	1.28454	1.5036	1.50705	2.22647	0.922239
Repeat:1	0.207704	0.52856	11691.2	220210	11143.8
Repeat:2	0.206313	0.522347	11884.8	223850	11132.1
Repeat:3	0.202597	0.512989	12048.7	230102	11316.5
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11874.9	224721	11197.4
Std Dev:	178.961	5003.34	103.267
%RSD:	1.50705	2.22647	0.922239
Repeat:1	11691.2	220210	11143.8
Repeat:2	11884.8	223850	11132.1
Repeat:3	12048.7	230102	11316.5

Sample Name	**Acquisition date**
MXJ06	12/20/2012 4:39:37PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	-0.000237931	0.00230649	-7.01357e-005	4.38103	0.0451085
Std Dev:	6.83792e-005	0.000286067	3.594e-005	0.0684587	0.00133673
%RSD:	28.7391	12.4027	51.2436	1.56262	2.96336
Repeat:1	-0.000172975	0.00198879	-0.000108721	4.449	0.0462427
Repeat:2	-0.000309284	0.002387	-3.76125e-005	4.382	0.0436347
Repeat:3	-0.000231534	0.00254367	-6.40731e-005	4.31209	0.045448
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-0.00014588	0.0473001	0.000312554	-0.000211072	0.000103775
Std Dev:	3.13192e-005	0.000730766	7.73947e-005	4.09795e-005	3.0128e-005
%RSD:	21.4691	1.54496	24.762	19.415	29.032
Repeat:1	-0.000113531	0.0478104	0.000399891	-0.000254508	0.000100475
Repeat:2	-0.000148052	0.0476268	0.00028529	-0.000173097	7.54335e-005
Repeat:3	-0.000176057	0.0464629	0.00025248	-0.000205611	0.000135418
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.000935972	0.000524678	0.0223628	-0.00332542	0.000802749
Std Dev:	2.83447e-005	0.000193758	0.00156204	0.00080959	0.000233051
%RSD:	3.02838	36.929	6.98501	24.3455	29.0317
Repeat:1	0.000968508	0.000357442	0.0234324	-0.00239502	0.000808518
Repeat:2	0.00091663	0.000479586	0.0230858	-0.00371186	0.00103286
Repeat:3	0.000922776	0.000737006	0.0205702	-0.00386938	0.000566867
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.0180269	0.000369851	0.00021937	0.16211	0.000463425
Std Dev:	0.000308953	8.82066e-005	0.000563715	0.0050662	7.35997e-005
%RSD:	1.71384	23.8492	256.97	3.12515	15.8817
Repeat:1	0.0183151	0.000432613	-0.000228795	0.16694	0.000420595
Repeat:2	0.018065	0.000407939	3.46301e-005	0.162553	0.00042127
Repeat:3	0.0177007	0.000269	0.000852274	0.156837	0.000548409
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.000221981	3.00898e-005	0.000559426	0.000365371	-4.25071e-005
Std Dev:	0.000107628	1.40842e-005	0.000155084	7.22083e-005	0.000114844
%RSD:	48.4853	46.8073	27.722	19.763	270.176

Repeat:1	0.000299488	2.01891e-005	0.000736003	0.000390943	-0.000155321
Repeat:2	9.9095e-005	2.38667e-005	0.000496957	0.000421314	7.42645e-005
Repeat:3	0.000267361	4.62137e-005	0.000445319	0.000283857	-4.64647e-005
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0134013	0.000913976	-0.0022022	-0.000160649	-0.000145026
Std Dev:	0.000183228	4.13403e-005	0.000222134	0.000550446	2.06131e-005
%RSD:	1.36724	4.52313	10.0869	342.639	14.2134
Repeat:1	0.0135453	0.000866842	-0.00244428	-0.000576634	-0.000153311
Repeat:2	0.0134635	0.000930996	-0.00200774	0.000463527	-0.000121559
Repeat:3	0.013195	0.000944089	-0.00215457	-0.00036884	-0.000160207
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.000104382	0.024532	12198.9	230034	11324.9
Std Dev:	4.76465e-005	0.000476215	203.804	4216.36	177.296
%RSD:	45.6465	1.9412	1.67068	1.83293	1.56554
Repeat:1	0.000152625	0.0250175	11987.4	225459	11167.4
Repeat:2	5.73549e-005	0.0245127	12215.3	230879	11290.4
Repeat:3	0.000103165	0.0240657	12394	233763	11517

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.000741071	0.0273865	0.00329946	148.148	0.00862109
Std Dev:	0.000760135	0.0165987	0.000455365	2.31499	0.000495355
%RSD:	102.572	60.6091	13.8012	1.56262	5.74585
Repeat:1	-1.8966e-005	0.00895169	0.00280984	150.446	0.00904147
Repeat:2	-0.00153424	0.0320613	0.00371029	148.18	0.00807499
Repeat:3	-0.000670003	0.0411465	0.00337824	145.816	0.00874681
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.843e-006	0.281457	0.000365994	-0.000142095	0.00158326
Std Dev:	1.23955e-005	0.0049289	4.04092e-005	3.37116e-005	0.000339616
%RSD:	672.575	1.75121	11.041	23.7247	21.4505
Repeat:1	1.46132e-005	0.2849	0.0004113	-0.00017813	0.00154615
Repeat:2	1.05612e-006	0.283661	0.000353005	-0.000111327	0.00126372
Repeat:3	-1.01404e-005	0.275811	0.000333676	-0.000136828	0.0019399
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00447075	0.122475	0.754565	-0.00157876	0.07425
Std Dev:	0.000214023	0.0346606	0.0493865	0.00111848	0.0176173
%RSD:	4.78719	28.3001	6.54503	70.8455	23.727
Repeat:1	0.00471638	0.0925741	0.788381	-0.00029337	0.0746878
Repeat:2	0.00432433	0.114386	0.777424	-0.00211271	0.0916443
Repeat:3	0.00437155	0.160465	0.697891	-0.00233022	0.0564179
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.039507	0.00066827	0.876375	1.34893	0.00182744
Std Dev:	0.000678454	0.000206963	1.61598	0.0408182	0.000102805
%RSD:	1.7173	30.97	184.394	3.02597	5.62562
Repeat:1	0.0401399	0.000815533	-0.407868	1.38785	0.00176744
Repeat:2	0.0395904	0.000757639	0.346137	1.3525	0.00176873
Repeat:3	0.0387907	0.000431638	2.69086	1.30644	0.00194614

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00371694	0.0048247	0.00339756	0.00206027	-0.0038445
Std Dev:	0.00222553	0.0019585	0.000859671	0.000878693	0.00239357
%RSD:	59.8754	40.5933	25.3026	42.6494	62.2595
Repeat:1	0.00532114	0.00344743	0.00437635	0.00237045	-0.00619788
Repeat:2	0.00117619	0.00395994	0.00305137	0.0027418	-0.00141268
Repeat:3	0.00465349	0.00706675	0.00276495	0.00106855	-0.00392294
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.29955	0.00379296	0.000314349	0.00282822	-0.00113289
Std Dev:	0.0179977	0.000193757	5.34442e-005	0.00167934	0.000390305
%RSD:	1.38491	5.10834	17.0015	59.3778	34.4521
Repeat:1	1.3137	0.00357205	0.000256087	0.00156529	-0.0012904
Repeat:2	1.30566	0.00387273	0.000361099	0.00473402	-0.000688446
Repeat:3	1.27929	0.0039341	0.000325862	0.00218536	-0.00141983
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000254464	0.0138701	12198.9	230034	11324.9
Std Dev:	0.00037697	0.000298425	203.804	4216.36	177.296
%RSD:	148.142	2.15157	1.67068	1.83293	1.56554
Repeat:1	0.000635112	0.0141728	11987.4	225459	11167.4
Repeat:2	-0.000118716	0.0138615	12215.3	230879	11290.4
Repeat:3	0.000246998	0.0135761	12394	233763	11517
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12198.9	230034	11324.9
Std Dev:	203.804	4216.36	177.296
%RSD:	1.67068	1.83293	1.56554
Repeat:1	11987.4	225459	11167.4
Repeat:2	12215.3	230879	11290.4
Repeat:3	12394	233763	11517

Sample Name	**Acquisition date**
MLDTJ	12/20/2012 4:44:41PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0832972	0.0107733	0.0518991	4.06604	3.12409
Std Dev:	0.0014914	0.000404222	0.000274467	0.0394988	0.00826064
%RSD:	1.79046	3.75208	0.528847	0.971432	0.264417
Repeat:1	0.0849969	0.0105241	0.0520445	4.09244	3.13356
Repeat:2	0.0822073	0.0105561	0.0520703	4.08506	3.12036
Repeat:3	0.0826874	0.0112397	0.0515825	4.02063	3.11836
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	3.13312	0.0340306	3.90798	1.70433	0.0993926
Std Dev:	0.0578782	0.000211161	0.022528	0.011338	0.000897787

%RSD:	1.8473	0.620502	0.576463	0.665245	0.903273
Repeat:1	3.1999	0.0341069	3.92737	1.71533	0.100419
Repeat:2	3.09727	0.0337919	3.9133	1.70497	0.0990059
Repeat:3	3.1022	0.034193	3.88327	1.69268	0.098753
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0981789	0.00145685	0.0111651	-0.0029716	0.000661167
Std Dev:	0.000646538	0.000401401	0.00126403	0.000542335	7.12411e-005
%RSD:	0.658531	27.5527	11.3213	18.2506	10.7751
Repeat:1	0.0988905	0.00176533	0.0104435	-0.00332854	0.000580926
Repeat:2	0.0980185	0.0016022	0.0126247	-0.00323876	0.000685592
Repeat:3	0.0976276	0.00100302	0.0104271	-0.00234752	0.000716983
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.564975	0.01928	-0.00038659	0.0166856	0.937269
Std Dev:	0.00290786	0.00022924	0.000166748	0.00213097	0.00527533
%RSD:	0.514688	1.18901	43.1331	12.7713	0.562841
Repeat:1	0.568197	0.0195433	-0.000443996	0.0180815	0.941571
Repeat:2	0.562547	0.0191248	-0.000198722	0.0177426	0.938854
Repeat:3	0.564181	0.0191718	-0.000517051	0.0142328	0.931383
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0398238	0.0183229	0.441536	0.0817617	0.0439259
Std Dev:	0.000209856	0.000141474	0.00298344	0.00066599	0.000312239
%RSD:	0.52696	0.772118	0.675696	0.81455	0.71083
Repeat:1	0.0400416	0.0184838	0.44387	0.0824686	0.0442825
Repeat:2	0.0398069	0.0182181	0.442564	0.0816707	0.043794
Repeat:3	0.0396229	0.0182667	0.438175	0.0811459	0.0437013
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	10.0558	-0.000284041	0.0061017	0.00188127	0.0442095
Std Dev:	0.044528	0.000129536	0.00102473	0.000209486	0.000465864
%RSD:	0.442809	45.6046	16.7942	11.1354	1.05376
Repeat:1	10.1058	-0.000281005	0.00655745	0.00165478	0.0444413
Repeat:2	10.0203	-0.000156051	0.00681948	0.00206807	0.044514
Repeat:3	10.0413	-0.000415069	0.00492815	0.00192095	0.0436732
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	-1.63853e-005	3.46292	11904.8	223696	10941.6
Std Dev:	4.50439e-005	0.0259091	65.6078	994.824	122.538
%RSD:	274.905	0.748186	0.551102	0.444722	1.11993
Repeat:1	-6.46965e-005	3.48542	11908.5	222549	11054.2
Repeat:2	-8.91709e-006	3.46874	11837.5	224333	10959.5
Repeat:3	2.44578e-005	3.43459	11968.5	224205	10811.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.927499	0.517359	0.682746	137.494	1.14958
Std Dev:	0.0165722	0.0234405	0.00350916	1.3357	0.00306094
%RSD:	1.78676	4.5308	0.513978	0.971463	0.266265
Repeat:1	0.946385	0.502903	0.684705	138.386	1.15309
Repeat:2	0.915388	0.504769	0.684837	138.137	1.1482
Repeat:3	0.920723	0.544404	0.678694	135.958	1.14746
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.2444	0.191957	1.9385	1.5283	1.12019
Std Dev:	0.0229868	0.00142425	0.0111688	0.0101457	0.0101194

%RSD:	1.84722	0.741962	0.576156	0.663852	0.903361
Repeat:1	1.27092	0.192471	1.94811	1.53816	1.13176
Repeat:2	1.23017	0.190346	1.94114	1.52885	1.11583
Repeat:3	1.23212	0.193052	1.92625	1.51789	1.11298
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.748364	0.187375	0.400532	-0.00108859	0.0640776
Std Dev:	0.00494922	0.0711544	0.0399645	0.00074928	0.00537872
%RSD:	0.661338	37.9744	9.97785	68.8305	8.39407
Repeat:1	0.753811	0.241893	0.377719	-0.00158173	0.05802
Repeat:2	0.74714	0.213348	0.446678	-0.00145766	0.0659195
Repeat:3	0.744142	0.106882	0.377199	-0.000226364	0.0682935
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.24016	0.0450379	-0.822198	0.177247	1.31206
Std Dev:	0.00638305	0.000537876	0.477829	0.0171692	0.00734004
%RSD:	0.514693	1.19427	58.1161	9.68661	0.55943
Repeat:1	1.24724	0.0456557	-0.985991	0.188493	1.31808
Repeat:2	1.23483	0.0446738	-0.284012	0.185763	1.31421
Repeat:3	1.23842	0.0447842	-1.19659	0.157484	1.30388
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.850622	2.547	2.32404	0.96463	0.901424
Std Dev:	0.00443785	0.0196644	0.016301	0.00786413	0.00646492
%RSD:	0.521719	0.772061	0.701407	0.815248	0.717189
Repeat:1	0.855268	2.56937	2.33636	0.972953	0.908803
Repeat:2	0.850172	2.53243	2.3302	0.963614	0.898716
Repeat:3	0.846427	2.53921	2.30555	0.957323	0.896754
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	988.022	-0.001822	0.00231255	0.00876449	0.836042
Std Dev:	4.37512	0.000607119	0.000246485	0.00063994	0.00875271
%RSD:	0.442816	33.3215	10.6586	7.3015	1.04692
Repeat:1	992.932	-0.00180777	0.00242216	0.00807137	0.840405
Repeat:2	984.536	-0.00122213	0.00248521	0.00933289	0.841755
Repeat:3	986.598	-0.00243612	0.00203027	0.00888922	0.825965
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000587805	2.06481	11904.8	223696	10941.6
Std Dev:	0.000341271	0.0156626	65.6078	994.824	122.538
%RSD:	58.0585	0.758546	0.551102	0.444722	1.11993
Repeat:1	0.000222661	2.07831	11908.5	222549	11054.2
Repeat:2	0.00064205	2.06849	11837.5	224333	10959.5
Repeat:3	0.000898705	2.04764	11968.5	224205	10811.1
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11904.8	223696	10941.6

Std Dev:	65.6078	994.824	122.538
%RSD:	0.551102	0.444722	1.11993
Repeat:1	11908.5	222549	11054.2
Repeat:2	11837.5	224333	10959.5
Repeat:3	11968.5	224205	10811.1

Sample Name	**Acquisition date**
MLDTK	12/20/2012 4:49:41PM

Analyst Name	**Method Name**
kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.134737	0.0100769	0.0512636	4.00355	3.07607
Std Dev:	0.00179392	0.000417537	0.000639089	0.114631	0.0164424
%RSD:	1.33143	4.1435	1.24667	2.86323	0.534528
Repeat:1	0.136336	0.010303	0.0517582	4.04608	3.09468
Repeat:2	0.135076	0.0103326	0.0514905	4.09084	3.07002
Repeat:3	0.132797	0.00959508	0.050542	3.87374	3.0635
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	3.06234	0.0407221	3.84231	1.67656	0.0971402
Std Dev:	0.0790384	0.000594972	0.0680819	0.0269787	0.00132554
%RSD:	2.58098	1.46105	1.7719	1.60918	1.36456
Repeat:1	3.12091	0.0413604	3.88985	1.69645	0.0982482
Repeat:2	3.09367	0.0406229	3.87275	1.68737	0.0975007
Repeat:3	2.97244	0.040183	3.76432	1.64585	0.0956717
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.0960131	0.0014626	0.00954363	-0.00253548	0.000884266
Std Dev:	0.000824571	0.000313471	0.00111082	0.0016039	0.00060002
%RSD:	0.858811	21.4324	11.6394	63.2584	67.8552
Repeat:1	0.0969207	0.00110371	0.00947188	-0.00369326	0.000247082
Repeat:2	0.0958086	0.00168282	0.0106886	-0.00320845	0.00143849
Repeat:3	0.0953101	0.00160128	0.00847041	-0.000704724	0.000967228
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.555729	0.018539	-9.46599e-005	0.0113627	0.922247
Std Dev:	0.00700596	0.000207482	0.000419636	0.000448088	0.0163189
%RSD:	1.26068	1.11916	443.309	3.94351	1.76947
Repeat:1	0.561036	0.0186718	-0.000426017	0.0112694	0.933697
Repeat:2	0.558364	0.0186453	-0.000235161	0.0109686	0.929482
Repeat:3	0.547788	0.0182999	0.000377199	0.0118501	0.903561
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.039393	0.0179496	0.432397	0.0806097	0.043466
Std Dev:	0.000231242	0.000313461	0.00868022	0.000767319	0.000224007
%RSD:	0.587015	1.74634	2.00747	0.951894	0.515361
Repeat:1	0.0396121	0.0182032	0.438115	0.0813595	0.0436748
Repeat:2	0.0394155	0.0180464	0.436667	0.0806436	0.0434939
Repeat:3	0.0391513	0.0175991	0.422409	0.079826	0.0432294
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	9.08429	-9.93162e-005	0.00685598	0.00170953	0.0435389
Std Dev:	0.0789099	2.18431e-005	0.000389552	0.000346794	0.000691127
%RSD:	0.868642	21.9934	5.68192	20.2859	1.58738
Repeat:1	9.16187	-0.000104354	0.00709095	0.00159146	0.0439788
Repeat:2	9.08686	-0.000118201	0.00707069	0.00143719	0.0438955

Repeat:3	9.00412	-7.53946e-005	0.00640632	0.00209994	0.0427423
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	-2.17372e-005	3.41368	12339.3	230899	10991.3
Std Dev:	2.80024e-005	0.0473563	489.98	7662.22	199.973
%RSD:	128.822	1.38725	3.97089	3.31843	1.81938
Repeat:1	8.39146e-006	3.45222	12047.1	226059	10861.5
Repeat:2	-2.66365e-005	3.428	12065.9	226905	10890.7
Repeat:3	-4.69666e-005	3.36082	12905	239733	11221.6

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.49909	0.477017	0.67275	135.381	1.13179
Std Dev:	0.0199342	0.0241982	0.00826227	3.87631	0.00609314
%RSD:	1.32975	5.07281	1.22813	2.86327	0.538365
Repeat:1	1.51687	0.490117	0.679182	136.819	1.13868
Repeat:2	1.50286	0.491841	0.675637	138.332	1.12955
Repeat:3	1.47754	0.449093	0.663432	130.991	1.12713
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.21629	0.23709	1.90593	1.50292	1.09489
Std Dev:	0.0313907	0.00401299	0.0337695	0.0241439	0.0149394
%RSD:	2.58085	1.69261	1.77181	1.60646	1.36447
Repeat:1	1.23955	0.241395	1.92952	1.52074	1.10737
Repeat:2	1.22873	0.23642	1.92102	1.51258	1.09895
Repeat:3	1.18059	0.233453	1.86724	1.47544	1.07834
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.731796	0.190094	0.349266	-0.000486711	0.08092
Std Dev:	0.0063038	0.0569561	0.0351205	0.00221602	0.0453518
%RSD:	0.861414	29.962	10.0555	455.304	56.0453
Repeat:1	0.738735	0.124701	0.346998	-0.00208638	0.0327617
Repeat:2	0.730234	0.228854	0.385466	-0.00141648	0.122814
Repeat:3	0.726421	0.216728	0.315335	0.00204273	0.087184
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.21987	0.0432994	0.0138943	0.13436	1.29009
Std Dev:	0.01538	0.000486824	1.20206	0.00361023	0.0227037
%RSD:	1.26079	1.12432	8651.48	2.68698	1.75986
Repeat:1	1.23152	0.0436109	-0.935468	0.133608	1.30605
Repeat:2	1.22565	0.0435488	-0.388346	0.131185	1.30012
Repeat:3	1.20243	0.0427384	1.3655	0.138287	1.2641
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.839029	2.49524	2.28576	0.951189	0.892812
Std Dev:	0.00500181	0.0435783	0.0472857	0.00899687	0.00457516
%RSD:	0.596143	1.74646	2.0687	0.945856	0.512444
Repeat:1	0.843777	2.53049	2.31653	0.960015	0.897071
Repeat:2	0.839503	2.5087	2.30944	0.951521	0.893389
Repeat:3	0.833807	2.44651	2.23132	0.942031	0.887976

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	892.562	-0.00095622	0.00249352	0.00824361	0.822769
Std Dev:	7.75319	0.000102376	9.36652e-005	0.00105621	0.0129928
%RSD:	0.868645	10.7063	3.75634	12.8125	1.57916
Repeat:1	900.186	-0.000979829	0.00254999	0.0078844	0.831051
Repeat:2	892.815	-0.00104473	0.00254517	0.00741386	0.829461
Repeat:3	884.685	-0.000844102	0.0023854	0.00943258	0.807794
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.00051634	2.03872	12339.3	230899	10991.3
Std Dev:	0.000235543	0.0284746	489.98	7662.22	199.973
%RSD:	45.6179	1.39669	3.97089	3.31843	1.81938
Repeat:1	0.000766164	2.06185	12047.1	226059	10861.5
Repeat:2	0.000484549	2.04739	12065.9	226905	10890.7
Repeat:3	0.000298307	2.00692	12905	239733	11221.6
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12339.3	230899	10991.3
Std Dev:	489.98	7662.22	199.973
%RSD:	3.97089	3.31843	1.81938
Repeat:1	12047.1	226059	10861.5
Repeat:2	12065.9	226905	10890.7
Repeat:3	12905	239733	11221.6

Sample Name	**Acquisition date**
CCV6	12/20/2012 4:54:42PM

	Analyst Name	**Method Name**
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Avg. of Repeats:	0.0900527	0.374904	0.0383263	0.0609044	6.5872
Std Dev:	0.0017585	0.00551103	0.000681844	0.000917943	0.0931157
%RSD:	1.95275	1.46999	1.77905	1.50719	1.41359
Repeat:1	0.0913606	0.379758	0.0389264	0.0616617	6.66693
Repeat:2	0.0907438	0.37604	0.0384676	0.061168	6.6098
Repeat:3	0.0880536	0.368913	0.0375849	0.0598835	6.48486
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	5.26873	6.51165	1.02661	2.22992	0.181086
Std Dev:	0.112621	0.110686	0.0217333	0.0464096	0.00300126
%RSD:	2.13753	1.69982	2.11699	2.08122	1.65736
Repeat:1	5.35144	6.60793	1.04788	2.27486	0.183233
Repeat:2	5.31428	6.53631	1.02752	2.23273	0.18237
Repeat:3	5.14047	6.39072	1.00444	2.18217	0.177657
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.248598	0.109826	2.20219	1.91414	0.509683
Std Dev:	0.00375131	0.00186808	0.0214845	0.0205569	0.0108942
%RSD:	1.50899	1.70095	0.975595	1.07395	2.13745
Repeat:1	0.251802	0.110989	2.22099	1.93196	0.52033

Repeat:2	0.249521	0.110818	2.20681	1.91879	0.510162
Repeat:3	0.244471	0.107671	2.17877	1.89165	0.498557
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	0.941108	0.836069	0.0157436	8.1065	1.47583
Std Dev:	0.0183714	0.0166757	0.000701148	0.0956763	0.0306732
%RSD:	1.9521	1.99454	4.45354	1.18024	2.07837
Repeat:1	0.956529	0.852172	0.0159962	8.18222	1.50495
Repeat:2	0.946012	0.83716	0.0162835	8.13831	1.47872
Repeat:3	0.920782	0.818874	0.0149512	7.99897	1.44381
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	0.0964367	0.00381323	0.090448	0.0426297	0.0233016
Std Dev:	0.00182265	6.45659e-005	0.00166081	0.00083168	0.00037632
%RSD:	1.89	1.69321	1.8362	1.95094	1.615
Repeat:1	0.0983062	0.00386863	0.0919034	0.0434517	0.0236416
Repeat:2	0.096339	0.00382873	0.0908018	0.0426485	0.023366
Repeat:3	0.0946649	0.00374232	0.0886388	0.0417887	0.0228973
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0833136	0.432281	9.25058	0.592662	0.0526087
Std Dev:	0.0100085	0.00839702	0.157026	0.00737133	0.00103934
%RSD:	12.0131	1.94249	1.69747	1.24377	1.9756
Repeat:1	0.0929308	0.440403	9.39666	0.598059	0.0535308
Repeat:2	0.0840549	0.432805	9.27058	0.595663	0.052813
Repeat:3	0.072955	0.423634	9.08452	0.584263	0.0514824
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	0.251421	3.2209	11854.9	225582	11116.7
Std Dev:	0.00392696	0.0592393	278.307	4460.5	249.307
%RSD:	1.5619	1.83922	2.34761	1.97733	2.24263
Repeat:1	0.254635	3.27809	11580.1	222753	10911.2
Repeat:2	0.252585	3.22481	11848	223268	11044.9
Repeat:3	0.247044	3.1598	12136.6	230723	11394.1

Concentration

Element/Wavelength	**Ag3280A**	**Al3082R**	**As1890A**	**B_2496A**	**Ba4934R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.00418	21.547	0.492065	2.06462	2.43283
Std Dev:	0.0195656	0.318036	0.00868661	0.031146	0.0345044
%RSD:	1.94841	1.47601	1.76534	1.50856	1.41828
Repeat:1	1.01874	21.8271	0.499697	2.0903	2.46237
Repeat:2	1.01187	21.6127	0.493886	2.07358	2.44121
Repeat:3	0.98194	21.2013	0.482613	2.02997	2.39491
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	Fail
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.09217	43.8825	0.50815	1.99082	2.0428
Std Dev:	0.044722	0.746563	0.0107609	0.0414649	0.0338502
%RSD:	2.13758	1.70128	2.11766	2.08281	1.65705
Repeat:1	2.12502	44.5319	0.518686	2.03098	2.06701
Repeat:2	2.11026	44.0488	0.508586	1.99331	2.05727
Repeat:3	2.04124	43.0668	0.497178	1.94816	2.00412
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	1.9022	19.6538	69.6733	2.64694	38.5617
Std Dev:	0.0287407	0.333378	0.679266	0.0283904	0.823914

%RSD:	1.51092	1.69625	0.97493	1.07257	2.13661
Repeat:1	1.92673	19.8606	70.2676	2.67157	39.3669
Repeat:2	1.90928	19.8316	69.8195	2.65337	38.5979
Repeat:3	1.87058	19.2692	68.9329	2.61589	37.7202
QC Status Pass/Fail:	Pass	Fail	Fail	Fail	Fail
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.06514	1.96151	45.0423	65.3566	2.04477
Std Dev:	0.0403147	0.039127	2.00715	0.770861	0.0424835
%RSD:	1.95216	1.99474	4.45616	1.17947	2.07766
Repeat:1	2.09898	1.99929	45.7653	65.9667	2.0851
Repeat:2	2.0759	1.96407	46.5877	65.6129	2.04879
Repeat:3	2.02053	1.92116	42.7738	64.4903	2.00042
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.0053	0.533765	0.508797	0.484497	0.482683
Std Dev:	0.0379513	0.00902462	0.0092163	0.00963295	0.00782917
%RSD:	1.89255	1.69075	1.81139	1.98824	1.62201
Repeat:1	2.04421	0.541513	0.516869	0.494138	0.48975
Repeat:2	2.00329	0.535924	0.510768	0.484479	0.484031
Repeat:3	1.96839	0.523856	0.498755	0.474872	0.474267
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	8.13636	2.02556	2.22541	1.80906	0.980881
Std Dev:	0.982791	0.0393558	0.0377614	0.022449	0.0193574
%RSD:	12.079	1.94296	1.69683	1.24092	1.97347
Repeat:1	9.08074	2.06363	2.26054	1.8255	0.998042
Repeat:2	8.20913	2.02802	2.23022	1.8182	0.984704
Repeat:3	7.11921	1.98503	2.18548	1.78349	0.959897
QC Status Pass/Fail:	Fail	Pass	Fail	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	1.98636	1.94779	11854.9	225582	11116.7
Std Dev:	0.0310478	0.0357866	278.307	4460.5	249.307
%RSD:	1.56305	1.83729	2.34761	1.97733	2.24263
Repeat:1	2.01177	1.98236	11580.1	222753	10911.2
Repeat:2	1.99556	1.95012	11848	223268	11044.9
Repeat:3	1.95175	1.9109	12136.6	230723	11394.1
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	11854.9	225582	11116.7
Std Dev:	278.307	4460.5	249.307
%RSD:	2.34761	1.97733	2.24263
Repeat:1	11580.1	222753	10911.2
Repeat:2	11848	223268	11044.9
Repeat:3	12136.6	230723	11394.1

Sample Name	**Acquisition date**
CCB6	12/20/2012 4:59:32PM

	Analyst Name	Method Name
	kerry	MT0007(v23) HF AIR (090512) (11)

RAW CTS/S

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Avg. of Repeats:	-3.61782e-005	0.00193666	-0.000268629	0.00187417	0.0343301
Std Dev:	5.88747e-005	0.000529722	4.46489e-005	0.000109826	0.0015079
%RSD:	162.736	27.3524	16.621	5.86	4.39236
Repeat:1	-1.75964e-005	0.00254514	-0.000315926	0.00198642	0.033222
Repeat:2	1.11638e-005	0.00168645	-0.00022721	0.00186916	0.0360472
Repeat:3	-0.000102102	0.00157838	-0.000262752	0.00176693	0.033721
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Avg. of Repeats:	-9.50991e-005	0.00500522	-0.000496046	7.35459e-005	-2.84556e-005
Std Dev:	1.80863e-005	0.000359141	4.05695e-005	0.000130267	6.13874e-006
%RSD:	19.0184	7.17534	8.17857	177.124	21.573
Repeat:1	-0.000108843	0.00466876	-0.000524645	-7.64247e-005	-2.30694e-005
Repeat:2	-7.46094e-005	0.0049635	-0.000513879	0.000158591	-3.51394e-005
Repeat:3	-0.000101845	0.0053834	-0.000449615	0.000138471	-2.71581e-005
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Avg. of Repeats:	0.000323011	-0.000161031	0.00802703	-0.00317885	-4.10692e-005
Std Dev:	3.53422e-005	0.000149351	0.00213659	0.000842217	0.000186977
%RSD:	10.9415	92.7465	26.6175	26.4944	455.274
Repeat:1	0.000314501	9.1987e-006	0.00624676	-0.00223487	-0.000231222
Repeat:2	0.0002927	-0.000270062	0.0103964	-0.00385334	-3.45478e-005
Repeat:3	0.000361831	-0.000222229	0.00743797	-0.00344833	0.000142562
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Avg. of Repeats:	2.48869e-005	0.000194017	-0.000292678	-0.000412414	-0.00092417
Std Dev:	1.20807e-005	5.40452e-005	0.000641319	0.00155094	0.00011325
%RSD:	48.5426	27.8559	219.121	376.063	12.2543
Repeat:1	3.82722e-005	0.000256227	-0.000973808	0.00137751	-0.00100219
Repeat:2	1.47928e-005	0.000167194	0.000299554	-0.0013579	-0.000794273
Repeat:3	2.15957e-005	0.00015863	-0.00020378	-0.00125685	-0.000976049
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Avg. of Repeats:	4.92252e-005	6.67317e-006	1.28692e-005	0.00032845	2.35039e-005
Std Dev:	7.95033e-005	1.56491e-005	0.000123826	8.58714e-005	0.000106407
%RSD:	161.509	234.508	962.188	26.1445	452.72
Repeat:1	0.000102317	2.06958e-005	-7.01945e-005	0.000346022	-9.82459e-005
Repeat:2	8.75388e-005	9.53198e-006	-4.63866e-005	0.000404175	7.0057e-005
Repeat:3	-4.218e-005	-1.02083e-005	0.000155189	0.000235151	9.87005e-005
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Avg. of Repeats:	0.0361381	0.000177938	-0.00584184	-0.00102336	-0.000103099
Std Dev:	0.00266314	6.15277e-006	0.000894011	0.000514785	5.2656e-005
%RSD:	7.36934	3.45781	15.3036	50.3031	51.0732
Repeat:1	0.0387449	0.000170935	-0.00595616	-0.00133219	-4.59959e-005
Repeat:2	0.0362474	0.000182476	-0.0066732	-0.000429096	-0.000149736
Repeat:3	0.033422	0.000180404	-0.00489617	-0.00130881	-0.000113566
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	9.34672e-005	0.00166488	12128.6	230026	10835.6
Std Dev:	3.5163e-005	1.06886e-005	222.689	4125.76	41.6369
%RSD:	37.6207	0.642005	1.83607	1.79361	0.384259
Repeat:1	0.000121195	0.00167646	12027.7	227137	10873.3
Repeat:2	0.00010529	0.00166278	11974.3	228190	10790.9
Repeat:3	5.39166e-005	0.00165539	12383.9	234751	10842.7

Concentration

Element/Wavelength	Ag3280A	Al3082R	As1890A	B_2496A	Ba4934R
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.00150073	0.00595134	0.000824113	0.0621664	0.00462736
Std Dev:	0.000654415	0.0307114	0.000561095	0.00372142	0.000558835
%RSD:	43.6064	516.042	68.0848	5.98622	12.0767
Repeat:1	0.00170739	0.0412293	0.000231839	0.0659727	0.00421665
Repeat:2	0.00202687	-0.00855853	0.00134771	0.0619902	0.00526374
Repeat:3	0.000767934	-0.0148167	0.000892793	0.0585361	0.00440169
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Be3130A**	**Ca3179R**	**Cd2265A**	**Co2286A**	**Cr2677A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	2.20293e-005	-0.00381518	-2.64107e-005	0.000130759	9.02421e-005
Std Dev:	7.17812e-006	0.00242235	2.10251e-005	0.000113582	6.90981e-005
%RSD:	32.5844	63.4925	79.6081	86.864	76.5697
Repeat:1	1.6526e-005	-0.00608455	-4.26413e-005	-1.08122e-007	0.000150669
Repeat:2	3.01485e-005	-0.00409656	-3.39314e-005	0.000203697	1.49064e-005
Repeat:3	1.94135e-005	-0.00126442	-2.65956e-006	0.000188688	0.000105151
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247A**	**Fe2714R**	**K_7664R**	**Li6707R**	**Mg2790R**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-0.00022886	-0.000244491	0.301317	-0.00137198	0.0104646
Std Dev:	0.000269046	0.0267377	0.0675518	0.00116364	0.0141314
%RSD:	117.559	10936.1	22.4189	84.8146	135.04
Repeat:1	-0.000293006	0.0302335	0.24503	-6.7736e-005	-0.00390646
Repeat:2	-0.000460034	-0.0197525	0.376227	-0.00230386	0.0109568
Repeat:3	6.64617e-005	-0.0112145	0.282693	-0.00174433	0.0243435
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576A**	**Mo2020A**	**aN**	**Na5895R**	**Ni2316A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	-8.83684e-006	0.000255703	-0.591137	0.0394885	-7.08875e-005
Std Dev:	2.63587e-005	0.000126809	1.83784	0.0124959	0.000156552
%RSD:	298.282	49.5921	310.899	31.6444	220.846
Repeat:1	2.03981e-005	0.000401669	-2.5432	0.0539098	-0.000175667
Repeat:2	-3.07871e-005	0.000192767	1.10582	0.0318708	0.000109074
Repeat:3	-1.61215e-005	0.000172673	-0.336024	0.0326849	-0.00014607
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**P_1782A**	**Pb2203A**	**XX**	**Sb2068A**	**Se1960A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	0.000204246	0.00156666	6.51966e-005	0.00163305	-0.00247464
Std Dev:	0.00165147	0.00217748	0.000718784	0.00103921	0.00221689
%RSD:	808.57	138.989	1102.49	63.6362	89.5843
Repeat:1	0.00131028	0.00351845	-0.000429555	0.00184478	-0.00501092
Repeat:2	0.00099655	0.00196347	-0.000264546	0.00255009	-0.00150661
Repeat:3	-0.00169409	-0.000781945	0.000889691	0.000504279	-0.000906389
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Si2506R**	**Sn1899A**	**Sr4215R**	**Ti3349R**	**Tl1908A**
Units:	ppm	ppm	ppm	ppm	ppm
Avg. of Repeats:	3.53359	0.00034324	-0.000558228	0.000213492	-0.00032607
Std Dev:	0.261676	2.88373e-005	0.000215017	0.00156312	0.000994098
%RSD:	7.40539	8.40151	38.5177	732.169	304.872
Repeat:1	3.78974	0.000310417	-0.000585702	-0.00071951	0.000752712
Repeat:2	3.54432	0.000364508	-0.000758188	0.00201808	-0.00120517

Repeat:3	3.26672	0.000354794	-0.000330795	-0.000658095	-0.000525752
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**V_2924A**	**Zn2138A**	**Y_2243A**	**Y_3710A**	**Y_3710R**
Units:	ppm	ppm	----	----	----
Avg. of Repeats:	0.000163919	-0.000134412	12128.6	230026	10835.6
Std Dev:	0.000277738	5.75294e-006	222.689	4125.76	41.6369
%RSD:	169.436	4.28007	1.83607	1.79361	0.384259
Repeat:1	0.000384775	-0.00013286	12027.7	227137	10873.3
Repeat:2	0.000254874	-0.000140782	11974.3	228190	10790.9
Repeat:3	-0.000147892	-0.000129595	12383.9	234751	10842.7
QC Status Pass/Fail:	Pass	Pass	None	None	None

Internal Standards

Element/Wavelength	**Y_2243A**	**Y_3710A**	**Y_3710R**
Avg. of Repeats:	12128.6	230026	10835.6
Std Dev:	222.689	4125.76	41.6369
%RSD:	1.83607	1.79361	0.384259
Repeat:1	12027.7	227137	10873.3
Repeat:2	11974.3	228190	10790.9
Repeat:3	12383.9	234751	10842.7

Miscellaneous Data

TestAmerica Knoxville ICP Data Review / Narrative Checklist
Methods 6010B, 6010C and 200.7 - KNOX-MT-0007, Rev 12

Lot / SDG #:	H2L140401

A. Review of QuantIMS / QDS Results	NA	Yes	No	Why is data reportable?
1.Were QuantIMS LIM L40 reports, Lot Summary and any applicable QAS reviewed?		✓		
2.Were all prep sheets and any existing NCMs reviewed?		✓		
3.Were results and RLs, flags, units, DFs, prep/analysis dates verified to be correct for each sample/QC sample and for all dilutions? **NOTE: If DF<1, results for all NDs must be verified.**		✓		
4.Were elements with F, k or ^ flags reported from a dilution if necessary?	✓			
5.Were all hits reported from a run in which interfering elements were less than the linear range?		✓		
6.Were any results reported as ND with elevated RLs? *If yes, list sample ID:*_____			✓	☐ [elev1] RLs elevated due to high conc. of _____ ☐ [elev3] RLs elevated due to difficult matrix.
7.Were elements with negative results >RL reported as ND G?	✓			
8.Were spike amounts verified and documented for one analyte per non-routine LCS or MS?	✓			
9.Were method blank results within limits? (Waters/Soils/Waste for 01 < ½ RL; Zn <RL) (4U/Air/ /PM10/JN Waste <RL)		✓		☐ **[mb3] No analyte >RL in associated samples.** ☐ **[mb7] Sample results >10x blank.** ☐ **[mb5] Insufficient sample for reanalysis.**
10.LCS or LCS/LCSD within QC limits? (6010B = in-house limits; 200.7 = 85 - 115%R)		✓		☐ **[lcs2] Insufficient sample for reanalysis.** ☐ **[lcs3] LCS%R >QC limits & sample results <RL.**
11.MS/MSD or MS/DUP run at required frequency?	✓			☐ [lcsd] Insufficient sample – lcs/lcsd analyzed.
12.MS %R or MS/MSD %R and RPD within QC limits?	✓			☐ [ms1] ☐ [msd1] LCS acceptable - matrix effects. ☐ [ms2] ☐ [msd2] Native analyte > 4x spike level. ☐ [ms3] ☐ [msd3] Matrix effects & native >4x spike. ☐ [batch] Batch QC on client's sample outside limits.
13.DUP RPD within limits? (0-20 RPD for results ≥5xRL; ±RL if result <5xRL) **Notes:** 1) Add J flags to DUP as needed; 2) Assure that DUP RPD=0 for 2 NDs & RPD=200 for ND & positive result.	✓			☐ [rpd] LCS acceptable. Results indicate sample heterogeneity.

Reviewed by: DRW	Date: 12/21/12
Comments:	

TestAmerica Knoxville ICP Data Review / Narrative Checklist
Methods 6010B, 6010C and 200.7 - KNOX-MT-0007, Rev 12

Lot / SDG #: H2L140401

B. Review of QC Summary Forms *Note:* Y=Yes, N=No, NA=Not Applicable	Chart # FB22012	Chart #	Chart #	Chart #	Why is data reportable?
1.Is the internal standard (IS) response of each run within ±30% of ICB IS response?	Y				☐ [is] High IS response. Sample(s) rerun at dilution. ☐ Low IS response. Sample(s) reanalyzed.
2.ICV within limits? (6010B/6010C=90-110%R and <5.0% RSD) (200.7=95-105%R and <3.0%RSD)	Y				
3.CCV within limits? (90-110%R and <5.0%RSD)	Y				If no, list details: _____ ☐ CCV reanalyzed one time; reanalysis within limits.
4.ICB/CCB within limits? (Water/Soil/Waste for 01/4U <3x std dev of mean blank value,<MDL) (Air/PM10/JN Waste <RL)	Y				If no, list details: _____ ☐ CCB reanalyzed one time; reanalysis within limits.
5.Are RLs on ICSA forms ≤ client RLs?	Y				
6.ICSA/ICSAB run at the beginning of run?	Y				
7.ICSA criteria for non-interfering elements met? *If no, list analytes:* _____	Y				☐ [ics1] Results outside limits due to contamination. ☐ [ics2] Interfering elements not present in sample at level which would result in false result >±1x RL. ☐ [ics3] Sample conc. >10x analyte signal in ICSA. ☐ Element not reported.
8.ICSAB interferents and analytes within 80-120%R?	Y				
9.Reporting Limit Check Standard (CRDL) within limits? (Water/Soil/Waste for 01 = 70-130%R) (4U/Air/PM10/JN Waste = 50-150%)	Y				
10. For method 6010C, were samples bracketed by RL Check Standards?	N/A				
11.PDS or PDS/PDSD run at required frequency?	Y				
12.PDS/PDSD within limits? (75-125%R) **Reminder:** Place copy of PDS results in Sample Data Summary and QC Summary sections of report. MXK42-FH-Pb	N				☐ [pds1] ☐ [pdsd1] LCS acceptable - matrix effects. ☐ [pds2] ☑ [pdsd2] Native analyte > 4x spike level. ☐ [pds3] ☐ [pdsd3] Matrix effects & native >4x spike.
13.Serial dilution done per prep batch? ☐ Client or ☑ Batch sample	Y				
14.Serial dilution results within 10% D for analytes >50xIDL? *If no, list ID:* _____	Y				☐ [ser1] Physical or chemical interference - sample matrix. ☐ [ser2] Batch serial dilution out of control
15.Serial dilution form generated for each undiluted/diluted run of OS?	Y				
16.Are the IDLs, LRs and IECs on summary forms current?	Y				

Reviewed by: [signature] Date: 12/21/12

Comments:

NOTE: Nonconformance memos are required for **bold** and *italicized* [autotext] statements: **Bold** = deficiency, *italicized* = anomaly.

TestAmerica Knoxville Metals Final Deliverable Data Review / Narrative Checklist

Lot / SDG #:	12L140401			
Report Type:	☐ Report (COA)	☐ Level 4 Package	☐ QDS Package	☐ Forms Only	☐ Other _____

Review of Final Deliverable	NA	Yes	No	
1. Are all nonconformances documented and discussed in narrative? (**Reminder:** Place copy of all NCMs in front of deliverable.)	✓			List NCM #:
2. For air train samples, was the appropriate autotext selected for the narrative? (**Reminder:** Review the autotext and make all appropriate changes.)		✓		☐ [MMT1] Multi-metals trains analyzed for ICP & Hg. ☑ [MMT2] Multi-metals trains analyzed for ICP only. ☐ [MMT3] Multi-metals trains analyzed for Hg only. ☐ [MMT4] Combined FH/BH analyzed for ICP only. ☐ [OH] Ontario-Hydro train. ☐ [OH thimble] Ontario-Hydro train with thimble-FH. ☐ [Method 12] Method 12 air train – Pb only.
3. For PM10 projects, was the appropriate autotext selected for the narrative?	✓			☐ [pm10] PM10 filters analyzed for ICP & Hg. ☐ [pm10icp] PM10 filters analyzed for ICP only.
4. For BJ air samples, was the Air BJ autotext selected for the narrative?	✓			☐ [Air BJ] BJ Air samples.
5. For low-level waste samples, was the JN autotext selected for the narrative?	✓			☐ [JN] Low-level waste prep.
6. Is the narrative complete and does it contain the appropriate deviations noted on the analyst DRCs, ICP DRC, and Hg DRC?		✓		
7. Were all client/project specific requirements met? (As described in the QuantIMS LIM L40 reports, Lot Summary or Client Analysis Summary, and any applicable QAS.)		✓		
8. Are the original DRCs behind narrative with copy in report?		✓		
9. Is the final deliverable in the proper format?		✓		
10. Were the ICP and Hg charts and cover pages scanned?		✓		

Data Reviewer: DW	Date: 12/21/12
Comments:	

TestAmerica Knoxville
Multi-Metals Air Train - SOP KNOX-MT-0006
Back Half ICP Sample Preparation Worksheet

Batch Number: 2352036

Prep Date: 12/17/2012 1300

Comp Date: 12/19/2012 1700

1st Level Review/Relinquished by: KND Date: 12/19/2012

2nd Level Review/Received by: DTW Date: 12/21/12

Lot Number	Lot Sample Number	Suffix	Method Code	Client ID	WO #	PDS	Total Sample Volume (L)	Sample pH	Final Volume Concentrated Sample (L)	Final ICP Digestate Volume (L)	Volume Concentrated Sample Digested (L)	ICP Bench Dilution Factor	QuantIMS Upload Dilution Factor	QuantIMS Upload Multiplier
H2L160401	2		DFQO	BC-FF-U2-O-M29-IMP1234-R1	MXLTX		0.680	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L160401	4		DFQO	BC-FF-U2-O-M29-IMP1234-R2	MXLT1		0.660	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L160401	6		DFQO	BC-FF-U2-O-M29-IMP1234-R3	MXLT3	**	0.610	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L160401	8		DFQO	BC-FF-M29-IMP1234-FB	MXLT5		0.100	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L160401	10		DFQO	BC-FF-U2-INA-M29-IMP1234-R1	MXLT7		0.470	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L160401	12		DFQO	BC-FF-U2-INB-M29-IMP1234-R1	MXLT9		0.480	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L160401	14		DFQO	BC-FF-U2-INC-M29-IMP1234-R1	MXLVC		0.470	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L160401	16		DFQO	BC-FF-U2-IND-M29-IMP1234-R1	MXLVE		0.460	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L140401	2		DFQO	M29 R1 092612 C03	MXK40		0.530	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L140401	4		DFQO	M29 R2 092612 C03	MXK43	**	0.520	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L140401	6		DFQO	M29 R3 092612 C03	MXK46		0.530	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L140401	8		DFQO	M29 FLB 092612 C03	MXK48		0.100	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L140401	10		DFQO	M29 RGB 092612 C03	MXK5A		0.100	<2	0.100	0.100	0.100	1	1.0000	0.1000
H2L170000	36	B	DFQO	INTRA-LAB BLANK	MXL25				0.100	0.100	0.100	1	1.0000	0.1000
H2L170000	36	C	DFQO	INTRA-LAB CHECK	MXL25				0.100	0.100	0.100	1	1.0000	0.1000
H2L170000	36	L	DFQO	INTRA-LAB CHECK	MXL25				0.100	0.100	0.100	1	1.0000	0.1000

1:1 HNO_3 Logbook #:	4019-20-C
H_2O_2 Lot #:	K12A06
HCl Lot #:	K48A02
Whatman 41 Filter Lot #:	D0608509-2087

Comments:

			Exp. Date	Pipet ID
ICP LCS/LCSD Spike:	1.0 mL of	F2MEB426044	10/1/2013	MET-012
	1.0 mL of	F2MEB426045	10/1/2013	MET-012
	1.0 mL of	F2MEB439074	10/1/2013	MET-012

QuantIMS Upload Dilution Factor = Final Volume Concentrated Sample (L) / 0.100 L x Final Volume ICP Digestate (L) / Volume Concentrated Sample Digested (L) x ICP Bench Dilution Factor

QuantIMS Multiplier = Final Volume Concentrated Sample (L) x Final Volume ICP Digestate (L) / Volume Concentrated Sample Digested (L) x ICP Bench Dilution Factor

* = Sample chosen for PDS.

** = Sample chosen for PDS/PDSD.

TestAmerica Knoxville
Multi-Metals Air Train - SOP KNOX-MT-0006
Front Half ICP Sample Preparation Worksheet

Batch Number: 2352035

Prep Date: 12/17/2012 1300

Comp Date: 12/19/2012 1600

1st Level Review/Relinquished by: KND Date: 12/19/2012

2nd Level Review/Received by: DKW Date: 12/21/12

Lot Number	Lot Sample Number	Suffix	Method Code	Client ID	WO #	PDS	Total Volume Probe Rinse (L)	Probe Rinse pH	Final ICP Digestate Volume (L)	ICP Bench Dilution Factor	QuantIMS Upload Dilution Factor	QuantIMS Upload Multiplier
H2L160401	1		DEQO	BC-FF-U2-O-M29-PF/FHR-R1	MXLTW		0.100	<2	0.100	1	1.0000	0.1000
H2L160401	3		DEQO	BC-FF-U2-O-M29-PF/FHR-R2	MXLT0		0.110	<2	0.100	1	1.0000	0.1000
H2L160401	5		DEQO	BC-FF-U2-O-M29-PF/FHR-R3	MXLT2	**	0.105	<2	0.100	1	1.0000	0.1000
H2L160401	7		DEQO	BC-FF-M29-PF/FHR-FB	MXLT4		0.100	<2	0.100	1	1.0000	0.1000
H2L160401	9		DEQO	BC-FF-U2-INA-M29-PF/FHR-R1	MXLT6		0.105	<2	0.100	1	1.0000	0.1000
H2L160401	11		DEQO	BC-FF-U2-INB-M29-PF/FHR-R1	MXLT8		0.100	<2	0.100	1	1.0000	0.1000
H2L160401	13		DEQO	BC-FF-U2-INC-M29-PF/FHR-R1	MXLVA		0.100	<2	0.100	1	1.0000	0.1000
H2L160401	15		DEQO	BC-FF-U2-IND-M29-PF/FHR-R1	MXLVD		0.105	<2	0.100	1	1.0000	0.1000
H2L140401	1		DEQO	M29 R1 092612 C01/C02	MXK4W		0.100	<2	0.100	1	1.0000	0.1000
H2L140401	3		DEQO	M29 R2 092612 C01/C02	MXK42	**	0.110	<2	0.100	1	1.0000	0.1000
H2L140401	5		DEQO	M29 R3 092612 C01/C02	MXK44		0.100	<2	0.100	1	1.0000	0.1000
H2L140401	7		DEQO	M29 FLB 092612 C01/C02	MXK47		0.100	<2	0.100	1	1.0000	0.1000
H2L140401	9		DEQO	M29 RGB 092612 C01/C04	MXK49		0.100	<2	0.100	1	1.0000	0.1000
H2L110431	1		DEQO	CPT-STK-PTR-A	MXJ05	**	0.095	<2	0.100	1	1.0000	0.1000
H2L110431	2		DEQO	CPT-STK-PTR-B	MXJ06		0.165	<2	0.100	1	1.0000	0.1000
H2L170000	35	B	DEQO	INTRA-LAB BLANK	MXL23				0.100	1	1.0000	0.1000
H2L170000	35	C	DEQO	INTRA-LAB CHECK	MXL23				0.100	1	1.0000	0.1000
H2L170000	35	L	DEQO	INTRA-LAB CHECK	MXL23				0.100	1	1.0000	0.1000
				MLDTJ- H1H030469 Ag Test					0.100	1	1.0000	0.1000
				MLDTK- H1H030469 Ag Test					0.100	1	1.0000	0.1000

HNO_3 Lot #:	L03021
HF Lot #:	5111093
H_3BO_3 Logbook #	3651-88
0.1N HNO_3 Logbook #:	3651-95
HCl Lot #:	K48A02
Whatman 41 Filter Lot #:	D0608509-2087

Comments:

		Exp. Date	Pipet ID
ICP LCS/LCSD Spike:	1.0 mL of F2MEB426044	10/1/2013	MET-012
	1.0 mL of F2MEB426045	10/1/2013	MET-012
	1.0 mL of F2MEB439074	10/1/2013	MET-012
Hg LCS/LCSD Spike:	0.5 mL of NA	NA	NA

QuantIMS Upload Dilution Factor = Final ICP Digestate Volume (L) / 0.100 L x ICP Bench Dilution Factor

QuantIMS Multiplier = Final ICP Digestate Volume (L) x ICP Bench Dilution Factor

* = Sample chosen for PDS.

** = Sample chosen for PDS/PDSD.

Sample Receipt Documentation

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

H2L140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_R1_092612_C01 770120 12-0311M29R01C01	Poly Petri, 4degC (Test America)	sign: date: 12-11-12 time: 1520	sign: date: 12-12-12 time: 10:15	sign: date: 12-13-12 time: 13:00	sign: date: time:
M29_R1_092612_C02 770121 12-0311M29R01C03	16oz poly, 4degC (Test America)	sign: date: 12-11-12 time: 1550	sign: date: time:	sign: date: time:	sign: date: time:
M29_R1_092612_C03 770122 12-0311M29R01C04	32 oz. poly, 4degC (Test America)	sign: date: 12-11-12 time: 1540	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

HAND DELIVERED
BKD 12-13-12 ~~NO~~ CUSTODY SEALS INTACT
RECEIVED AT AMBIENT TEMP
BKD 12-13-12

(CHAIN_SMP_SEL_3RECD)

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

H2L140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_R2_092612_C01 770123 12-0311M29R02C01	Poly Petri, 4degC (Test America)	sign: date: time: 12-11-12 0820	sign: date: time: 12-13-12 10:15	sign: date: time: 12-13-12 13:00	sign: date: time:
M29_R2_092612_C02 770124 12-0311M29R02C03	16oz poly, 4degC (Test America)	sign: date: time: 12-11-12 0845	sign: date: time:	sign: date: time:	sign: date: time:
M29_R2_092612_C03 770125 12-0311M29R02C04	32 oz. poly, 4degC (Test America)	sign: date: time: 12-11-12 0830	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

H2140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_R3_092612_C01 770126 12-0311M29R03C01	Poly Petri, 4degC (Test America)	sign: date: time: 12-11-12 2350	sign: date: time: 12-12-12 10:15	sign: date: time: 12-13-12 13:00	sign: date: time:
M29_R3_092612_C02 770127 12-0311M29R03C03	16oz poly, 4degC (Test America)	sign: date: time: 12-12-12 0020	sign: date: time:	sign: date: time:	sign: date: time:
M29_R3_092612_C03 770128 12-0311M29R03C04	32 oz. poly, 4degC (Test America)	sign: date: time: 12-12-12 0010	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
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H2L140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_FLB_092612_C01 770139 12-0311M29FLBC01	Poly Petri, 4degC (Test America)	sign: date: time: 12-11-12 0935	sign: date: time: 12.12.12 10:15	sign: date: time: 12-13-12 13:00	sign: date: time:
M29_FLB_092612_C02 770140 12-0311M29FLBC03	16oz poly, 4degC (Test America)	sign: date: time: 12-11-12 10:00	sign: date: time:	sign: date: time:	sign: date: time:
M29_FLB_092612_C03 770141 12-0311M29FLBC04	32 oz. poly, 4degC (Test America)	sign: date: time: 12-11-12 0945	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

(CHAIN_SMP_SEL_3RECD)

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

L12140401

LIMS Job ID: ESL_12_2723 LCD CPT 12-0311 M29 Job created on 26-SEP-2012 09:50 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
M29_RGB_092612_C01 ✓ 770135 12-0311M29RGBC8A	16oz poly, 4degC (Test America)	sign: [signature] date: 12-11-12 time: 1030	sign: [signature] date: 12-12-12 time: 10:15	sign: [signature] date: 12-13-12 time: 13:00	sign: date: time:
M29_RGB_092612_C02 770136 NO 12-0311M29RGBC8B SAMPLE	16oz poly, 4degC (Test America)	sign: NS LA 12-12-12 ~~date: 12-11-12 time: 1030~~	sign: NS date: time:	sign: date: time:	sign: date: time:
M29_RGB_092612_C03 770137 12-0311M29RGBC09	16oz poly, 4degC (Test America)	sign: [signature] date: 12-11-12 time: 1030	sign: [signature] date: 12-12-12 time: 10:15	sign: date: time:	sign: date: time:
M29_RGB_092612_C04 ✓ 770138 12-0311M29RGBC12	Poly Petri, 4degC (Test America)	sign: [signature] date: 12-11-12 time: 10:30	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 420140401

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **1a** Do not match COC ☐ **1b** Incomplete information ☐ **1c** Marking smeared ☐ **1d** Label torn ☐ **1e** No label ☐ **1f** COC not received ☐ **1g** Other:	NA - However, samples were hand-delivered with custody seals to the lab. JBW 12-24-12
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C)			✓	☐ **2a** Temp Blank = _____ ☐ **2b** Cooler Temp = _____ ☐ **2c** Cooling initiated for recently collected samples, ice present.	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **3a** Sample preservative =	
4. Were custody seals present/intact on cooler and/or containers?	✓			☐ **4a** Not present ☐ **4b** Not intact ☐ **4c** Other:	
5. Were all of the samples listed on the COC received?	✓			☐ **5a** Samples received-not on COC ☐ **5b** Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ **6a** Leaking ☐ **6b** Broken	
7. Were VOA samples received without headspace?		✓		☐ **7a** Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ **8a** Improper container	
9. Did you check for residual chlorine, if necessary?		✓		☐ **9a** Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ **10a** Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For 1613B water samples is pH<9?			✓	If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____	
13. Are the shipping containers intact?	✓			☐ **13a** Leaking ☐ **13b** Other:	
14. Was COC relinquished? (Signed/Dated/Timed) JWS 12-13-12	✓	✓		☑ **14a** Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ **15a** Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ **15a** Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ **15a** Incomplete information	
18. Is the client and project name/# identified?	✓			☐ **15a** Incomplete information	
19. Was the sampler identified on the COC?	✓			☐ **19a** Other	

Quote #: 76110 PM Instructions: _____

Sample Receiving Associate: _____ Date: 12-14-12

QA026R23.doc, 022812

APPENDIX I-D

FFEDSTREAM AND ASH SPIKE DATA PACKAGE

Pace Analytical
www.pacelabs.com

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
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(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

December 24, 2012

Ms. Melissa Wise
Eastman Chemical Company
P.O. Box 511
Kingsport, TN 37662

RE: Project: ESL_12_2714
Pace Project No.: 92141962

Dear Ms. Wise:
Enclosed are the analytical results for sample(s) received by the laboratory on December 14, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Lorri Patton

Lorri Patton

lorri.patton@pacelabs.com
Project Manager

Enclosures

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Pace Analytical
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Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: ESL_12_2714
Pace Project No.: 92141962

Asheville Certification IDs
2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

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(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: ESL_12_2714
Pace Project No.: 92141962

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92141962001	**769948 FUEL_092512_C01**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962002	**769949 FUEL_092512_C02**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962003	**769950 FUEL_092512_C03**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962004	**769951 FUEL_092512_C04**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962005	**782323 FUEL_121312_C01**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962006	**769952 EDA_092512_C01**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962007	**769953 EDA_092512_C02**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962008	**769954 EDA_092512_C03**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962009	**769955 EDA_092512_C04**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962010	**782324 EDA_121312_C01**	EPA 6010	JMW	2	PASI-A

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SAMPLE ANALYTE COUNT

Project: ESL_12_2714
Pace Project No.: 92141962

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962011	**769956 SUR_AD01_092512_C01**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962012	**769957 SUR_AD01_092512_C02**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962013	**769958 SUR_AD01_092512_C03**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962014	**769959 SUR_AD01_092512_C04**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962015	**782325 SUR_AD01_092512_C01**	EPA 6010	JMW	2	PASI-A
		EPA 9076	SDH	1	PASI-A
		ASTM D482-95	SDH	1	PASI-A
		ASTM D5468-02	SDH	1	PASI-A
92141962016	**769960 ASH_SPIKE_092512_C01**	EPA 6010	JMW	2	PASI-A
92141962017	**769961 ASH_SPIKE_092512_C02**	EPA 6010	JMW	2	PASI-A
92141962018	**769962 ASH_SPIKE_092512_C03**	EPA 6010	JMW	2	PASI-A
92141962019	**769963 ASH_SPIKE_092512_C04**	EPA 6010	JMW	2	PASI-A
92141962020	**782326 ASH_SPIKE_121312_C01**	EPA 6010	JMW	2	PASI-A

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769948 FUEL_092512_C01 **Lab ID: 92141962001** Collected: 12/13/12 09:36 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.49	1	12/14/12 20:45	12/18/12 18:26	7440-47-3	
Lead	ND	ug/g	0.49	1	12/14/12 20:45	12/17/12 22:20	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	**0.091**	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**19310**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769949 FUEL_092512_C02 **Lab ID: 92141962002** Collected: 12/13/12 09:43 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.50	1	12/14/12 20:45	12/18/12 18:32	7440-47-3	
Lead	ND	ug/g	0.50	1	12/14/12 20:45	12/17/12 22:26	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	**0.016**	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**17480**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769950 FUEL_092512_C03 **Lab ID: 92141962003** Collected: 12/13/12 09:48 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.50	1	12/14/12 20:45	12/18/12 18:38	7440-47-3	
Lead	ND	ug/g	0.50	1	12/14/12 20:45	12/17/12 22:42	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	**0.066**	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**19280**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769951 FUEL_092512_C04 **Lab ID: 92141962004** Collected: 12/13/12 09:53 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.49	1	12/14/12 20:45	12/18/12 18:41	7440-47-3	
Lead	ND	ug/g	0.49	1	12/14/12 20:45	12/17/12 22:45	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	ND	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**19240**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 782323 FUEL_121312_C01 **Lab ID: 92141962005** Collected: 12/13/12 09:58 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.49	1	12/14/12 20:45	12/18/12 18:53	7440-47-3	
Lead	ND	ug/g	0.49	1	12/14/12 20:45	12/17/12 22:48	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	ND	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**17630**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769952 EDA_092512_C01 **Lab ID: 92141962006** Collected: 12/13/12 10:04 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	**206**	ug/g	0.48	1	12/14/12 20:45	12/18/12 18:56	7440-47-3	
Lead	ND	ug/g	0.48	1	12/14/12 20:45	12/17/12 22:51	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	**0.024**	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	**0.17**	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**7910**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769953 EDA_092512_C02 **Lab ID: 92141962007** Collected: 12/13/12 10:09 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	**189**	ug/g	0.50	1	12/14/12 20:45	12/18/12 18:59	7440-47-3	
Lead	ND	ug/g	0.50	1	12/14/12 20:45	12/17/12 22:54	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	**0.026**	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	**0.16**	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**7470**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769954 EDA_092512_C03 **Lab ID: 92141962008** Collected: 12/13/12 10:14 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	**189**	ug/g	0.49	1	12/14/12 20:45	12/18/12 19:03	7440-47-3	
Lead	ND	ug/g	0.49	1	12/14/12 20:45	12/17/12 22:57	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	**0.020**	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	**0.13**	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**7910**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769955 EDA_092512_C04 **Lab ID: 92141962009** Collected: 12/13/12 10:20 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	**183**	ug/g	0.49	1	12/14/12 20:45	12/18/12 19:06	7440-47-3	
Lead	ND	ug/g	0.49	1	12/14/12 20:45	12/17/12 23:00	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	**0.023**	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	**0.14**	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**7900**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 782324 EDA_121312_C01 **Lab ID: 92141962010** Collected: 12/13/12 10:26 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	**184**	ug/g	0.49	1	12/14/12 20:45	12/18/12 19:09	7440-47-3	
Lead	ND	ug/g	0.49	1	12/14/12 20:45	12/17/12 23:03	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	**0.023**	%	0.010	1		12/19/12 16:50	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	**0.13**	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**7920**	BTU/lb	50.0	1		12/17/12 16:30		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769956 **Lab ID: 92141962011** Collected: 12/13/12 09:10 Received: 12/14/12 10:00 Matrix: Other
SUR_AD01_092512_C01

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.49	1	12/14/12 20:45	12/18/12 19:12	7440-47-3	
Lead	ND	ug/g	0.49	1	12/14/12 20:45	12/17/12 23:07	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/21/12 17:00	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	ND	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**6890**	BTU/lb	50.0	1		12/18/12 14:45		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769957 **Lab ID: 92141962012** Collected: 12/13/12 09:12 Received: 12/14/12 10:00 Matrix: Other
SUR_AD01_092512_C02

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.49	1	12/14/12 20:45	12/18/12 19:15	7440-47-3	
Lead	ND	ug/g	0.49	1	12/14/12 20:45	12/17/12 23:20	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/21/12 17:00	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	ND	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**6860**	BTU/lb	50.0	1		12/18/12 14:45		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769958 **Lab ID: 92141962013** Collected: 12/13/12 09:19 Received: 12/14/12 10:00 Matrix: Other
SUR_AD01_092512_C03

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.50	1	12/14/12 20:45	12/18/12 19:18	7440-47-3	
Lead	ND	ug/g	0.50	1	12/14/12 20:45	12/17/12 23:23	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/21/12 17:00	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	ND	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**6650**	BTU/lb	50.0	1		12/18/12 14:45		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769959 **Lab ID: 92141962014** Collected: 12/13/12 09:25 Received: 12/14/12 10:00 Matrix: Other
SUR_AD01_092512_C04

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.49	1	12/14/12 20:45	12/18/12 19:21	7440-47-3	
Lead	ND	ug/g	0.49	1	12/14/12 20:45	12/17/12 23:26	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/21/12 17:00	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	ND	% (w/w)	0.010	1		12/20/12 14:50		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**6870**	BTU/lb	50.0	1		12/18/12 14:45		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 782325 SUR_AD01_092512_C01 **Lab ID: 92141962015** Collected: 12/13/12 09:29 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.47	1	12/14/12 20:45	12/18/12 19:33	7440-47-3	
Lead	ND	ug/g	0.47	1	12/14/12 20:45	12/17/12 23:29	7439-92-1	
9076 Total Chlorine	Analytical Method: EPA 9076							
Chlorine, Total	ND	%	0.010	1		12/21/12 17:00	7782-50-5	N2
ASTM D482-95 ASH	Analytical Method: ASTM D482-95							
Percent Ash	ND	% (w/w)	0.010	1		12/18/12 15:30		N2
ASTM D5468-02 BTU	Analytical Method: ASTM D5468-02							
British Thermal Units	**6840**	BTU/lb	50.0	1		12/18/12 14:45		N2

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769960 **Lab ID: 92141962016** Collected: 12/13/12 08:55 Received: 12/14/12 10:00 Matrix: Other
ASH_SPIKE_092512_C01

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.47	1	12/14/12 20:45	12/18/12 19:36	7440-47-3	
Lead	ND	ug/g	0.47	1	12/14/12 20:45	12/17/12 23:32	7439-92-1	

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769961 ASH_SPIKE_092512_C02 **Lab ID: 92141962017** Collected: 12/13/12 08:57 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.50	1	12/14/12 20:45	12/18/12 19:39	7440-47-3	
Lead	ND	ug/g	0.50	1	12/14/12 20:45	12/17/12 23:35	7439-92-1	

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769962 ASH_SPIKE_092512_C03 **Lab ID: 92141962018** Collected: 12/13/12 08:59 Received: 12/14/12 10:00 Matrix: Other

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.48	1	12/14/12 20:45	12/18/12 19:43	7440-47-3	
Lead	ND	ug/g	0.48	1	12/14/12 20:45	12/17/12 23:38	7439-92-1	

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 769963 **Lab ID: 92141962019** Collected: 12/13/12 09:01 Received: 12/14/12 10:00 Matrix: Other
ASH_SPIKE_092512_C04

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.50	1	12/14/12 20:45	12/18/12 19:49	7440-47-3	
Lead	ND	ug/g	0.50	1	12/14/12 20:45	12/17/12 23:41	7439-92-1	

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ANALYTICAL RESULTS

Project: ESL_12_2714
Pace Project No.: 92141962

Sample: 782326 **Lab ID: 92141962020** Collected: 12/13/12 09:03 Received: 12/14/12 10:00 Matrix: Other
ASH_SPIKE_121312_C01

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Chromium	ND	ug/g	0.50	1	12/14/12 20:45	12/18/12 19:56	7440-47-3	
Lead	ND	ug/g	0.50	1	12/14/12 20:45	12/17/12 23:44	7439-92-1	

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QUALITY CONTROL DATA

Project: ESL_12_2714
Pace Project No.: 92141962

QC Batch: MPRP/12207 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 92141962001, 92141962002, 92141962003, 92141962004, 92141962005, 92141962006, 92141962007, 92141962008, 92141962009, 92141962010, 92141962011, 92141962012, 92141962013, 92141962014, 92141962015, 92141962016, 92141962017, 92141962018, 92141962019, 92141962020

METHOD BLANK: 891408 Matrix: Solid
Associated Lab Samples: 92141962001, 92141962002, 92141962003, 92141962004, 92141962005, 92141962006, 92141962007, 92141962008, 92141962009, 92141962010, 92141962011, 92141962012, 92141962013, 92141962014, 92141962015, 92141962016, 92141962017, 92141962018, 92141962019, 92141962020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	ug/g	ND	0.50	12/18/12 18:20	
Lead	ug/g	ND	0.50	12/17/12 22:13	

LABORATORY CONTROL SAMPLE: 891409

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	ug/g	50	50.9	102	80-120	
Lead	ug/g	50	51.1	102	80-120	

MATRIX SPIKE SAMPLE: 891410

Parameter	Units	92141962001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium	ug/g	ND	49	49.5	101	75-125	
Lead	ug/g	ND	49	50.9	104	75-125	

SAMPLE DUPLICATE: 891412

Parameter	Units	92141962002 Result	Dup Result	RPD	Qualifiers
Chromium	ug/g	ND	ND		
Lead	ug/g	ND	ND		

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QUALITY CONTROL DATA

Project: ESL_12_2714
Pace Project No.: 92141962

QC Batch: WET/23511 Analysis Method: EPA 9076
QC Batch Method: EPA 9076 Analysis Description: 9076 Total Chlorine
Associated Lab Samples: 92141962001, 92141962002, 92141962003, 92141962004, 92141962005, 92141962006, 92141962007, 92141962008, 92141962009, 92141962010

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 894649 894650

Parameter	Units	92141962001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Chlorine, Total	%	ND	.05	.05	0.055	0.056	106	107	75-125	1	N2

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QUALITY CONTROL DATA

Project: ESL_12_2714
Pace Project No.: 92141962

QC Batch: WET/23578 Analysis Method: EPA 9076
QC Batch Method: EPA 9076 Analysis Description: 9076 Total Chlorine
Associated Lab Samples: 92141962011, 92141962012, 92141962013, 92141962014, 92141962015

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 895730 895731

Parameter	Units	92141962012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Chlorine, Total	%	ND	.05	.05	0.048	0.044	86	79	75-125	8	N2

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QUALIFIERS

Project: ESL_12_2714
Pace Project No.: 92141962

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

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TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: ESL_12_2714
Pace Project No.: 92141962

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92141962001	769948 FUEL_092512_C01	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962002	769949 FUEL_092512_C02	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962003	769950 FUEL_092512_C03	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962004	769951 FUEL_092512_C04	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962005	782323 FUEL_121312_C01	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962006	769952 EDA_092512_C01	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962007	769953 EDA_092512_C02	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962008	769954 EDA_092512_C03	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962009	769955 EDA_092512_C04	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962010	782324 EDA_121312_C01	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962011	769956 SUR_AD01_092512_C01	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962012	769957 SUR_AD01_092512_C02	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962013	769958 SUR_AD01_092512_C03	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962014	769959 SUR_AD01_092512_C04	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962015	782325 SUR_AD01_092512_C01	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962016	769960 ASH_SPIKE_092512_C01	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962017	769961 ASH_SPIKE_092512_C02	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962018	769962 ASH_SPIKE_092512_C03	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962019	769963 ASH_SPIKE_092512_C04	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962020	782326 ASH_SPIKE_121312_C01	EPA 3050	MPRP/12207	EPA 6010	ICP/11154
92141962001	769948 FUEL_092512_C01	EPA 9076	WET/23511		
92141962002	769949 FUEL_092512_C02	EPA 9076	WET/23511		
92141962003	769950 FUEL_092512_C03	EPA 9076	WET/23511		
92141962004	769951 FUEL_092512_C04	EPA 9076	WET/23511		
92141962005	782323 FUEL_121312_C01	EPA 9076	WET/23511		
92141962006	769952 EDA_092512_C01	EPA 9076	WET/23511		
92141962007	769953 EDA_092512_C02	EPA 9076	WET/23511		
92141962008	769954 EDA_092512_C03	EPA 9076	WET/23511		
92141962009	769955 EDA_092512_C04	EPA 9076	WET/23511		
92141962010	782324 EDA_121312_C01	EPA 9076	WET/23511		
92141962011	769956 SUR_AD01_092512_C01	EPA 9076	WET/23578		
92141962012	769957 SUR_AD01_092512_C02	EPA 9076	WET/23578		
92141962013	769958 SUR_AD01_092512_C03	EPA 9076	WET/23578		
92141962014	769959 SUR_AD01_092512_C04	EPA 9076	WET/23578		
92141962015	782325 SUR_AD01_092512_C01	EPA 9076	WET/23578		
92141962001	769948 FUEL_092512_C01	ASTM D482-95	WET/23510		
92141962002	769949 FUEL_092512_C02	ASTM D482-95	WET/23510		
92141962003	769950 FUEL_092512_C03	ASTM D482-95	WET/23510		
92141962004	769951 FUEL_092512_C04	ASTM D482-95	WET/23510		
92141962005	782323 FUEL_121312_C01	ASTM D482-95	WET/23510		
92141962006	769952 EDA_092512_C01	ASTM D482-95	WET/23510		
92141962007	769953 EDA_092512_C02	ASTM D482-95	WET/23510		
92141962008	769954 EDA_092512_C03	ASTM D482-95	WET/23510		
92141962009	769955 EDA_092512_C04	ASTM D482-95	WET/23510		
92141962010	782324 EDA_121312_C01	ASTM D482-95	WET/23510		
92141962011	769956 SUR_AD01_092512_C01	ASTM D482-95	WET/23510		
92141962012	769957 SUR_AD01_092512_C02	ASTM D482-95	WET/23510		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: ESL_12_2714
Pace Project No.: 92141962

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92141962013	**769958 SUR_AD01_092512_C03**	ASTM D482-95	WET/23510		
92141962014	**769959 SUR_AD01_092512_C04**	ASTM D482-95	WET/23555		
92141962015	**782325 SUR_AD01_092512_C01**	ASTM D482-95	WET/23510		
92141962001	**769948 FUEL_092512_C01**	ASTM D5468-02	WET/23497		
92141962002	**769949 FUEL_092512_C02**	ASTM D5468-02	WET/23497		
92141962003	**769950 FUEL_092512_C03**	ASTM D5468-02	WET/23497		
92141962004	**769951 FUEL_092512_C04**	ASTM D5468-02	WET/23497		
92141962005	**782323 FUEL_121312_C01**	ASTM D5468-02	WET/23497		
92141962006	**769952 EDA_092512_C01**	ASTM D5468-02	WET/23497		
92141962007	**769953 EDA_092512_C02**	ASTM D5468-02	WET/23497		
92141962008	**769954 EDA_092512_C03**	ASTM D5468-02	WET/23497		
92141962009	**769955 EDA_092512_C04**	ASTM D5468-02	WET/23497		
92141962010	**782324 EDA_121312_C01**	ASTM D5468-02	WET/23497		
92141962011	**769956 SUR_AD01_092512_C01**	ASTM D5468-02	WET/23512		
92141962012	**769957 SUR_AD01_092512_C02**	ASTM D5468-02	WET/23512		
92141962013	**769958 SUR_AD01_092512_C03**	ASTM D5468-02	WET/23512		
92141962014	**769959 SUR_AD01_092512_C04**	ASTM D5468-02	WET/23512		
92141962015	**782325 SUR_AD01_092512_C01**	ASTM D5468-02	WET/23512		

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92141962

LIMS Job ID: ESL_12_2714 Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
FUEL_092512_C01 769948 Fuel - Run 1 92141962-001	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0936	sign: date: 12-14-12 time: 0810	sign: Lori Patton date: 12/14/12 time: 1000	sign: date: time:
FUEL_092512_C02 769949 Fuel - Run 2 92141962-002	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0943	sign: date: time:	sign: date: time:	sign: date: time:
FUEL_092512_C03 769950 Fuel - Run 2 Dup 92141962-003	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0948	sign: date: time:	sign: date: time:	sign: date: time:
FUEL_092512_C04 769951 Fuel - Run 3 92141962-004	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0953	sign: date: time:	sign: date: time:	sign: date: time:
FUEL_121312_C01 782323 Fuel - Run 4 92141962-005	8 oz. poly, 4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0958	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: 0.8°C

(CHAIN_SMP_SEL_3RECD)

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

92141962

LIMS Job ID: ESL_12_2714 Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
EDA_092512_C01 769952 92141962-006 EDA - Run 1	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 1004	sign: date: time: 12-14-12 0810	sign: Lori Patton date: time: 12/14/12 1000	sign: date: time:
EDA_092512_C02 769953 92141962-007 EDA - Run 2	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 1009	sign: date: time:	sign: date: time:	sign: date: time:
EDA_092512_C03 769954 92141962-008 EDA - Run 2 Dup	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 1014	sign: date: time:	sign: date: time:	sign: date: time:
EDA_092512_C04 769955 92141962-009 EDA - Run 3	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 1330	sign: date: time:	sign: date: time:	sign: date: time:
EDA_121312_C01 782324 92141962-010 EDA - Run 4	8 oz. poly, 4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 1026	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: 0.8°C

(CHAIN_SMP_SEL_3RECD)

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

92141962

LIMS Job ID: ESL_12_2714 Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
SUR_AD01_092512_C01 769956 SUR AD01 - Run 1 92141962-011	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 0910	sign: date: time: 12-14-12 0810	sign: Lori Patton date: time: 12/14/12 1000	sign: date: time:
SUR_AD01_092512_C02 769957 SUR AD01 - Run 2 92141962-012	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 0912	sign: date: time:	sign: date: time:	sign: date: time:
SUR_AD01_092512_C03 769958 SUR AD01 - Run 2 Dup 92141962-013	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 0919	sign: date: time:	sign: date: time:	sign: date: time:
SUR_AD01_092512_C04 769959 SUR AD01 - Run 3 92141962-014	8oz poly,4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 0925	sign: date: time:	sign: date: time:	sign: date: time:
SUR_AD01_121312_C01 782325 SUR AD01 - Run 4 92141962-05	8 oz. poly, 4degC (ASH/BTU/CHLORINE_P/CR_I CP1/PB_ICP1) PACE	sign: date: time: 12-13-12 0929	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: 0.8°C

C H A I N - O F - C U S T O D Y (***CONTRACT***)

Environmental Services Laboratory
Tennessee Eastman Division
P.O. Box 511
Kingsport, TN 37662-5054
Phone: (423) 229-2123 Fax: (423) 229-3677

92141962

LIMS Job ID: ESL_12_2714 Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
ASH_SPIKE_092512_C01 769960 ASH SPK - Run 1 92141962-016	8oz poly,4degC (CR_ICP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0855	sign: date: 12-14-12 time: 0815	sign: Lori Patton date: 12/14/12 time: 1000	sign: date: time:
ASH_SPIKE_092512_C02 769961 ASH SPK - Run 2 92141962-017	8oz poly,4degC (CR_ICP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0857	sign: date: time:	sign: date: time:	sign: date: time:
ASH_SPIKE_092512_C03 769962 ASH SPK - Run 2 Dup 92141962-018	8oz poly,4degC (CR_ICP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0859	sign: date: time:	sign: date: time:	sign: date: time:
ASH_SPIKE_092512_C04 769963 ASH SPK - Run 3 92141962-019	8oz poly,4degC (CR_ICP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0901	sign: date: time:	sign: date: time:	sign: date: time:
ASH_SPIKE_121312_C01 782326 ASH SPK - Run 4 92141962-020	8 oz. poly, 4degC (CR_ICP1/PB_ICP1) PACE	sign: date: 12-13-12 time: 0903	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: 0.8°C

Eastman

12-20-21

WET 23555

2225 Riverside Drive, Asheville, NC 28804

Pace Analytical™

Determination of Ash in Waste Materials

ASTM Method D-482-95

Analyst:	SDH
Date:	12/20/2012
Time Analyzed:	14:50
Matrix:	SOIL
Batch:	WET23555

%Ash = 100*(ASH/Sample Weight)

ASH = (Dry Weight -Tare Weight)

After Ashing

Sample #	Dish #	Tare (g) (crucible weight)	Sample Weight	Dry Weight(1)	Dry Weight(2)	ASH	% ASH
92142060001	13	36.2199	5.2851	36.2618	36.2617	0.0419	0.7928
3577509002	14	36.7447	5.9237	37.4159	37.4158	0.6712	11.3308
3577509003	15	38.4894	4.9694	38.9009	38.9007	0.4115	8.2807
92141962014	16	36.3341	10.5214	36.3346	36.3346	0.0005	0.0048
DUP.	17	37.7484	10.3988	37.7492	37.7491	0.0008	0.0077
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!
						0	#DIV/0!

Pace Analytical™

Analyst:	JH
Date Analyzed:	12-20-12
Time Analyzed:	1450
Matrix:	SOIL
Batch#:	WET23555

Determination of Ash in Waste Materials

ASTM Method D-482-95

% Ash = ((w-c) /(W) x 100)

0930

Sample Number	Sample I.D.	Crucible ID	C Crucible Weight (g)	W Sample Weight (g)	w Dry Weight (g) (Crucible +ASH)	2nd Dry Weight (g)	%ASH
92142060001	782478 WCHEM 121412 G11	13	36.2199	5.2851	36.2618	36.2617	
3577509002	RDF	14	36.7447	5.9237	37.4159	37.4158	
3577509003	RDF DUP	15	38.4894	4.9694	38.9009	38.9007	
92141962014	769959 SUR_AD01_092512_C04	16	36.3341	10.5214	36.3346	36.3346	
JH 12-20-12	CCV						
	CCB						
	DUP	17	37.7484	10.3988	37.7492	37.7491	

Pace Analytical™

Test: Ash
Method: ASTM D482-95

Batch Number WET23555
Serial Number: NA
Epic Pro Inst ID: 92WST4
Instrument: Balance #7
Serial Number: 41106832
Epic Pro Inst ID: NA
Instrument: Muffle Furnace

Comments: Check box if there is an issue and then write what happened in the "Issues" section, end of report.

Sample Collection, Preservation, & Handling:

☐ **Hold Time:** 28 days from time of collection.
Corrective Action: If samples are analyzed outside of hold time, they must be footnoted with the comment "**H1**" which states "Analysis conducted in excess of EPA recommended holding times."
☐ **Preservation:** None.
☐ **Storage:** above 0.0-6.0 deg C, plastic or glass container.

Batch QC (MB, LCS, MS, & DUP):

☐ **Duplicate:** A sample duplicate is prepared by homogenizing and splitting the sample into two equal portions before the sample preparation process. It measures precision associated with preparation through analysis.
Frequency: Must be analyzed once every 10 samples, 10%.
Criteria: ≤ 20% RPD.
Corrective Action: footnote the sample duplicated with the canned footnote "D6" which states "The relative percent difference (RPD) between the sample and sample duplicate, exceeded laboratory control limits"

Sample Validation:

☐ *Date Analyzed:* Was the date analyzed entered correctly?
☐ *Footnotes:* Are the footnotes correct if applied?
☐ *Dilutions:* Are the dilution factor(s) posted correctly if applied?
☐ *Customer Requirements:* Are customer specific requirements met?
☐ *Linear Range:* Verify the last page of the validation report to see if there were any non-reportable data due to an element being over its linear dynamic range.

Issues: Write any and all out of control issues below:

☐ I have reviewed the maintenance log.

To the best of my knowledge, all of the above information is correct and all supporting documentation has been provided.

Analyst: [signature] **Date:** 12-20-12
Reviewer: [signature] **Date:** 12/20/12

12-18-12
WET 23510

2225 Riverside Drive, Asheville, NC 28804

Pace Analytical™

Determination of Ash in Waste Materials

ASTM Method D-482-95

%Ash = 100*(ASH/Sample Weight)

ASH = (Dry Weight -Tare Weight)

Analyst:	SDH
Date:	12/18/2012
Time Analyzed:	15:30
Matrix:	SOIL
Batch:	WET23510

After Ashing

Sample #	Dish #	Tare (g) (crucible weight)	Sample Weight	Dry Weight(1)	Dry Weight(2)	ASH	% ASH
92141956001	12	32.9547	7.3335	37.9597	37.9597	5.005	68.2484
92141956002	10	32.2787	5.6664	32.4536	32.4537	0.1749	3.0866
92141956003	C_1	35.7266	5.169	39.2115	39.2115	3.4849	67.4192
92141956004	16_1	31.4395	5.6115	34.7989	34.799	3.3594	59.8663
92141962001	4	35.1004	10.3583	35.1098	35.1097	0.0094	0.0907
92141962002	7	29.1025	10.2473	29.1041	29.104	0.0016	0.0156
92141962003	14_1	34.1886	10.5435	34.1956	34.1955	0.007	0.0664
92141962004	13	36.2211	10.3917	36.2216	36.2215	0.0005	0.0048
92141962005	14	36.75	10.0536	36.75	36.7498	0	0.0000
92141962006	15	38.4905	10.2157	38.5076	38.5076	0.0171	0.1674
92141962007	16	36.3349	10.6829	36.3521	36.3521	0.0172	0.1610
92141962008	17	37.7491	10.1782	37.7624	37.7625	0.0133	0.1307
92141962009	18	37.657	10.0199	37.671	37.6711	0.014	0.1397
92141962010	19	36.6153	10.5666	36.6293	36.6294	0.014	0.1325
92141962011	20	38.5265	9.9912	38.5265	38.5263	0	0.0000
92141962012	21	36.8613	10.1071	36.8616	36.8617	0.0003	0.0030
92141962013	22	34.0308	10.4581	34.0308	34.0307	0	0.0000
92141962015	23	39.1707	9.9831	39.1707	39.1705	0	0.0000
DUP.	24	37.0528	10.1479	37.0528	37.0528	0	0.0000
						0	#DIV/0!

Pace Analytical™

Analyst:	BH
Date Analyzed:	12-18-12
Time Analyzed:	1530
Matrix:	SOIL
Batch#:	WET23510

Determination of Ash in Waste Materials

ASTM Method D-482-95

% Ash = ((w-c) /(W) x 100)

1010-1310

Sample Number	Sample I.D.	Crucible ID	C Crucible Weight (g)	W Sample Weight (g)	w Dry Weight (g) (Crucible +ASH)	2nd Dry Weight (g)	%ASH
92141956001	781190 WCHEM_120512_G06	12	32.9547	7.3335	37.9597	37.9597	
92141956002	782023 WCHEM_121212_G01	10	32.2787	5.6664	32.4536	32.4537	
92141956003	782189 WCHEM_121212_G02	C-1	35.7266	5.1690	39.2115	39.2115	
92141956004	782190 WCHEM_121212_G03	16-1	31.9395	5.6115	34.7989	34.7990	
92141962001	769948 FUEL_092512_C01	4	35.1004	10.3583	35.1098	35.1097	
92141962002	769949 FUEL_092512_C02	7	29.1025	10.2473	29.1041	29.1040	
92141962003	769950 FUEL_092512_C03	14-1	34.1886	10.5435	34.1956	34.1955	
92141962004	769951 FUEL_092512_C04	13	36.2211	10.3917	36.2216	36.2215	
92141962005	782323 FUEL_121312_C01	14	36.7500	10.0536	36.7500	36.7498	
92141962006	769952 EDA_092512_C01	15	38.4905	10.2157	38.5076	38.5076	
92141962007	769953 EDA_092512_C02	16	36.3349	10.6829	36.3521	36.3521	
92141962008	769954 EDA_092512_C03	17	37.7491	10.1782	37.7624	37.7625	
92141962009	769955 EDA_092512_C04	18	37.6570	10.0199	37.6710	37.6711	
92141962010	782324 EDA_121312_C01	19	36.6153	10.5666	36.6293	36.6294	
BH 12-18-12	CCV						
	CCB						
92141962011	769956 SUR_AD01_092512_C01	20	38.5265	9.9912	38.5265	38.5263	
92141962012	769957 SUR_AD01_092512_C02	21	36.8613	10.1071	36.8616	36.8617	
92141962013	769958 SUR_AD01_092512_C03	22	34.0308	10.4581	34.0308	34.0307	
BH 12-18-12	769959 SUR_AD01_092512_C04						
92141962015	782325 SUR_AD01_092512_C01	23	39.1707	9.9831	39.1707	39.1705	
BH 12-18-12	CCV						
	CCB						
DUP. - 92141962015		24	37.0528	10.1479	37.0528	37.0528	

Pace Analytical™

Test: Ash
Method: ASTM D482-95

Batch Number WET23510
Serial Number: NA
Epic Pro Inst ID: 92WST4
Instrument: Balance #7
Serial Number: 41106832
Epic Pro Inst ID: NA
Instrument: Muffle Furnace

Comments: Check box if there is an issue and then write what happened in the "Issues" section, end of report.

Sample Collection, Preservation, & Handling:

☐ **Hold Time:** 28 days from time of collection.
Corrective Action: If samples are analyzed outside of hold time, they must be footnoted with the comment "**H1**" which states "Analysis conducted in excess of EPA recommended holding times."
☐ **Preservation:** None.
☐ **Storage:** above 0.0-6.0 deg C, plastic or glass container.

Batch QC (MB, LCS, MS, & DUP):

☐ **Duplicate:** A sample duplicate is prepared by homogenizing and splitting the sample into two equal portions before the sample preparation process. It measures precision associated with preparation through analysis.
Frequency: Must be analyzed once every 10 samples, 10%.
Criteria: ≤ 20% RPD.
Corrective Action: footnote the sample duplicated with the canned footnote "D6" which states "The relative percent difference (RPD) between the sample and sample duplicate, exceeded laboratory control limits"

Sample Validation:

☐ *Date Analyzed:* Was the date analyzed entered correctly?
☐ *Footnotes:* Are the footnotes correct if applied?
☐ *Dilutions:* Are the dilution factor(s) posted correctly if applied?
☐ *Customer Requirements:* Are customer specific requirements met?
☐ *Linear Range:* Verify the last page of the validation report to see if there were any non-reportable data due to an element being over its linear dynamic range.

Issues: Write any and all out of control issues below:

☐ I have reviewed the maintenance log.

To the best of my knowledge, all of the above information is correct and all supporting documentation has been provided.

Analyst: _____ **Date:** 12-18-12
Reviewer: _____ **Date:** 12/19/12

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

12-17-12

WET 23497

Determination of Caloric Value (BTU/LB) of Waste Materials
ASTM D54 68-95

Analyst:	SDH
Date Analyzed:	12/17/2012
Time Analyzed:	16:30
Circle Epic Pro ID	92WST1 / 92WST6
Batch:	WET23497
Date of last ICV Monthly QC Check	12/17/2012_WET23497

WET
D5468 BTU

Sample Number	Sample I.D.	Sample Type	BTU Instrument Result	BTU Posted Result BTU/Lb	
QC Check	QC		11361.396	11360	= 100%
Check (CCV)	QC		11368.889	11370	= 100%
92141962001	769948 FUEL_092512_C01	PS	19308.405	19310	
92141962002	769949 FUEL_092512_C02	PS	17480.147	17480	
92141962003	769950 FUEL_092512_C03	PS	19277.081	19280	
92141962004	769951 FUEL_092512_C04	PS	19244.823	19240	
92141962005	782323 FUEL_121312_C01	PS	17632.227	17630	
92141962006	769952 EDA_092512_C01	PS	7912.2128	7910	
92141962007	769953 EDA_092512_C02	PS	7468.7508	7470	
92141962008	769954 EDA_092512_C03	PS	7908.547	7910	
92141962009	769955 EDA_092512_C04	PS	7896.7465	7900	
92141962010	782324 EDA_121312_C01	PS	7919.3815	7920	
	CCV		11356.404	11360	= 100%

Test: BTU
Method Number: ASTM D5468-95

WET23497

Date Analyzed:	See Bench Sheet
Analyst Initials:	See Bench Sheet
Batch(s):	
Reporting Limit:	<50 Btu/lb
Preservative:	Cool to above 0.0 - 6.0 degrees C
Holding Time:	28 Days
Instrument:	Parr Calorimeter
Serial Number:	M1116
Epic Pro Inst ID:	92WST1
Instrument:	Parr Calorimeter
Serial Number:	M9807
Epic Pro Inst ID:	92WST6
Instrument:	Balance #7
Serial Number:	41106832
Epic Pro Inst ID:	NA

Analysis Reagents

SS#	
8614	Benzoic Acid Standard
7596	Benzoic Acid Standard, Second Source
7491	Mineral Oil
12-17-12	Date of last ICV, monthly QC Check

Test: BTU
Method Number: ASTM D5468-95

Comments: Check box if there is an issue and then write what happened in the "Issues" section, end of report.

Sample Collection, Preservation, & Handling:

Hold Time: 28 days from time of collection.

Corrective Action: If samples are analyzed outside of hold time, they must be footnoted with the comment " **H1**" which states "Analysis conducted in excess of EPA recommended holding times."

Preservation: None.

Storage: above 0.0-6.0 deg C, plastic or glass container .

Calibration QC (Calibration, LL CCV, ICV, CCV, ICB, CCB & ICSA):

Calibration: a process of establishing the relationship between the instrument response and known, traceable concentrations of analyte(s) of interest.

Frequency: Whenever there is a major change to the instrument.

ICV, Initial Calibration Verification: The calibration is checked once per month by running a second source. This should run withing 0.33% of the previous monthly calibration check.

Frequency: Monthly

Criteria : The ICV must be within **+/- 1 %** of the True Value, (11234-11460 Btu/lb.)
If it is outside of the acceptance limits, the ICV can be reanalyzed. If it is still outside of the acceptance limits, recalibrate.

CCV, Continuing Calibration Verification: Calibration source standard .

Frequency: The frequency is before analyzing any samples, after every ten (10) samples and at the end of the analytical sequence.

Criteria : The CCV must be within +/- 1% of the True Value, (11234-11460 Btu/lb)
If it is outside of the acceptance limits, the CCV can be reanalyzed. If it is still outside of the acceptance limits, recalibrate.

Batch QC (DUP):

Duplicate: A sample duplicate is prepared by homogenizing and splitting the sample into two equal portions before the sample preparation process. It measures precision associated with preparation through analysis.

Frequency: Must be analyzed once every 10 samples, 10%.

Criteria: ≤ 20% RPD.

Corrective Action : footnote the sample duplicated with the canned footnote "D6" which states "The relative percent difference (RPD) between the sample and sample duplicate, exceeded laboratory control limits"

Sample Validation:

Date Analyzed: Was the date analyzed entered correctly?

Footnotes: Are the footnotes correct if applied?

Dilutions: Are the dilution factor(s) posted correctly if applied?

Customer Requirements: Are customer specific requirements met?

Issues: Write any and all out of control issues below:

I have reviewed the maintenance log.

To the best of my knowledge, all of the above information is correct and all supporting documentation has been provided.

Analyst: [signature] **Date:** 12-17-12

Reviewer: [signature] **Date:** 12/19/12

CCV
%R=100%

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 12:21:25
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 467

Bomb ID	1	EE Value	805.1649
Weight	1.0107	Spike Wght	0.0000
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9123	Temp. Rise	8.0029
Jacket T	29.9997		

Gross Heat 11368.889
Btu/lb

92141962 002

ICV
%R=100%

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 12:03:24
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 466

Bomb ID	1	EE Value	805.1649
Weight	1.0227	Spike Wght	0.0000
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8845	Temp. Rise	8.0917
Jacket T	30.0021		

Gross Heat 11361.396
Btu/lb

92141962 001

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 13:27:30
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 470

Bomb ID	1	EE Value	805.1649
Weight	0.4115	Spike Wght	0.3269
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9793	Temp. Rise	9.5666
Jacket T	30.0064		

Gross Heat 17480.147
Btu/lb

92141962 004

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 13:01:34
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 469

Bomb ID	1	EE Value	805.1649
Weight	0.4147	Spike Wght	0.3144
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9245	Temp. Rise	9.9552
Jacket T	30.0064		

Gross Heat 19308.405
Btu/lb

92141962 003

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 14:27:04
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 472

Bomb ID	1	EE Value	805.1649
Weight	0.4030	Spike Wght	0.3258
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9480	Temp. Rise	9.9396
Jacket T	30.0052		

Gross Heat 19244.823
Btu/lb

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 13:45:53
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 471

Bomb ID	1	EE Value	805.1649
Weight	0.4062	Spike Wght	0.3079
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9308	Temp. Rise	9.7431
Jacket T	29.9992		

Gross Heat 19277.081
Btu/lb

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 15:08:38

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 474

Bomb ID	1	EE Value	805.1649
Weight	0.4271	Spike Wght	0.4044
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9066	Temp. Rise	8.0089
Jacket T	30.0059		

Gross Heat 7912.2128
Btu/lb

92141962 008

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 14:50:38

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 473

Bomb ID	1	EE Value	805.1649
Weight	0.4060	Spike Wght	0.3305
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8071	Temp. Rise	9.5928
Jacket T	29.9996		

Gross Heat 17632.227
Btu/lb

92141962 007

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 15:52:03

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 476

Bomb ID	1	EE Value	805.1649
Weight	0.4218	Spike Wght	0.4029
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8938	Temp. Rise	7.9581
Jacket T	30.0040		

Gross Heat 7908.5470
Btu/lb

92141962 010

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 15:33:07

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 475

Bomb ID	1	EE Value	805.1649
Weight	0.4252	Spike Wght	0.4012
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8386	Temp. Rise	7.8241
Jacket T	29.9997		

Gross Heat 7468.7508
Btu/lb

92141967009

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 16:25:40

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 478

Bomb ID	1	EE Value	805.1649
Weight	0.4369	Spike Wght	0.4030
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9127	Temp. Rise	8.0451
Jacket T	29.9987		

Gross Heat 7919.3815
Btu/lb

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 16:07:23

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 477

Bomb ID	1	EE Value	805.1649
Weight	0.4302	Spike Wght	0.4025
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9122	Temp. Rise	7.9949
Jacket T	30.0021		

Gross Heat 7896.7465
Btu/lb

CCV
%R= 100%

Parr 6300 Calorimeter Rev. 050822161423
12/17/12 16:41:23

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 479

Bomb ID		1 EE Value	805.1649
Weight	1.0107	Spike Wght	0.0000
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9127	Temp. Rise	7.9942
Jacket T	30.0090		

Gross Heat 11356.404
Btu/lb

12-18-12

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

WET 23512

Determination of Caloric Value (BTU/LB) of Waste Materials
ASTM D54 68-95

Analyst:	SDH
Date Analyzed:	12/18/2012
Time Analyzed:	14:45
Circle Epic Pro ID	92WST1 (92WST6)
Batch:	WET23512
Date of last ICV Monthly QC Check	12-18-12_WET23512

WET
D5468 BTU

Sample Number	Sample I.D.	Sample Type	BTU Instrument Result	BTU Posted Result BTU/Lb	
QC Check	QC		11370.209	11370	= 100%
Check (CCV)	QC	QC	11350.584	11350	= 100%
92141962011	769956	PS	6891.3879	6890	
92141962012	769957	PS	6858.721	6860	
92141962013	769958	PS	6650.5106	6650	
92141962014	769959	PS	6867.9116	6870	
92141962015	782325	PS	6844.2158	6840	
* 92141581001	2012-31 HT 5170	PS	1515.4862	1520	
92141584001	2012-29 Drill Fluids	PS	41.4171	<50	
92142060001	782478	PS	6715.7147	6720	
	CCV	QC	11358.995	11360	= 100%

Test: BTU

Method Number: ASTM D5468-95

WET23512

Date Analyzed:	See Bench Sheet
Analyst Initials:	See Bench Sheet
Batch(s):	
Reporting Limit:	<50 Btu/lb
Preservative:	Cool to above 0.0 - 6.0 degrees C
Holding Time:	28 Days
Instrument:	Parr Calorimeter
Serial Number:	M1116
Epic Pro Inst ID:	92WST1
Instrument:	Parr Calorimeter
Serial Number:	M9807
Epic Pro Inst ID:	92WST6
Instrument:	Balance #7
Serial Number:	41106832
Epic Pro Inst ID:	NA

Analysis Reagents

SS#	
8614	Benzoic Acid Standard
7596	Benzoic Acid Standard, Second Source
7991	Mineral Oil
12-18-12	Date of last ICV, monthly QC Check

Test: BTU
Method Number: ASTM D5468-95

Comments: Check box if there is an issue and then write what happened in the "Issues" section, end of report.

Sample Collection, Preservation, & Handling:

Hold Time: 28 days from time of collection.

Corrective Action: If samples are analyzed outside of hold time, they must be footnoted with the comment " **H1**" which states "Analysis conducted in excess of EPA recommended holding times."

Preservation: None.

Storage: above 0.0-6.0 deg C, plastic or glass container .

Calibration QC (Calibration, LL CCV, ICV, CCV, ICB, CCB & ICSA):

Calibration: a process of establishing the relationship between the instrument response and known, traceable concentrations of analyte(s) of interest.

Frequency: Whenever there is a major change to the instrument.

ICV, Initial Calibration Verification: The calibration is checked once per month by running a second source. This should run withing 0.33% of the previous monthly calibration check.

Frequency: Monthly

Criteria : The ICV must be within +/- 1 % of the True Value, (11234-11460 Btu/lb.)
If it is outside of the acceptance limits, the ICV can be reanalyzed. If it is still outside of the acceptance limits, recalibrate.

CCV, Continuing Calibration Verification: Calibration source standard .

Frequency: The frequency is before analyzing any samples, after every ten (10) samples and at the end of the analytical sequence.

Criteria : The CCV must be within +/- 1% of the True Value, (11234-11460 Btu/lb)
If it is outside of the acceptance limits, the CCV can be reanalyzed. If it is still outside of the acceptance limits, recalibrate.

Batch QC (DUP):

Duplicate: A sample duplicate is prepared by homogenizing and splitting the sample into two equal portions before the sample preparation process. It measures precision associated with preparation through analysis.

Frequency : Must be analyzed once every 10 samples, 10%.

Criteria : ≤ 20% RPD.

Corrective Action : footnote the sample duplicated with the canned footnote "D6" which states "The relative percent difference (RPD) between the sample and sample duplicate, exceeded laboratory control limits"

Sample Validation:

Date Analyzed: Was the date analyzed entered correctly?

Footnotes: Are the footnotes correct if applied?

Dilutions: Are the dilution factor(s) posted correctly if applied?

Customer Requirements: Are customer specific requirements met?

Issues: Write any and all out of control issues below:

* ⇒ Temp. rise could not be reached unless mase spike is used than sample.

I have reviewed the maintenance log.

To the best of my knowledge, all of the above information is correct and all supporting documentation has been provided.

Analyst: _____ **Date:** 12-18-12

Reviewer: _____ **Date:** 12/19/12

CCV
%R=100%

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 11:18:17

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 483

Bomb ID	1	EE Value	805.1649
Weight	1.0009	Spike Wght	0.0000
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8960	Temp. Rise	7.9134
Jacket T	29.9955		

Gross Heat 11350.584
Btu/lb

ICV
%R=100%

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 10:57:57

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 482

Bomb ID	1	EE Value	805.1649
Weight	1.0143	Spike Wght	0.0000
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8916	Temp. Rise	8.0320
Jacket T	29.9965		

Gross Heat 11370.209
Btu/lb

9214962012

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 12:15:05

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 486

Bomb ID	1	EE Value	805.1649
Weight	0.4646	Spike Wght	0.4141
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8849	Temp. Rise	8.0103
Jacket T	29.9991		

Gross Heat 6858.7210
Btu/lb

9214962011

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 11:56:53

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 485

Bomb ID	1	EE Value	805.1649
Weight	0.4512	Spike Wght	0.4062
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8301	Temp. Rise	7.8476
Jacket T	30.0027		

Gross Heat 6891.3879
Btu/lb

9214962014

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 12:48:46

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 488

Bomb ID	1	EE Value	805.1649
Weight	0.4595	Spike Wght	0.4062
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8229	Temp. Rise	7.8796
Jacket T	30.0091		

Gross Heat 6867.9116
Btu/lb

9214962013

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 12:32:07

Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 487

Bomb ID	1	EE Value	805.1649
Weight	0.4581	Spike Wght	0.4108
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8410	Temp. Rise	7.8680
Jacket T	30.0065		

Gross Heat 6650.5106
Btu/lb

* 92141581001

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 13:43:37
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 490

Bomb ID	1	EE Value	805.1649
Weight	0.4661	Spike Wght	0.4543
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	30.0971	Temp. Rise	6.8559
Jacket T	29.9994		

Gross Heat 1515.4862
Btu/lb

92141962015

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 13:05:20
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 489

Bomb ID	1	EE Value	805.1649
Weight	0.4551	Spike Wght	0.4065
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8567	Temp. Rise	7.8555
Jacket T	30.0059		

Gross Heat 6844.2158
Btu/lb

92142060001

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 14:23:08
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 493

Bomb ID	1	EE Value	805.1649
Weight	0.4361	Spike Wght	0.4232
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8402	Temp. Rise	7.9584
Jacket T	30.0092		

Gross Heat 6715.7147
Btu/lb

92141584001

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 14:01:18
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 491

Bomb ID	1	EE Value	805.1649
Weight	0.5003	Spike Wght	0.4797
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.8652	Temp. Rise	6.7347
Jacket T	30.0046		

Gross Heat 41.4171
Btu/lb

CCV
%R=100%

Parr 6300 Calorimeter Rev. 050822161423
12/18/12 14:38:49
Mode: Determination
Method: Dynamic Type: Preliminary
Sample ID: 494

Bomb ID	1	EE Value	805.1649
Weight	1.0085	Spike Wght	0.0000
Fuse	50.0000	Acid	10.0000
Sulfur	0.0000		
Init. Temp	29.9031	Temp. Rise	7.9787
Jacket T	30.0028		

Gross Heat 11358.995
Btu/lb

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

SH 12-20-12
WET23511

Pace Analytical™

Analyst:	SH
Date Analyzed:	12-20-12
Time Analyzed:	1650
Matrix:	SL
Batch #	WET23511
Circle Epic Pro ID	92WST2 (92WST5)

Test: Total Chlorine
Method Number: SW-846 Method 9076

Sample Number	Sample I.D.	Result 1 (ppm)	Result 2 (ppm)	Reported (Avg)	% Recovery
CCV		414.58	436.18	425.38	85%
92141956001	781190 WCHEM_120512_G06	Ø	59.48	29.74	
92141956002	782023 WCHEM_121212_G01	44.41	75.63	60.02	
92141956003	782189 WCHEM_121212_G02	74.73	Ø	37.37	
92141956004	782190 WCHEM_121212_G03	84.01	112.37	98.19	
92141962001	769948 FUEL_092512_C01	42.87	Ø	21.44	
894649	769948 FUEL_09251...(890864MS)	553.89		553.89	
894650	769948 FUEL_0925...(890864MSD)	556.70		556.70	
92141962002	769949 FUEL_092512_C02	38.12	21.71	29.92	
92141962003	769950 FUEL_092512_C03	Ø	Ø	Ø	
92141962004	769951 FUEL_092512_C04	Ø	Ø	Ø	
92141962005	782323 FUEL_121312_C01	18.68	Ø	9.34	
92141962006	769952 EDA_092512_C01	217.17	254.75	235.96	
92141962007	769953 EDA_092512_C02	275.49	244.60	260.05	
92141962008	769954 EDA_092512_C03	207.88	191.04	199.46	
	CCV	581.75	528.83	555.29	111%
SH 12-20-12	CCB				
92141962009	769955 EDA_092512_C04	237.69	232.07	234.88	
92141962010	782324 EDA_121312_C01	230.99	230.56	230.78	
	CCV	523.22	528.83	526.03	105%
SH 12-20-12	CCB				

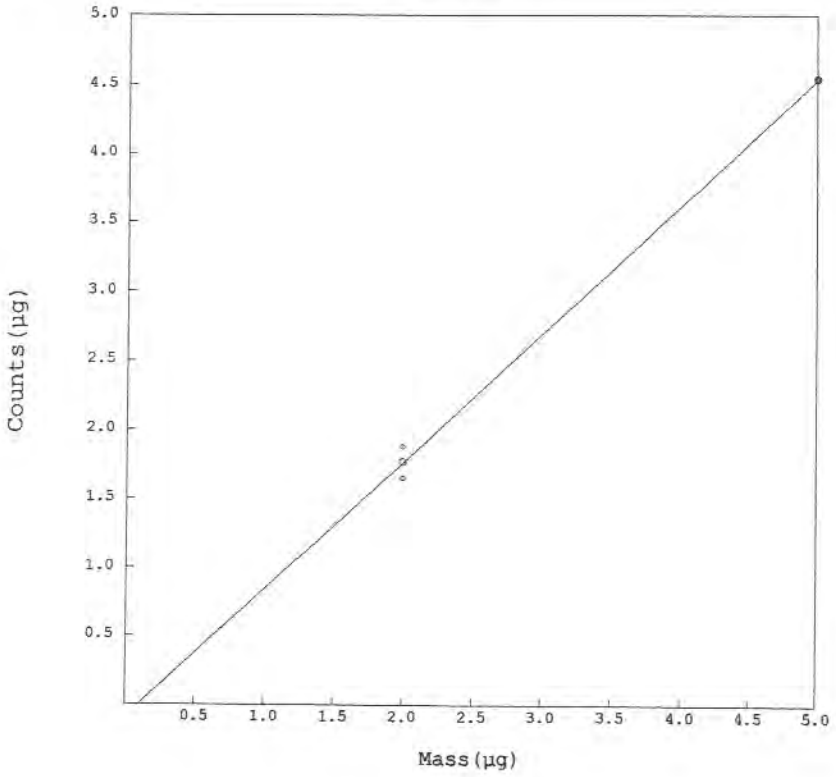
Pace Analytical
2225 Riverside Dr.
Asheville, NC

12/20/2012

Calibration Report

Calibration Curve

Data ID	:	TSXC12202012.001
Formula	:	Y = BX+C
Slope(A)	:	***.****
Slope(B)	:	0.9260
Intercept(C)	:	-0.0855
r^	:	0.99827



Calibration Data

Mass(µg)	Counts $\bar{X}$	n	RSD	RSD(%)
2.000	1.767	2	***.**	***.**
5.000	4.545	2	***.**	***.**

Pace Analytical
2225 Riverside Dr.
Asheville, NC

Calibration Report

Calibration All Data

Data ID : TSXC12202012.001
Blank : 0.000 µg

Reps.	Mass(µg)	Concentration	Std.Volume	Counts(µg)	ABC No.	Date
1	2.000	1000.00 mg/l	2.0 µl	1.882	3	12/19/12 16:05
2	2.000	1000.00 mg/l	2.0 µl	1.651	3	12/19/12 15:54
n = 2		$\bar{X}$ = 1.767	RSD = ***.**		RSD(%) = ***.**	
1	5.000	1000.00 mg/l	5.0 µl	4.550	3	12/19/12 15:04
2	5.000	1000.00 mg/l	5.0 µl	4.539	3	12/19/12 16:16
n = 2		$\bar{X}$ = 4.545	RSD = ***.**		RSD(%) = ***.**	

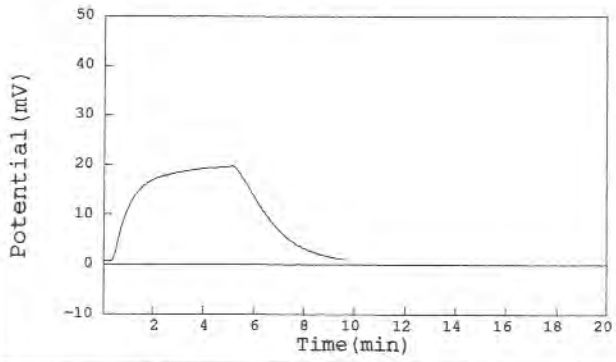
Pace Analytical
2225 Riverside Dr.
Asheville, NC

Calibration Report

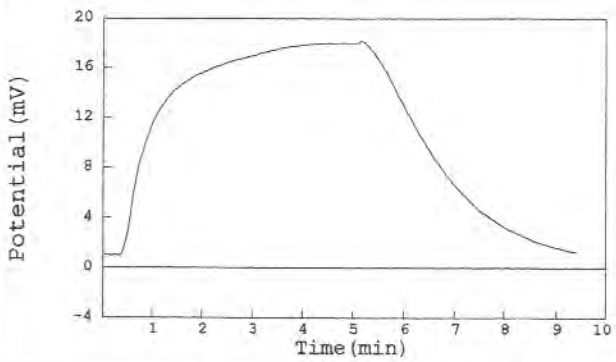
Calibration Chart

Data ID : TSXC12202012.001

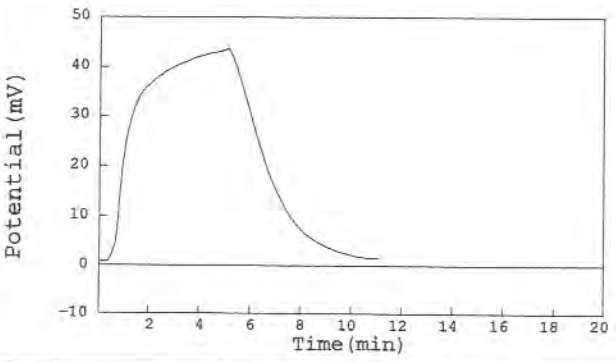
Reps. : 1 Date : 12/19/12
Mass(µg) : 2.000 16:05
Counts(µg): 1.882



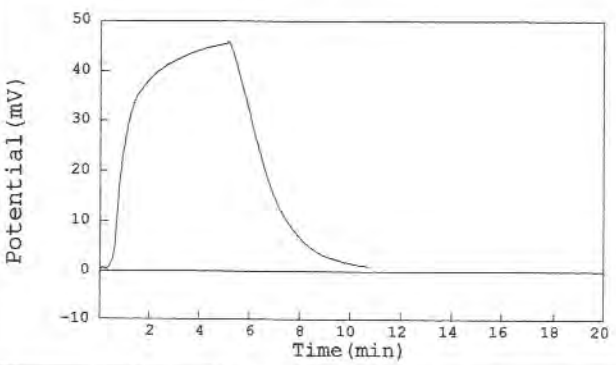
Reps. : 2 Date : 12/19/12
Mass(µg) : 2.000 15:54
Counts(µg): 1.651



Reps. : 1 Date : 12/19/12
Mass(µg) : 5.000 15:04
Counts(µg): 4.550



Reps. : 2 Date : 12/19/12
Mass(µg) : 5.000 16:16
Counts(µg): 4.539



Pace Analytical
2225 Riverside Dr.
Asheville, NC

Sample Report

Sample All Data

Data ID : TSXC12202012.001
Blank : 0.000 µg

Reps.	Sample ID	Sample Size	Density	Dilution Rate	Counts(µg)	Concentration	ABC No.
1	CCV	5.00 µl	1.0000		1.834	414.58 ppm	3
2	CCV	5.00 µl	1.0000		1.934	436.18 ppm	3
3	CCV	5.00 µl	1.0000		2.608	581.75 ppm	3
4	CCV	5.00 µl	1.0000		2.363	528.83 ppm	3
5	CCV	5.00 µl	1.0000		2.337	523.22 ppm	3
6	CCV	5.00 µl	1.0000		2.363	528.83 ppm	3
	n = 6	$\bar{X}$ = 502.23 ppm		RSD = 63.60		RSD(%) = 12.66	
1	92141956001	13.90 mg			-1.844	0.00 ppm	3
2	92141956001	13.10 mg			0.636	59.48 ppm	3
	n = 2	$\bar{X}$ = 29.74 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141956002	17.30 mg			0.626	44.41 ppm	3
2	92141956002	15.80 mg			1.021	75.63 ppm	3
	n = 2	$\bar{X}$ = 60.02 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141956003	9.40 mg			0.565	74.73 ppm	3
2	92141956003	9.10 mg			-0.084	0.00 ppm	3
	n = 2	$\bar{X}$ = 37.37 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141956004	24.20 mg			1.797	84.01 ppm	3
2	92141956004	9.50 mg			0.903	112.37 ppm	3
	n = 2	$\bar{X}$ = 98.19 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141962001	5.00 µl	1.0000		0.113	42.87 ppm	3
2	92141962001	5.00 µl	1.0000		-0.010	0.00 ppm	3
	n = 2	$\bar{X}$ = 21.44 ppm		RSD = ****.**		RSD(%) = ***.**	
1	MS	5.00 µl	1.0000		2.479	553.89 ppm	3
	n = 1	$\bar{X}$ = 553.89 ppm		RSD = ****.**		RSD(%) = ***.**	
1	MSD	5.00 µl	1.0000		2.492	556.70 ppm	3
	n = 1	$\bar{X}$ = 556.70 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141962002	5.00 µl	1.0000		0.091	38.12 ppm	3
2	92141962002	5.00 µl	1.0000		0.015	21.71 ppm	3
	n = 2	$\bar{X}$ = 29.92 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141962003	5.00 µl	1.0000		-0.034	0.00 ppm	3
2	92141962003	5.00 µl	1.0000		-0.002	0.00 ppm	3
	n = 2	$\bar{X}$ = 0.00 ppm		RSD = ****.**		RSD(%) = ***.**	

Pace Analytical
2225 Riverside Dr.
Asheville, NC

Sample Report

Sample All Data

Data ID : TSXC12202012.001
Blank : 0.000 µg

Reps.	Sample ID	Sample Size	Density	Dilution Rate	Counts(µg)	Concentration	ABC No.
1	92141962004	5.00 µl	1.0000		-0.015	0.00 ppm	3
2	92141962004	5.00 µl	1.0000		-0.008	0.00 ppm	3
	n = 2 $\bar{X}$ = 0.00 ppm		RSD = ****.**		RSD(%) = ***.**		
1	92141962005	5.00 µl	1.0000		0.001	18.68 ppm	3
2	92141962005	5.00 µl	1.0000		-0.004	0.00 ppm	3
	n = 2 $\bar{X}$ = 9.34 ppm		RSD = ****.**		RSD(%) = ***.**		
1	92141962006	5.00 µl	1.0000		0.920	217.17 ppm	3
2	92141962006	5.00 µl	1.0000		1.094	254.75 ppm	3
	n = 2 $\bar{X}$ = 235.96 ppm		RSD = ****.**		RSD(%) = ***.**		
1	92141962007	5.00 µl	1.0000		1.190	275.49 ppm	3
2	92141962007	5.00 µl	1.0000		1.047	244.60 ppm	3
	n = 2 $\bar{X}$ = 260.05 ppm		RSD = ****.**		RSD(%) = ***.**		
1	92141962008	5.00 µl	1.0000		0.877	207.88 ppm	3
2	92141962008	5.00 µl	1.0000		0.799	191.04 ppm	3
	n = 2 $\bar{X}$ = 199.46 ppm		RSD = ****.**		RSD(%) = ***.**		
1	92141962009	5.00 µl	1.0000		1.015	237.69 ppm	3
2	92141962009	5.00 µl	1.0000		0.989	232.07 ppm	3
	n = 2 $\bar{X}$ = 234.88 ppm		RSD = ****.**		RSD(%) = ***.**		
1	92141962010	5.00 µl	1.0000		0.984	230.99 ppm	3
2	92141962010	5.00 µl	1.0000		0.982	230.56 ppm	3
	n = 2 $\bar{X}$ = 230.78 ppm		RSD = ****.**		RSD(%) = ***.**		

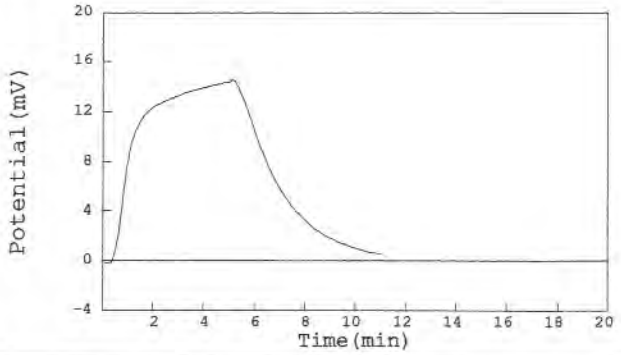
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Asheville, NC

Sample Report

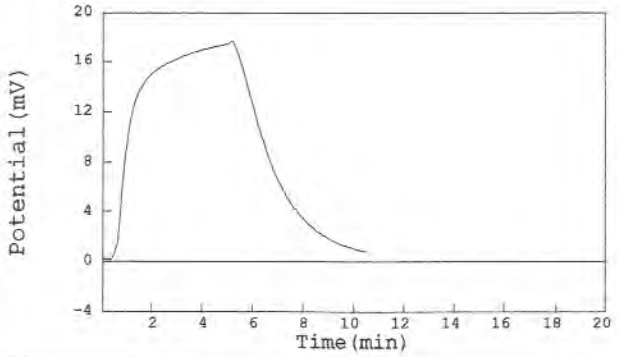
Sample Charts

Data ID : TSXC12202012.001

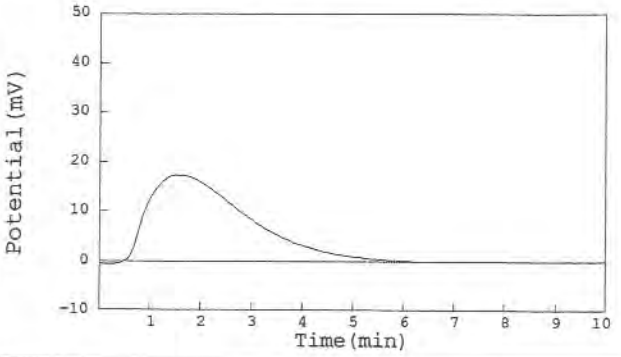
Reps. : 1 12/20/12 09:14
Sample ID : CCV
Counts(µg): 1.834



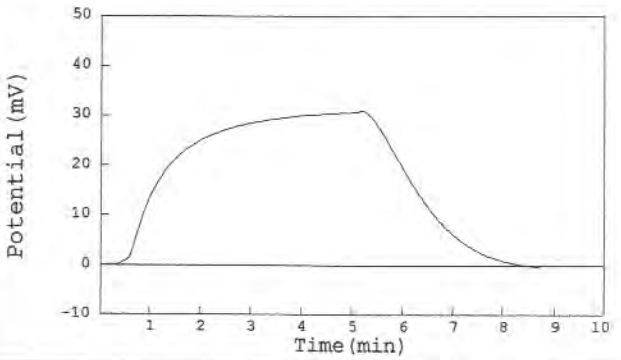
Reps. : 2 12/20/12 09:26
Sample ID : CCV
Counts(µg): 1.934



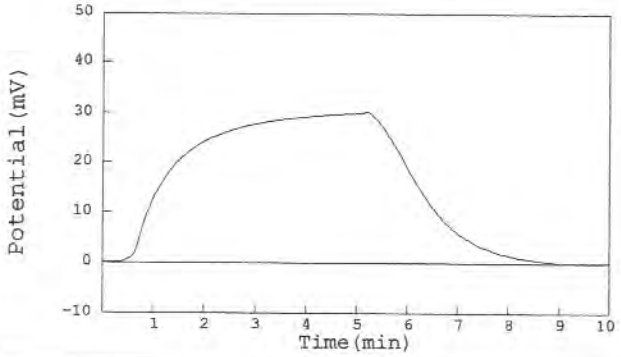
Reps. : 3 12/20/12 14:11
Sample ID : CCV
Counts(µg): 2.608



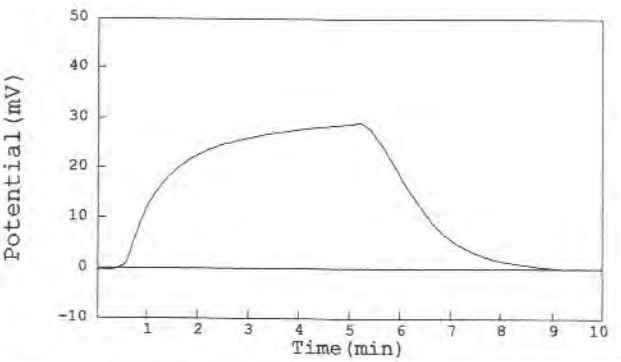
Reps. : 4 12/20/12 14:25
Sample ID : CCV
Counts(µg): 2.363



Reps. : 5 12/20/12 16:19
Sample ID : CCV
Counts(µg): 2.337



Reps. : 6 12/20/12 16:29
Sample ID : CCV
Counts(µg): 2.363



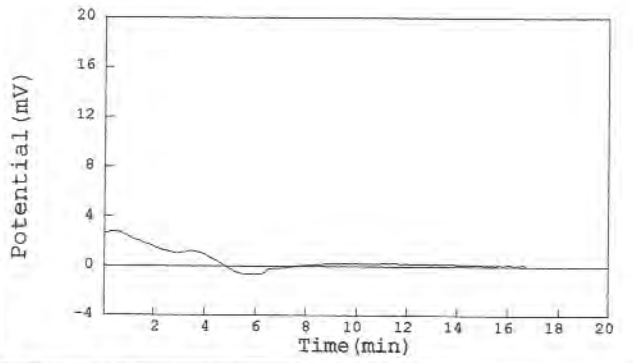
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Sample Report

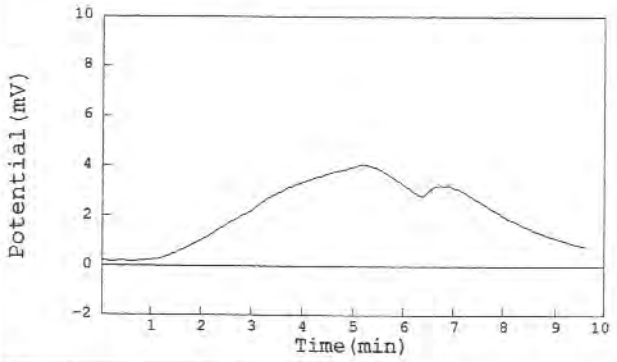
Sample Charts

Data ID : TSXC12202012.001

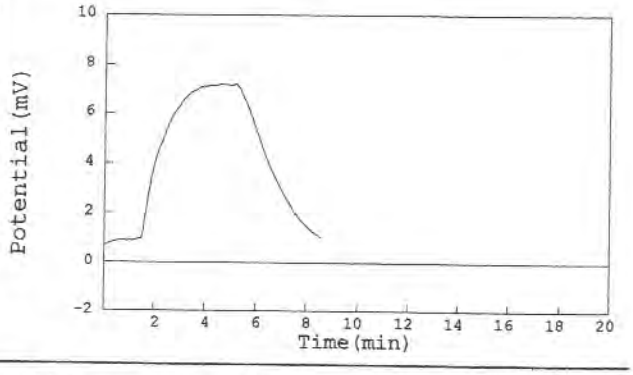
Reps. : 1 12/20/12 09:52
Sample ID : 92141956001
Counts(µg): -1.844



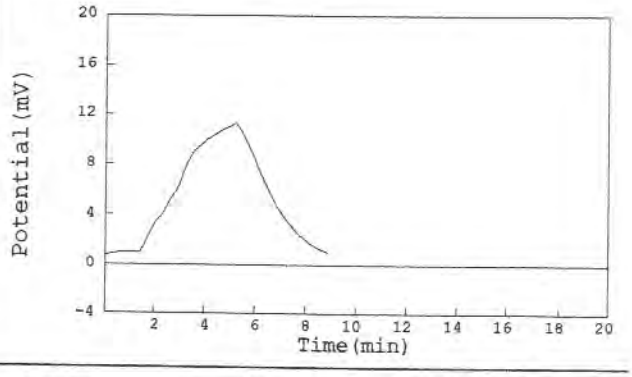
Reps. : 2 12/20/12 10:04
Sample ID : 92141956001
Counts(µg): 0.636



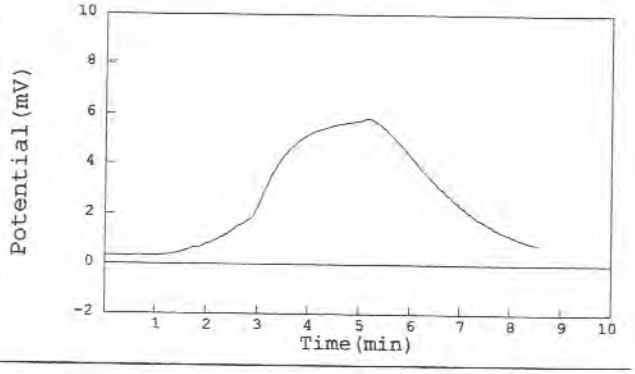
Reps. : 1 12/20/12 10:14
Sample ID : 92141956002
Counts(µg): 0.626



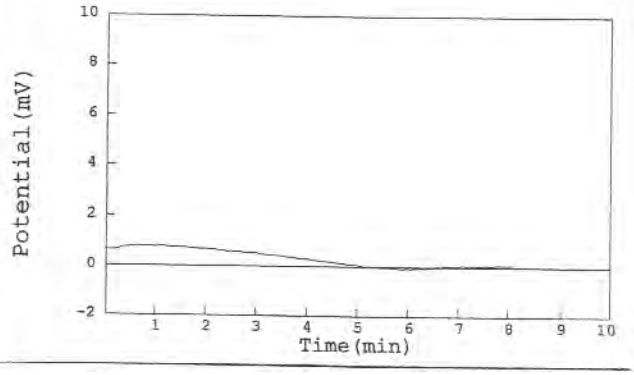
Reps. : 2 12/20/12 10:27
Sample ID : 92141956002
Counts(µg): 1.021



Reps. : 1 12/20/12 10:38
Sample ID : 92141956003
Counts(µg): 0.565



Reps. : 2 12/20/12 10:48
Sample ID : 92141956003
Counts(µg): -0.084



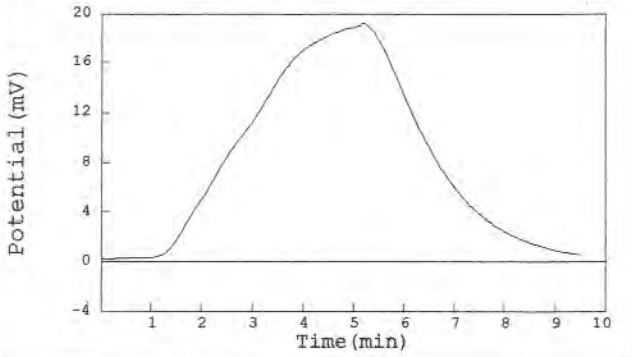
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Sample Report

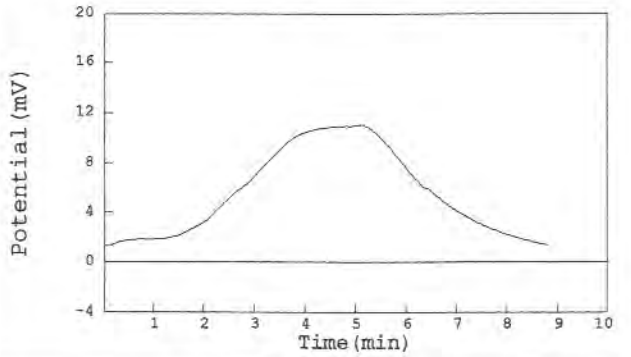
Sample Charts

Data ID : TSXC12202012.001

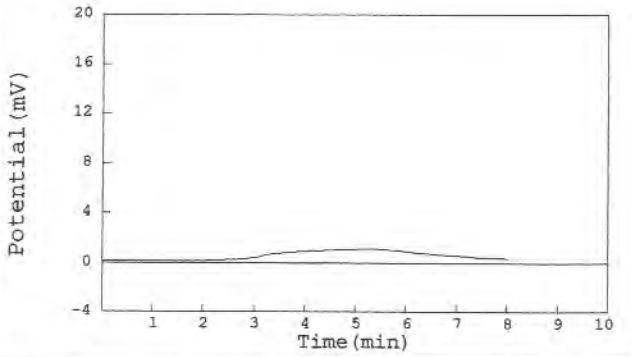
Reps. : 1 12/20/12 10:59
Sample ID : 92141956004
Counts(µg): 1.797



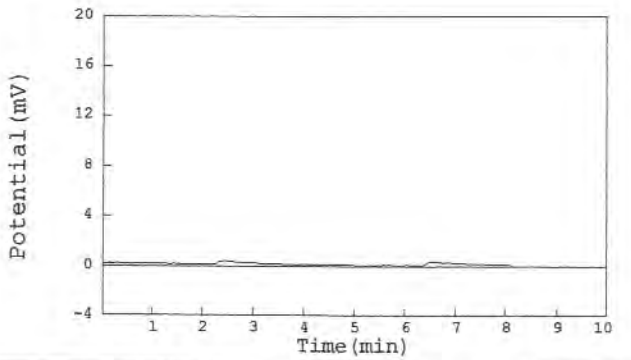
Reps. : 2 12/20/12 11:10
Sample ID : 92141956004
Counts(µg): 0.903



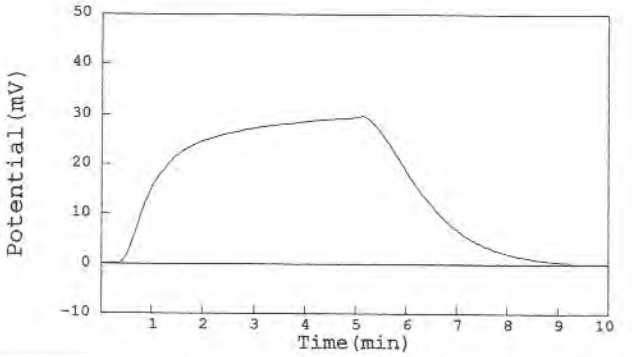
Reps. : 1 12/20/12 11:27
Sample ID : 92141962001
Counts(µg): 0.113



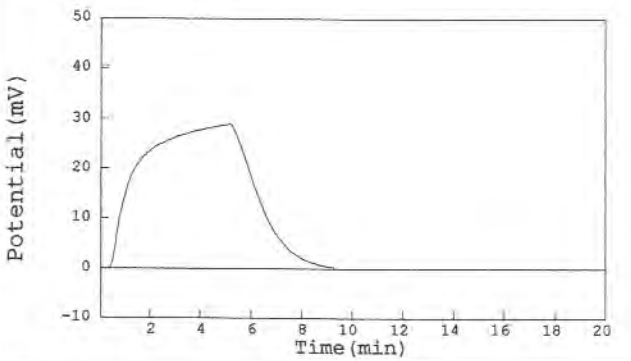
Reps. : 2 12/20/12 11:37
Sample ID : 92141962001
Counts(µg): -0.010



Reps. : 1 12/20/12 11:49
Sample ID : MS
Counts(µg): 2.479



Reps. : 1 12/20/12 11:59
Sample ID : MSD
Counts(µg): 2.492



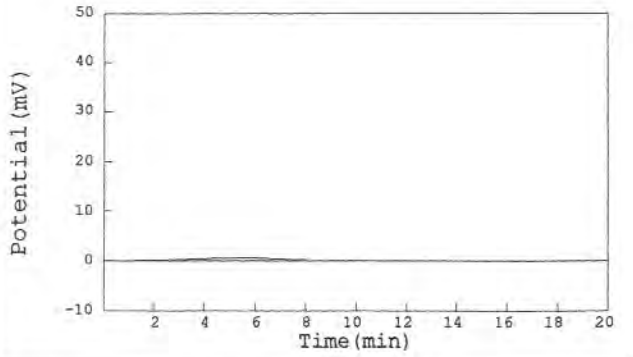
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Asheville, NC

Sample Report

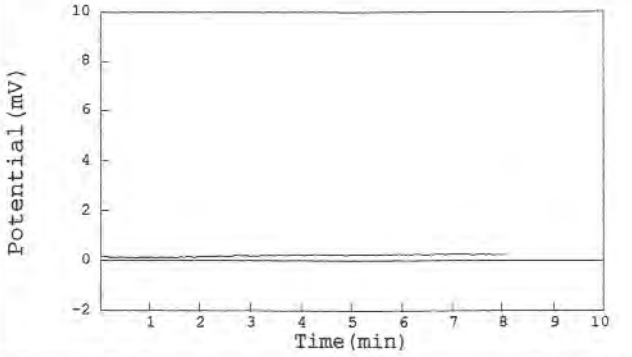
Sample Charts

Data ID : TSXC12202012.001

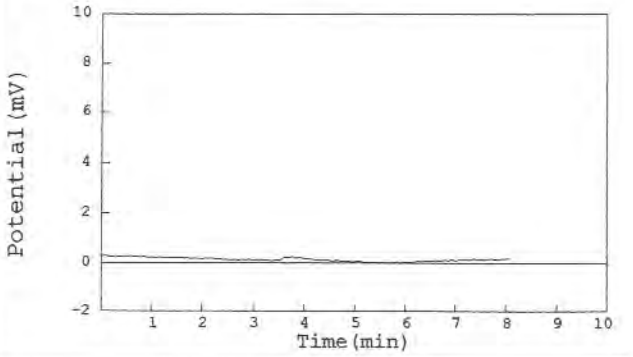
Reps. : 1 12/20/12 12:09
Sample ID : 92141962002
Counts(µg): 0.091



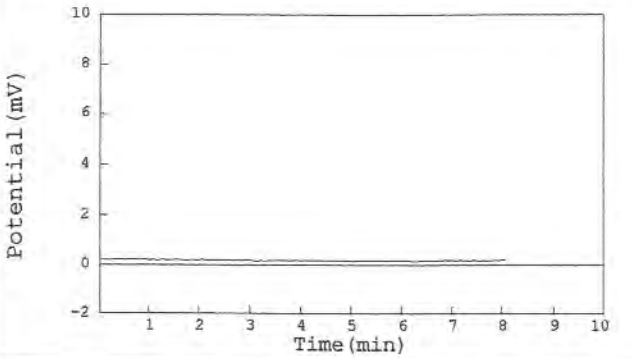
Reps. : 2 12/20/12 12:20
Sample ID : 92141962002
Counts(µg): 0.015



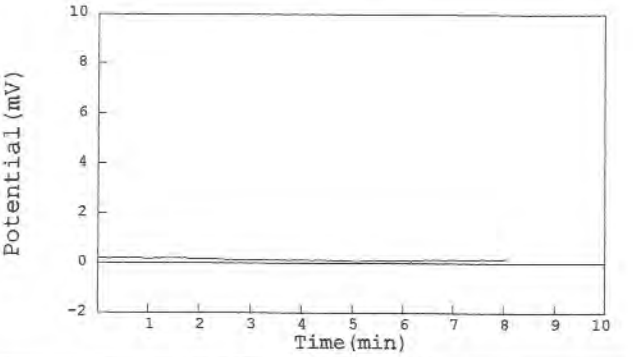
Reps. : 1 12/20/12 12:30
Sample ID : 92141962003
Counts(µg): -0.034



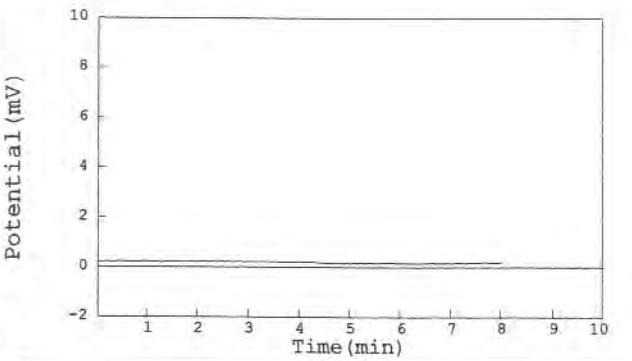
Reps. : 2 12/20/12 12:40
Sample ID : 92141962003
Counts(µg): -0.002



Reps. : 1 12/20/12 12:51
Sample ID : 92141962004
Counts(µg): -0.015



Reps. : 2 12/20/12 13:02
Sample ID : 92141962004
Counts(µg): -0.008



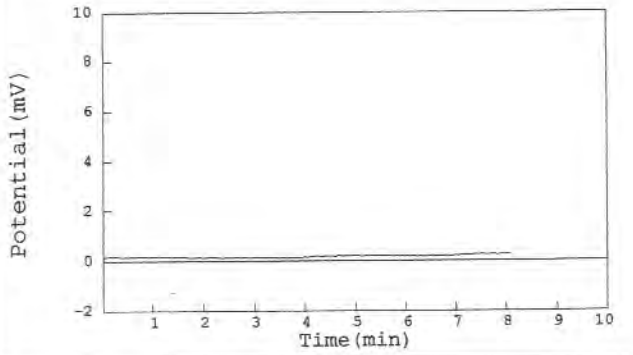
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Asheville, NC

Sample Report

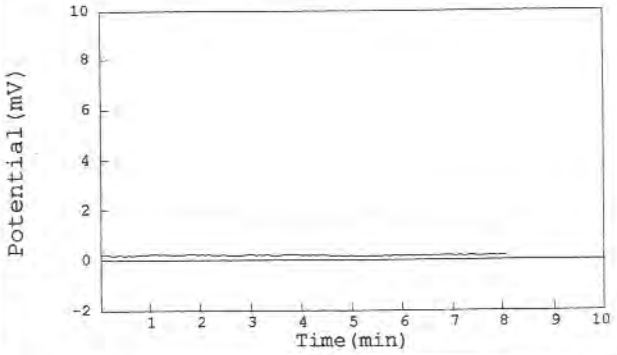
Sample Charts

Data ID : TSXC12202012.001

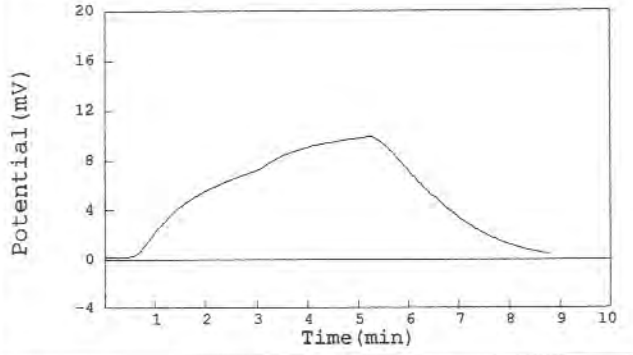
Reps. : 1 12/20/12 13:15
Sample ID : 92141962005
Counts(µg): 0.001



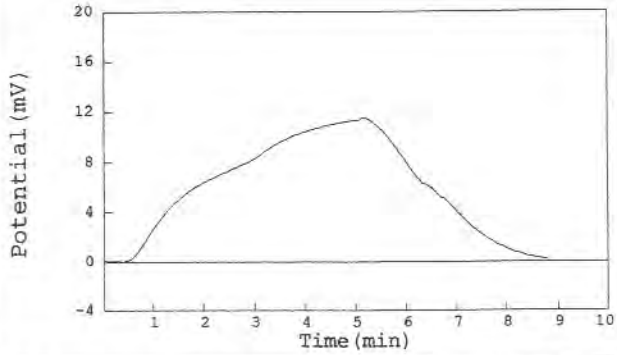
Reps. : 2 12/20/12 13:32
Sample ID : 92141962005
Counts(µg): -0.004



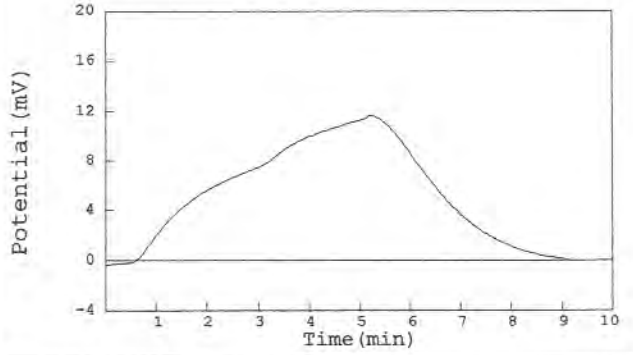
Reps. : 1 12/20/12 13:43
Sample ID : 92141962006
Counts(µg): 0.920



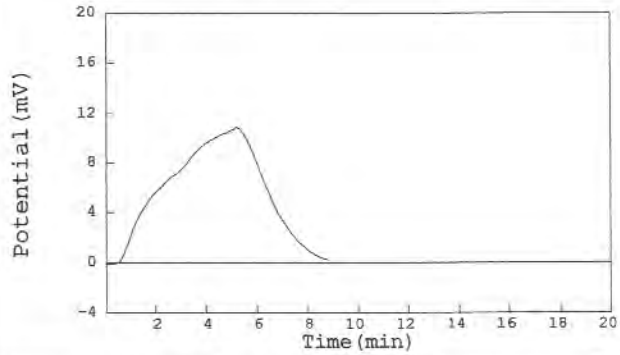
Reps. : 2 12/20/12 13:53
Sample ID : 92141962006
Counts(µg): 1.094



Reps. : 1 12/20/12 14:36
Sample ID : 92141962007
Counts(µg): 1.190



Reps. : 2 12/20/12 14:46
Sample ID : 92141962007
Counts(µg): 1.047



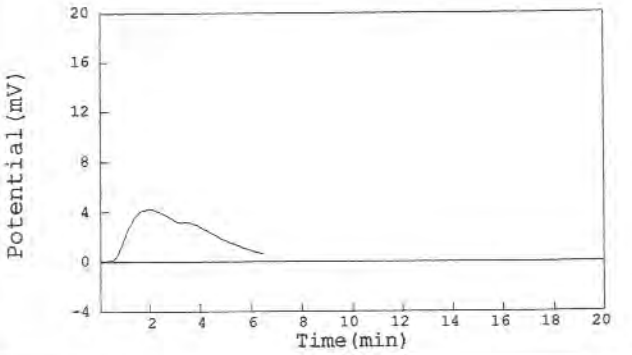
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Asheville, NC

Sample Report

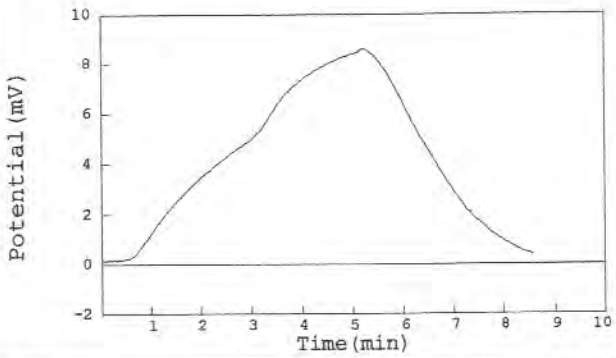
Sample Charts

Data ID : TSXC12202012.001

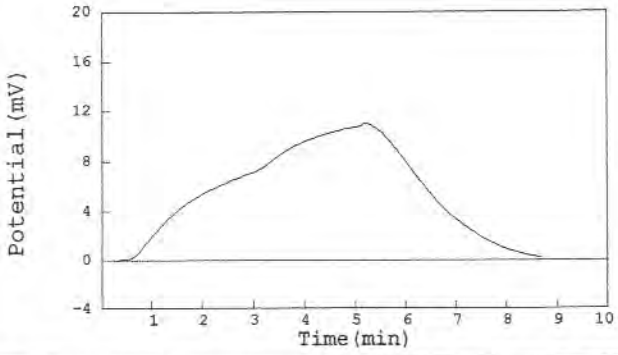
Reps. : 1 12/20/12 14:56
Sample ID : 92141962008
Counts(µg): 0.877



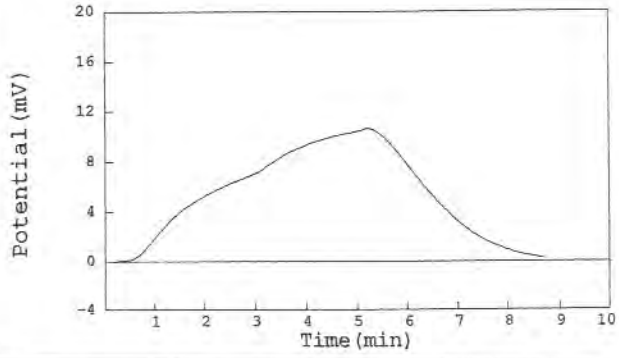
Reps. : 2 12/20/12 15:22
Sample ID : 92141962008
Counts(µg): 0.799



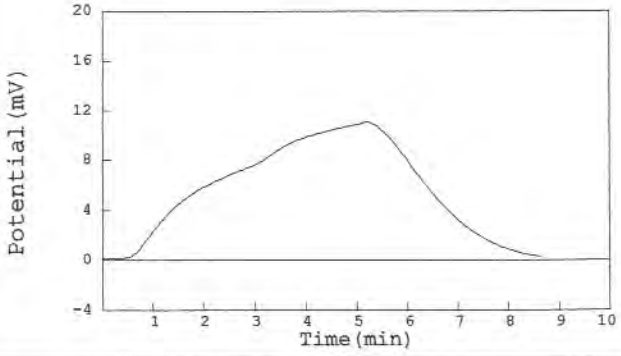
Reps. : 1 12/20/12 15:33
Sample ID : 92141962009
Counts(µg): 1.015



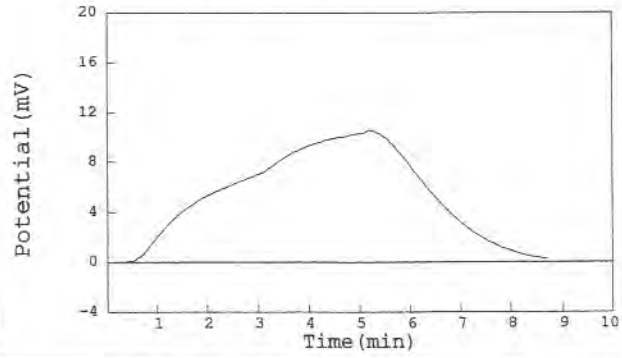
Reps. : 2 12/20/12 15:44
Sample ID : 92141962009
Counts(µg): 0.989



Reps. : 1 12/20/12 15:56
Sample ID : 92141962010
Counts(µg): 0.984



Reps. : 2 12/20/12 16:07
Sample ID : 92141962010
Counts(µg): 0.982



Pace Analytical™

Test: Total Chlorine
Method Number: SW-846 Method 9076

Date Analyzed: See Bench Sheet
Analyst Initials: See Bench Sheet
Batch(s): WET23511

Reporting Limit: 0.01% (100ppm)
Preservative: Cool to above 0.0 - 6.0 degrees C
Holding Time: 28 Days

Instrument: TOX-100
Serial Number: A7M-20639
Epic Pro Inst ID: 92WST2
Instrument: TOX-100
Serial Number: A7M-30181
Epic Pro Inst ID: 92WST5
Instrument: Balance #8
Serial Number: 19550801
Model Saterius / CP 124 S
Epic Pro Inst ID: NA

Organic Intermediate Calibration Standard		
	Chlorobenzine	
Final Conc.	Volume	Final Vol. mL
ppm	Used, mL	mg/L
10000.0	2.874	100mL

Organic Calibration Standard					
Final Conc.		Volume	From Conc.	Final Vol. mL	
ppm		Used, mL	mg/L	Isoctane	
1000.0		1.0	10,000	10	
500.0		0.5	1,000	10	CCV

Inorganic Chloride Stock Cell Check				
Final Conc.		Volume	From Conc.	Final Vol. mL
ppm		Used, mL	mg/L	DI Water
10000		1.7	1,000	100mL

How to prepare a Matrix Spike sample			
	Sodium Chloride		
Final Conc.	Volume	From Conc.	Final Vol. mL
mg/L	Used, mL	mg/L	Use Sample
500	0.5	1,000	10

Analysis Reagents

SS#	
6775	**Organic Chloride Stock Cal -** Prepared 10,000 mg/L Chlorine Standard.
7621	**Organic Chloride Std- Prepared 1,000 ppm Chlorine Standard (CCV)**
7621	**CCV Chloride Std 500 ppm**
7705	**Cell Electrolyte (85% Acetic Acid Solution)**
7367	**Working Electrode Solution**
7366	**Inner Reference Electrode Solution**
7365	**Outer Reference Electrode Solution**

Pace Analytical™

Test: Total Chlorine
Method Number: SW-846 Method 9076

Pace Analytical™

Test: Total Chlorine
Method Number: SW-846 Method 9076

Comments: Check box if there is an issue and then write what happened in the "Issues" section, end of report.

Sample Collection, Preservation, & Handling:

Hold Time: 28 days from time of collection.

Corrective Action: If samples are analyzed outside of hold time, they must be footnoted with the comment "**H1**" which states "Analysis conducted in excess of EPA recommended holding times."

Preservation: None.

Storage: above 0.0-6.0 deg C, plastic or glass container.

Calibration QC (Calibration, ICV, CCV, ICB, & CCB):

☐ **Calibration:** a process of establishing the relationship between the instrument response and known, traceable concentrations of analyte(s) of interest.

Frequency: Weekly

Criteria: Correlation Coefficient: The correlation coefficient of the calibration curve must be ≥0.995? If it is outside of the acceptance limits, the TOX must be recalibrated.

☐ **ICV, Initial Calibration Verification:** A second source (different from calibration source) standard at approximately the mid-range of the calibration.

Frequency: Immediately after the calibration before any samples are analyzed.

Criteria: The ICV must be within +/- 15 % of the True Value, 500ppm. If it is outside of the acceptance limits, the ICV can be reanalyzed. If it is still outside of the acceptance limits, the Kone must be recalibrated.

☐ **CCV, Continuing Calibration Verification:** Calibration source standard at approximately the mid-range of the calibration.

Frequency: The frequency is before analyzing any samples, after every ten (10) samples and at the end of the analytical sequence.

Criteria: CCV must be within +/- 15 % of the True Value, 500ppm. If it is outside of the acceptance limits,

☐ the CCV can be reanalyzed. If it is still outside of the acceptance limits, the Kone must be recalibrated and the samples must be reanalyzed from the last acceptable CCV.

Batch QC (MB, LCS, MS, & DUP):

☐ **Duplicate:** A sample duplicate is prepared by doing two different injections of the same sample. It measures precision associated with preparation through analysis.

Frequency: Every sample must be ran in duplicate.

Criteria: ≤ 20% RPD.

Corrective Action: footnote the sample duplicated with the canned footnote "D6" which states "The relative percent difference (RPD) between the sample and sample duplicate, exceeded laboratory control limits"

☐ **Matrix Spike:** Matrix spikes are similar to LCSs except that the analyte spikes are added to a second and third

☐ separate aliquot of the same client sample within an analytical batch. This enables the lab to assess matrix effects and field conditions.

Frequency: Must be analyzed once every 10 samples (1 per batch of ten samples).

Criteria: ± 20% (80 - 120 % rec) Recovery.

Corrective Action #1: footnote the Matrix Spike with the canned footnote "M1" which states "Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.".

☐ **Sample Validation:**

Pace Analytical™

Test: Total Chlorine

Method Number: SW-846 Method 9076

Sample #1: If the sample concentration is greater than the highest calibration standard, dilute the sample and reanalyze. The Konelab will perform this task once. If the result is still above the highest calibration standard, manually dilute and reanalyze the sample.

Sample #2: If the sample is initially analyzed at a dilution and the result is below the reporting limit, the sample must be analyzed with a lesser dilution or straight until the sample concentration is above the reporting limit. The exception to this rule is that there is a legitimate matrix interference. In this case, the sample must be qualified with the canned footnote **D3** "The sample was diluted to reduce matrix interference, resulting in elevated reporting limits."

Date Analyzed: Was the date analyzed entered correctly?

Dilutions: Is the dilution factor(s) posted correctly?

Remember to include the calibration in the data package.

Issues: Write any and all out of control issues below:

☐ I have reviewed the maintenance log.

To the best of my knowledge, all of the above information is correct and all supporting documentation has been provided.

Analyst: _____ **Date:** 12-20-12

Reviewer: _____ **Date:** 12-21-12

Pace Analytical

12-21-12
WET 23578

Analyst: SH
Date Analyzed: 12-21-12
Time Analyzed: 1700
Matrix: SL
Batch # WET23578
Circle Epic Pro ID: 92WST2 (92WST5)

Test: Total Chlorine
Method Number: SW-846 Method 9076

Sample Number	Sample I.D.	Result 1 (ppm)	Result 2 (ppm)	Reported (Avg)	% Recovery
CCV		400.54	521.27	460.91	92%
92141962011	769956 SUR_AD01_092512_C01	48.70	46.54	47.62	
92141962012	769957 SUR_AD01_092512_C02	47.19	43.95	45.57	
895730	769957 SUR_AD01_0...(890889MS)	475.70		475.70	
895731	769957 SUR_AD01_...(890889MSD)	438.98		438.98	
92141962013	769958 SUR_AD01_092512_C03	79.16	58.64	68.90	
92141962014	769959 SUR_AD01_092512_C04	49.14	52.38	50.76	
92141962015	782325 SUR_AD01_092512_C01	53.67	53.24	53.46	
92142060001	782478 WCHEM_121412_G11	129.23	197.30	163.27	
92142142001	761818 WCHEM_080312_G08	59.70	93.66	76.68	
92142142002	761819 WCHEM_080312_G09	75.47	61.21	68.59	
92142142003	781033 WCHEM_120412_G05	76.78	35.10	55.94	
	CCV	498.60	488.88	493.74	99%
SH 12-21-12	CCB				

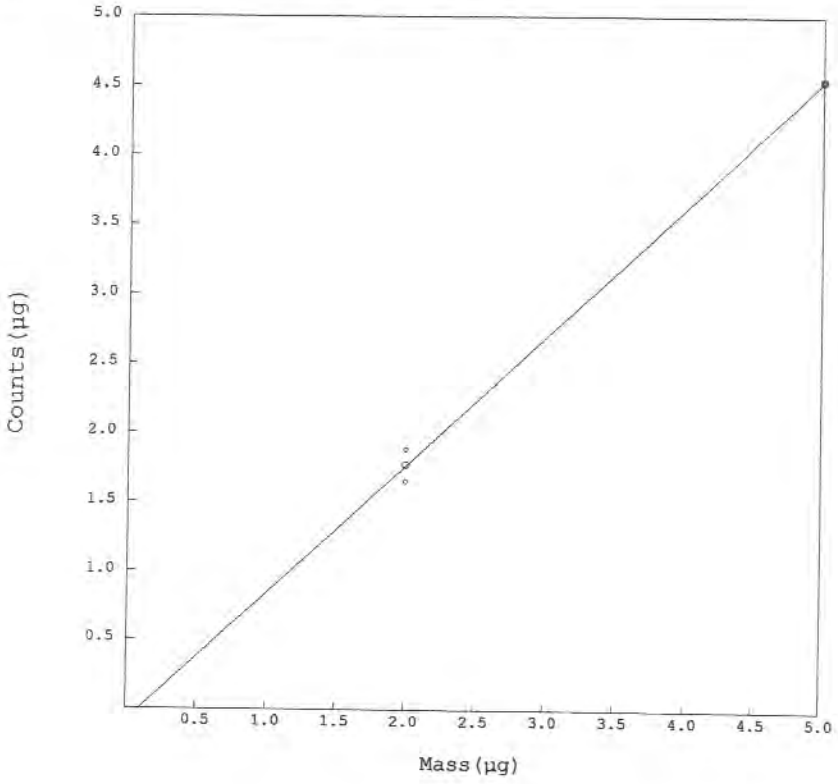
Pace Analytical
2225 Riverside Dr.
Asheville, NC

12/21/2012

Calibration Report

Calibration Curve

Data ID	:	TSXC12212012.001
Formula	:	Y = BX+C
Slope(A)	:	***.****
Slope(B)	:	0.9260
Intercept(C)	:	-0.0855
r^	:	0.99827



Calibration Data

Mass(µg)	Counts $\bar{X}$	n	RSD	RSD(%)
2.000	1.767	2	***.**	***.**
5.000	4.545	2	***.**	***.**

Pace Analytical
2225 Riverside Dr.
Asheville, NC

Calibration Report

Calibration All Data

Data ID : TSXC12212012.001
Blank : 0.000 µg

Reps.	Mass(µg)	Concentration	Std.Volume	Counts(µg)	ABC No.	Date
1	2.000	1000.00 mg/l	2.0 µl	1.882	3	12/19/12 16:05
2	2.000	1000.00 mg/l	2.0 µl	1.651	3	12/19/12 15:54
	n = 2	$\bar{X}$ = 1.767	RSD = ***.**	RSD(%) = ***.**		
1	5.000	1000.00 mg/l	5.0 µl	4.550	3	12/19/12 15:04
2	5.000	1000.00 mg/l	5.0 µl	4.539	3	12/19/12 16:16
	n = 2	$\bar{X}$ = 4.545	RSD = ***.**	RSD(%) = ***.**		

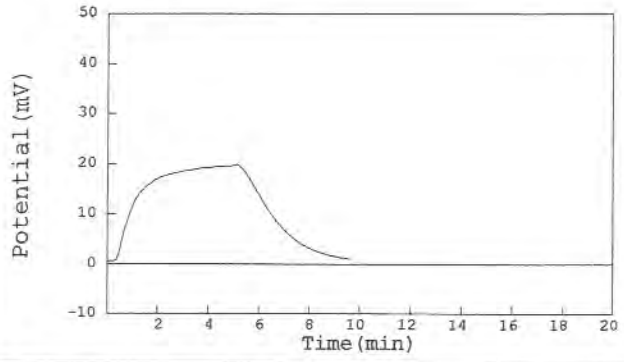
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Calibration Report

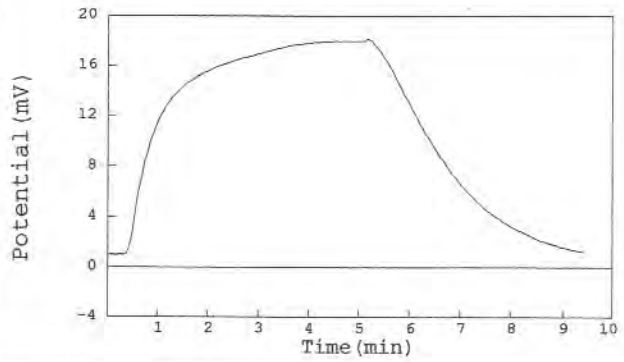
Calibration Chart

Data ID : TSXC12212012.001

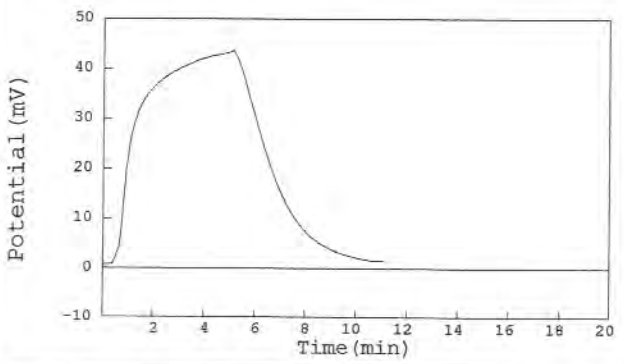
Reps. : 1 Date : 12/19/12
Mass(µg) : 2.000 16:05
Counts(µg): 1.882



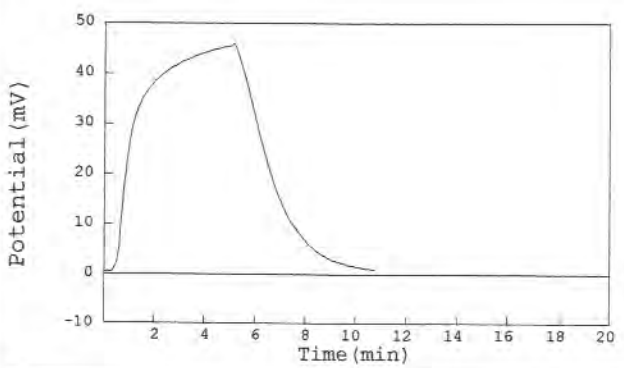
Reps. : 2 Date : 12/19/12
Mass(µg) : 2.000 15:54
Counts(µg): 1.651



Reps. : 1 Date : 12/19/12
Mass(µg) : 5.000 15:04
Counts(µg): 4.550



Reps. : 2 Date : 12/19/12
Mass(µg) : 5.000 16:16
Counts(µg): 4.539



Pace Analytical
2225 Riverside Dr.
Asheville, NC

Sample Report

Sample All Data

Data ID : TSXC12212012.001
Blank : 0.000 µg

Reps.	Sample ID	Sample Size	Density	Dilution Rate	Counts(µg)	Concentration	ABC No.
1	CCV	5.00 µl	1.0000		1.769	400.54 ppm	3
2	CCV	5.00 µl	1.0000		2.328	521.27 ppm	3
3	CCV	5.00 µl	1.0000		2.348	525.59 ppm	3
4	CCV	5.00 µl	1.0000		2.281	511.12 ppm	3
5	CCV	5.00 µl	1.0000		2.223	498.60 ppm	3
6	CCV	5.00 µl	1.0000		2.178	488.88 ppm	3
	n = 6	$\bar{X}$ = 491.00 ppm		RSD = 46.40		RSD(%) = 9.45	
1	92141962011	5.00 µl	1.0000		0.140	48.70 ppm	3
2	92141962011	5.00 µl	1.0000		0.130	46.54 ppm	3
	n = 2	$\bar{X}$ = 47.62 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141962012	5.00 µl	1.0000		0.133	47.19 ppm	3
2	92141962012	5.00 µl	1.0000		0.118	43.95 ppm	3
	n = 2	$\bar{X}$ = 45.57 ppm		RSD = ****.**		RSD(%) = ***.**	
1	MS	5.00 µl	1.0000		2.117	475.70 ppm	3
	n = 1	$\bar{X}$ = 475.70 ppm		RSD = ****.**		RSD(%) = ***.**	
1	MSD	5.00 µl	1.0000		1.947	438.98 ppm	3
	n = 1	$\bar{X}$ = 438.98 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141962013	5.00 µl	1.0000		0.281	79.16 ppm	3
2	92141962013	5.00 µl	1.0000		0.186	58.64 ppm	3
	n = 2	$\bar{X}$ = 68.90 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141962014	5.00 µl	1.0000		0.142	49.14 ppm	3
2	92141962014	5.00 µl	1.0000		0.157	52.38 ppm	3
	n = 2	$\bar{X}$ = 50.76 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92141962015	5.00 µl	1.0000		0.163	53.67 ppm	3
2	92141962015	5.00 µl	1.0000		0.161	53.24 ppm	3
	n = 2	$\bar{X}$ = 53.46 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92142060001	7.60 mg			0.824	129.23 ppm	3
2	92142060001	5.00 mg			0.828	197.30 ppm	3
	n = 2	$\bar{X}$ = 163.27 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92142142001	16.20 mg			0.810	59.70 ppm	3
2	92142142001	8.10 mg			0.617	93.66 ppm	3

Sample Report

Sample All Data

Data ID : TSXC12212012.001
Blank : 0.000 µg

Reps.	Sample ID	Sample Size	Density	Dilution Rate	Counts(µg)	Concentration	ABC No.
1	92142142002	7.10 mg			0.414	75.97 ppm	3
2	92142142002	12.20 mg			0.606	61.21 ppm	3
	n = 2	$\bar{X}$ = 68.59 ppm		RSD = ****.**		RSD(%) = ***.**	
1	92142142003	5.00 µl	1.0000		0.270	76.78 ppm	3
2	92142142003	5.00 µl	1.0000		0.077	35.10 ppm	3
	n = 2	$\bar{X}$ = 55.94 ppm		RSD = ****.**		RSD(%) = ***.**	

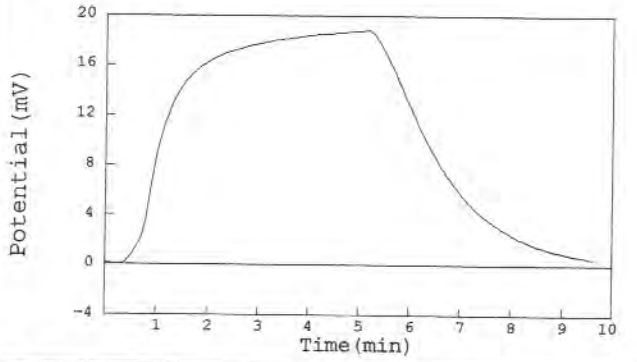
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Asheville, NC

Sample Report

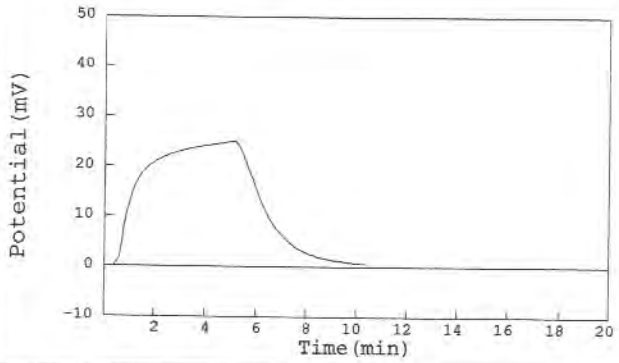
Sample Charts

Data ID : TSXC12212012.001

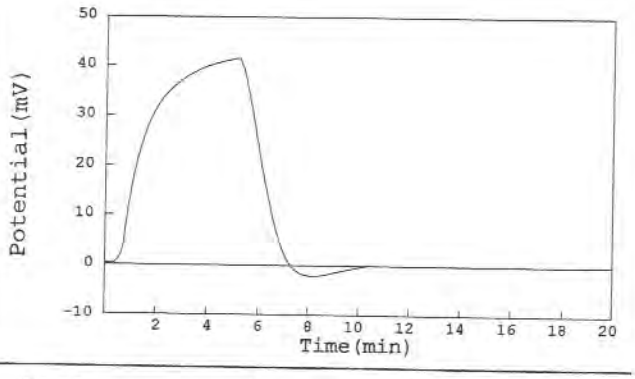
Reps. : 1 12/21/12 10:41
Sample ID : CCV
Counts(µg): 1.769



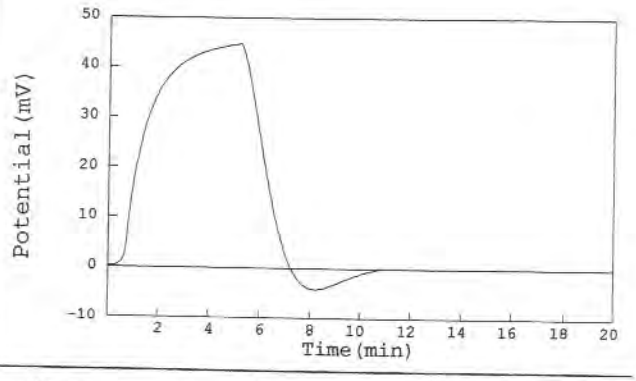
Reps. : 2 12/21/12 10:56
Sample ID : CCV
Counts(µg): 2.328



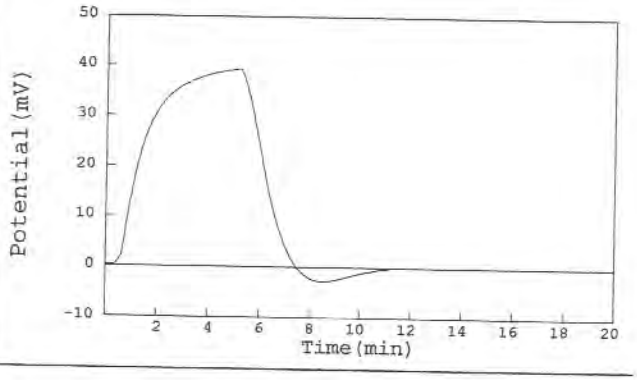
Reps. : 3 12/21/12 14:47
Sample ID : CCV
Counts(µg): 2.348



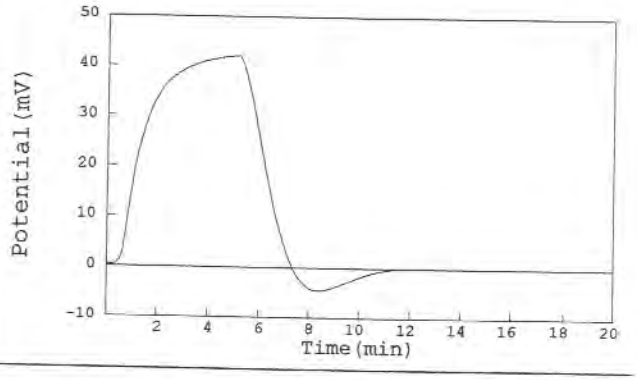
Reps. : 4 12/21/12 15:16
Sample ID : CCV
Counts(µg): 2.281



Reps. : 5 12/21/12 16:40
Sample ID : CCV
Counts(µg): 2.223



Reps. : 6 12/21/12 16:52
Sample ID : CCV
Counts(µg): 2.178

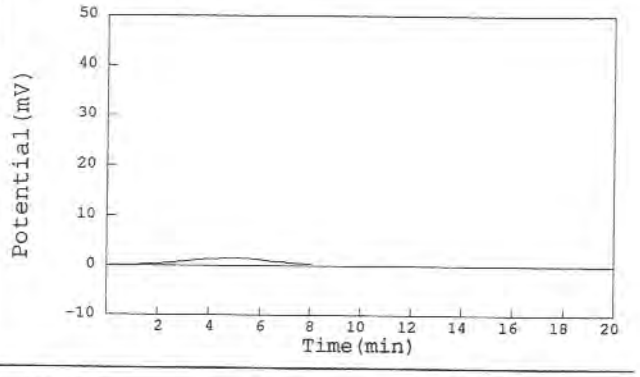


Sample Report

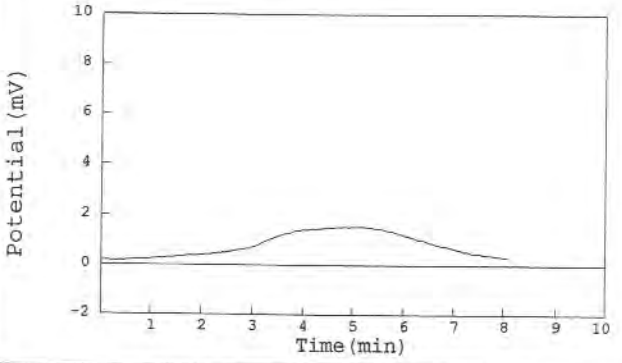
Sample Charts

Data ID : TSXC12212012.001

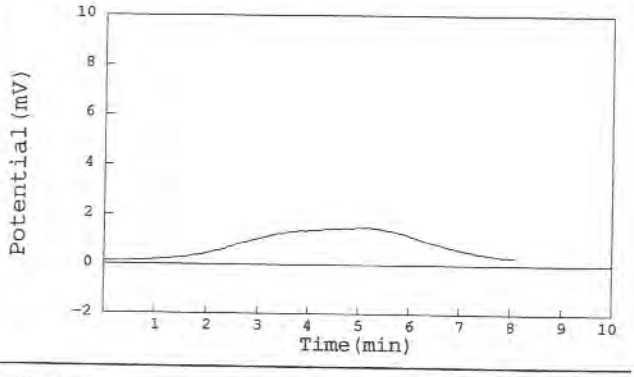
Reps. : 1 12/21/12 11:06
Sample ID : 92141962011
Counts(µg): 0.140



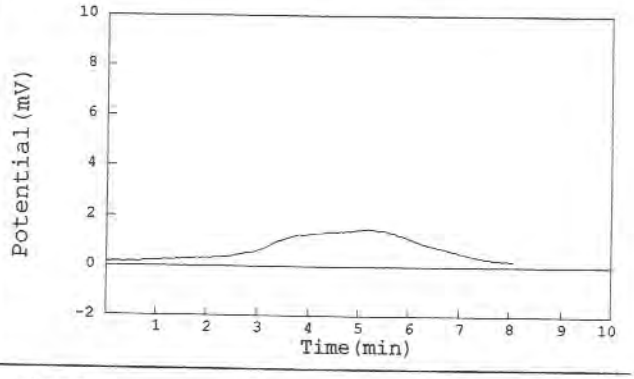
Reps. : 2 12/21/12 11:20
Sample ID : 92141962011
Counts(µg): 0.130



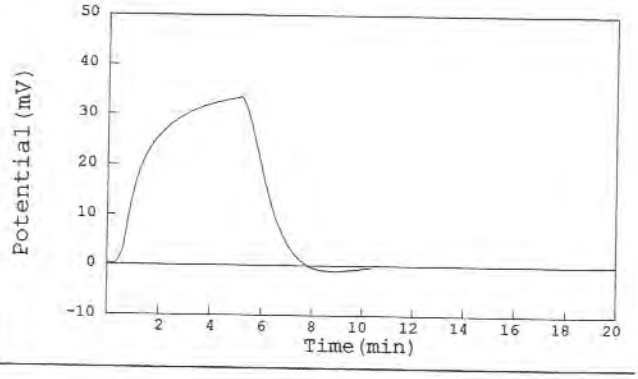
Reps. : 1 12/21/12 11:30
Sample ID : 92141962012
Counts(µg): 0.133



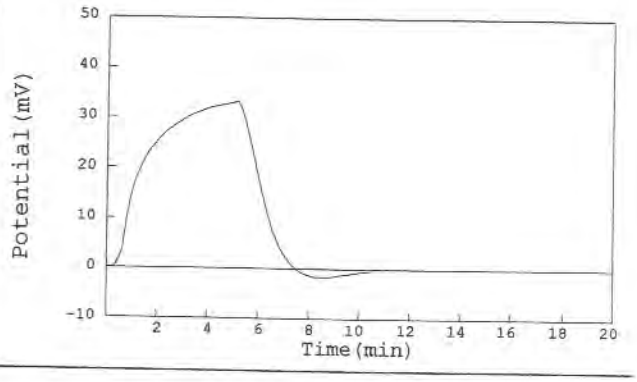
Reps. : 2 12/21/12 12:20
Sample ID : 92141962012
Counts(µg): 0.118



Reps. : 1 12/21/12 12:34
Sample ID : MS
Counts(µg): 2.117



Reps. : 1 12/21/12 12:46
Sample ID : MSD
Counts(µg): 1.947



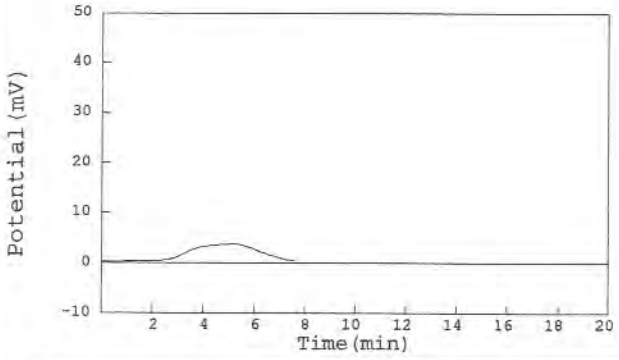
Pace Analytical
2225 Riverside Dr.
Asheville, NC

Sample Report

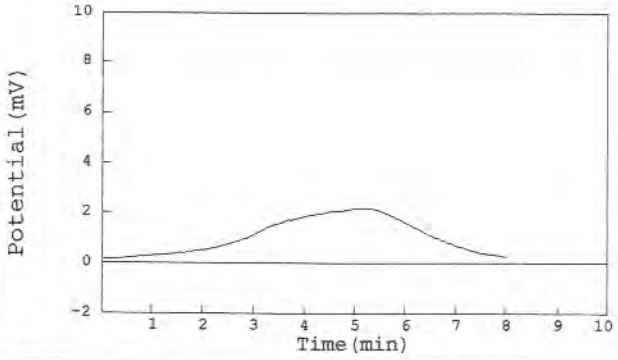
Sample Charts

Data ID : TSXC12212012.001

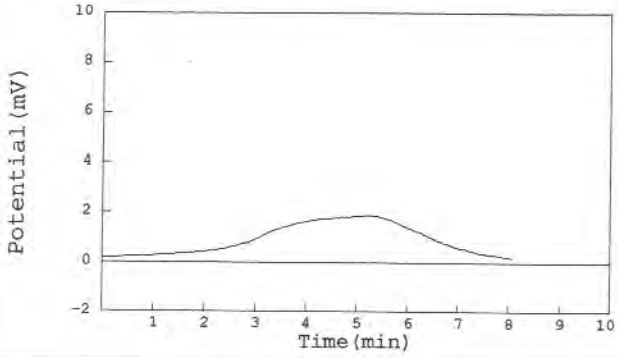
Reps. : 1 12/21/12 12:56
Sample ID : 92141962013
Counts(µg): 0.281



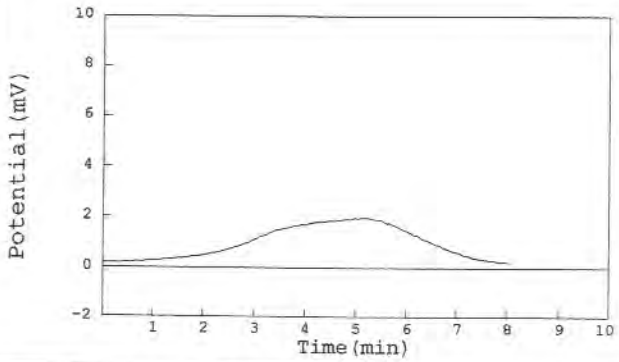
Reps. : 2 12/21/12 13:06
Sample ID : 92141962013
Counts(µg): 0.186



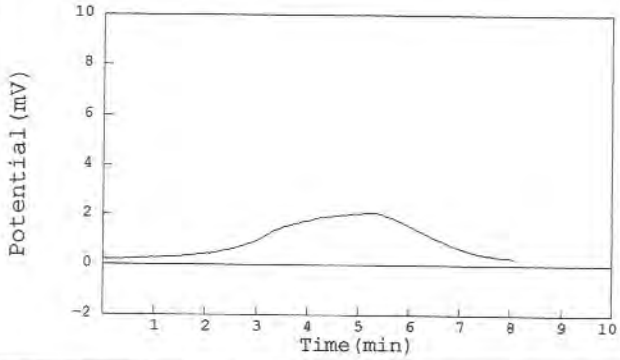
Reps. : 1 12/21/12 13:16
Sample ID : 92141962014
Counts(µg): 0.142



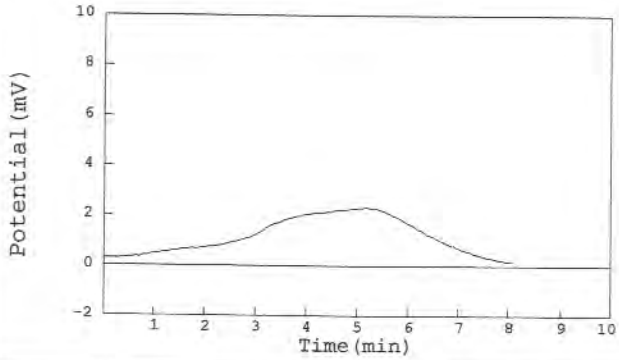
Reps. : 2 12/21/12 13:26
Sample ID : 92141962014
Counts(µg): 0.157



Reps. : 1 12/21/12 13:36
Sample ID : 92141962015
Counts(µg): 0.163



Reps. : 2 12/21/12 13:50
Sample ID : 92141962015
Counts(µg): 0.161



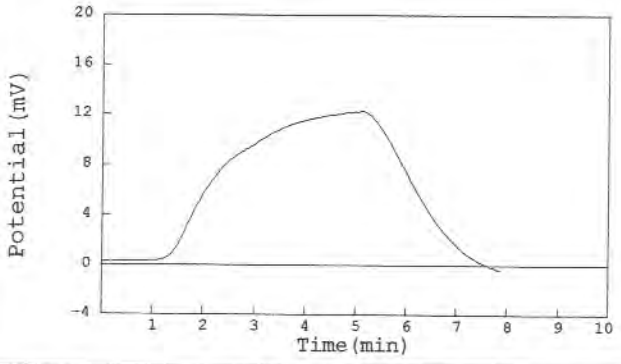
Pace Analytical
2225 Riverside Dr.
Asheville, NC

Sample Report

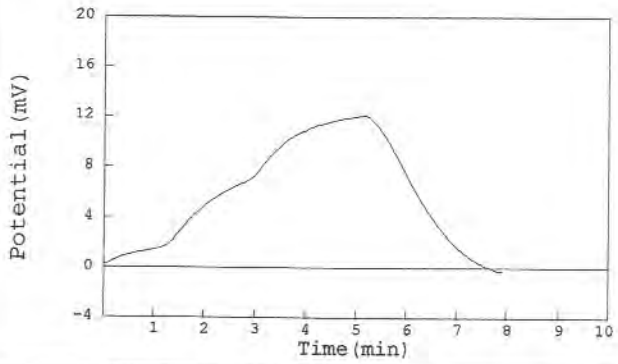
Sample Charts

Data ID : TSXC12212012.001

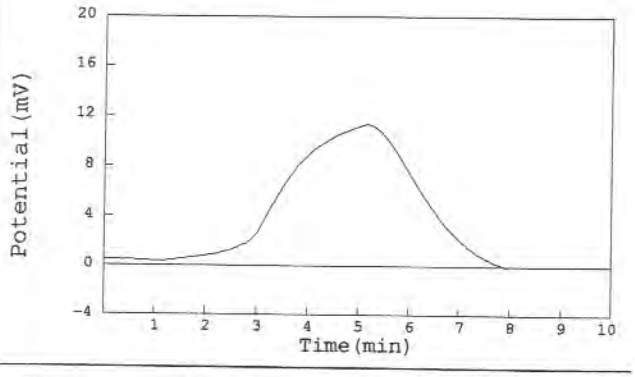
Reps. : 1 12/21/12 14:07
Sample ID : 92142060001
Counts(µg): 0.824



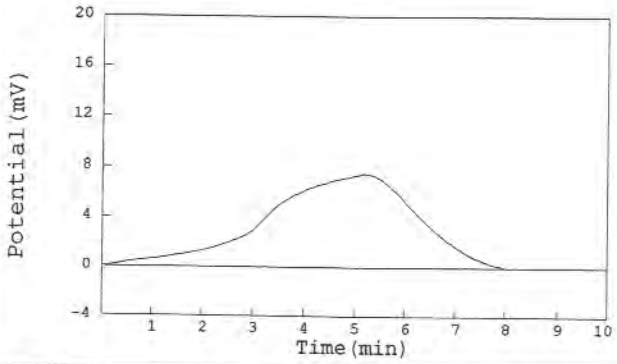
Reps. : 2 12/21/12 14:17
Sample ID : 92142060001
Counts(µg): 0.828



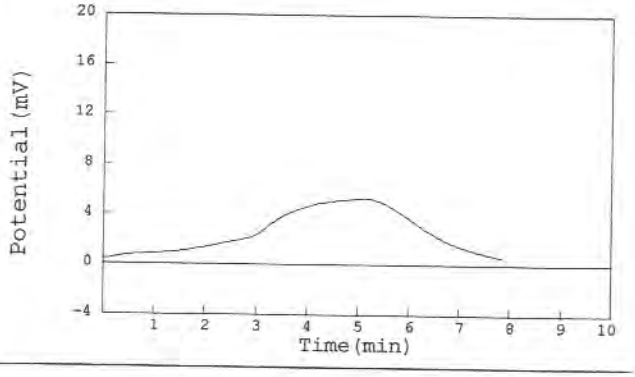
Reps. : 1 12/21/12 15:27
Sample ID : 92142142001
Counts(µg): 0.810



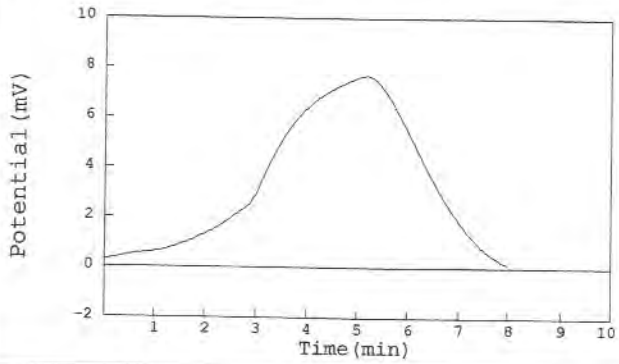
Reps. : 2 12/21/12 15:37
Sample ID : 92142142001
Counts(µg): 0.617



Reps. : 1 12/21/12 15:55
Sample ID : 92142142002
Counts(µg): 0.414



Reps. : 2 12/21/12 16:05
Sample ID : 92142142002
Counts(µg): 0.606

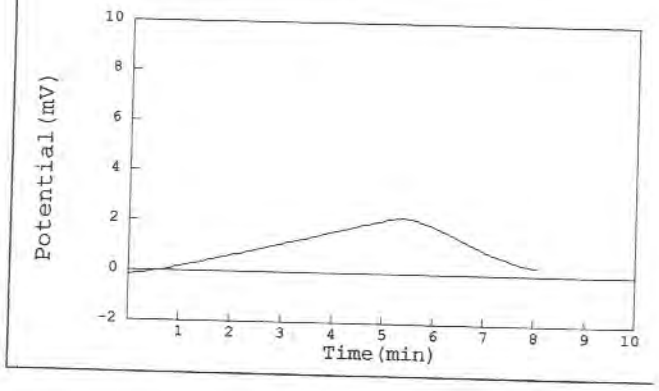


Sample Report

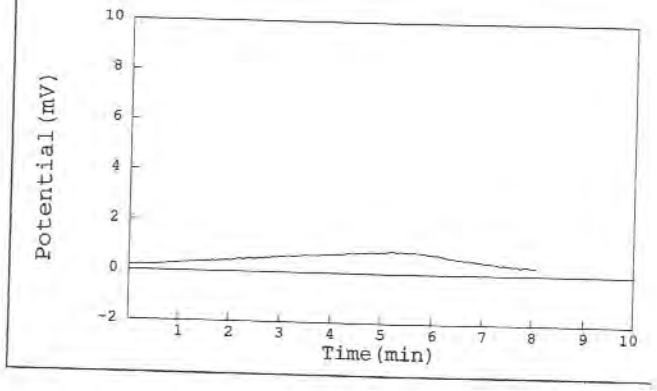
Sample Charts

Data ID : TSXC12212012.001

Reps. : 1 12/21/12 16:15
Sample ID : 92142142003
Counts(µg): 0.270



Reps. : 2 12/21/12 16:25
Sample ID : 92142142003
Counts(µg): 0.077



Pace Analytical™

Test: Total Chlorine

Method Number: SW-846 Method 9076

Date Analyzed: See Bench Sheet
Analyst Initials: See Bench Sheet
Batch(s): WET23578

Reporting Limit: 0.01% (100ppm)
Preservative: Cool to above 0.0 - 6.0 degrees C
Holding Time: 28 Days

Instrument: TOX-100
Serial Number: A7M-20639
Epic Pro Inst ID: 92WST2
Instrument: TOX-100
Serial Number: A7M-30181
Epic Pro Inst ID: 92WST5
Instrument: Balance #8
Serial Number: 19550801
Model Saterius / CP 124 S
Epic Pro Inst ID: NA

Organic Intermediate Calibration Standard		
	Chlorobenzine	
Final Conc.	Volume	Final Vol. mL
ppm	Used, mL	mg/L
10000.0	2.874	100mL

Organic Calibration Standard					
Final Conc.		Volume	From Conc.	Final Vol. mL	
ppm		Used, mL	mg/L	Isoctane	
1000.0		1.0	10,000	10	
500.0		0.5	1,000	10	CCV

Inorganic Chloride Stock Cell Check				
Final Conc.		Volume	From Conc.	Final Vol. mL
ppm		Used, mL	mg/L	DI Water
10000		1.7	1,000	100mL

How to prepare a Matrix Spike sample			
	Sodium Chloride		
Final Conc.	Volume	From Conc.	Final Vol. mL
mg/L	Used, mL	mg/L	Use Sample
500	0.5	1,000	10

Analysis Reagents

SS#	
6775	**Organic Chloride Stock Cal** - Prepared 10,000 mg/L Chlorine Standard.
7621	**Organic Chloride Std- Prepared 1,000 ppm Chlorine Standard (CCV)**
7621	**CCV Chloride Std 500 ppm**
7705	**Cell Electrolyte (85% Acetic Acid Solution)**
7367	**Working Electrode Solution**
7366	**Inner Reference Electrode Solution**
7365	**Outer Reference Electrode Solution**

Pace Analytical™

Test: Total Chlorine
Method Number: SW-846 Method 9076

Pace Analytical™

Test: Total Chlorine
Method Number: SW-846 Method 9076

Comments: Check box if there is an issue and then write what happened in the "Issues" section, end of report.

Sample Collection, Preservation, & Handling:

Hold Time: 28 days from time of collection.

Corrective Action: If samples are analyzed outside of hold time, they must be footnoted with the comment "**H1**" which states "Analysis conducted in excess of EPA recommended holding times."

Preservation: None.

Storage: above 0.0-6.0 deg C, plastic or glass container.

Calibration QC (Calibration, ICV, CCV, ICB, & CCB):

☐ **Calibration:** a process of establishing the relationship between the instrument response and known, traceable concentrations of analyte(s) of interest.

Frequency: Weekly

Criteria: Correlation Coefficient: The correlation coefficient of the calibration curve must be ≥0.995? If it is outside of the acceptance limits, the TOX must be recalibrated.

☐ **ICV, Initial Calibration Verification:** A second source (different from calibration source) standard at approximately the mid-range of the calibration.

Frequency: Immediately after the calibration before any samples are analyzed.

Criteria: The ICV must be within +/- 15 % of the True Value, 500ppm. If it is outside of the acceptance limits, the ICV can be reanalyzed. If it is still outside of the acceptance limits, the Kone must be recalibrated.

☐ **CCV, Continuing Calibration Verification:** Calibration source standard at approximately the mid-range of the calibration.

Frequency: The frequency is before analyzing any samples, after every ten (10) samples and at the end of the analytical sequence.

Criteria: CCV must be within +/- 15 % of the True Value, 500ppm. If it is outside of the acceptance limits,

☐ the CCV can be reanalyzed. If it is still outside of the acceptance limits, the Kone must be recalibrated and the samples must be reanalyzed from the last acceptable CCV.

Batch QC (MB, LCS, MS, & DUP):

☐ **Duplicate:** A sample duplicate is prepared by doing two different injections of the same sample. It measures precision associated with preparation through analysis.

Frequency: Every sample must be ran in duplicate.

Criteria: ≤ 20% RPD.

Corrective Action: footnote the sample duplicated with the canned footnote "D6" which states "The relative percent difference (RPD) between the sample and sample duplicate, exceeded laboratory control limits"

☐ **Matrix Spike:** Matrix spikes are similar to LCSs except that the analyte spikes are added to a second and third

☐ separate aliquot of the same client sample within an analytical batch. This enables the lab to assess matrix effects and field conditions.

Frequency: Must be analyzed once every 10 samples (1 per batch of ten samples).

Criteria: ± 20% (80 - 120 % rec) Recovery.

Corrective Action #1; footnote the Matrix Spike with the canned footnote "M1" which states "Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.".

☐ **Sample Validation:**

Pace Analytical™

Test: Total Chlorine

Method Number: SW-846 Method 9076

Sample #1: If the sample concentration is greater than the highest calibration standard, dilute the sample and reanalyze. The Konelab will perform this task once. If the result is still above the highest calibration standard, manually dilute and reanalyze the sample.

Sample #2: If the sample is initially analyzed at a dilution and the result is below the reporting limit, the sample must be analyzed with a lesser dilution or straight until the sample concentration is above the reporting limit. The exception to this rule is that there is a legitimate matrix interference. In this case, the sample must be qualified with the canned footnote **D3** "The sample was diluted to reduce matrix interference, resulting in elevated reporting limits."

Date Analyzed: Was the date analyzed entered correctly?

Dilutions: Is the dilution factor(s) posted correctly?

Remember to include the calibration in the data package.

Issues: Write any and all out of control issues below:

☐ I have reviewed the maintenance log.

To the best of my knowledge, all of the above information is correct and all supporting documentation has been provided.

Analyst: [signature] **Date:** 12-21-12

Reviewer: AES **Date:** 12/22/12

ENVIRONMENTAL SERVICES LABORATORY
JOB REPORT

TO: Ryan Vannice, TN - B-481

Report Date: 15-JAN-2013
Request Date: 15-JAN-2013

FROM: ENVIRONMENTAL SERVICES LABORATORY
Tennessee Eastman Division
Eastman Chemical Company
P. O. Box 511, B-54
Kingsport, TN 37662-5054
Phone: 423-229-2123
FAX: 423-229-3677

COPIES: ESL Archives, Rick Zimmerman

JOB NUMBER: ESL-12-2714

JOB DESCRIPTION: Process Samples - LCD CPT

==========

NARRATIVE

Contract:
Composite samples were sent to Pace Analytical for ICP metals, total chlorine, ash and Btu. ICP metals were determined by SW-846 Methods 3050/6010. Total chlorine was analyzed according to SW-846 Method 9076. Percent ash and Btu were done by ASTM methods D482-95 and D5468-02, respectively. All QA/QC data were within acceptable limits.

Inorganic:
Samples were analyzed for viscosity and density using ASTM Method D3236-88. All QA/QC was acceptable.

Conventional:
TSS analysis was conducted by using Standard Methods 2540D-1997. TDS analysis was conducted by using Standards Methods 2540C. All QA/QC data was within acceptable limits.

Sample Shipping/Receiving:
Grab samples from each feed were received at the Incineration Complex and taken to B-54, Lab 204 for compositing. Samples for each feed were then composited by run. Composite samples were split between two containers. One sample was sent to Pace Analytical for testing and the other was used for visocity or TSS/TDS testing as required. Samples were sent to Pace Analytical, via courier, in a cooler and on ice.

Sampling:
Grab samples were collected by Utilities Division personnel. Compositing was done by ESL personnel.

Please contact the Chemist/Job Coordinator for additional information regarding this work.

APPROVAL:

Melissa D. Wise
Job Coordinator

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Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: FUEL_092512_C01 (769948)
Sample Point: Fuel - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:36
Description: Fuel - Run 1

Test (Method) Components	CAS Number	Units	Result
ASH (ASTM D482)			
Ash		%	0.091
Date/Time Analyzed			18-DEC-2012 15:30
BTU (ASTM D5468)			
BTU		btu/lb	19310
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P (SW-846 9076)			
Chlorine, Percent		%	<0.010
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1 (SW-846 6010)			
Chromium	7440-47-3	ug/g	<0.49
Date/Time Analyzed			18-DEC-2012 18:26
PB_ICP1 (SW-846 6010)			
Lead	7439-92-1	ug/g	<0.49
Date/Time Analyzed			17-DEC-2012 22:20
DENSITY			
Density		g/mL	0.834
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY (ASTM D3236-88)			
Viscosity		SUS	37
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: FUEL_092512_C02 (769949)
Sample Point: Fuel - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:43
Description: Fuel - Run 2

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	0.016
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	17480
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	<0.010
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.50
Date/Time Analyzed			18-DEC-2012 18:32
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.50
Date/Time Analyzed			17-DEC-2012 22:26
DENSITY			
Density		g/mL	0.827
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	39
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: FUEL_092512_C03 (769950)
Sample Point: Fuel - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:48
Description: Fuel - Run 2 Dup

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	0.066
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	19280
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	<0.010
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.50
Date/Time Analyzed			18-DEC-2012 18:38
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.50
Date/Time Analyzed			17-DEC-2012 22:42
DENSITY			
Density		g/mL	0.826
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	35
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: FUEL_092512_C04 (769951)
Sample Point: Fuel - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:53
Description: Fuel - Run 3

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	<0.010
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	19240
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	<0.010
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.49
Date/Time Analyzed			18-DEC-2012 18:41
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.49
Date/Time Analyzed			17-DEC-2012 22:45
DENSITY			
Density		g/mL	0.824
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	36
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: EDA_092512_C01 (769952)
Sample Point: EDA - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 10:04
Description: EDA - Run 1

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	0.17
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	7910
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	0.024
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	206
Date/Time Analyzed			18-DEC-2012 18:56
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.48
Date/Time Analyzed			17-DEC-2012 22:51
DENSITY			
Density		g/mL	1.10
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	32
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: EDA_092512_C02 (769953)
Sample Point: EDA - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 10:09
Description: EDA - Run 2

Test / Components	(Method) / CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	0.16
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	7470
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	0.026
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	189
Date/Time Analyzed			18-DEC-2012 18:59
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.50
Date/Time Analyzed			17-DEC-2012 22:54
DENSITY			
Density		g/mL	1.10
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	32
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: EDA_092512_C03 (769954)
Sample Point: EDA - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 10:14
Description: EDA - Run 2 Dup

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	0.13
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	7910
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	0.020
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	189
Date/Time Analyzed			18-DEC-2012 19:03
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.49
Date/Time Analyzed			17-DEC-2012 22:57
DENSITY			
Density		g/mL	1.10
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	34
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: EDA_092512_C04 (769955)
Sample Point: EDA - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 10:20
Description: EDA - Run 3

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	0.14
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	7900
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	0.023
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	183
Date/Time Analyzed			18-DEC-2012 19:06
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.49
Date/Time Analyzed			17-DEC-2012 23:00
DENSITY			
Density		g/mL	1.10
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	34
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: SUR_AD01_092512_C01 (769956)
Sample Point: Surrogate - AD01 - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:10
Description: SUR_AD01 - Run 1

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	<0.010
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	6890
Date/Time Analyzed			18-DEC-2012 14:45
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	<0.010
Date/Time Analyzed			21-DEC-2012 17:00
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.49
Date/Time Analyzed			18-DEC-2012 19:12
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.49
Date/Time Analyzed			17-DEC-2012 23:07
DENSITY			
Density		g/mL	0.899
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	<32
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: SUR_AD01_092512_C02 (769957)
Sample Point: Surrogate - AD01 - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:12
Description: SUR_AD01 - Run 2

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	<0.010
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	6860
Date/Time Analyzed			18-DEC-2012 14:45
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	<0.010
Date/Time Analyzed			21-DEC-2012 17:00
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.49
Date/Time Analyzed			18-DEC-2012 19:15
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.49
Date/Time Analyzed			17-DEC-2012 23:20
DENSITY			
Density		g/mL	0.903
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	<32
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: SUR_AD01_092512_C03 (769958)
Sample Point: Surrogate - AD01 - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:19
Description: SUR_AD01 - Run 2 Dup

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	<0.010
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	6650
Date/Time Analyzed			18-DEC-2012 14:45
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	<0.010
Date/Time Analyzed			21-DEC-2012 17:00
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.50
Date/Time Analyzed			18-DEC-2012 19:18
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.50
Date/Time Analyzed			17-DEC-2012 23:23
DENSITY			
Density		g/mL	0.900
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	<32
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: SUR_AD01_092512_C04 (769959)
Sample Point: Surrogate - AD01 - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:25
Description: SUR_AD01 - Run 3

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	<0.010
Date/Time Analyzed			20-DEC-2012 14:50
BTU	(ASTM D5468)		
BTU		btu/lb	6870
Date/Time Analyzed			18-DEC-2012 14:45
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	<0.010
Date/Time Analyzed			21-DEC-2012 17:00
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.49
Date/Time Analyzed			18-DEC-2012 19:21
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.49
Date/Time Analyzed			17-DEC-2012 23:26
DENSITY			
Density		g/mL	0.900
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	<32
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: ASH_SPIKE_092512_C01 (769960)
Sample Point: Ash Spike
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 08:55
Description: ASH_SPK - Run 1

Test / Components	(Method) CAS Number	Units	Result
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.47
Date/Time Analyzed			18-DEC-2012 19:36
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.47
Date/Time Analyzed			17-DEC-2012 23:32
TDS	(SM 2540 C)		
Total Dis. Solids		mg/L	198000
Date/Time Analyzed			14-DEC-2012 17:35
TSS	(SM 2540 D-1997)		
Total Suspended Solids		mg/L	29.2
Date/Time Analyzed			14-DEC-2012 17:05

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: ASH_SPIKE_092512_C02 (769961)
Sample Point: Ash Spike
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 08:57
Description: ASH_SPK - Run 2

Test / Components	(Method) CAS Number	Units	Result
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.50
Date/Time Analyzed			18-DEC-2012 19:39
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.50
Date/Time Analyzed			17-DEC-2012 23:35
TDS	(SM 2540 C)		
Total Dis. Solids		mg/L	200000
Date/Time Analyzed			14-DEC-2012 17:35
TSS	(SM 2540 D-1997)		
Total Suspended Solids		mg/L	24.1
Date/Time Analyzed			14-DEC-2012 17:05

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: ASH_SPIKE_092512_C03 (769962)
Sample Point: Ash Spike
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 08:59
Description: ASH_SPK - Run 2 Dup

Test / Components	(Method) CAS Number	Units	Result
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.48
Date/Time Analyzed			18-DEC-2012 19:43
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.48
Date/Time Analyzed			17-DEC-2012 23:38
TDS	(SM 2540 C)		
Total Dis. Solids		mg/L	172000
Date/Time Analyzed			14-DEC-2012 17:35
TSS	(SM 2540 D-1997)		
Total Suspended Solids		mg/L	29.3
Date/Time Analyzed			14-DEC-2012 17:05

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: ASH_SPIKE_092512_C04 (769963)
Sample Point: Ash Spike
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:01
Description: ASH_SPK - Run 3

Test / Components	(Method) CAS Number	Units	Result
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.50
Date/Time Analyzed			18-DEC-2012 19:49
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.50
Date/Time Analyzed			17-DEC-2012 23:41
TDS	(SM 2540 C)		
Total Dis. Solids		mg/L	199000
Date/Time Analyzed			14-DEC-2012 17:35
TSS	(SM 2540 D-1997)		
Total Suspended Solids		mg/L	34.6
Date/Time Analyzed			14-DEC-2012 17:05

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: FUEL_121312_C01 (782323)
Sample Point: Fuel - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:58
Description: Fuel - Run 4

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	<0.010
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	17630
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	<0.010
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.49
Date/Time Analyzed			18-DEC-2012 18:53
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.49
Date/Time Analyzed			17-DEC-2012 22:48
DENSITY			
Density		g/mL	0.819
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	39
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: EDA_121312_C01 (782324)
Sample Point: EDA - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 10:26
Description: EDA - Run 4

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	0.13
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	7920
Date/Time Analyzed			17-DEC-2012 16:30
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	0.023
Date/Time Analyzed			19-DEC-2012 16:50
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	184
Date/Time Analyzed			18-DEC-2012 19:09
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.49
Date/Time Analyzed			17-DEC-2012 23:03
DENSITY			
Density		g/mL	1.10
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	33
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: SUR_AD01_121312_C01 (782325)
Sample Point: Surrogate - AD01 - B248
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:29
Description: SUR_AD01 - Run 4

Test / Components	(Method) CAS Number	Units	Result
ASH	(ASTM D482)		
Ash		%	<0.010
Date/Time Analyzed			18-DEC-2012 15:30
BTU	(ASTM D5468)		
BTU		btu/lb	6840
Date/Time Analyzed			18-DEC-2012 14:45
CHLORINE_P	(SW-846 9076)		
Chlorine, Percent		%	<0.010
Date/Time Analyzed			21-DEC-2012 17:00
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.47
Date/Time Analyzed			18-DEC-2012 19:33
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.47
Date/Time Analyzed			17-DEC-2012 23:29
DENSITY			
Density		g/mL	0.900
Date/Time Analyzed			18-DEC-2012 10:50
VISCOSITY	(ASTM D3236-88)		
Viscosity		SUS	33
Temperature (F)		Fahrenheit	80
Date/Time Analyzed			18-DEC-2012 11:15

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Sample ID: ASH_SPIKE_121312_C01 (782326)
Sample Point: Ash Spike
Sample Type: COMPOSITE
Sample Matrix: LIQUIDWAST
Sample Date: 13-DEC-2012 09:03
Description: ASH_SPK - Run 4

Test / Components	(Method) CAS Number	Units	Result
CR_ICP1	(SW-846 6010)		
Chromium	7440-47-3	ug/g	<0.50
Date/Time Analyzed			18-DEC-2012 19:56
PB_ICP1	(SW-846 6010)		
Lead	7439-92-1	ug/g	<0.50
Date/Time Analyzed			17-DEC-2012 23:44
TDS	(SM 2540 C)		
Total Dis. Solids		mg/L	201000
Date/Time Analyzed			14-DEC-2012 17:35
TSS	(SM 2540 D-1997)		
Total Suspended Solids		mg/L	28.3
Date/Time Analyzed			14-DEC-2012 17:05

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

Qualifier Flags and Description for Organic Analysis

U - Analyte not detected or concentration below the MDL.
J - Concentration estimated to be between the MDL and the EQL.
B - Analyte found in the method blank and the sample.
b - Found in a blank other than the method blank and the sample.
D - Concentration based upon secondary dilution.
E - Concentration exceeds the upper calibration range.
MS - Spiked into the matrix spike sample.
< - Lowest result reported with certainty.
ND - Not detected.
NS - No sample collected or received.
NA - Analysis not performed on the sample.

Qualifier Flags and Description for Inorganic and Metals Analysis

< - Lowest result reported with certainty.

Qualifier Flags and Description for IC, GC, and LC

J - Concentration estimated to be between the MDL and EQL.
D - Concentration based upon secondary dilution.
< - Not detected or concentration is below the lowest calibration standard.
NS - No sample collected or received.
NA - Analysis not performed on the sample.

Qualifier Flags and Description for Water Monitoring

< - Not detected or concentration is below the MDL.
ND - Not detected.
NS - No sample collected or received.
NA - Analysis not performed on the sample.

Qualifier Flags and Description for Special Projects

< - Not detected or concentration is below the MDL.
ND - Not detected.
NS - No sample collected or received.
NA - Analysis not performed on the sample.
N/A- Not applicable.

Comparison Table of Units

ppm (parts per million)
weight mg/kg ug/g ng/mg
volume mg/L ug/mL ng/uL
ppb (parts per billion)

Data results listed under sample id relate only to that sample.

Customer: Ryan Vannice, TN - B-481
Job Name: ESL_12_2714
Coordinator: Wise Melissa L
Description: Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB

weight	ug/kg	ng/g	pg/mg
volume	ug/L	ng/mL	pg/uL

ppt (parts per trillion)

weight	ng/kg	pg/g	fg/mg
volume	ng/L	pg/mL	fg/uL

ppq (parts per quadrillion)

weight	pg/kg	fg/g	ag/mg
volume	pg/L	fg/mL	ag/uL

End

Analysis Worksheet : TSS_2297 Signature: Jeff Bolen Date: 12-14-12

Analysis ID : TSS Description : * Total Suspended Solids in Water and Wastewater Samples
ESL Method : THSE-A-ES-9001-GA-3
Group : ROUTINE

The following results are required from this analysis :

Result Number	Name of Component	Expected Range Minimum value	Maximum value
1	Initial Weight	0.00g	0.00g
2	Final Weight	0.00g	0.00g
3	Volume	0.00mL	0.00mL
4	TSS Result	Type = K	
5	Total Suspended Solids	Type = K	
6	Date/Time Analyzed	Type = D	
7	Date TSS Analyzed	Type = K	

The following samples are to be analysed:

Sample ID R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results (Lot # T11684)	
769960/1	ASH_SPIKE_092512_C01 / ASH_SPK - Run 1 / ESL_12_2714 / 1261		Initial Weight	= .1175
			Final Weight	= .1467
			Volume	= 1000
			TSS Result	= 29.2
			Total Suspended Solids	= 29.2
			Date/Time Analyzed	= 12-14-12|1705
			Date TSS Analyzed	= 20121214
769961/1	ASH_SPIKE_092512_C02 / ASH_SPK - Run 2 / ESL_12_2714 / 1261		Initial Weight	= .1168
			Final Weight	= .1409
			Volume	= 1000
			TSS Result	= 24.1
			Total Suspended Solids	= 24.1
			Date/Time Analyzed	= 12-14-12|1705
			Date TSS Analyzed	= 20121214
769962/1	ASH_SPIKE_092512_C03 / ASH_SPK - Run 2 Dup / ESL_12_2714 / 1261		Initial Weight	= .1167
			Final Weight	= .1460
			Volume	= 1000
			TSS Result	= 29.3
			Total Suspended Solids	= 29.3
			Date/Time Analyzed	= 12-14-12|1705

Sample ID R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results	
			Date TSS Analyzed	= 20121214
769963/1	ASH_SPIKE_092512_C04		Initial Weight	= .1229
	ASH_SPK - Run 3		Final Weight	= .1575
	ESL_12_2714		Volume	= 1000
	1261		TSS Result	= 34.6
			Total Suspended Solids	= 34.6
			Date/Time Analyzed	= 12-14-12/1705
			Date TSS Analyzed	= 20121214
782326/1	ASH_SPIKE_121312_C01		Initial Weight	= .1240
	ASH_SPK - Run 4		Final Weight	= .1523
	ESL_12_2714		Volume	= 1000
	1261		TSS Result	= 28.3
			Total Suspended Solids	= 28.3
			Date/Time Analyzed	= 12-14-12/1705
			Date TSS Analyzed	= 20121214

MB ⇒ ESL-12-3500

End of Analysis Worklist.

Analysis Worksheet : TDS_102 Signature: Jill Baker Date: 12-14-12

Analysis ID : TDS Description : * Total Dissolved Solids in Water and Wastewater Samples
ESL Method : THSE-A-ES-9001-GA-12
Group : ROUTINE

The following results are required from this analysis :

Result Number	Name of Component	Expected Range Minimum value	Maximum value
1	Initial Weight	0.00g	0.00g
2	Final Weight	0.00g	0.00g
3	Volume	0.00mL	0.00mL
4	TDS Result	Type = K	
5	Total Dis. Solids	Type = K	
6	Date/Time Analyzed	Type = D	
7	Date TDS Analyzed	Type = K	

The following samples are to be analysed:

Sample ID	R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results	
769960/1		ASH_SPIKE_092512_C01 ASH_SPK - Run 1 ESL_12_2714 1261		Initial Weight Final Weight Volume TDS Result Total Dis. Solids Date/Time Analyzed Date TDS Analyzed	= 52,0729 = 61,9721 = 50 = 198000 = 198000 = 12-14-12 / 1735 = 20121214
769961/1		ASH_SPIKE_092512_C02 ASH_SPK - Run 2 ESL_12_2714 1261		Initial Weight Final Weight Volume TDS Result Total Dis. Solids Date/Time Analyzed Date TDS Analyzed	= 52,4429 = 62,4657 = 50 = 200000 = 200000 = 12-14-12 / 1735 = 20121214
769962/1		ASH_SPIKE_092512_C03 ASH_SPK - Run 2 Dup ESL_12_2714 1261		Initial Weight Final Weight Volume TDS Result Total Dis. Solids Date/Time Analyzed	= 49,9979 = 58,6195 = 50 = 172000 = 172000 = 12-14-12 / 1735

Sample ID R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results	
			Date TDS Analyzed	= 20121214
769963/1	ASH_SPIKE_092512_C04		Initial Weight	= 50.8980
	ASH_SPK - Run 3		Final Weight	= 60.8248
	ESL_12_2714		Volume	= 50
	1261		TDS Result	= 199000
			Total Dis. Solids	= 199000
			Date/Time Analyzed	= 12-14-12|1735
			Date TDS Analyzed	= 20121214
782326/1	ASH_SPIKE_121312_C01		Initial Weight	= 49.2861
	ASH_SPK - Run 4		Final Weight	= 59.3140
	ESL_12_2714		Volume	= 50
	1261		TDS Result	= 201000
			Total Dis. Solids	= 201000
			Date/Time Analyzed	= 12-14-12|1735
			Date TDS Analyzed	= 20121214

MB - Init. Wght 41.6121
Final Wght 41.6122
Volume 50
TDS Result <10
Total Dis. Solids <10
Date/Time Analyzed 12-14-12/1735
Date TDS Analyzed 20121214

End of Analysis Worklist.

Analysis Worksheet : VISCOSITY_3355 Signature: Jim Corder Date: 12/18/12

Analysis ID : VISCOSITY Description : * Determination of Viscosity of Waste Materials
ESL Method : THSE-A-ES-G-V-3
Group : ORGANICS

The following results are required from this analysis :

Result Number	Name of Component	Expected Range Minimum value	Maximum value
1	Viscosity	0.00SUS	0.00SUS
2	Temperature (F)	0.00Fahrenh	0.00Fahrenh
3	Date/Time Analyzed	Type = D	

The following samples are to be analysed:

Sample ID R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results	
769948/1	FUEL_092512_C01 / Fuel - Run 1 / ESL_12_2714 / 1261		Viscosity = 37 ✓ Temperature (F) = 80° Date/Time Analyzed = 12-18-12 ---------- = 11:15	
769949/1	FUEL_092512_C02 / Fuel - Run 2 / ESL_12_2714 / 1261		Viscosity = 39 ✓ Temperature (F) = 80° Date/Time Analyzed = 12-18-12 ---------- = 11:15	
769950/1	FUEL_092512_C03 / Fuel - Run 2 Dup / ESL_12_2714 / 1261		Viscosity = 35 ✓ Temperature (F) = 80° Date/Time Analyzed = 12-18-12 ---------- = 11:15	
769951/1	FUEL_092512_C04 / Fuel - Run 3 / ESL_12_2714 / 1261		Viscosity = 36 ✓ Temperature (F) = 80° Date/Time Analyzed = 12-18-12 ---------- = 11:15	
769952/1	EDA_092512_C01 / EDA - Run 1 / ESL_12_2714 / 1261		Viscosity = 32 ✓ Temperature (F) = 80° Date/Time Analyzed = 12-18-12 ---------- = 11:15	

Sample ID R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results		
769953/1	EDA_092512_C02 EDA - Run 2 ESL_12_2714 1261		Viscosity Temperature (F) Date/Time Analyzed ----------	= 32 = 80° = 12-18-12 = 11:15	✓
769954/1	EDA_092512_C03 EDA - Run 2 Dup ESL_12_2714 1261		Viscosity Temperature (F) Date/Time Analyzed ----------	= 34 = 80° = 12-18-12 = 11:15	✓
769955/1	EDA_092512_C04 EDA - Run 3 ESL_12_2714 1261		Viscosity Temperature (F) Date/Time Analyzed ----------	= 34 = 80° = 12-18-12 = 11:15	✓
769956/1	SUR_AD01_092512_C01 SUR_AD01 - Run 1 ESL_12_2714 1261		Viscosity Temperature (F) Date/Time Analyzed ----------	= <32 = 80° = 12-18-12 = 11:15	✓
769957/1	SUR_AD01_092512_C02 SUR_AD01 - Run 2 ESL_12_2714 1261		Viscosity Temperature (F) Date/Time Analyzed ----------	= <32 = 80° = 12-18-12 = 11:15	✓
769958/1	SUR_AD01_092512_C03 SUR_AD01 - Run 2 Dup ESL_12_2714 1261		Viscosity Temperature (F) Date/Time Analyzed ----------	= <32 = 80° = 12-18-12 = 11:15	✓
769959/1	SUR_AD01_092512_C04 SUR_AD01 - Run 3 ESL_12_2714 1261		Viscosity Temperature (F) Date/Time Analyzed ----------	= <32 = 80° = 12-18-12 = 11:15	✓
782323/1	FUEL_121312_C01 Fuel - Run 4 ESL_12_2714 1261		Viscosity Temperature (F) Date/Time Analyzed ----------	= 39 = 80° = 12-18-12 = 11:15	✓
782324/1	EDA_121312_C01 EDA - Run 4 ESL_12_2714 1261		Viscosity Temperature (F) Date/Time Analyzed ----------	= 33 = 80° = 12-18-12 = 11:15	✓

Sample ID	R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results	
782325/1		SUR_AD01_121312_C01		Viscosity	= 33
		SUR_AD01 - Run 4		Temperature (F)	= 80° ✓
		ESL_12_2714		Date/Time Analyzed	= 12-18-13
		1261		----------	= 11:15

End of Analysis Worklist.

Analysis Worksheet : DENSITY_7 Signature: Jim Corder Date: 12-18-12

Analysis ID : DENSITY Description : * Determination of Density for Waste Chemicals
ESL Method :
Group : INORGANICS

The following results are required from this analysis :

Result Number	Name of Component	Expected Range Minimum value	Maximum value
1	Density	0.00g/mL	0.00g/mL
2	Date/Time Analyzed	Type = D	

The following samples are to be analysed:

Sample ID R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results	
769948/1	FUEL_092512_C01 / Fuel - Run 1 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed =	0.834
769949/1	FUEL_092512_C02 / Fuel - Run 2 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed =	0.827
769950/1	FUEL_092512_C03 / Fuel - Run 2 Dup / ESL_12_2714 / 1261		Density = / Date/Time Analyzed =	0.826
769951/1	FUEL_092512_C04 / Fuel - Run 3 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed =	0.824
769952/1	EDA_092512_C01 / EDA - Run 1 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed =	1.10

Sample ID R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results	
769953/1	EDA_092512_C02 / EDA - Run 2 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed = / ---------- = / ---------- =	1.10
769954/1	EDA_092512_C03 / EDA - Run 2 Dup / ESL_12_2714 / 1261		Density = / Date/Time Analyzed = / ---------- = / ---------- =	1.10
769955/1	EDA_092512_C04 / EDA - Run 3 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed = / ---------- = / ---------- =	1.10
769956/1	SUR_AD01_092512_C01 / SUR_AD01 - Run 1 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed = / ---------- = / ---------- =	0.899
769957/1	SUR_AD01_092512_C02 / SUR_AD01 - Run 2 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed = / ---------- = / ---------- =	0.903
769958/1	SUR_AD01_092512_C03 / SUR_AD01 - Run 2 Dup / ESL_12_2714 / 1261		Density = / Date/Time Analyzed = / ---------- = / ---------- =	0.900
769959/1	SUR_AD01_092512_C04 / SUR_AD01 - Run 3 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed = / ---------- = / ---------- =	0.900
782323/1	FUEL_121312_C01 / Fuel - Run 4 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed = / ---------- = / ---------- =	0.819
782324/1	EDA_121312_C01 / EDA - Run 4 / ESL_12_2714 / 1261		Density = / Date/Time Analyzed = / ---------- = / ---------- =	1.10

Sample ID R	Sample Text ID / Description / Job Name / Cost Center	Dept Code / Instrument	Actual Results	
782325/1	SUR_AD01_121312_C01		Density	= 0.900
	SUR_AD01 - Run 4		Date/Time Analyzed	=
	ESL_12_2714		----------	=
	1261		----------	=

End of Analysis Worklist.

Sample ID	Viscometer Reading	Weight of 4mL, g	Temp	Centipoise	Density	Centistokes	SUS @ 100°F	SUS	Out of Range
769948	3.06	3.334	80	3.06	0.8335	3.7	37.3	37	
769949	3.51	3.307	80	3.51	0.82675	4.2	39.4	39	
769950	2.4	3.304	80	2.4	0.826	2.9	34.6	35	
769951	2.7	3.297	80	2.7	0.82425	3.3	35.9	36	
769952	2.45	4.392	80	2.45	1.098	2.2	32.1	32	
769953	2.3	4.414	80	2.3	1.1035	2.1	31.6	32	
769954	3.01	4.415	80	3.01	1.10375	2.7	33.9	34	
769955	2.91	4.407	80	2.91	1.10175	2.6	33.6	34	
769956	1.55	3.597	80	2	0.89925	2.2	32.1	32	<
769957	1.6	3.61	80	2	0.9025	2.2	32.1	32	<
769958	1.3	3.599	80	2	0.89975	2.2	32.1	32	<
769959	1.25	3.6	80	2	0.9	2.2	32.1	32	<
782323	3.51	3.277	80	3.51	0.81925	4.3	39.5	39	
782324	2.65	4.387	80	2.65	1.09675	2.4	32.8	33	
782325	2.15	3.598	80	2.15	0.8995	2.4	32.7	33	

Sample ID	Viscometer Reading	Weight of 4mL, g	Temp	Centipoise	Density	Centistokes	SUS @ 100°F	SUS	Out of Range
769948	3.06	3.334	80	3.06	0.8335	3.7	37.3	37	
769949	3.51	3.307	80	3.51	0.82675	4.2	39.4	39	
769950	2.4	3.304	80	2.4	0.826	2.9	34.6	35	
769951	2.7	3.297	80	2.7	0.82425	3.3	35.9	36	
769952	2.45	4.392	80	2.45	1.098	2.2	32.1	32	
769953	2.3	4.414	80	2.3	1.1035	2.1	31.6	32	
769954	3.01	4.415	80	3.01	1.10375	2.7	33.9	34	
769955	2.91	4.407	80	2.91	1.10175	2.6	33.6	34	
769956	1.55	3.597	80	2	0.89925	2.2	32.1	32	<
769957	1.6	3.61	80	2	0.9025	2.2	32.1	32	<
769958	1.3	3.599	80	2	0.89975	2.2	32.1	32	<
769959	1.25	3.6	80	2	0.9	2.2	32.1	32	<
782323	3.51	3.277	80	3.51	0.81925	4.3	39.5	39	
782324	2.65	4.387	80	2.65	1.09675	2.4	32.8	33	
782325	2.15	3.598	80	2.15	0.8995	2.4	32.7	33	

C H A I N - O F - C U S T O D Y

Environmental Services Laboratory
Tennessee Eastman Division
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All samples meet sample receipt criteria as detailed in THSE-ESL-WTR-3005 unless otherwise noted in comments.

LIMS Job ID: ESL_12_2714 Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
SUR_AD01_092512_C01 769956 SUR AD01 - Run 1	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 0910	sign: date: time: 12-13-12 11:00	sign: date: time:	sign: date: time:
SUR_AD01_092512_C02 769957 SUR AD01 - Run 2	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 0913	sign: date: time:	sign: date: time:	sign: date: time:
SUR_AD01_092512_C03 769958 SUR AD01 - Run 2 Dup	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 0919	sign: date: time:	sign: date: time:	sign: date: time:
SUR_AD01_092512_C04 769959 SUR AD01 - Run 3	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 0925	sign: date: time:	sign: date: time:	sign: date: time:
SUR_AD01_121312_C01 782325 SUR AD01 - Run 4	8 oz. poly, 4degC (VISCOSITY)	sign: date: time: 12-13-12 0929	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

(CHAIN_SMP_SEL_3RECD)

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LIMS Job ID: ESL_12_2714 Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB
Cost Center: 1261

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	Product Id: ANALYSIS/ CONTAINER/ PRESERVATIVE	Stream Id: SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
EDA_092512_C01 769952 EDA - Run 1	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 1004	sign: date: time: 12-13-12 11:00	sign: date: time:	sign: date: time:
EDA_092512_C02 769953 EDA - Run 2	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 1009	sign: date: time:	sign: date: time:	sign: date: time:
EDA_092512_C03 769954 EDA - Run 2 Dup	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 1014	sign: date: time:	sign: date: time:	sign: date: time:
EDA_092512_C04 769955 EDA - Run 3	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 1020	sign: date: time:	sign: date: time:	sign: date: time:
EDA_121312_C01 782324 EDA - Run 4	8 oz. poly, 4degC (VISCOSITY)	sign: date: time: 12-13-12 1026	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

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LIMS Job ID: ESL_12_2714 Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
FUEL_092512_C01 769948 Fuel - Run 1	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 0936	sign: date: time: 12-13-12 11:00	sign: date: time:	sign: date: time:
FUEL_092512_C02 769949 Fuel - Run 2	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 0943	sign: date: time:	sign: date: time:	sign: date: time:
FUEL_092512_C03 769950 Fuel - Run 2 Dup	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 0948	sign: date: time:	sign: date: time:	sign: date: time:
FUEL_092512_C04 769951 Fuel - Run 3	8 oz. poly,4degC (VISCOSITY)	sign: date: time: 12-13-12 0953	sign: date: time:	sign: date: time:	sign: date: time:
FUEL_121312_C01 782323 Fuel - Run 4	8 oz. poly, 4degC (VISCOSITY)	sign: date: time: 12-13-12 0958	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

(CHAIN_SMP_SEL_3RECD)

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LIMS Job ID: ESL_12_2714 Process Samples - LCD CPT Job created on 25-SEP-2012 10:07 by L793116 using ESL_JOB
Cost Center: 1261 Product Id: Stream Id:

SAMPLE TEXT ID/ SAMPLE NUMERIC ID/ SAMPLE DESCRIPTION	ANALYSIS/ CONTAINER/ PRESERVATIVE	SAMPLED BY SIGNATURE/ SAMPLED	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME	RECEIVED SIGNATURE/ DATE & TIME
ASH_SPIKE_092512_C01 769960 ASH SPK - Run 1	1 L poly,4degC (TSS/TDS)	sign: date: time: 12-13-12 0855	sign: date: time: 12-13-12 11:00	sign: date: time:	sign: date: time:
ASH_SPIKE_092512_C02 769961 ASH SPK - Run 2	1 L poly,4degC (TSS/TDS)	sign: date: time: 12-13-12 0857	sign: date: time:	sign: date: time:	sign: date: time:
ASH_SPIKE_092512_C03 769962 ASH SPK - Run 2 Dup	1 L poly,4degC (TSS/TDS)	sign: date: time: 12-13-12 0859	sign: date: time:	sign: date: time:	sign: date: time:
ASH_SPIKE_092512_C04 769963 ASH SPK - Run 3	1 L poly,4degC (TSS/TDS)	sign: date: time: 12-13-12 0901	sign: date: time:	sign: date: time:	sign: date: time:
ASH_SPIKE_121312_C01 782326 ASH SPK - Run 4	1 L poly, 4degC (TSS/TDS)	sign: date: time: 12-13-12 0903	sign: date: time:	sign: date: time:	sign: date: time:

COMMENTS: _____

Viscosity Data Sheet

Date 12-18-12

Calibration Standards
9.17 @ 80 degrees
_____ @ 212 degrees

Sample ID	Instrument Reading	Sample Wt.	Temp.
781033	2.81	3.751	80°
781034	0.70	3.361	80°
782473	1.80	3.089	80°
769948	3.06	3.334	80°
769949	3.51	3.307	80°
769950	2.40	3.304	80°
769951	2.70	3.297	80°
769952	2.45	4.392	80°
769953	2.30	4.414	80°
769954	3.01	4.415	80°

Viscosity Data Sheet

Date 12-18-12

Calibration Standards

_____ @ 80 degrees

28.6 @ 212 degrees

Sample ID	Instrument Reading	Sample Wt.	Temp.
769955	2.91	4.407	80°
769956	1.55	3.597	80°
769957	1.60	3.610	80°
769958	1.30	3.599	80°
769959	1.25	3.600	80°
782323	3.51	3.277	80°
782324	2.65	4.387	80°
782325	2.15	3.598	80°
781030	7.06	3.599	150°
776398	48.9	4.060	220°

12/11/12

Time	Flow	Time	Flow	
11:18 Am	15.6	11:44	17.9	32,283
11:19	16.5	11:45	17.9	
11:20	15.9	11:46	18.2	
11:21	16.1	11:47	18.2	
11:22	16.2	11:48	18.2	
11:23	16.2	11:49	18.2	
11:24	16.1	11:50	17.3	
11:25	16.4	11:51	17.3	
11:26	16.4	11:52	17.3	
11:27	16.5	11:53	17.3	
11:28	16.7	11:54	17.3	
11:29	17.1	11:55	17.3	
11:30	17.3	11:56	17.3	
11:31	17.3	11:57	17.3	
11:32	17.3	11:58	17.3	
11:33	17.4	11:59	17.3	
11:34	17.4	12:00 pm	17.1	
11:35	17.6	12:01 PM	17.1	
11:36	17.6	12:02	17.1	
11:37	17.7	12:03	17.1	
11:38	17.7	12:04	17.1	
11:39	17.6	12:05	17.1	
11:40	17.6	12:06	17.1	Mustafa Ahmed
11:41	17.6	12:07	17.1	Tony Crawford
11:42	17.7	12:08	17.1	Brent Miller
11:43	17.9	12:09	17.1	

12/11/12

Time	Flow	Time	Flow
[redacted]			
12:10 PM	17.1	12:37 PM	17.1
12:11	17.1	12:38	17.1
12:12	17.1	12:39	17.1
12:13	17.1	12:40	17.1
12:14	17.1	12:41	17.1
12:15	17.1	12:42	17.1
12:16	17.1	12:43	17.1
12:17	17.1	12:44	17.1
12:18	17.1	12:45	17.0
12:19	17.1	12:46	17.0
12:20	17.1	12:47	17.0
12:21	17.1	12:48	17.0
12:22	17.4	12:49	17.0
12:23	17.1	12:50	16.8
12:24	17.4	12:51	16.8
12:25	17.1	12:52	17.0
12:26	17.4	12:53	17.1
12:27	17.4	12:54	17.1
12:28	17.4	12:55	17.3
12:29	17.4	12:56	17.3
12:30	17.1	12:57	17.3
12:31	17.1	12:58	17.3
12:32	17.1	[redacted] 12:59	17.1
12:33	17.1	[redacted] 1:00	17.1
12:34	17.0	[redacted] 1:01	17.1
12:35	17.1	[redacted] 1:02	17.1
12:36	17.1	[redacted] 1:03	16.8

12/11/12

Time	Flow	Time	Flow
1:04 PM	16.8	1:31 PM	18.3
1:05	16.8	1:32	18.0
1:06	17.0	1:33	17.7
1:07	17.1	1:34	18.0
1:08	17.1	1:35	17.7
1:09	17.1	1:36	17.7
1:10	17.1	1:37	17.9
1:11	17.1	1:38	17.7
1:12	17.1	1:39	17.7
1:13	17.1	1:40	17.7
1:14	17.3	1:41	18.0
1:15	17.4	1:42	18.0
1:16	17.4	1:43	18.0
1:17	17.7	1:44	18.0
1:18	17.7	1:45	18.0
1:19	17.7	1:46	18.0
1:20	18.0	1:47	18.0
1:21	18.3	1:48	18.0
1:22	18.0	1:49	18.0
1:23	18.0	1:50	18.0
1:24	18.0	1:51	18.0
1:25	18.0	1:52	18.0
1:26	18.3	1:53	18.0
1:27	18.0	1:54	18.0
1:28	18.0	1:55	18.0
1:29	18.0	1:56	18.0
1:30	18.0	1:57	18.0

12/11/12

Time	Flow	Time	Flow
1:58 PM	18.0	2:25 PM	17.0
1:59	17.7	2:26	17.0
2:00	17.7	2:27	17.0
2:01	17.7	2:28	17.0
2:02	17.9	2:29	17.1
2:03	17.9	2:30	17.1
2:04	17.9	2:31	17.3
2:05	17.9	2:32	17.3
2:06	17.9	2:33	17.3
34802 2:07	18.0	2:34	17.3
2:08	18.0	2:35	17.3
2:09	18.2	2:36	17.3
2:10	18.3	2:37	17.3
2:11	19.1	2:38	17.3
2:12	17.9	2:39	17.3
2:13	17.4	2:40	17.3
2:14	17.0	2:41	17.3 35391
2:15	16.7	2:42	17.3
2:16	16.5	2:43	17.3
2:17	16.4	2:44	17.3
2:18	16.2	2:45	17.3
2:19	16.2	2:46	17.3
2:20	16.4	2:47	17.1
2:21	16.4	2:48	17.1
2:22	16.4	2:49	17.1
2:23	16.4	2:50	17.1
2:24	16.4	2:51	17.1

12/11/12

Time	Flow	Time	Flow	
2:52 PM	17.1	3:19 PM	17.3	
35,601 2:53 PM	17.1	3:20 PM	17.3	
2:54 PM	17.1	3:21 PM	17.3	
2:55 PM	17.0	3:22 PM	17.3	36,109
2:56 PM	17.0	3:23 PM	17.3	
2:57 PM	17.0	3:24 PM	17.3	36,141
2:58 PM	17.1	3:25 PM	17.3	Zero totalizer
2:59 PM	17.1	3:26 PM	17.3	
3:00 PM	17.3	3:27 PM	17.1	
3:01 PM	17.4	3:28 PM	17.1	
3:02 PM	17.4	3:29 PM	17.3	
3:03 PM	17.4	3:30 PM	17.3	
3:04 PM	17.4	3:31 PM	17.3	
35,811 3:05 PM	17.4	3:32 PM	17.3	
3:06 PM	17.4	3:33 PM	17.1	
3:07 PM	17.4	3:34 PM	17.1	
3:08 PM	17.4	3:35 PM	17.1	
3:09 PM	17.4	3:36 PM	17.1	
3:10 PM	17.4	3:37 PM	17.1	
3:11 PM	17.4	3:38 PM	17.1	
3:12 PM	17.4	3:39 PM	17.1	
3:13 PM	17.4	3:40 PM	17.1	
3:14 PM	17.3	3:41 PM	17.1	
3:15 PM	17.3	3:42 PM	17.1	
3:16 PM	17.3	3:43 PM	17.3	
3:17 PM	17.4	3:44 PM	17.3	
3:18 PM	17.3	3:45 PM	17.3	

	Time	Flow	Time	Flow	
	3:46 pm	17.3	4:13 pm	17.3	
	3:47 pm	17.3	4:14 pm	17.3	
	3:48 pm	17.3	4:15 pm	17.3	
	3:49 pm	17.3	4:16 pm	17.3	
	3:50 pm	17.3	4:17 pm	17.3	
	3:51 pm	17.3	4:18 pm	17.3	
	3:52 pm	17.3	4:19 pm	17.3	
	3:53 pm	17.3	4:20 pm	17.3	
	3:54 pm	17.4	4:21 pm	17.3	
	3:55 pm	17.4	4:22 pm	17.3	
	3:56 pm	17.4	4:23 pm	17.3	
	3:57 pm	17.3	4:24 pm	17.3	
	3:58 pm	17.3	4:25 pm	17.4	
	3:59 pm	17.3	4:26 pm	17.3	
596 lbs.	4:00 pm	17.3	4:27 pm	17.3	
	4:01 pm	17.3	4:28 pm	17.4	278 lbs
	4:02 pm	17.3	4:29 pm	17.4	
	4:03 pm	17.3	4:30 pm	17.4	
	4:04 pm	17.4	4:31 pm	17.4	
	4:05 pm	17.3	4:32 pm	17.4	
	4:06 pm	17.4	4:33 pm	17.4	
	4:07 pm	17.3	4:34 pm	17.4	
	4:08 pm	17.4	4:35 pm	17.4	
	4:09 pm	17.4	4:36 pm	17.4	
	4:10 pm	17.4	4:37 pm	17.4	
	4:11 pm	17.3	4:38 pm	17.4	
804 lbs	4:12 pm	17.3	4:39 pm	17.4	468 lbs.

zero totalizer

12/11/12

Time	Flow	Time	Flow	Time	Flow	Time	Flow
4:40 PM	17.4	5:25 PM	17.4	6:10 PM	17.1	6:55 PM	17.1
4:41 PM	17.4	5:26 PM	17.4	6:11 PM	17.1	6:56 PM	17.1
4:42 PM	17.4	5:27 PM	17.4	6:12 PM	17.1	6:57 PM	17.1
4:43 PM	17.4	5:28 PM	17.4	6:13 PM	17.1	6:58 PM	17.1
4:44 PM	17.4	5:29 PM	17.4	6:14 PM	17.1	6:59 PM	17.1
4:45 PM	17.4	5:30 PM	17.4	6:15 PM	16.8	7:00 PM	17.1
4:46 PM	17.4	5:31 PM	17.1	6:16 PM	16.8	7:01 PM	17.1
4:47 PM	17.4	5:32 PM	17.1	6:17 PM	17.1	7:02 PM	17.1
4:48 PM	17.4	5:33 PM	17.1	6:18 PM	17.1	7:03 PM	17.1
4:49 PM	17.4	5:34 PM	17.1	6:19 PM	17.1	7:04 PM	17.4
4:50 PM	17.4	5:35 PM	17.1	6:20 PM	17.1	7:05 PM	17.7
4:51 PM	17.4	5:36 PM	17.1	6:21 PM	17.4	7:06 PM	18.0
4:52 PM	17.4	5:37 PM	17.1	6:22 PM	17.1	7:07 PM	18.2
4:53 PM	17.4	5:38 PM	17.1	6:23 PM	17.4	7:08 PM	18.3
4:54 PM	17.4	5:39 PM	17.4	6:24 PM	17.4	7:09 PM	18.5
4:55 PM	17.4	5:40 PM	17.4	6:25 PM	17.4	7:10 PM	18.0
4:56 PM	17.4	5:41 PM	17.4	6:26 PM	17.1	7:11 PM	17.7
4:57 PM	17.4	5:42 PM	17.4	6:27 PM	17.1	7:12 PM	17.7
4:58 PM	17.4	5:43 PM	17.4	6:28 PM	17.1	7:13 PM	17.9
4:59 PM	17.4	5:44 PM	17.1	6:29 PM	17.1	7:14 PM	17.9
5:00 PM	17.4	5:45 PM	17.4	6:30 PM	17.1	7:15 PM	17.9
5:01 PM	17.4	5:46 PM	17.4	6:31 PM	17.1	7:16 PM	17.9
5:02 PM	17.4	5:47 PM	17.4	6:32 PM	17.1	7:17 PM	18.0
5:03 PM	17.4	5:48 PM	17.4	6:33 PM	17.1	7:18 PM	18.0
5:04 PM	17.4	5:49 PM	17.4	6:34 PM	17.1	7:19 PM	18.0
5:05 PM	17.4	5:50 PM	17.4	6:35 PM	17.1	7:20 PM	18.0
5:06 PM	17.4	5:51 PM	17.1	6:36 PM	17.1	7:21 PM	18.0
5:07 PM	17.4	5:52 PM	17.4	6:37 PM	17.1	7:22 PM	18.0
5:08 PM	17.4	5:53 PM	17.4	6:38 PM	17.1	7:23 PM	18.0
5:09 PM	17.4	5:54 PM	17.4	6:39 PM	17.1	7:24 PM	18.0
5:10 PM	17.4	5:55 PM	17.1	6:40 PM	17.1	7:25 PM	18.0
5:11 PM	17.4	5:56 PM	17.1	6:41 PM	17.1	7:26 PM	18.0
5:12 PM	17.4	5:57 PM	17.1	6:42 PM	17.1	7:27 PM	18.0
5:13 PM	17.4	5:58 PM	17.1	6:43 PM	17.1	7:28 PM	18.0
5:14 PM	17.4	5:59 PM	17.1	6:44 PM	17.1	7:29 PM	18.0
5:15 PM	17.4	6:00 PM	17.1	6:45 PM	17.0	7:30 PM	18.0
5:16 PM	17.4	6:01 PM	17.1	6:46 PM	17.0	7:31 PM	18.0
5:17 PM	17.4	6:02 PM	17.1	6:47 PM	17.0	7:32 PM	18.0
5:18 PM	17.4	6:03 PM	17.1	6:48 PM	17.0	7:33 PM	18.0
5:19 PM	17.4	6:04 PM	17.1	6:49 PM	17.0	7:34 PM	18.0
5:20 PM	17.4	6:05 PM	17.1	6:50 PM	16.8	7:35 PM	18.0
5:21 PM	17.4	6:06 PM	16.8	6:51 PM	17.1	7:36 PM	18.0
5:22 PM	17.4	6:07 PM	17.1	6:52 PM	17.1	7:37 PM	18.0
5:23 PM	17.4	6:08 PM	17.1	6:53 PM	17.1	7:38 PM	18.0
5:24 PM	17.4	6:09 PM	17.1	6:54 PM	17.1	7:39 PM	18.0

2807

765

3109

1011

3381

Run 3 8411

12/11/12

Time	Flow	Time	Flow	Time	Flow	Time	Flow
7:40 PM	18.0	8:25 PM	18.0	9:10 PM	18.3	9:55 PM	18.9
7:41 PM	18.0	8:26 PM	18.0	9:11 PM	18.3	9:56 PM	18.8
7:42 PM	18.0	8:27 PM	17.7	9:12 PM	18.3	9:57 PM	18.8
7:43 PM	18.0	8:28 PM	18.0	9:13 PM	18.3	9:58 PM	18.8
7:44 PM	18.0	8:29 PM	17.7	9:14 PM	18.3	9:59 PM	18.6
7:45 PM	18.0	8:30 PM	17.7	9:15 PM	18.3	10:00 PM	18.6
7:46 PM	18.0	8:31 PM	18.0	9:16 PM	18.3	10:01 PM	18.6
7:47 PM	18.0	8:32 PM	18.0	9:17 PM	18.3	10:02 PM	18.6
7:48 PM	18.0	8:33 PM	18.0	9:18 PM	18.3	10:03 PM	18.6
7:49 PM	17.9	8:34 PM	18.0	9:19 PM	18.3	10:04 PM	18.8
7:50 PM	17.9	8:35 PM	18.0	9:20 PM	18.6	10:05 PM	18.8
7:51 PM	17.9	8:36 PM	18.3	9:21 PM	18.6	10:06 PM	18.8
7:52 PM	17.9	8:37 PM	18.6	9:22 PM	18.6	10:07 PM	18.8
7:53 PM	17.9	8:38 PM	18.6	9:23 PM	18.6	10:08 PM	18.8
7:54 PM	18.0	8:39 PM	18.3	9:24 PM	18.6	10:09 PM	18.9
7:55 PM	17.9	8:40 PM	18.3	9:25 PM	18.9	10:10 PM	18.9
7:56 PM	18.0	8:41 PM	18.3	9:26 PM	18.9	10:11 PM	18.9
7:57 PM	18.0	8:42 PM	18.3	9:27 PM	18.9	10:12 PM	19.1
7:58 PM	17.9	8:43 PM	18.6	9:28 PM	18.9	10:13 PM	19.1
7:59 PM	17.9	8:44 PM	18.6	9:29 PM	18.9	10:14 PM	19.2
8:00 PM	17.9	8:45 PM	18.3	9:30 PM	18.9	10:15 PM	19.2
8:01 PM	17.9	8:46 PM	18.6	9:31 PM	18.9	10:16 PM	19.2
8:02 PM	17.9	8:47 PM	18.6	9:32 PM	18.9	10:17 PM	19.2
8:03 PM	17.9	8:48 PM	18.6	9:33 PM	18.9	10:18 PM	19.2
8:04 PM	18.0	8:49 PM	18.6	9:34 PM	18.9	10:19 PM	19.2
8:05 PM	18.0	8:50 PM	18.6	9:35 PM	18.9	10:20 PM	19.2
8:06 PM	17.9	8:51 PM	18.6	9:36 PM	18.9	10:21 PM	19.2
8:07 PM	17.9	8:52 PM	18.6	9:37 PM	18.9	10:22 PM	19.2
8:08 PM	17.9	8:53 PM	18.6	9:38 PM	18.9	10:23 PM	19.2
8:09 PM	17.9	8:54 PM	18.6	9:39 PM	18.9	10:24 PM	19.2
8:10 PM	18.0	8:55 PM	18.6	9:40 PM	18.9	10:25 PM	19.2
8:11 PM	17.9	8:56 PM	18.6	9:41 PM	18.9	10:26 PM	19.2
8:12 PM	17.9	8:57 PM	18.6	9:42 PM	18.9	10:27 PM	19.2
8:13 PM	17.7	8:58 PM	18.6	9:43 PM	18.9	10:28 PM	19.2
8:14 PM	17.7	8:59 PM	18.6	9:44 PM	18.9	10:29 PM	19.2
8:15 PM	18.0	9:00 PM	18.6	9:45 PM	18.9	10:30 PM	19.5
8:16 PM	18.0	9:01 PM	18.6	9:46 PM	18.9	10:31 PM	19.5
8:17 PM	18.0	9:02 PM	18.6	9:47 PM	18.9	10:32 PM	19.5
8:18 PM	18.0	9:03 PM	18.6	9:48 PM	18.9	10:33 PM	19.5
8:19 PM	18.0	9:04 PM	18.3	9:49 PM	18.9	10:34 PM	19.5
8:20 PM	18.0	9:05 PM	18.3	9:50 PM	18.9	10:35 PM	19.5
8:21 PM	18.0	9:06 PM	18.3	9:51 PM	18.9	10:36 PM	19.5
8:22 PM	18.0	9:07 PM	18.3	9:52 PM	18.9	10:37 PM	19.5
8:23 PM	17.7	9:08 PM	18.3	9:53 PM	18.9	10:38 PM	19.5
8:24 PM	18.0	9:09 PM	18.3	9:54 PM	18.9	10:39 PM	19.5

3671

6154

3836

6937

12/11/12

Time	Flow	Time	Flow	Time	Flow	Time	Flow
10:40 PM	19.5	11:25 PM	21.0	12:10 AM		12:55 AM	
10:41 PM	19.5	11:26 PM	21.0	12:11 AM		12:56 AM	
10:42 PM	19.5	11:27 PM	21.0	12:12 AM		12:57 AM	
10:43 PM	19.7	11:28 PM	21.0	12:13 AM		12:58 AM	
10:44 PM	19.7	11:29 PM	21.0	12:14 AM		12:59 AM	
10:45 PM	19.7	11:30 PM	21.0	12:15 AM		1:00 AM	
10:46 PM	19.7	11:31 PM	21.0	12:16 AM		1:01 AM	
10:47 PM	19.7	11:32 PM	21.0	12:17 AM		1:02 AM	
10:48 PM	19.8	11:33 PM	21.0	12:18 AM		1:03 AM	
10:49 PM	19.8	11:34 PM	21.3	12:19 AM		1:04 AM	
10:50 PM	19.8	11:35 PM	21.0	12:20 AM		1:05 AM	
10:51 PM	20.0	11:36 PM	21.3	12:21 AM		1:06 AM	
10:52 PM	19.8	11:37 PM	21.3	12:22 AM		1:07 AM	
10:53 PM	19.8	11:38 PM	21.3	12:23 AM		1:08 AM	
10:54 PM	19.8	11:39 PM	21.3	12:24 AM		1:09 AM	
10:55 PM	19.8	11:40 PM	21.3	12:25 AM		1:10 AM	
10:56 PM	19.8	11:41 PM	21.3	12:26 AM		1:11 AM	
10:57 PM	20.1	11:42 PM	21.3	12:27 AM		1:12 AM	
10:58 PM	20.0	11:43 PM	21.3	12:28 AM		1:13 AM	
10:59 PM	20.0	11:44 PM	21.3	12:29 AM		1:14 AM	
11:00 PM	20.1	11:45 PM	21.3	12:30 AM		1:15 AM	
11:01 PM	20.0	11:46 PM	21.3	12:31 AM		1:16 AM	
11:02 PM	20.0	11:47 PM	21.3	12:32 AM		1:17 AM	
11:03 PM	20.1	11:48 PM	21.3	12:33 AM		1:18 AM	
11:04 PM	20.1	11:49 PM	21.6	12:34 AM		1:19 AM	
11:05 PM	20.1	11:50 PM	21.6	12:35 AM		1:20 AM	
11:06 PM	20.1	11:51 PM	21.6	12:36 AM		1:21 AM	
11:07 PM	20.1	11:52 PM	21.6	12:37 AM		1:22 AM	
11:08 PM	20.1	11:53 PM	21.6	12:38 AM		1:23 AM	
11:09 PM	20.3	11:54 PM	21.6	12:39 AM		1:24 AM	
11:10 PM	20.3	11:55 PM	21.6	12:40 AM		1:25 AM	
11:11 PM	20.3	11:56 PM	21.6	12:41 AM		1:26 AM	
11:12 PM	20.4	11:57 PM	21.6	12:42 AM		1:27 AM	
11:13 PM	20.4	11:58 PM	21.6	12:43 AM		1:28 AM	
11:14 PM	20.4	11:59 PM	21.6	12:44 AM		1:29 AM	
11:15 PM	20.4	12:00 AM	21.8	12:45 AM		1:30 AM	
11:16 PM	20.4	12:01 AM	21.8	12:46 AM		1:31 AM	
11:17 PM	20.4	12:02 AM	21.8	12:47 AM		1:32 AM	
11:18 PM	20.4	12:03 AM	345	12:48 AM		1:33 AM	
11:19 PM	20.4	12:04 AM	0.0	12:49 AM		1:34 AM	
11:20 PM	20.7	12:05 AM	0.0	12:50 AM		1:35 AM	
11:21 PM	20.7	12:06 AM		12:51 AM		1:36 AM	
11:22 PM	20.7	12:07 AM		12:52 AM		1:37 AM	
11:23 PM	20.7	12:08 AM		12:53 AM		1:38 AM	
11:24 PM	20.7	12:09 AM		12:54 AM		1:39 AM	

7675

8686166

12:03 AM

Amy Curtis
Michael Ashworth
Britt Miller

Run #4 12/12/12

Time	Flow	Time	Flow	Time	Flow	Time	Flow
10:00 AM		10:46 AM		11:32 AM	0.0	12:18 PM	19.6
10:01 AM		10:47 AM		11:33 AM	0.0	12:19 PM	20.0
10:02 AM		10:48 AM		11:34 AM	6.3	12:20 PM	20.1
10:03 AM		10:49 AM		11:35 AM	6.3	12:21 PM	20.1
10:04 AM		10:50 AM		11:36 AM	5.4	12:22 PM	20.4
10:05 AM		10:51 AM		11:37 AM	17.1	12:23 PM	20.6
10:06 AM		10:52 AM		11:38 AM	16.8	12:24 PM	20.6
10:07 AM		10:53 AM		11:39 AM	19.4	12:25 PM	20.1
10:08 AM		10:54 AM		11:40 AM	24.9	12:26 PM	17.4
10:09 AM		10:55 AM		11:41 AM	24.6	12:27 PM	17.4
10:10 AM		10:56 AM		11:42 AM	6.0	12:28 PM	17.6
10:11 AM		10:57 AM		11:43 AM	8.6	12:29 PM	17.6
10:12 AM		10:58 AM		11:44 AM	3.6	12:30 PM	17.7
10:13 AM		10:59 AM		11:45 AM	4.8	12:31 PM	17.7
10:14 AM		11:00 AM		11:46 AM	12.0	12:32 PM	17.7
10:15 AM		11:01 AM		11:47 AM	12.0	12:33 PM	17.6
10:16 AM		11:02 AM		11:48 AM	23.4	12:34 PM	17.6
10:17 AM		11:03 AM		11:49 AM	21.6	12:35 PM	17.6
10:18 AM		11:04 AM		11:50 AM	17.7	12:36 PM	17.6
10:19 AM		11:05 AM		11:51 AM	18.6	12:37 PM	17.6
10:20 AM		11:06 AM		11:52 AM	19.5	12:38 PM	17.6
10:21 AM		11:07 AM		11:53 AM	20.6	12:39 PM	17.6
10:22 AM		11:08 AM		11:54 AM	21.6	12:40 PM	17.4
10:23 AM		11:09 AM		11:55 AM	22.7	12:41 PM	17.4
10:24 AM		11:10 AM		11:56 AM	19.8	12:42 PM	17.3
10:25 AM		11:11 AM		11:57 AM	19.5	12:43 PM	17.4
10:26 AM		11:12 AM		11:58 AM	21.0	12:44 PM	17.4
10:27 AM		11:13 AM		11:59 AM	21.8	12:45 PM	17.3
10:28 AM		11:14 AM		12:00 PM	22.4	12:46 PM	17.3
10:29 AM		11:15 AM		12:01 PM	23.4	12:47 PM	17.1
10:30 AM		11:16 AM		12:02 PM	23.9	12:48 PM	17.1
10:31 AM		11:17 AM		12:03 PM	16.8	12:49 PM	17.1
10:32 AM		11:18 AM		12:04 PM	17.0	12:50 PM	17.1
10:33 AM		11:19 AM		12:05 PM	17.1	12:51 PM	17.0
10:34 AM		11:20 AM		12:06 PM	17.4	12:52 PM	16.8
10:35 AM		11:21 AM		12:07 PM	17.6	12:53 PM	16.8
10:36 AM		11:22 AM	45.0	12:08 PM	17.7	12:54 PM	16.8
10:37 AM		11:23 AM	21.0	12:09 PM	17.9	12:55 PM	16.8
10:38 AM		11:24 AM	0.0	12:10 PM	18.0	12:56 PM	16.7
10:39 AM		11:25 AM	0.0	12:11 PM	18.3	12:57 PM	16.7
10:40 AM		11:26 AM	0.0	12:12 PM	18.6	12:58 PM	16.5
10:41 AM		11:27 AM	0.0	12:13 PM	18.8	12:59 PM	16.7
10:42 AM		11:28 AM	63.0	12:14 PM	19.0	1:00 PM	16.5
10:43 AM		11:29 AM	0.0	12:15 PM	19.2	1:01 PM	16.7
10:44 AM		11:30 AM	0.0	12:16 PM	19.4	1:02 PM	16.5
10:45 AM		11:31 AM	0.0	12:17 PM	19.5	1:03 PM	16.5

11:39 AM 160 lbs
11:55 434 lbs
12:10 PM 724 lbs
12:25 1018 lbs
12:40 1282 lbs
12:52 1489 lbs
12:53 1505 lbs

22809 before reset @ 11:22AM
totalizer

Brett Miller

12/12/12

Time	Flow	Time	Flow	Time	Flow	Time	Flow
1:04 PM	16.5	1:50 PM	16.8	2:36 PM	19.5	3:22 PM	17.3
1:05 PM	16.5	1:51 PM	16.8	2:37 PM	19.2	3:23 PM	17.0
1:06 PM	16.4	1:52 PM	16.8	2:38 PM	19.2	3:24 PM	17.4
1:07 PM	16.4	1:53 PM	16.8	2:39 PM	19.2	3:25 PM	17.4
1:08 PM	16.5	1:54 PM	16.8	2:40 PM	19.2	3:26 PM	17.4
1:09 PM	16.5	1:55 PM	16.5	2:41 PM	19.2	3:27 PM	17.4
1:10 PM	16.4	1:56 PM	16.5	2:42 PM	19.2	3:28 PM	17.4
1:11 PM	16.4	1:57 PM	16.5	2:43 PM	19.2	3:29 PM	17.0
1:12 PM	16.4	1:58 PM	16.5	2:44 PM	19.2	3:30 PM	17.0
1:13 PM	16.4	1:59 PM	19.8	2:45 PM	19.2	3:31 PM	17.0
1:14 PM	16.4	2:00 PM	19.8	2:46 PM	19.2	3:32 PM	17.0
1:15 PM	16.4	2:01 PM	19.8	2:47 PM	19.2	3:33 PM	17.0
1:16 PM	16.4	2:02 PM	19.8	2:48 PM	19.2	3:34 PM	17.0
1:17 PM	16.2	2:03 PM	19.8	2:49 PM	18.9	3:35 PM	17.0
1:18 PM	16.2	2:04 PM	19.8	2:50 PM	18.9	3:36 PM	17.0
1:19 PM	16.2	2:05 PM	19.8	2:51 PM	18.9	3:37 PM	17.1
1:20 PM	17.3	2:06 PM	19.8	2:52 PM	18.9	3:38 PM	17.3
1:21 PM	17.1	2:07 PM	19.8	2:53 PM	18.9	3:39 PM	17.3
1:22 PM	17.1	2:08 PM	19.8	2:54 PM	18.9	3:40 PM	17.3
1:23 PM	17.0	2:09 PM	19.8	2:55 PM	18.9	3:41 PM	17.4
1:24 PM	17.1	2:10 PM	19.8	2:56 PM	18.9	3:42 PM	17.4
1:25 PM	17.1	2:11 PM	19.8	2:57 PM	18.9	3:43 PM	17.6
1:26 PM	17.1	2:12 PM	19.8	2:58 PM	18.9	3:44 PM	17.7
1:27 PM	17.1	2:13 PM	19.8	2:59 PM	18.9	3:45 PM	17.7
1:28 PM	17.1	2:14 PM	19.8	3:00 PM	18.9	3:46 PM	17.9
1:29 PM	17.1	2:15 PM	19.8	3:01 PM	18.6	3:47 PM	18.0
1:30 PM	17.1	2:16 PM	19.5	3:02 PM	18.6	3:48 PM	18.0
1:31 PM	17.1	2:17 PM	19.5	3:03 PM	18.6	3:49 PM	18.0
1:32 PM	17.1	2:18 PM	19.5	3:04 PM	18.5	3:50 PM	18.2
1:33 PM	16.8	2:19 PM	19.5	3:05 PM	18.5	3:51 PM	18.3
1:34 PM	16.8	2:20 PM	19.5	3:06 PM	18.5	3:52 PM	18.3
1:35 PM	16.8	2:21 PM	19.5	3:07 PM	18.5	3:53 PM	18.5
1:36 PM	16.8	2:22 PM	19.5	3:08 PM	18.5	3:54 PM	18.5
1:37 PM	16.8	2:23 PM	19.5	3:09 PM	18.3	3:55 PM	18.6
1:38 PM	16.8	2:24 PM	19.5	3:10 PM	18.5	3:56 PM	18.6
1:39 PM	16.8	2:25 PM	19.5	3:11 PM	18.5	3:57 PM	18.7
1:40 PM	16.8	2:26 PM	19.5	3:12 PM	18.5	3:58 PM	18.7
1:41 PM	16.8	2:27 PM	19.5	3:13 PM	18.5	3:59 PM	18.7
1:42 PM	16.8	2:28 PM	19.5	3:14 PM	18.5	4:00 PM	18.9
1:43 PM	16.8	2:29 PM	19.5	3:15 PM	18.8	4:01 PM	18.9
1:44 PM	16.8	2:30 PM	19.5	3:16 PM	18.6	4:02 PM	18.9
1:45 PM	16.8	2:31 PM	19.5	3:17 PM	18.3	4:03 PM	18.9
1:46 PM	16.8	2:32 PM	19.5	3:18 PM	18.2	4:04 PM	19.1
1:47 PM	16.8	2:33 PM	19.5	3:19 PM	18.3	4:05 PM	19.2
1:48 PM	16.6	2:34 PM	19.5	3:20 PM	17.9	4:06 PM	19.2
1:49 PM	16.8	2:35 PM	19.5	3:21 PM	17.9	4:07 PM	19.4

1:08 PM 1755 165
1:28 PM 1969 165
3:00 PM 3785
Run 4
3:15 4064 165
3:30 4333 165
3:45 4588 165
4:01 4884 165

12/12/12
Run #4

Time	Flow	Time	Flow
4:08 PM	19.4	4:54 PM	21.0
4:09 PM	19.5	4:55 PM	20.9
4:10 PM	19.5	4:56 PM	20.9
4:11 PM	19.5	4:57 PM	20.9
4:12 PM	19.5	4:58 PM	21.0
4:13 PM	19.5	4:59 PM	21.0
4:14 PM	19.7	5:00 PM	21.0
4:15 PM	19.7	5:01 PM	20.9
4:16 PM	19.7	5:02 PM	20.9
4:17 PM	19.7	5:03 PM	20.9
4:18 PM	19.8	5:04 PM	21.0
4:19 PM	19.8	5:05 PM	21.0
4:20 PM	19.8	5:06 PM	20.9
4:21 PM	19.8	5:07 PM	20.9
4:22 PM	19.8	5:08 PM	20.9
4:23 PM	20.0	5:09 PM	20.9
4:24 PM	20.0	5:10 PM	20.9
4:25 PM	20.0	5:11 PM	20.9
4:26 PM	20.0	5:12 PM	20.9
4:27 PM	20.0	5:13 PM	20.9
4:28 PM	20.1	5:14 PM	20.7
4:29 PM	20.1	5:15 PM	20.7
4:30 PM	20.1	5:16 PM	
4:31 PM	20.1	5:17 PM	
4:32 PM	20.1	5:18 PM	
4:33 PM	20.1	5:19 PM	
4:34 PM	20.3	5:20 PM	
4:35 PM	20.3	5:21 PM	
4:36 PM	20.3	5:22 PM	
4:37 PM	20.3	5:23 PM	
4:38 PM	20.3	5:24 PM	
4:39 PM	20.4	5:25 PM	
4:40 PM	20.4	5:26 PM	
4:41 PM	20.4	5:27 PM	
4:42 PM	20.6	5:28 PM	
4:43 PM	20.6	5:29 PM	
4:44 PM	20.6	5:30 PM	
4:45 PM	20.7	5:31 PM	
4:46 PM	20.7	5:32 PM	
4:47 PM	20.7	5:33 PM	
4:48 PM	20.7	5:34 PM	
4:49 PM	20.7	5:35 PM	
4:50 PM	20.7	5:36 PM	
4:51 PM	20.7	5:37 PM	
4:52 PM	20.7	5:38 PM	
4:53 PM	20.9	5:39 PM	

5179

5459

5790

6086

6214

6235

6256

6277

6299

6320

6341

6412

B A Miller

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
11:18:00	15.6	11:22:00	45.0
11:19:00	16.5	11:23:00	21.0
11:20:00	15.9	11:24:00	0.0
11:21:00	16.1	11:25:00	0.0
11:22:00	16.2	11:26:00	0.0
11:23:00	16.2	11:27:00	0.0
11:24:00	16.1	11:28:00	63.0
11:25:00	16.4	11:29:00	0.0
11:26:00	16.4	11:30:00	0.0
11:27:00	16.5	11:31:00	0.0
11:28:00	16.7	11:32:00	0.0
11:29:00	17.1	11:33:00	0.0
11:30:00	17.3	11:34:00	6.3
11:31:00	17.3	11:35:00	6.3
11:32:00	17.3	11:36:00	5.4
11:33:00	17.4	11:37:00	17.1
11:34:00	17.4	11:38:00	16.8
11:35:00	17.6	11:39:00	19.4
11:36:00	17.6	11:40:00	24.9
11:37:00	17.7	11:41:00	24.6
11:38:00	17.7	11:42:00	6.0
11:39:00	17.6	11:43:00	8.6
11:40:00	17.6	11:44:00	3.6
11:41:00	17.6	11:45:00	4.8
11:42:00	17.7	11:46:00	12.0
11:43:00	17.9	11:47:00	12.0
11:44:00	17.9	11:48:00	23.4
11:45:00	17.9	11:49:00	21.6
11:46:00	18.2	11:50:00	17.7
11:47:00	18.2	11:51:00	18.6
11:48:00	18.2	11:52:00	19.5
11:49:00	18.2	11:53:00	20.6
11:50:00	17.3	11:54:00	21.6
11:51:00	17.3	11:55:00	22.7
11:52:00	17.3	11:56:00	19.8
11:53:00	17.3	11:57:00	19.5
11:54:00	17.3	11:58:00	21.0
11:55:00	17.3	11:59:00	21.8
11:56:00	17.3	12:00:00	22.4
11:57:00	17.3	12:01:00	23.4
11:58:00	17.3	12:02:00	23.9
11:59:00	17.3	12:03:00	16.8
12:00:00	17.1	12:04:00	17.0
12:01:00	17.1	12:05:00	17.1
12:02:00	17.1	12:06:00	17.4
12:03:00	17.1	12:07:00	17.6
12:04:00	17.1	12:08:00	17.7
12:05:00	17.1	12:09:00	17.9

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
12:06:00	17.1	12:10:00	18.0
12:07:00	17.1	12:11:00	18.3
12:08:00	17.1	12:12:00	18.6
12:09:00	17.1	12:13:00	18.8
12:10:00	17.1	12:14:00	19.0
12:11:00	17.1	12:15:00	19.2
12:12:00	17.1	12:16:00	19.4
12:13:00	17.1	12:17:00	19.5
12:14:00	17.1	12:18:00	19.6
12:15:00	17.1	12:19:00	20.0
12:16:00	17.1	12:20:00	20.1
12:17:00	17.1	12:21:00	20.1
12:18:00	17.1	12:22:00	20.4
12:19:00	17.1	12:23:00	20.6
12:20:00	17.1	12:24:00	20.6
12:21:00	17.1	12:25:00	20.1
12:22:00	17.4	12:26:00	17.4
12:23:00	17.1	12:27:00	17.4
12:24:00	17.4	12:28:00	17.6
12:25:00	17.1	12:29:00	17.6
12:26:00	17.4	12:30:00	17.7
12:27:00	17.4	12:31:00	17.7
12:28:00	17.4	12:32:00	17.7
12:29:00	17.4	12:33:00	17.6
12:30:00	17.1	12:34:00	17.6
12:31:00	17.1	12:35:00	17.6
12:32:00	17.1	12:36:00	17.6
12:33:00	17.1	12:37:00	17.6
12:34:00	17.0	12:38:00	17.6
12:35:00	17.1	12:39:00	17.6
12:36:00	17.1	12:40:00	17.4
12:37:00	17.1	12:41:00	17.4
12:38:00	17.1	12:42:00	17.3
12:39:00	17.1	12:43:00	17.4
12:40:00	17.1	12:44:00	17.4
12:41:00	17.1	12:45:00	17.3
12:42:00	17.1	12:46:00	17.3
12:43:00	17.1	12:47:00	17.1
12:44:00	17.1	12:48:00	17.1
12:45:00	17.0	12:49:00	17.1
12:46:00	17.0	12:50:00	17.1
12:47:00	17.0	12:51:00	17.0
12:48:00	17.0	12:52:00	16.8
12:49:00	17.0	12:53:00	16.8
12:50:00	16.8	12:54:00	16.8
12:51:00	16.8	12:55:00	16.8
12:52:00	17.0	12:56:00	16.7
12:53:00	17.1	12:57:00	16.7

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
12:54:00	17.1	12:58:00	16.5
12:55:00	17.3	12:59:00	16.7
12:56:00	17.3	1:00:00	16.5
12:57:00	17.3	1:01:00	16.7
12:58:00	17.3	1:02:00	16.5
12:59:00	17.1	1:03:00	16.5
1:00:00	17.1	1:04:00	16.5
1:01:00	17.1	1:05:00	16.5
1:02:00	17.1	1:06:00	16.4
1:03:00	16.8	1:07:00	16.4
1:04:00	16.8	1:08:00	16.5
1:05:00	16.8	1:09:00	16.5
1:06:00	17.0	1:10:00	16.4
1:07:00	17.1	1:11:00	16.4
1:08:00	17.1	1:12:00	16.4
1:09:00	17.1	1:13:00	16.4
1:10:00	17.1	1:14:00	16.4
1:11:00	17.1	1:15:00	16.4
1:12:00	17.1	1:16:00	16.4
1:13:00	17.1	1:17:00	16.2
1:14:00	17.3	1:18:00	16.2
1:15:00	17.4	1:19:00	16.2
1:16:00	17.4	1:20:00	17.3
1:17:00	17.7	1:21:00	17.1
1:18:00	17.7	1:22:00	17.1
1:19:00	17.7	1:23:00	17.0
1:20:00	18.0	1:24:00	17.1
1:21:00	18.3	1:25:00	17.1
1:22:00	18.0	1:26:00	17.1
1:23:00	18.0	1:27:00	17.1
1:24:00	18.0	1:28:00	17.1
1:25:00	18.0	1:29:00	17.1
1:26:00	18.3	1:30:00	17.1
1:27:00	18.0	1:31:00	17.1
1:28:00	18.0	1:32:00	17.1
1:29:00	18.0	1:33:00	16.8
1:30:00	18.0	1:34:00	16.8
1:31:00	18.3	1:35:00	16.8
1:32:00	18.0	1:36:00	16.8
1:33:00	17.7	1:37:00	16.8
1:34:00	18.0	1:38:00	16.8
1:35:00	17.7	1:39:00	16.8
1:36:00	17.7	1:40:00	16.8
1:37:00	17.9	1:41:00	16.8
1:38:00	17.7	1:42:00	16.8
1:39:00	17.7	1:43:00	16.8
1:40:00	17.7	1:44:00	16.8
1:41:00	18.0	1:45:00	16.8

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
1:42:00	18.0	1:46:00	16.8
1:43:00	18.0	1:47:00	16.8
1:44:00	18.0	1:48:00	16.8
1:45:00	18.0	1:49:00	16.8
1:46:00	18.0	1:50:00	16.8
1:47:00	18.0	1:51:00	16.8
1:48:00	18.0	1:52:00	16.8
1:49:00	18.0	1:53:00	16.8
1:50:00	18.0	1:54:00	16.8
1:51:00	18.0	1:55:00	16.5
1:52:00	18.0	1:56:00	16.5
1:53:00	18.0	1:57:00	16.5
1:54:00	18.0	1:58:00	16.5
1:55:00	18.0	1:59:00	19.8
1:56:00	18.0	2:00:00	19.8
1:57:00	18.0	2:01:00	19.8
1:58:00	18.0	2:02:00	19.8
1:59:00	17.7	2:03:00	19.8
2:00:00	17.7	2:04:00	19.8
2:01:00	17.7	2:05:00	19.8
2:02:00	17.9	2:06:00	19.8
2:03:00	17.9	2:07:00	19.8
2:04:00	17.9	2:08:00	19.8
2:05:00	17.9	2:09:00	19.8
2:06:00	17.9	2:10:00	19.8
2:07:00	18.0	2:11:00	19.8
2:08:00	18.0	2:12:00	19.8
2:09:00	18.2	2:13:00	19.8
2:10:00	18.3	2:14:00	19.8
2:11:00	19.1	2:15:00	19.8
2:12:00	17.9	2:16:00	19.5
2:13:00	17.4	2:17:00	19.5
2:14:00	17.0	2:18:00	19.5
2:15:00	16.7	2:19:00	19.5
2:16:00	16.5	2:20:00	19.5
2:17:00	16.4	2:21:00	19.5
2:18:00	16.2	2:22:00	19.5
2:19:00	16.2	2:23:00	19.5
2:20:00	16.4	2:24:00	19.5
2:21:00	16.4	2:25:00	19.5
2:22:00	16.4	2:26:00	19.5
2:23:00	16.4	2:27:00	19.5
2:24:00	16.4	2:28:00	19.5
2:25:00	17.0	2:29:00	19.5
2:26:00	17.0	2:30:00	19.5
2:27:00	17.0	2:31:00	19.5
2:28:00	17.0	2:32:00	19.5
2:29:00	17.1	2:33:00	19.5

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
2:30:00	17.1	2:34:00	19.5
2:31:00	17.3	2:35:00	19.5
2:32:00	17.3	2:36:00	19.5
2:33:00	17.3	2:37:00	19.2
2:34:00	17.3	2:38:00	19.2
2:35:00	17.3	2:39:00	19.2
2:36:00	17.3	2:40:00	19.2
2:37:00	17.3	2:41:00	19.2
2:38:00	17.3	2:42:00	19.2
2:39:00	17.3	2:43:00	19.2
2:40:00	17.3	2:44:00	19.2
2:41:00	17.3	2:45:00	19.2
2:42:00	17.3	2:46:00	19.2
2:43:00	17.3	2:47:00	19.2
2:44:00	17.3	2:48:00	19.2
2:45:00	17.3	2:49:00	18.9
2:46:00	17.3	2:50:00	18.9
2:47:00	17.1	2:51:00	18.9
2:48:00	17.1	2:52:00	18.9
2:49:00	17.1	2:53:00	18.9
2:50:00	17.1	2:54:00	18.9
2:51:00	17.1	2:55:00	18.9
2:52:00	17.1	2:56:00	18.9
2:53:00	17.1	2:57:00	18.9
2:54:00	17.1	2:58:00	18.9
2:55:00	17.0	2:59:00	18.9
2:56:00	17.0	3:00:00	18.9
2:57:00	17.0	3:01:00	18.6
2:58:00	17.1	3:02:00	18.6
2:59:00	17.1	3:03:00	18.6
3:00:00	17.3	3:04:00	18.5
3:01:00	17.4	3:05:00	18.5
3:02:00	17.4	3:06:00	18.5
3:03:00	17.4	3:07:00	18.5
3:04:00	17.4	3:08:00	18.5
3:05:00	17.4	3:09:00	18.3
3:06:00	17.4	3:10:00	18.5
3:07:00	17.4	3:11:00	18.5
3:08:00	17.4	3:12:00	18.5
3:09:00	17.4	3:13:00	18.5
3:10:00	17.4	3:14:00	18.5
3:11:00	17.4	3:15:00	18.8
3:12:00	17.4	3:16:00	18.6
3:13:00	17.4	3:17:00	18.3
3:14:00	17.3	3:18:00	18.2
3:15:00	17.3	3:19:00	18.3
3:16:00	17.3	3:20:00	17.9
3:17:00	17.4	3:21:00	17.9

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
3:18:00	17.3	3:22:00	17.3
3:19:00	17.3	3:23:00	17.0
3:20:00	17.3	3:24:00	17.4
3:21:00	17.3	3:25:00	17.4
3:22:00	17.3	3:26:00	17.4
3:23:00	17.3	3:27:00	17.4
3:24:00	17.3	3:28:00	17.4
3:25:00	17.3	3:29:00	17.0
3:26:00	17.3	3:30:00	17.0
3:27:00	17.1	3:31:00	17.0
3:28:00	17.1	3:32:00	17.0
3:29:00	17.3	3:33:00	17.0
3:30:00	17.3	3:34:00	17.0
3:31:00	17.3	3:35:00	17.0
3:32:00	17.3	3:36:00	17.0
3:33:00	17.1	3:37:00	17.1
3:34:00	17.1	3:38:00	17.3
3:35:00	17.1	3:39:00	17.3
3:36:00	17.1	3:40:00	17.3
3:37:00	17.1	3:41:00	17.4
3:38:00	17.1	3:42:00	17.4
3:39:00	17.1	3:43:00	17.6
3:40:00	17.1	3:44:00	17.7
3:41:00	17.1	3:45:00	17.7
3:42:00	17.1	3:46:00	17.9
3:43:00	17.3	3:47:00	18.0
3:44:00	17.3	3:48:00	18.0
3:45:00	17.3	3:49:00	18.0
3:46:00	17.3	3:50:00	18.2
3:47:00	17.3	3:51:00	18.3
3:48:00	17.3	3:52:00	18.3
3:49:00	17.3	3:53:00	18.5
3:50:00	17.3	3:54:00	18.5
3:51:00	17.3	3:55:00	18.6
3:52:00	17.3	3:56:00	18.6
3:53:00	17.3	3:57:00	18.7
3:54:00	17.4	3:58:00	18.7
3:55:00	17.4	3:59:00	18.7
3:56:00	17.4	4:00:00	18.9
3:57:00	17.3	4:01:00	18.9
3:58:00	17.3	4:02:00	18.9
3:59:00	17.3	4:03:00	18.9
4:00:00	17.3	4:04:00	19.1
4:01:00	17.3	4:05:00	19.2
4:02:00	17.3	4:06:00	19.2
4:03:00	17.3	4:07:00	19.4
4:04:00	17.4	4:08:00	19.4
4:05:00	17.3	4:09:00	19.5

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
4:06:00	17.4	4:10:00	19.5
4:07:00	17.3	4:11:00	19.5
4:08:00	17.4	4:12:00	19.5
4:09:00	17.4	4:13:00	19.5
4:10:00	17.4	4:14:00	19.7
4:11:00	17.3	4:15:00	19.7
4:12:00	17.3	4:16:00	19.7
4:13:00	17.3	4:17:00	19.7
4:14:00	17.3	4:18:00	19.8
4:15:00	17.3	4:19:00	19.8
4:16:00	17.3	4:20:00	19.8
4:17:00	17.3	4:21:00	19.8
4:18:00	17.3	4:22:00	19.8
4:19:00	17.3	4:23:00	20.0
4:20:00	17.3	4:24:00	20.0
4:21:00	17.3	4:25:00	20.0
4:22:00	17.3	4:26:00	20.0
4:23:00	17.3	4:27:00	20.0
4:24:00	17.3	4:28:00	20.1
4:25:00	17.4	4:29:00	20.1
4:26:00	17.3	4:30:00	20.1
4:27:00	17.3	4:31:00	20.1
4:28:00	17.4	4:32:00	20.1
4:29:00	17.4	4:33:00	20.1
4:30:00	17.4	4:34:00	20.3
4:31:00	17.4	4:35:00	20.3
4:32:00	17.4	4:36:00	20.3
4:33:00	17.4	4:37:00	20.3
4:34:00	17.4	4:38:00	20.3
4:35:00	17.4	4:39:00	20.4
4:36:00	17.4	4:40:00	20.4
4:37:00	17.4	4:41:00	20.4
4:38:00	17.4	4:42:00	20.6
4:39:00	17.4	4:43:00	20.6
4:40:00	17.4	4:44:00	20.6
4:41:00	17.4	4:45:00	20.7
4:42:00	17.4	4:46:00	20.7
4:43:00	17.4	4:47:00	20.7
4:44:00	17.4	4:48:00	20.7
4:45:00	17.4	4:49:00	20.7
4:46:00	17.4	4:50:00	20.7
4:47:00	17.4	4:51:00	20.7
4:48:00	17.4	4:52:00	20.7
4:49:00	17.4	4:53:00	20.9
4:50:00	17.4	4:54:00	21.0
4:51:00	17.4	4:55:00	20.9
4:52:00	17.4	4:56:00	20.9
4:53:00	17.4	4:57:00	20.9

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
4:54:00	17.4	4:58:00	21.0
4:55:00	17.4	4:59:00	21.0
4:56:00	17.4	5:00:00	21.0
4:57:00	17.4	5:01:00	20.9
4:58:00	17.4	5:02:00	20.9
4:59:00	17.4	5:03:00	20.9
5:00:00	17.4	5:04:00	21.0
5:01:00	17.4	5:05:00	21.0
5:02:00	17.4	5:06:00	20.9
5:03:00	17.4	5:07:00	20.9
5:04:00	17.4	5:08:00	20.9
5:05:00	17.4	5:09:00	20.9
5:06:00	17.4	5:10:00	20.9
5:07:00	17.4	5:11:00	20.9
5:08:00	17.4	5:12:00	20.9
5:09:00	17.4	5:13:00	20.9
5:10:00	17.4	5:14:00	20.7
5:11:00	17.4	5:15:00	20.7
5:12:00	17.4		
5:13:00	17.4		
5:14:00	17.4		
5:15:00	17.4		
5:16:00	17.4		
5:17:00	17.4		
5:18:00	17.4		
5:19:00	17.4		
5:20:00	17.4		
5:21:00	17.4		
5:22:00	17.4		
5:23:00	17.4		
5:24:00	17.4		
5:25:00	17.4		
5:26:00	17.4		
5:27:00	17.4		
5:28:00	17.4		
5:29:00	17.4		
5:30:00	17.4		
5:31:00	17.1		
5:32:00	17.1		
5:33:00	17.1		
5:34:00	17.1		
5:35:00	17.1		
5:36:00	17.1		
5:37:00	17.1		
5:38:00	17.1		
5:39:00	17.4		
5:40:00	17.4		
5:41:00	17.4		

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
5:42:00	17.4		
5:43:00	17.4		
5:44:00	17.1		
5:45:00	17.4		
5:46:00	17.4		
5:47:00	17.4		
5:48:00	17.4		
5:49:00	17.4		
5:50:00	17.4		
5:51:00	17.1		
5:52:00	17.4		
5:53:00	17.4		
5:54:00	17.4		
5:55:00	17.1		
5:56:00	17.1		
5:57:00	17.1		
5:58:00	17.1		
5:59:00	17.1		
6:00:00	17.1		
6:01:00	17.1		
6:02:00	17.1		
6:03:00	17.1		
6:04:00	17.1		
6:05:00	17.1		
6:06:00	16.8		
6:07:00	17.1		
6:08:00	17.1		
6:09:00	17.1		
6:10:00	17.1		
6:11:00	17.1		
6:12:00	17.1		
6:13:00	17.1		
6:14:00	17.1		
6:15:00	16.8		
6:16:00	16.8		
6:17:00	17.1		
6:18:00	17.1		
6:19:00	17.1		
6:20:00	17.1		
6:21:00	17.4		
6:22:00	17.1		
6:23:00	17.4		
6:24:00	17.4		
6:25:00	17.4		
6:26:00	17.1		
6:27:00	17.1		
6:28:00	17.1		
6:29:00	17.1		

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
6:30:00	17.1		
6:31:00	17.1		
6:32:00	17.1		
6:33:00	17.1		
6:34:00	17.1		
6:35:00	17.1		
6:36:00	17.1		
6:37:00	17.1		
6:38:00	17.1		
6:39:00	17.1		
6:40:00	17.1		
6:41:00	17.1		
6:42:00	17.1		
6:43:00	17.1		
6:44:00	17.1		
6:45:00	17.0		
6:46:00	17.0		
6:47:00	17.0		
6:48:00	17.0		
6:49:00	17.0		
6:50:00	16.8		
6:51:00	17.1		
6:52:00	17.1		
6:53:00	17.1		
6:54:00	17.1		
6:55:00	17.1		
6:56:00	17.1		
6:57:00	17.1		
6:58:00	17.1		
6:59:00	17.1		
7:00:00	17.1		
7:01:00	17.1		
7:02:00	17.1		
7:03:00	17.1		
7:04:00	17.4		
7:05:00	17.7		
7:06:00	18.0		
7:07:00	18.2		
7:08:00	18.3		
7:09:00	18.5		
7:10:00	18.0		
7:11:00	17.7		
7:12:00	17.7		
7:13:00	17.9		
7:14:00	17.9		
7:15:00	17.9		
7:16:00	17.9		
7:17:00	18.0		

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
7:18:00	18.0		
7:19:00	18.0		
7:20:00	18.0		
7:21:00	18.0		
7:22:00	18.0		
7:23:00	18.0		
7:24:00	18.0		
7:25:00	18.0		
7:26:00	18.0		
7:27:00	18.0		
7:28:00	18.0		
7:29:00	18.0		
7:30:00	18.0		
7:31:00	18.0		
7:32:00	18.0		
7:33:00	18.0		
7:34:00	18.0		
7:35:00	18.0		
7:36:00	18.0		
7:37:00	18.0		
7:38:00	18.0		
7:39:00	18.0		
7:40:00	18.0		
7:41:00	18.0		
7:42:00	18.0		
7:43:00	18.0		
7:44:00	18.0		
7:45:00	18.0		
7:46:00	18.0		
7:47:00	18.0		
7:48:00	18.0		
7:49:00	17.9		
7:50:00	17.9		
7:51:00	17.9		
7:52:00	17.9		
7:53:00	17.9		
7:54:00	18.0		
7:55:00	17.9		
7:56:00	18.0		
7:57:00	18.0		
7:58:00	17.9		
7:59:00	17.9		
8:00:00	17.9		
8:01:00	17.9		
8:02:00	17.9		
8:03:00	17.9		
8:04:00	18.0		
8:05:00	18.0		

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
8:06:00	17.9		
8:07:00	17.9		
8:08:00	17.9		
8:09:00	17.9		
8:10:00	18.0		
8:11:00	17.9		
8:12:00	17.9		
8:13:00	17.7		
8:14:00	17.7		
8:15:00	18.0		
8:16:00	18.0		
8:17:00	18.0		
8:18:00	18.0		
8:19:00	18.0		
8:20:00	18.0		
8:21:00	18.0		
8:22:00	18.0		
8:23:00	17.7		
8:24:00	18.0		
8:25:00	18.0		
8:26:00	18.0		
8:27:00	17.7		
8:28:00	18.0		
8:29:00	17.7		
8:30:00	17.7		
8:31:00	18.0		
8:32:00	18.0		
8:33:00	18.0		
8:34:00	18.0		
8:35:00	18.0		
8:36:00	18.3		
8:37:00	18.6		
8:38:00	18.6		
8:39:00	18.3		
8:40:00	18.3		
8:41:00	18.3		
8:42:00	18.3		
8:43:00	18.6		
8:44:00	18.6		
8:45:00	18.3		
8:46:00	18.6		
8:47:00	18.6		
8:48:00	18.6		
8:49:00	18.6		
8:50:00	18.6		
8:51:00	18.6		
8:52:00	18.6		
8:53:00	18.6		

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
8:54:00	18.6		
8:55:00	18.6		
8:56:00	18.6		
8:57:00	18.6		
8:58:00	18.6		
8:59:00	18.6		
9:00:00	18.6		
9:01:00	18.6		
9:02:00	18.6		
9:03:00	18.6		
9:04:00	18.3		
9:05:00	18.3		
9:06:00	18.3		
9:07:00	18.3		
9:08:00	18.3		
9:09:00	18.3		
9:10:00	18.3		
9:11:00	18.3		
9:12:00	18.3		
9:13:00	18.3		
9:14:00	18.3		
9:15:00	18.3		
9:16:00	18.3		
9:17:00	18.3		
9:18:00	18.3		
9:19:00	18.3		
9:20:00	18.6		
9:21:00	18.6		
9:22:00	18.6		
9:23:00	18.6		
9:24:00	18.6		
9:25:00	18.9		
9:26:00	18.9		
9:27:00	18.9		
9:28:00	18.9		
9:29:00	18.9		
9:30:00	18.9		
9:31:00	18.9		
9:32:00	18.9		
9:33:00	18.9		
9:34:00	18.9		
9:35:00	18.9		
9:36:00	18.9		
9:37:00	18.9		
9:38:00	18.9		
9:39:00	18.9		
9:40:00	18.9		
9:41:00	18.9		

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
9:42:00	18.9		
9:43:00	18.9		
9:44:00	18.9		
9:45:00	18.9		
9:46:00	18.9		
9:47:00	18.9		
9:48:00	18.9		
9:49:00	18.9		
9:50:00	18.9		
9:51:00	18.9		
9:52:00	18.9		
9:53:00	18.9		
9:54:00	18.9		
9:55:00	18.9		
9:56:00	18.8		
9:57:00	18.8		
9:58:00	18.8		
9:59:00	18.6		
10:00:00	18.6		
10:01:00	18.6		
10:02:00	18.6		
10:03:00	18.6		
10:04:00	18.8		
10:05:00	18.8		
10:06:00	18.8		
10:07:00	18.8		
10:08:00	18.8		
10:09:00	18.9		
10:10:00	18.9		
10:11:00	18.9		
10:12:00	19.1		
10:13:00	19.1		
10:14:00	19.2		
10:15:00	19.2		
10:16:00	19.2		
10:17:00	19.2		
10:18:00	19.2		
10:19:00	19.2		
10:20:00	19.2		
10:21:00	19.2		
10:22:00	19.2		
10:23:00	19.2		
10:24:00	19.2		
10:25:00	19.2		
10:26:00	19.2		
10:27:00	19.2		
10:28:00	19.2		
10:29:00	19.2		

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
10:30:00	19.5		
10:31:00	19.5		
10:32:00	19.5		
10:33:00	19.5		
10:34:00	19.5		
10:35:00	19.5		
10:36:00	19.5		
10:37:00	19.5		
10:38:00	19.5		
10:39:00	19.5		
10:40:00	19.5		
10:41:00	19.5		
10:42:00	19.5		
10:43:00	19.7		
10:44:00	19.7		
10:45:00	19.7		
10:46:00	19.7		
10:47:00	19.7		
10:48:00	19.8		
10:49:00	19.8		
10:50:00	19.8		
10:51:00	20.0		
10:52:00	19.8		
10:53:00	19.8		
10:54:00	19.8		
10:55:00	19.8		
10:56:00	19.8		
10:57:00	20.1		
10:58:00	20.0		
10:59:00	20.0		
11:00:00	20.1		
11:01:00	20.0		
11:02:00	20.0		
11:03:00	20.1		
11:04:00	20.1		
11:05:00	20.1		
11:06:00	20.1		
11:07:00	20.1		
11:08:00	20.1		
11:09:00	20.3		
11:10:00	20.3		
11:11:00	20.3		
11:12:00	20.4		
11:13:00	20.4		
11:14:00	20.4		
11:15:00	20.4		
11:16:00	20.4		
11:17:00	20.4		

Waste EDA Flowrate

12/11/2012		12/12/2012	
Time	**Flow (lb/min)**	**Time**	**Flow (lb/min)**
11:18:00	20.4		
11:19:00	20.4		
11:20:00	20.7		
11:21:00	20.7		
11:22:00	20.7		
11:23:00	20.7		
11:24:00	20.7		
11:25:00	21.0		
11:26:00	21.0		
11:27:00	21.0		
11:28:00	21.0		
11:29:00	21.0		
11:30:00	21.0		
11:31:00	21.0		
11:32:00	21.0		
11:33:00	21.0		
11:34:00	21.3		
11:35:00	21.0		
11:36:00	21.3		
11:37:00	21.3		
11:38:00	21.3		
11:39:00	21.3		
11:40:00	21.3		
11:41:00	21.3		
11:42:00	21.3		
11:43:00	21.3		
11:44:00	21.3		
11:45:00	21.3		
11:46:00	21.3		
11:47:00	21.3		
11:48:00	21.3		
11:49:00	21.6		
11:50:00	21.6		
11:51:00	21.6		
11:52:00	21.6		
11:53:00	21.6		
11:54:00	21.6		
11:55:00	21.6		
11:56:00	21.6		
11:57:00	21.6		
11:58:00	21.6		
11:59:00	21.6		
12:00:00	21.8		
12:01:00	21.8		
12:02:00	21.8		
12:03:00	34.5		
12:04:00	0.0		
12:05:00	0.0		

APPENDIX I-E

METALS AND CHLORINE SPIKE DATA PACKAGE

RESEARCH & ANALYTICAL LABORATORIES, INC.
Analytical/Process Consultations

RESEARCH & ANALYTICAL LABS. SIDNEY L. CHAMPION NC #34 DIRECTOR CERTIFIED ANALYSIS

August 20, 2012

Triad Chemicals
P.O. Box 4529
Greensboro, NC 27410

Attention: Martin Friedman

Project Name : Not Available

Sample Identification	RAL Sample Number	Date	Time	Total Chromium (mg/kg)	Total Lead (mg/kg)
12220601A	738387	08/17/12	1453	**52,700**	**20,700**

mg/L = milligrams per Liter = parts per million
< = Less than or below detection limit

1-1

Run 1
12-11-12
Log Torsion

Test Start
12:52:29 12-11-2012

12:52:29	893.0 lb
12:53:29	891.0 lb
12:54:28	889.5 lb
12:55:28	888.0 lb
12:56:27	886.0 lb
12:57:27	884.5 lb
12:58:26	883.0 lb
12:59:26	881.0 lb
13:00:25	879.5 lb
13:01:25	878.0 lb
13:02:24	876.0 lb
13:03:24	874.5 lb
13:04:23	872.5 lb
13:05:23	871.0 lb
13:06:22	869.5 lb
13:07:22	867.5 lb
13:08:21	866.0 lb
13:09:21	864.5 lb
13:10:20	862.5 lb
13:11:20	861.0 lb
13:12:19	859.5 lb
13:13:19	857.5 lb
13:14:18	856.0 lb
13:15:18	854.5 lb
13:16:17	852.5 lb
13:17:17	851.0 lb
13:18:16	849.5 lb
13:19:16	847.5 lb
13:20:15	846.0 lb
13:21:15	844.5 lb
13:22:14	842.5 lb
13:23:14	841.0 lb
13:24:13	839.5 lb
13:25:13	837.5 lb
13:26:12	836.0 lb
13:27:12	834.5 lb
13:28:11	832.5 lb
13:29:11	831.0 lb
13:30:10	829.5 lb
13:31:10	827.5 lb
13:32:09	826.0 lb
13:33:09	824.5 lb
13:34:08	822.5 lb
13:35:08	821.0 lb
13:36:08	819.5 lb
13:37:07	817.5 lb
13:38:07	816.0 lb
13:39:06	814.5 lb
13:40:06	812.5 lb
13:41:05	811.0 lb
13:42:05	809.5 lb
13:43:04	808.0 lb
13:44:04	806.0 lb
13:45:03	804.5 lb
13:46:03	803.0 lb
13:47:02	801.0 lb
13:48:02	799.5 lb
13:49:01	798.0 lb
13:50:01	796.0 lb
13:51:00	794.5 lb
13:52:00	793.0 lb
13:52:59	791.0 lb
13:53:59	789.5 lb
13:54:58	788.0 lb
13:55:58	786.0 lb
13:56:57	784.5 lb
13:57:57	783.0 lb
13:58:56	781.0 lb
13:59:56	779.5 lb
14:00:55	778.0 lb
14:01:55	776.0 lb
14:02:54	774.5 lb
14:03:54	773.0 lb
14:04:53	771.0 lb
14:05:53	769.5 lb
14:06:52	768.0 lb
14:07:52	766.0 lb
14:08:51	764.5 lb
14:09:51	763.0 lb
14:10:50	761.5 lb
14:11:50	759.5 lb
14:12:49	758.0 lb
14:13:49	756.5 lb
14:14:48	754.5 lb
14:15:48	753.0 lb
14:16:47	751.5 lb
14:17:47	749.5 lb
14:18:46	748.0 lb
14:19:46	746.5 lb
14:20:45	745.0 lb
14:21:45	743.0 lb
14:22:45	741.5 lb
14:23:44	740.0 lb
14:24:44	738.0 lb
14:25:43	736.5 lb
14:26:43	735.0 lb
14:27:42	733.0 lb
14:28:42	731.5 lb
14:29:41	730.0 lb
14:30:41	728.5 lb
14:31:40	726.5 lb
14:32:40	725.0 lb
14:33:39	723.5 lb
14:34:39	721.5 lb
14:35:38	720.0 lb
14:36:38	718.5 lb
14:37:37	716.5 lb
14:38:37	715.0 lb
14:39:36	713.5 lb
14:40:36	711.5 lb
14:41:35	710.0 lb
14:42:35	708.5 lb
14:43:34	706.5 lb
14:44:34	705.0 lb
14:45:33	703.5 lb
14:46:33	702.0 lb
14:47:32	700.0 lb
14:48:32	698.5 lb
14:49:31	697.0 lb
14:50:31	695.0 lb
14:51:30	693.5 lb
14:52:30	692.0 lb
14:53:29	690.0 lb
14:54:29	688.5 lb
14:55:28	687.0 lb
14:56:28	685.0 lb
14:57:27	683.5 lb
14:58:27	682.0 lb
14:59:26	680.0 lb
15:00:26	678.5 lb
15:01:25	677.0 lb
15:02:25	675.0 lb
15:03:24	673.5 lb
15:04:24	672.0 lb
15:05:23	670.5 lb
15:06:23	668.5 lb
15:07:22	667.0 lb
15:08:22	665.5 lb
15:09:22	663.5 lb
15:10:21	662.0 lb
15:11:21	660.5 lb
15:12:20	658.5 lb
15:13:20	657.0 lb
15:14:19	655.5 lb
15:15:19	654.0 lb
15:16:18	652.0 lb
15:17:18	650.5 lb
15:18:17	649.0 lb
15:19:17	647.0 lb
15:20:16	645.5 lb
15:21:16	644.0 lb
15:22:15	642.5 lb
15:23:15	640.5 lb
15:24:14	639.0 lb
15:25:14	637.5 lb
15:26:13	635.5 lb
15:27:13	634.0 lb
15:28:12	632.5 lb
15:29:12	630.5 lb
15:30:11	629.0 lb
15:31:11	627.5 lb

Start - 1

1-2

1-3

15:32:10	626.0 lb
15:33:10	624.0 lb
15:34:09	622.5 lb
15:35:09	621.0 lb
15:36:08	619.0 lb
15:37:08	617.5 lb
15:38:07	616.0 lb
15:39:07	614.0 lb
15:40:06	612.5 lb
15:41:06	611.0 lb
15:42:05	609.5 lb
15:43:05	607.5 lb
15:44:04	606.0 lb
15:45:04	604.5 lb
15:46:03	602.5 lb
15:47:03	601.0 lb
15:48:02	599.5 lb
15:49:02	598.0 lb
15:50:01	596.0 lb
15:51:01	594.5 lb
15:52:00	593.0 lb
15:53:00	591.0 lb
15:53:59	589.5 lb
15:54:59	588.0 lb
15:55:59	586.5 lb
15:56:58	584.5 lb
15:57:58	583.0 lb
15:58:57	581.5 lb
15:59:57	579.5 lb
16:00:56	578.0 lb
16:01:56	576.5 lb
16:02:55	575.0 lb
16:03:55	573.0 lb
16:04:54	571.5 lb
16:05:54	570.0 lb
16:06:53	568.5 lb
16:07:53	566.5 lb
16:08:52	565.0 lb
16:09:52	563.5 lb
16:10:51	561.5 lb
16:11:51	560.0 lb
16:12:50	558.5 lb
16:13:50	557.0 lb
16:14:49	555.5 lb
16:15:49	553.5 lb
16:16:48	552.0 lb
16:17:48	550.5 lb
16:18:47	549.0 lb
16:19:47	547.5 lb
16:20:46	545.5 lb
16:21:46	544.0 lb
16:22:45	542.5 lb
16:23:45	541.0 lb
16:24:44	539.5 lb
16:25:44	538.0 lb
16:26:43	536.0 lb
16:27:43	534.5 lb
16:28:42	533.0 lb
16:29:42	531.5 lb
16:30:41	530.0 lb
16:31:41	528.5 lb
16:32:40	527.0 lb
16:32:48	526.5 lb
16:32:48	12-11-2012
Test End	

Run 2 Test Start

16:34:11	12-11-2012
16:34:11	524.5 lb
16:35:11	523.0 lb
16:36:10	521.0 lb
16:37:10	519.5 lb
16:38:09	518.0 lb
16:39:09	516.5 lb
16:40:08	515.0 lb
16:41:08	513.5 lb
16:42:08	512.0 lb
16:43:07	510.5 lb
16:44:07	508.5 lb
16:45:06	507.0 lb
16:46:06	505.5 lb
16:47:05	504.0 lb
16:48:05	502.5 lb
16:49:04	501.0 lb
16:50:04	499.5 lb
16:51:03	497.5 lb
16:52:03	496.0 lb
16:53:02	494.5 lb
16:54:02	493.0 lb
16:55:01	491.5 lb
16:56:01	490.0 lb
16:57:00	488.5 lb
16:58:00	487.0 lb
16:58:59	485.5 lb
16:59:59	483.5 lb
17:00:58	482.0 lb
17:01:58	480.5 lb
17:02:57	479.0 lb
17:03:57	477.5 lb
17:04:56	476.0 lb
17:05:56	474.5 lb
17:06:55	473.0 lb
17:07:55	471.5 lb
17:08:54	469.5 lb
17:09:54	468.0 lb
17:10:53	466.5 lb
17:11:53	465.0 lb
17:12:52	463.5 lb
17:13:52	462.0 lb
17:14:51	460.5 lb
17:15:51	459.0 lb
17:16:50	457.5 lb
17:17:50	456.0 lb
17:18:49	454.5 lb
17:19:49	452.5 lb
17:20:48	451.0 lb
17:21:48	449.5 lb
17:22:47	448.0 lb
17:23:47	446.5 lb
17:24:47	445.0 lb
17:25:46	443.5 lb
17:26:46	442.0 lb
17:27:45	440.5 lb
17:28:45	439.0 lb
17:29:44	437.0 lb
17:30:44	435.5 lb
17:31:43	434.0 lb
17:32:43	432.5 lb
17:33:42	431.0 lb
17:34:42	429.5 lb
17:35:41	428.0 lb
17:36:41	426.5 lb
17:37:40	425.0 lb
17:38:40	423.5 lb
17:39:39	421.5 lb
17:40:39	420.0 lb
17:41:38	418.5 lb
17:42:38	417.0 lb
17:43:37	415.5 lb
17:44:37	414.0 lb
17:45:36	412.5 lb
17:46:36	411.0 lb
17:47:35	409.5 lb
17:48:35	408.0 lb
17:49:34	406.5 lb
17:50:34	405.0 lb
17:51:33	403.0 lb
17:52:33	401.5 lb
17:53:32	400.0 lb
17:54:32	398.5 lb
17:55:31	397.0 lb
17:56:31	395.5 lb
17:57:30	394.0 lb
17:58:30	392.5 lb
17:59:29	391.0 lb
18:00:29	389.5 lb
18:01:28	388.0 lb
18:02:28	386.5 lb
18:03:27	385.0 lb
18:04:27	383.5 lb
18:05:26	381.5 lb
18:06:26	380.0 lb
18:07:25	378.5 lb
18:08:25	377.0 lb
18:09:25	375.5 lb
18:10:24	374.0 lb
18:11:24	372.5 lb
18:12:23	371.0 lb
18:13:23	369.5 lb
18:14:22	368.0 lb
18:15:22	366.5 lb
18:16:21	365.0 lb
18:17:21	363.5 lb
18:18:20	361.5 lb
18:19:20	360.0 lb
18:20:19	358.5 lb
18:21:19	357.0 lb
18:22:18	355.5 lb
18:23:18	354.0 lb
18:24:17	352.5 lb
18:25:17	351.0 lb
18:26:16	349.5 lb
18:27:16	348.0 lb
18:28:15	346.5 lb
18:29:15	345.0 lb
18:30:14	343.5 lb
18:31:14	342.0 lb
18:32:13	340.0 lb
18:33:13	338.5 lb
18:34:12	337.0 lb
18:35:12	335.5 lb
18:36:11	334.0 lb
18:37:11	332.5 lb
18:38:10	331.0 lb
18:39:10	329.5 lb
18:40:09	328.0 lb
18:41:09	326.5 lb
18:42:08	325.0 lb
18:43:08	323.5 lb
18:44:07	322.0 lb
18:45:07	320.5 lb
18:46:06	319.0 lb
18:47:06	317.0 lb
18:48:05	315.5 lb
18:49:05	314.0 lb
18:50:04	312.5 lb
18:51:04	311.0 lb
18:52:03	309.5 lb
18:53:03	308.0 lb
18:54:02	306.5 lb
18:55:02	305.0 lb
18:56:02	303.5 lb
18:57:01	302.0 lb
18:58:01	300.5 lb
18:59:00	299.0 lb
19:00:00	297.5 lb
19:00:59	296.0 lb
19:01:59	294.5 lb
19:02:58	293.0 lb
19:03:58	291.5 lb
19:04:57	290.0 lb
19:05:57	288.0 lb
19:06:56	286.5 lb
19:07:56	285.0 lb
19:08:55	283.5 lb
19:09:55	282.0 lb
19:10:54	280.5 lb
19:11:54	279.0 lb
19:12:53	277.5 lb
19:13:53	276.0 lb
19:14:52	274.5 lb
19:15:52	273.0 lb
19:16:51	271.5 lb
19:17:51	270.0 lb
19:18:50	268.5 lb
19:19:50	267.0 lb
19:20:49	265.5 lb
19:21:49	264.0 lb
19:22:48	262.5 lb
19:23:48	260.5 lb
19:24:47	259.0 lb

19:25:47	257.5 lb
19:26:46	256.0 lb
19:27:46	254.5 lb
19:28:45	253.0 lb
19:29:45	251.5 lb
19:30:44	250.0 lb
19:31:44	248.5 lb
19:32:43	247.0 lb
19:33:43	245.5 lb
19:34:42	244.0 lb
19:35:42	242.5 lb
19:36:41	241.0 lb
19:37:41	239.5 lb
19:38:40	238.0 lb
19:39:40	236.5 lb
19:40:40	235.0 lb
19:41:39	233.5 lb
19:42:39	231.5 lb
19:43:38	230.0 lb
19:44:38	228.5 lb
19:45:37	227.0 lb
19:46:37	225.5 lb
19:47:36	224.0 lb
19:48:36	222.5 lb
19:49:35	221.0 lb
19:50:35	219.5 lb
19:51:34	218.0 lb
19:52:34	216.5 lb
19:53:33	215.0 lb
19:54:33	213.5 lb
19:55:32	212.0 lb
19:56:32	210.5 lb
19:57:31	209.0 lb
19:58:31	207.5 lb
19:59:30	206.0 lb
20:00:30	204.5 lb
20:01:29	203.0 lb
20:02:29	201.5 lb
20:03:28	200.0 lb
20:04:28	198.5 lb
20:05:27	197.0 lb
20:06:27	195.5 lb
20:07:26	194.0 lb
20:08:26	192.5 lb
20:09:25	191.0 lb
20:10:25	189.5 lb
20:11:24	188.0 lb
20:12:24	186.0 lb
20:13:23	184.5 lb
20:14:23	183.0 lb
20:15:22	181.5 lb
20:16:22	180.0 lb
20:17:21	178.5 lb
20:18:21	177.0 lb
20:19:20	175.5 lb
20:20:20	174.0 lb
20:21:19	172.5 lb
20:22:19	171.0 lb
20:23:18	169.5 lb
20:24:18	168.0 lb
20:25:18	166.5 lb
20:26:17	165.0 lb
20:27:17	163.5 lb
20:28:16	162.0 lb
20:29:16	160.5 lb
20:30:15	159.0 lb
20:31:15	157.5 lb
20:32:14	156.0 lb
20:33:14	154.5 lb
20:34:13	153.0 lb
20:35:13	151.5 lb
20:36:12	150.0 lb
20:37:12	148.5 lb
20:38:11	147.0 lb
20:39:11	145.5 lb
20:40:10	144.0 lb
20:41:10	142.5 lb
20:42:09	141.0 lb
20:43:09	139.5 lb
20:44:08	138.0 lb
20:45:08	136.5 lb
20:46:07	135.0 lb
20:47:07	133.5 lb
20:48:06	132.0 lb
20:49:06	130.5 lb
20:50:05	129.0 lb
20:51:05	127.5 lb
20:52:04	126.0 lb
20:53:04	124.5 lb
20:54:03	123.0 lb
20:55:03	121.5 lb
20:56:02	120.0 lb
20:57:02	118.5 lb
20:58:01	117.0 lb
20:59:01	115.5 lb
21:00:00	114.0 lb
21:01:00	112.5 lb
21:01:59	111.0 lb
21:02:59	109.5 lb
21:03:58	108.0 lb
21:04:58	106.5 lb
21:05:58	105.0 lb
21:06:57	103.5 lb
21:07:57	102.0 lb
21:08:56	100.5 lb
21:09:56	99.0 lb
21:10:55	97.5 lb
21:11:55	96.0 lb
21:12:54	94.5 lb
21:13:54	93.0 lb
21:14:01	92.5 lb
21:14:01	12-11-2012
Test End	

Log Tolin

Test Start Run 3

21:31:43	12-11-2012
21:31:43	442.0 lb
21:32:43	440.5 lb
21:33:42	439.0 lb
21:34:42	437.5 lb
21:35:41	436.0 lb
21:36:41	434.0 lb
21:37:40	432.5 lb
21:38:40	431.0 lb
21:39:39	429.5 lb
21:40:39	430.5 lb
21:41:38	429.0 lb
21:42:38	427.5 lb
21:43:37	426.0 lb start 3
21:44:37	424.5 lb
21:45:36	423.0 lb
21:46:36	421.0 lb
21:47:35	419.5 lb
21:48:35	416.0 lb
21:49:34	414.0 lb
21:50:34	412.5 lb
21:51:34	411.0 lb
21:52:33	409.5 lb
21:53:33	408.0 lb
21:54:32	406.5 lb
21:55:32	405.0 lb
21:56:31	403.5 lb
21:57:31	402.0 lb
21:58:30	400.5 lb
21:59:30	399.0 lb
22:00:29	397.5 lb
22:01:29	396.0 lb
22:02:28	394.0 lb
22:03:28	392.5 lb
22:04:27	391.0 lb
22:05:27	389.5 lb
22:06:26	388.0 lb
22:07:26	386.5 lb
22:08:25	385.0 lb
22:09:25	383.5 lb
22:10:24	382.0 lb
22:11:24	380.5 lb
22:12:23	379.0 lb
22:13:23	377.5 lb
22:14:22	375.5 lb
22:15:22	374.0 lb
22:16:21	372.5 lb
22:17:21	371.0 lb
22:18:20	369.5 lb
22:19:20	368.0 lb
22:20:19	366.5 lb
22:21:19	365.0 lb
22:22:18	363.5 lb
22:23:18	362.0 lb
22:24:17	360.5 lb
22:25:17	359.0 lb
22:26:16	357.5 lb
22:27:16	355.5 lb
22:28:15	354.0 lb
22:29:15	352.5 lb
22:30:14	351.0 lb
22:31:14	349.5 lb
22:32:13	348.0 lb
22:33:13	346.5 lb
22:34:12	345.0 lb
22:35:12	343.5 lb
22:36:12	342.0 lb
22:37:11	340.5 lb
22:38:11	339.0 lb
22:39:10	337.5 lb
22:40:10	336.0 lb
22:41:09	334.5 lb
22:42:09	333.0 lb
22:43:08	331.5 lb
22:44:08	330.0 lb
22:45:07	328.0 lb
22:46:07	326.5 lb
22:47:06	325.0 lb
22:48:06	323.5 lb
22:49:05	322.0 lb
22:50:05	320.5 lb
22:51:04	318.5 lb
22:52:04	317.0 lb
22:53:03	315.5 lb
22:54:03	314.0 lb
22:55:02	312.0 lb
22:56:02	310.5 lb
22:57:01	309.0 lb
22:58:01	307.5 lb
22:59:00	305.5 lb
23:00:00	304.0 lb
23:00:59	302.5 lb
23:01:59	301.0 lb
23:02:58	299.0 lb
23:03:58	297.5 lb
23:04:57	296.0 lb
23:05:57	294.5 lb
23:06:56	292.5 lb
23:07:56	291.0 lb
23:08:55	289.5 lb
23:09:55	288.0 lb
23:10:54	286.5 lb
23:11:54	284.5 lb
23:12:53	283.0 lb
23:13:53	281.5 lb
23:14:52	280.0 lb
23:15:52	278.0 lb
23:16:51	276.5 lb
23:17:51	275.0 lb
23:18:50	273.5 lb
23:19:50	271.5 lb
23:20:49	270.0 lb
23:21:49	268.5 lb
23:22:49	267.0 lb
23:23:48	265.5 lb
23:24:48	263.5 lb
23:25:47	262.0 lb
23:26:47	260.5 lb
23:27:46	259.0 lb
23:28:46	257.0 lb
23:29:45	255.5 lb
23:30:45	254.0 lb
23:31:44	252.5 lb
23:32:44	250.5 lb
23:33:43	249.0 lb
23:34:43	247.5 lb
23:35:42	246.0 lb
23:36:42	244.5 lb
23:37:41	242.5 lb
23:38:41	241.0 lb
23:39:40	239.5 lb
23:40:40	238.0 lb
23:41:39	236.0 lb
23:42:39	234.5 lb
23:43:38	233.0 lb
23:44:38	231.5 lb
23:45:37	230.0 lb
23:46:37	228.0 lb
23:47:36	226.5 lb
23:48:36	225.0 lb
23:49:35	223.5 lb
23:50:35	222.0 lb
23:51:34	220.0 lb
23:52:34	218.5 lb
23:53:33	217.0 lb
23:54:33	215.5 lb
23:55:32	214.0 lb
23:56:32	212.0 lb
23:57:31	210.5 lb
23:58:31	209.0 lb
23:59:30	207.5 lb
00:00:30	206.0 lb
00:01:29	204.0 lb
00:02:29	202.5 lb
00:03:28	201.0 lb
00:04:28	199.5 lb
00:05:27	198.0 lb
00:06:27	196.0 lb
00:07:27	194.5 lb
00:08:26	193.0 lb
00:09:26	191.5 lb
00:10:25	189.5 lb
00:11:25	188.0 lb
00:12:24	186.5 lb
00:13:24	185.0 lb
00:14:23	183.5 lb
00:15:23	181.5 lb
00:16:22	180.0 lb
00:17:22	178.5 lb
00:18:21	177.0 lb
00:19:21	175.5 lb
00:20:20	173.5 lb
00:21:20	172.0 lb

00:22:19	170.5 lb	3-4
00:23:19	169.0 lb	
00:24:18	167.5 lb	
00:25:18	165.5 lb	
00:26:17	164.0 lb	
00:27:17	162.5 lb	
00:28:16	161.0 lb	
00:29:16	159.5 lb	
00:30:15	157.5 lb	
00:31:15	156.0 lb	
00:32:14	154.5 lb	
00:33:14	153.0 lb	
00:34:13	151.5 lb	
00:35:13	150.0 lb	
00:36:12	148.0 lb	
00:37:12	146.5 lb	
00:38:11	145.0 lb	
00:39:11	143.5 lb	
00:40:10	142.0 lb	
00:41:10	140.0 lb	
00:42:09	138.5 lb	
00:43:09	137.0 lb	
00:44:08	135.5 lb	
00:45:08	134.0 lb	
00:46:07	132.0 lb	
00:47:07	130.5 lb	
00:48:06	129.0 lb	
00:49:06	127.5 lb	
00:50:05	126.0 lb	
00:51:05	124.5 lb	
00:52:04	122.5 lb	End
00:53:04	121.0 lb	3
00:54:04	119.5 lb	
00:55:03	118.0 lb	
00:56:03	116.5 lb	
00:57:02	115.0 lb	
00:58:02	113.0 lb	
00:59:01	111.5 lb	
01:00:01	110.0 lb	
01:01:00	108.5 lb	
01:02:00	107.0 lb	
01:02:59	105.5 lb	
01:03:45	104.0 lb	
01:03:45	12-12-2012	
Test End		

Metals Spike Feedrate Data

Note that the timestamp from the printout time was 1 hour and 5 minutes fast.

Run 1 - 12/11/12			Run 2 - 12/11/12			Run 3 - 12/11/12		
Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight
12:52:29	11:47:29	Start Time	16:34:11	15:29:11	Start Time	21:31:43	20:26:43	Start Time
12:52:29	11:47:29	893.0	16:34:11	15:29:11	524.5	21:31:43	20:26:43	442.0
12:53:29	11:48:29	891.0	16:35:11	15:30:11	523.0	21:32:43	20:27:43	440.5
12:54:28	11:49:28	889.5	16:36:10	15:31:10	521.0	21:33:42	20:28:42	439.0
12:55:28	11:50:28	888.0	16:37:10	15:32:10	519.5	21:34:42	20:29:42	437.5
12:56:27	11:51:27	886.0	16:38:09	15:33:09	518.0	21:35:41	20:30:41	436.0
12:57:27	11:52:27	884.5	16:39:09	15:34:09	516.5	21:36:41	20:31:41	434.0
12:58:26	11:53:26	883.0	16:40:08	15:35:08	515.0	21:37:40	20:32:40	432.5
12:59:26	11:54:26	881.0	16:41:08	15:36:08	513.5	21:38:40	20:33:40	431.0
13:00:25	11:55:25	879.5	16:42:08	15:37:08	512.0	21:39:39	20:34:39	429.5
13:01:25	11:56:25	878.0	16:43:07	15:38:07	510.5	21:40:39	20:35:39	430.5
13:02:24	11:57:24	876.0	16:44:07	15:39:07	508.5	21:41:38	20:36:38	429.0
13:03:24	11:58:24	874.5	16:45:06	15:40:06	507.0	21:42:38	20:37:38	427.5
13:04:23	11:59:23	872.5	16:46:06	15:41:06	505.5	21:43:37	20:38:37	426.0
13:05:23	12:00:23	871.0	16:47:05	15:42:05	504.0	21:44:37	20:39:37	424.5
13:06:22	12:01:22	869.5	16:48:05	15:43:05	502.5	21:45:36	20:40:36	423.0
13:07:22	12:02:22	867.5	16:49:04	15:44:04	501.0	21:46:36	20:41:36	421.0
13:08:21	12:03:21	866.0	16:50:04	15:45:04	499.5	21:47:35	20:42:35	419.5
13:09:21	12:04:21	864.5	16:51:03	15:46:03	497.5	21:48:35	20:43:35	416.0
13:10:20	12:05:20	862.5	16:52:03	15:47:03	496.0	21:49:34	20:44:34	414.0
13:11:20	12:06:20	861.0	16:53:02	15:48:02	494.5	21:50:34	20:45:34	412.5
13:12:19	12:07:19	859.5	16:54:02	15:49:02	493.0	21:51:34	20:46:34	411.0
13:13:19	12:08:19	857.5	16:55:01	15:50:01	491.5	21:52:33	20:47:33	409.5
13:14:18	12:09:18	856.0	16:56:01	15:51:01	490.0	21:53:33	20:48:33	408.0
13:15:18	12:10:18	854.5	16:57:00	15:52:00	488.5	21:54:32	20:49:32	406.5
13:16:17	12:11:17	852.5	16:58:00	15:53:00	487.0	21:55:32	20:50:32	405.0
13:17:17	12:12:17	851.0	16:58:59	15:53:59	485.5	21:56:31	20:51:31	403.5
13:18:16	12:13:16	849.5	16:59:59	15:54:59	483.5	21:57:31	20:52:31	402.0
13:19:16	12:14:16	847.5	17:00:58	15:55:58	482.0	21:58:30	20:53:30	400.5
13:20:15	12:15:15	846.0	17:01:58	15:56:58	480.5	21:59:30	20:54:30	399.0
13:21:15	12:16:15	844.5	17:02:57	15:57:57	479.0	22:00:29	20:55:29	397.5
13:22:14	12:17:14	842.5	17:03:57	15:58:57	477.5	22:01:29	20:56:29	396.0
13:23:14	12:18:14	841.0	17:04:56	15:59:56	476.0	22:02:28	20:57:28	394.0
13:24:13	12:19:13	839.5	17:05:56	16:00:56	474.5	22:03:28	20:58:28	392.5
13:25:13	12:20:13	837.5	17:06:55	16:01:55	473.0	22:04:27	20:59:27	391.0
13:26:12	12:21:12	836.0	17:07:55	16:02:55	471.5	22:05:27	21:00:27	389.5
13:27:12	12:22:12	834.5	17:08:54	16:03:54	469.5	22:06:26	21:01:26	388.0
13:28:11	12:23:11	832.5	17:09:54	16:04:54	468.0	22:07:26	21:02:26	386.5
13:29:11	12:24:11	831.0	17:10:53	16:05:53	466.5	22:08:25	21:03:25	385.0
13:30:10	12:25:10	829.5	17:11:53	16:06:53	465.0	22:09:25	21:04:25	383.5
13:31:10	12:26:10	827.5	17:12:52	16:07:52	463.5	22:10:24	21:05:24	382.0
13:32:09	12:27:09	826.0	17:13:52	16:08:52	462.0	22:11:24	21:06:24	380.5
13:33:09	12:28:09	824.5	17:14:51	16:09:51	460.5	22:12:23	21:07:23	379.0
13:34:08	12:29:08	822.5	17:15:51	16:10:51	459.0	22:13:23	21:08:23	377.5
13:35:08	12:30:08	821.0	17:16:50	16:11:50	457.5	22:14:22	21:09:22	375.5

Metals Spike Feedrate Data

Note that the timestamp from the printout time was 1 hour and 5 minutes fast.

Run 1 - 12/11/12			Run 2 - 12/11/12			Run 3 - 12/11/12		
Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight
13:36:08	12:31:08	819.5	17:17:50	16:12:50	456.0	22:15:22	21:10:22	374.0
13:37:07	12:32:07	817.5	17:18:49	16:13:49	454.5	22:16:21	21:11:21	372.5
13:38:07	12:33:07	816.0	17:19:49	16:14:49	452.5	22:17:21	21:12:21	371.0
13:39:06	12:34:06	814.5	17:20:48	16:15:48	451.0	22:18:20	21:13:20	369.5
13:40:06	12:35:06	812.5	17:21:48	16:16:48	449.5	22:19:20	21:14:20	368.0
13:41:05	12:36:05	811.0	17:22:47	16:17:47	448.0	22:20:19	21:15:19	366.5
13:42:05	12:37:05	809.5	17:23:47	16:18:47	446.5	22:21:19	21:16:19	365.0
13:43:04	12:38:04	808.0	17:24:47	16:19:47	445.0	22:22:18	21:17:18	363.5
13:44:04	12:39:04	806.0	17:25:46	16:20:46	443.5	22:23:18	21:18:18	362.0
13:45:03	12:40:03	804.5	17:26:46	16:21:46	442.0	22:24:17	21:19:17	360.5
13:46:03	12:41:03	803.0	17:27:45	16:22:45	440.5	22:25:17	21:20:17	359.0
13:47:02	12:42:02	801.0	17:28:45	16:23:45	439.0	22:26:16	21:21:16	357.5
13:48:02	12:43:02	799.5	17:29:44	16:24:44	437.0	22:27:16	21:22:16	355.5
13:49:01	12:44:01	798.0	17:30:44	16:25:44	435.5	22:28:15	21:23:15	354.0
13:50:01	12:45:01	796.0	17:31:43	16:26:43	434.0	22:29:15	21:24:15	352.5
13:51:00	12:46:00	794.5	17:32:43	16:27:43	432.5	22:30:14	21:25:14	351.0
13:52:00	12:47:00	793.0	17:33:42	16:28:42	431.0	22:31:14	21:26:14	349.5
13:52:59	12:47:59	791.0	17:34:42	16:29:42	429.5	22:32:13	21:27:13	348.0
13:53:59	12:48:59	789.5	17:35:41	16:30:41	428.0	22:33:13	21:28:13	346.5
13:54:58	12:49:58	788.0	17:36:41	16:31:41	426.5	22:34:12	21:29:12	345.0
13:55:58	12:50:58	786.0	17:37:40	16:32:40	425.0	22:35:12	21:30:12	343.5
13:56:57	12:51:57	784.5	17:38:40	16:33:40	423.5	22:36:12	21:31:12	342.0
13:57:57	12:52:57	783.0	17:39:39	16:34:39	421.5	22:37:11	21:32:11	340.5
13:58:56	12:53:56	781.0	17:40:39	16:35:39	420.0	22:38:11	21:33:11	339.0
13:59:56	12:54:56	779.5	17:41:38	16:36:38	418.5	22:39:10	21:34:10	337.5
14:00:55	12:55:55	778.0	17:42:38	16:37:38	417.0	22:40:10	21:35:10	336.0
14:01:55	12:56:55	776.0	17:43:37	16:38:37	415.5	22:41:09	21:36:09	334.5
14:02:54	12:57:54	774.5	17:44:37	16:39:37	414.0	22:42:09	21:37:09	333.0
14:03:54	12:58:54	773.0	17:45:36	16:40:36	412.5	22:43:08	21:38:08	331.5
14:04:53	12:59:53	771.0	17:46:36	16:41:36	411.0	22:44:08	21:39:08	330.0
14:05:53	13:00:53	769.5	17:47:35	16:42:35	409.5	22:45:07	21:40:07	328.0
14:06:52	13:01:52	768.0	17:48:35	16:43:35	408.0	22:46:07	21:41:07	326.5
14:07:52	13:02:52	766.0	17:49:34	16:44:34	406.5	22:47:06	21:42:06	325.0
14:08:51	13:03:51	764.5	17:50:34	16:45:34	405.0	22:48:06	21:43:06	323.5
14:09:51	13:04:51	763.0	17:51:33	16:46:33	403.0	22:49:05	21:44:05	322.0
14:10:50	13:05:50	761.5	17:52:33	16:47:33	401.5	22:50:05	21:45:05	320.5
14:11:50	13:06:50	759.5	17:53:32	16:48:32	400.0	22:51:04	21:46:04	318.5
14:12:49	13:07:49	758.0	17:54:32	16:49:32	398.5	22:52:04	21:47:04	317.0
14:13:49	13:08:49	756.5	17:55:31	16:50:31	397.0	22:53:03	21:48:03	315.5
14:14:48	13:09:48	754.5	17:56:31	16:51:31	395.5	22:54:03	21:49:03	314.0
14:15:48	13:10:48	753.0	17:57:30	16:52:30	394.0	22:55:02	21:50:02	312.0
14:16:47	13:11:47	751.5	17:58:30	16:53:30	392.5	22:56:02	21:51:02	310.5
14:17:47	13:12:47	749.5	17:59:29	16:54:29	391.0	22:57:01	21:52:01	309.0
14:18:46	13:13:46	748.0	18:00:29	16:55:29	389.5	22:58:01	21:53:01	307.5
14:19:46	13:14:46	746.5	18:01:28	16:56:28	388.0	22:59:00	21:54:00	305.5

Metals Spike Feedrate Data

Note that the timestamp from the printout time was 1 hour and 5 minutes fast.

Run 1 - 12/11/12			Run 2 - 12/11/12			Run 3 - 12/11/12		
Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight
14:20:45	13:15:45	745.0	18:02:28	16:57:28	386.5	23:00:00	21:55:00	304.0
14:21:45	13:16:45	743.0	18:03:27	16:58:27	385.5	23:00:59	21:55:59	302.5
14:22:45	13:17:45	741.5	18:04:27	16:59:27	383.5	23:01:59	21:56:59	301.0
14:23:44	13:18:44	740.0	18:05:26	17:00:26	381.5	23:02:58	21:57:58	299.0
14:24:44	13:19:44	738.0	18:06:26	17:01:26	380.0	23:03:58	21:58:58	297.5
14:25:43	13:20:43	736.5	18:07:25	17:02:25	378.5	23:04:57	21:59:57	296.0
14:26:43	13:21:43	735.0	18:08:25	17:03:25	377.0	23:05:57	22:00:57	294.5
14:27:42	13:22:42	733.0	18:09:25	17:04:25	375.5	23:06:56	22:01:56	292.5
14:28:42	13:23:42	731.5	18:10:24	17:05:24	374.0	23:07:56	22:02:56	291.0
14:29:41	13:24:41	730.0	18:11:24	17:06:24	372.5	23:08:55	22:03:55	289.5
14:30:41	13:25:41	728.5	18:12:23	17:07:23	371.0	23:09:55	22:04:55	288.0
14:31:40	13:26:40	726.5	18:13:23	17:08:23	369.5	23:10:54	22:05:54	286.5
14:32:40	13:27:40	725.0	18:14:22	17:09:22	368.0	23:11:54	22:06:54	284.5
14:33:39	13:28:39	723.5	18:15:22	17:10:22	366.5	23:12:53	22:07:53	283.0
14:34:39	13:29:39	721.5	18:16:21	17:11:21	365.0	23:13:53	22:08:53	281.5
14:35:38	13:30:38	720.0	18:17:21	17:12:21	363.5	23:14:52	22:09:52	280.0
14:36:38	13:31:38	718.5	18:18:20	17:13:20	361.5	23:15:52	22:10:52	278.0
14:37:37	13:32:37	716.5	18:19:20	17:14:20	360.0	23:16:51	22:11:51	276.5
14:38:37	13:33:37	715.0	18:20:19	17:15:19	358.5	23:17:51	22:12:51	275.0
14:39:36	13:34:36	713.5	18:21:19	17:16:19	357.0	23:18:50	22:13:50	273.5
14:40:36	13:35:36	711.5	18:22:18	17:17:18	355.5	23:19:50	22:14:50	271.5
14:41:35	13:36:35	710.0	18:23:18	17:18:18	354.0	23:20:49	22:15:49	270.0
14:42:35	13:37:35	708.5	18:24:17	17:19:17	352.5	23:21:49	22:16:49	268.5
14:43:34	13:38:34	706.5	18:25:17	17:20:17	351.0	23:22:49	22:17:49	267.0
14:44:34	13:39:34	705.0	18:26:16	17:21:16	349.5	23:23:48	22:18:48	265.5
14:45:33	13:40:33	703.5	18:27:16	17:22:16	348.0	23:24:48	22:19:48	263.5
14:46:33	13:41:33	702.0	18:28:15	17:23:15	346.5	23:25:47	22:20:47	262.0
14:47:32	13:42:32	700.0	18:29:15	17:24:15	345.0	23:26:47	22:21:47	260.5
14:48:32	13:43:32	698.5	18:30:14	17:25:14	343.5	23:27:46	22:22:46	259.0
14:49:31	13:44:31	697.0	18:31:14	17:26:14	342.0	23:28:46	22:23:46	257.0
14:50:31	13:45:31	695.0	18:32:13	17:27:13	340.0	23:29:45	22:24:45	255.5
14:51:30	13:46:30	693.5	18:33:13	17:28:13	338.5	23:30:45	22:25:45	254.0
14:52:30	13:47:30	692.0	18:34:12	17:29:12	337.0	23:31:44	22:26:44	252.5
14:53:29	13:48:29	690.0	18:35:12	17:30:12	335.5	23:32:44	22:27:44	250.5
14:54:29	13:49:29	688.5	18:36:11	17:31:11	334.0	23:33:43	22:28:43	249.0
14:55:28	13:50:28	687.0	18:37:11	17:32:11	332.5	23:34:43	22:29:43	247.5
14:56:28	13:51:28	685.0	18:38:10	17:33:10	331.0	23:35:42	22:30:42	246.0
14:57:27	13:52:27	683.5	18:39:10	17:34:10	329.5	23:36:42	22:31:42	244.5
14:58:27	13:53:27	682.0	18:40:09	17:35:09	328.0	23:37:41	22:32:41	242.5
14:59:26	13:54:26	680.0	18:41:09	17:36:09	326.5	23:38:41	22:33:41	241.0
15:00:26	13:55:26	678.5	18:42:08	17:37:08	325.0	23:39:40	22:34:40	239.5
15:01:25	13:56:25	677.0	18:43:08	17:38:08	323.5	23:40:40	22:35:40	238.0
15:02:25	13:57:25	675.0	18:44:07	17:39:07	322.0	23:41:39	22:36:39	236.0
15:03:24	13:58:24	673.5	18:45:07	17:40:07	320.5	23:42:39	22:37:39	234.5
15:04:24	13:59:24	672.0	18:46:06	17:41:06	319.0	23:43:38	22:38:38	233.0

Metals Spike Feedrate Data

Note that the timestamp from the printout time was 1 hour and 5 minutes fast.

Run 1 - 12/11/12			Run 2 - 12/11/12			Run 3 - 12/11/12		
Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight
15:05:23	14:00:23	670.5	18:47:06	17:42:06	317.0	23:44:38	22:39:38	231.5
15:06:23	14:01:23	668.5	18:48:05	17:43:05	315.5	23:45:37	22:40:37	230.0
15:07:22	14:02:22	667.0	18:49:05	17:44:05	314.0	23:46:37	22:41:37	228.0
15:08:22	14:03:22	665.5	18:50:04	17:45:04	312.5	23:47:36	22:42:36	226.5
15:09:22	14:04:22	663.5	18:51:04	17:46:04	311.0	23:48:36	22:43:36	225.0
15:10:21	14:05:21	662.0	18:52:03	17:47:03	309.5	23:49:35	22:44:35	223.5
15:11:21	14:06:21	660.5	18:53:03	17:48:03	308.0	23:50:35	22:45:35	222.0
15:12:20	14:07:20	658.5	18:54:02	17:49:02	306.5	23:51:34	22:46:34	220.0
15:13:20	14:08:20	657.0	18:55:02	17:50:02	305.0	23:52:34	22:47:34	218.5
15:14:19	14:09:19	655.5	18:56:02	17:51:02	303.5	23:53:33	22:48:33	217.0
15:15:19	14:10:19	654.0	18:57:01	17:52:01	302.0	23:54:33	22:49:33	215.5
15:16:18	14:11:18	652.0	18:58:01	17:53:01	300.5	23:55:32	22:50:32	214.0
15:17:18	14:12:18	650.5	18:59:00	17:54:00	299.0	23:56:32	22:51:32	212.0
15:18:17	14:13:17	649.0	19:00:00	17:55:00	297.5	23:57:31	22:52:31	210.5
15:19:17	14:14:17	647.0	19:00:59	17:55:59	296.0	23:58:31	22:53:31	209.0
15:20:16	14:15:16	645.5	19:01:59	17:56:59	294.5	23:59:30	22:54:30	207.5
15:21:16	14:16:16	644.0	19:02:58	17:57:58	293.0	0:00:30	22:55:30	206.0
15:22:15	14:17:15	642.5	19:03:58	17:58:58	291.5	0:01:29	22:56:29	204.0
15:23:15	14:18:15	640.5	19:04:57	17:59:57	290.0	0:02:29	22:57:29	202.5
15:24:14	14:19:14	639.0	19:05:57	18:00:57	288.0	0:03:28	22:58:28	201.0
15:25:14	14:20:14	637.5	19:06:56	18:01:56	286.5	0:04:28	22:59:28	199.5
15:26:13	14:21:13	635.5	19:07:56	18:02:56	285.0	0:05:27	23:00:27	198.0
15:27:13	14:22:13	634.0	19:08:55	18:03:55	283.5	0:06:27	23:01:27	196.0
15:28:12	14:23:12	632.5	19:09:55	18:04:55	282.0	0:07:27	23:02:27	194.5
15:29:12	14:24:12	630.5	19:10:54	18:05:54	280.5	0:08:26	23:03:26	193.0
15:30:11	14:25:11	629.0	19:11:54	18:06:54	279.0	0:09:26	23:04:26	191.5
15:31:11	14:26:11	627.5	19:12:53	18:07:53	277.5	0:10:25	23:05:25	189.5
15:32:10	14:27:10	626.0	19:13:53	18:08:53	276.0	0:11:25	23:06:25	188.0
15:33:10	14:28:10	624.0	19:14:52	18:09:52	274.5	0:12:24	23:07:24	186.5
15:34:09	14:29:09	622.5	19:15:52	18:10:52	273.0	0:13:24	23:08:24	185.0
15:35:09	14:30:09	621.0	19:16:51	18:11:51	271.5	0:14:23	23:09:23	183.5
15:36:08	14:31:08	619.0	19:17:51	18:12:51	270.0	0:15:23	23:10:23	181.5
15:37:08	14:32:08	617.5	19:18:50	18:13:50	268.5	0:16:22	23:11:22	180.0
15:38:07	14:33:07	616.0	19:19:50	18:14:50	267.0	0:17:22	23:12:22	178.5
15:39:07	14:34:07	614.0	19:20:49	18:15:49	265.5	0:18:21	23:13:21	177.0
15:40:06	14:35:06	612.5	19:21:49	18:16:49	264.0	0:19:21	23:14:21	175.5
15:41:06	14:36:06	611.0	19:22:48	18:17:48	262.5	0:20:20	23:15:20	173.5
15:42:05	14:37:05	609.5	19:23:48	18:18:48	260.5	0:21:20	23:16:20	172.0
15:43:05	14:38:05	607.5	19:24:47	18:19:47	259.0	0:22:19	23:17:19	170.5
15:44:04	14:39:04	606.0	19:25:47	18:20:47	257.5	0:23:19	23:18:19	169.0
15:45:04	14:40:04	604.5	19:26:46	18:21:46	256.0	0:24:18	23:19:18	167.5
15:46:03	14:41:03	602.5	19:27:46	18:22:46	254.5	0:25:18	23:20:18	165.5
15:47:03	14:42:03	601.0	19:28:45	18:23:45	253.0	0:26:17	23:21:17	164.0
15:48:02	14:43:02	599.5	19:29:45	18:24:45	251.5	0:27:17	23:22:17	162.5
15:49:02	14:44:02	598.0	19:30:44	18:25:44	250.0	0:28:16	23:23:16	161.0

Metals Spike Feedrate Data

Note that the timestamp from the printout time was 1 hour and 5 minutes fast.

Run 1 - 12/11/12			Run 2 - 12/11/12			Run 3 - 12/11/12		
Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight
15:50:01	14:45:01	596.0	19:31:44	18:26:44	248.5	0:29:16	23:24:16	159.5
15:51:01	14:46:01	594.5	19:32:43	18:27:43	247.0	0:30:15	23:25:15	157.5
15:52:00	14:47:00	593.0	19:33:43	18:28:43	245.5	0:31:15	23:26:15	156.0
15:53:00	14:48:00	591.0	19:34:42	18:29:42	244.0	0:32:14	23:27:14	154.5
15:53:59	14:48:59	589.5	19:35:42	18:30:42	242.5	0:33:14	23:28:14	153.0
15:54:59	14:49:59	588.0	19:36:41	18:31:41	241.0	0:34:13	23:29:13	151.5
15:55:59	14:50:59	586.5	19:37:41	18:32:41	239.5	0:35:13	23:30:13	150.0
15:56:58	14:51:58	584.5	19:38:40	18:33:40	238.0	0:36:12	23:31:12	148.0
15:57:58	14:52:58	583.0	19:39:40	18:34:40	236.5	0:37:12	23:32:12	146.5
15:58:57	14:53:57	581.5	19:40:40	18:35:40	235.0	0:38:11	23:33:11	145.0
15:59:57	14:54:57	579.5	19:41:39	18:36:39	233.5	0:39:11	23:34:11	143.5
16:00:56	14:55:56	578.0	19:42:39	18:37:39	231.5	0:40:10	23:35:10	142.0
16:01:56	14:56:56	576.5	19:43:38	18:38:38	230.0	0:41:10	23:36:10	140.0
16:02:55	14:57:55	575.0	19:44:38	18:39:38	228.5	0:42:09	23:37:09	138.5
16:03:55	14:58:55	573.0	19:45:37	18:40:37	227.0	0:43:09	23:38:09	137.0
16:04:54	14:59:54	571.5	19:46:37	18:41:37	225.5	0:44:08	23:39:08	135.5
16:05:54	15:00:54	570.0	19:47:36	18:42:36	224.0	0:45:08	23:40:08	134.0
16:06:53	15:01:53	568.5	19:48:36	18:43:36	222.5	0:46:07	23:41:07	132.0
16:07:53	15:02:53	566.5	19:49:35	18:44:35	221.0	0:47:07	23:42:07	130.5
16:08:52	15:03:52	565.0	19:50:35	18:45:35	219.5	0:48:06	23:43:06	129.0
16:09:52	15:04:52	563.5	19:51:34	18:46:34	218.0	0:49:06	23:44:06	127.5
16:10:51	15:05:51	561.5	19:52:34	18:47:34	216.5	0:50:05	23:45:05	126.0
16:11:51	15:06:51	560.0	19:53:33	18:48:33	215.0	0:51:05	23:46:05	124.5
16:12:50	15:07:50	558.5	19:54:33	18:49:33	213.5	0:52:04	23:47:04	122.5
16:13:50	15:08:50	557.0	19:55:32	18:50:32	212.0	0:53:04	23:48:04	121.0
16:14:49	15:09:49	555.5	19:56:32	18:51:32	210.5	0:54:04	23:49:04	119.5
16:15:49	15:10:49	553.5	19:57:31	18:52:31	209.0	0:55:03	23:50:03	118.0
16:16:48	15:11:48	552.0	19:58:31	18:53:31	207.5	0:56:03	23:51:03	116.5
16:17:48	15:12:48	550.5	19:59:30	18:54:30	206.0	0:57:02	23:52:02	115.0
16:18:47	15:13:47	549.0	20:00:30	18:55:30	204.5	0:58:02	23:53:02	113.0
16:19:47	15:14:47	547.5	20:01:29	18:56:29	203.0	0:59:01	23:54:01	111.5
16:20:46	15:15:46	545.5	20:02:29	18:57:29	201.5	1:00:01	23:55:01	110.0
16:21:46	15:16:46	544.0	20:03:28	18:58:28	200.0	1:01:00	23:56:00	108.5
16:22:45	15:17:45	542.5	20:04:28	18:59:28	198.5	1:02:00	23:57:00	107.0
16:23:45	15:18:45	541.0	20:05:27	19:00:27	197.0	1:02:59	23:57:59	105.5
16:24:44	15:19:44	539.5	20:06:27	19:01:27	195.5	1:03:45	23:58:45	104.0
16:25:44	15:20:44	538.0	20:07:26	19:02:26	194.0	1:03:45	23:58:45	#########
16:26:43	15:21:43	536.0	20:08:26	19:03:26	192.5			
16:27:43	15:22:43	534.5	20:09:25	19:04:25	191.0			
16:28:42	15:23:42	533.0	20:10:25	19:05:25	189.5			
16:29:42	15:24:42	531.5	20:11:24	19:06:24	188.0			
16:30:41	15:25:41	530.0	20:12:24	19:07:24	186.0			
16:31:41	15:26:41	528.5	20:13:23	19:08:23	184.5			
16:32:40	15:27:40	527.0	20:14:23	19:09:23	183.0			
16:32:48	15:27:48	526.5	20:15:22	19:10:22	181.5			

Metals Spike Feedrate Data

Note that the timestamp from the printout time was 1 hour and 5 minutes fast.

Run 1 - 12/11/12			Run 2 - 12/11/12			Run 3 - 12/11/12		
Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight	Printout Time	Actual Time	Weight
	END		20:16:22	19:11:22	180.0			
			20:17:21	19:12:21	178.5			
			20:18:21	19:13:21	177.0			
			20:19:20	19:14:20	175.5			
			20:20:20	19:15:20	174.0			
			20:21:19	19:16:19	172.5			
			20:22:19	19:17:19	171.0			
			20:23:18	19:18:18	169.5			
			20:24:18	19:19:18	168.0			
			20:25:18	19:20:18	166.5			
			20:26:17	19:21:17	165.0			
			20:27:17	19:22:17	163.5			
			20:28:16	19:23:16	162.0			
			20:29:16	19:24:16	160.5			
			20:30:15	19:25:15	159.0			
			20:31:15	19:26:15	157.5			
			20:32:14	19:27:14	156.0			
			20:33:14	19:28:14	154.5			
			20:34:13	19:29:13	153.0			
			20:35:13	19:30:13	151.5			
			20:36:12	19:31:12	150.0			
			20:37:12	19:32:12	148.5			
			20:38:11	19:33:11	147.0			
			20:39:11	19:34:11	145.5			
			20:40:10	19:35:10	144.0			
			20:41:10	19:36:10	142.5			
			20:42:09	19:37:09	141.0			
			20:43:09	19:38:09	139.5			
			20:44:08	19:39:08	138.0			
			20:45:08	19:40:08	136.5			
			20:46:07	19:41:07	135.0			
			20:47:07	19:42:07	133.5			
			20:48:06	19:43:06	132.0			
			20:49:06	19:44:06	130.5			
			20:50:05	19:45:05	129.0			
			20:51:05	19:46:05	127.5			
			20:52:04	19:47:04	126.0			
			20:53:04	19:48:04	124.5			
			20:54:03	19:49:03	123.0			
			20:55:03	19:50:03	121.5			
			20:56:02	19:51:02	120.0			
			20:57:02	19:52:02	118.5			
			20:58:01	19:53:01	117.0			
			20:59:01	19:54:01	115.5			
			21:00:00	19:55:00	114.0			

Metals Spike Feedrate Data

Note that the timestamp from the printout time was 1 hour and 5 minutes fast.

Run 1 - 12/11/12			Run 2 - 12/11/12			Run 3 - 12/11/12		
Printout Time	**Actual Time**	**Weight**	**Printout Time**	**Actual Time**	**Weight**	**Printout Time**	**Actual Time**	**Weight**
			21:01:00	19:56:00	112.5			
			21:01:59	19:56:59	111.0			
			21:02:59	19:57:59	109.5			
			21:03:58	19:58:58	108.0			
			21:04:58	19:59:58	106.5			
			21:05:58	20:00:58	105.0			
			21:06:57	20:01:57	103.5			
			21:07:57	20:02:57	102.0			
			21:08:56	20:03:56	100.5			
			21:09:56	20:04:56	99.0			
			21:10:55	20:05:55	97.5			
			21:11:55	20:06:55	96.0			
			21:12:54	20:07:54	94.5			
			21:13:54	20:08:54	93.0			
			21:14:01	20:09:01	92.5			
				END				

Eastman Chemical Company
Tennessee Operations

Certificate of Formulation

The following materials and quantities were used for the formulation of the Chlorine Spike (GMN P3079300) to be used for testing of the ~~RKI~~ LWCI, Bldg 248D. These tests are scheduled in October 2012.

RMW 12/17/12

Test Burn Batch TS120001

Compound	CAS No.	Eastman PM No.	Purity from Manufacturer	Quantity in Blend	% by Weight
Perchloroethylene (Tetrachloroethene)	127-18-4	7018	99.985 to 99.995%	14,000 lbs	87.0
Methanol	67-56-1	12	99.98%	2,082 pounds	13.0

Loaded

PM 7018 Batch Y072828312	14,000 pounds
PM 12 Batch TSBulk	2,082 pounds (315 gallons)
Total	16,082 pounds

Signature _____ Date 9/26/12

Jeremy Gibson
Print Name

Eastman Chemical Company

Eastman Chemical Company
Tennessee Operations

Certificate of Formulation

The following materials and quantities were used for the formulation of the Chlorine Spike (GMN P3079300) to be used for testing of the ~~RKI~~, Bldg 248D. These tests are scheduled in December 2012.

LwCE
RwV 14/7/12

Test Burn Batch TS120001

Compound	CAS No.	Eastman PM No.	Purity from Manufacturer	Quantity in Blend	% by Weight
Perchloroethylene (Tetrachloroethene)	127-18-4	7018	100.0%	9,100 lbs	87.0
Methanol	67-56-1	12	99.98%	1,350 pounds	13.0

Loaded

PM 7018	Batch Y072828312	2,800 pounds (100.0% purity on COA)
	Batch Y112829890	6,300 pounds (100.0% purity on COA)
PM 12	Batch TSBulk	1,350 pounds (206 gallons)
Total		10,460 pounds

Jeremy Gibson
Signature

12/8/12
Date

Jeremy Gibson
Print Name

APPENDIX II

PROCESS INSTRUMENTATION CALIBRATION RECORDS

LIQUID CHEMICAL WASTE INCINERATOR
QUARTERLY CALIBRATION & REQUIREMENTS
FOR HAZARDOUS WASTE T/S/D FACILITIES

CMS LOGSHEET

PERMIT DESCRIPTOR	PROCESS DESCRIPTOR	TAG NAME	RANGE	UNITS	TRIP	TIME	DATE	SIGNATURE
1. Combustion Chamber Temperature Low	Furnace Temperature	KTE-3566 KTE 3104 KTE 3105	0 LO 2500 HI	DEGF	<1674	10:28am	12/6/12	Carl Zwalen
2. Quench Chamber High Outlet Temperature		KTE-3506	100 LO 300 HI	DEGF	>210	10:12am	12/6/12	Carl Zwalen
3. Multi Rod Scrubber Ratio Of Liquid Input/gas Flow	Inlet Water Flow	KFT-3521	0 LO 3000 HI GPM	GKACFM	<70.9	10:18am	12/6/12	Carl Zwalen
4. Multi Rod Scrubber /Quench Blow down	Quench Blow Down Flow	KFT-3504 KFT-3556	0 LO 200 HI 0 LO 5 HI	% SOLIDS	DCS Calculation	10:16am	12/6/12	Carl Zwalen
5. Multi Rod Scrubber Exit Gas Temp		KTE-3515	50 LO 250 HI	DEGF	>130 (1 WESP) >160 (2 WESPS) >125 (1 WESP) >163 (2 WESPS)	10:06am	12/6/12	Carl Zwalen
6. WESP Blow down Control	WESP Stage 1 Blow down Flow	KFT-3547	0 LO 52 HI GPM	% SOLIDS	DCS Calculation	8:57am	12/6/12	Carl Zwalen
7. WESP Ratio of Liquid Input To Gas Flow – Stage 1 (When Energized)	WESP 1 Recirc Water Flow	KFT-3548	0 LO 600 HI GPM	GKACFM	<9.5 <10.7	8:56am	12/6/12	Carl Zwalen
8. WESP Ratio of Liquid Input To Gas Flow – Stage 2 (When Energized)	WESP 2 Recirc Water Flow	KFT-3537	0 LO 600 HI GPM	GKACFM	<9.5 <10.7	8:51am	12/6/12	Carl Zwalen
9. Combustion Zone High Pressure	Negative Draft Pressure	KPT 3106 KPT 3106C KPT 3657	-12 TO 12	INCHES WATER	-0.1	12:46pm	12/6/12	Carl Zwalen
10. ID Fan Inlet Gas Pressure	Inlet Gas Pressure	KPT-3529	-55 LO 5 HI	Inches WC		9:56am	12/6/12	Carl Zwalen
11. ID Fan Inlet Gas Temperature	Inlet Gas Temperature	KTE-3528	50 LO 150 HI	DEGF		10:01am	12/6/12	Carl Zwalen

REVISION DATE: 11/29/11

PERMIT DESCRIPTOR	PROCESS DESCRIPTOR	TAG NAME	RANGE	UNITS	TRIP	TIME	DATE	SIGNATURE
12. Low Atomization Air Pressure		KPS-3058		INCHES WATER	<18	10:21 am	12/6/12	Carl Gualtieri
13. Low Atomization Steam Pressure		KPS-3096 KPS-3097	0 LO 100 HI	PSIG	<20	8:44 am	12/6/12	Carl Gualtieri
14. WESP Ratio Power To Gas Flow To Any One WESP	Voltage and Current For WESP DD-05 and DD-06.	KIT-3613 KIT-3633 KET-3613 KET-3633	0-1500 MA DC 0-80 KVDC	WKACF M	<600 <890 <600 <890	10:56 am	12/3/12	Carl Gualtieri
15. High Liquid Feed Rate To Any One Nozzle	Waste Burner Flow 1 Waste Burner Flow 2 Waste Burner Flow 3	KFT-3083 KFT-3091 KFT-3076	0 LO 150 HI	POUNDS PER MINUTE	>8450 >8450 >3450	2:02 pm	12/6/12	Carl Gualtieri

Trip values are checked via the weekly "SELF CHECK" system

Calibration of feed rate to waste burner nozzles is also the calibration for organic bound chlorine, ash, and metals since each of these parameters are computer calculated based on feed rates from the burners.

NOTE: Calibration of individual waste burner nozzle flows is also the calibration for high total feed rate to all nozzles since this parameter is computer calculated based on the sum of all feeds to each nozzle.

Vannice, Ryan W

From: Vannice, Ryan W
Sent: Tuesday, September 11, 2012 8:44 AM
To: Jennings, Missy
Cc: King, Johnny W; Vannice, Ryan W
Subject: RE: Orifice Measures

The diameter stamped on the orifices is 3.365". The allowable tolerance during original fabrication is 0.005", so the measured diameter is well within even this tolerance.

From: Jennings, Missy
Sent: Monday, September 10, 2012 3:16 PM
To: Vannice, Ryan W
Cc: King, Johnny W
Subject: FW: Orifice Measures

Ryan:

The mechanics pulled the orifice plates from both WESP recirculation transmitters and I took them to B156 Big Shop for physical measure. Brian Dougherty with CM&S reliability services measured the orifices for us. Please refer to his note below.

Mechanics re-installed the orifice plates for both WESP recirculation transmitters; they also installed the FE3062 orifice plate for fuel oil 248D.

Thanks,

Missy

From: Dougherty, Brian G
Sent: Monday, September 10, 2012 2:14 PM
To: Jennings, Missy
Subject: Orifice Measures

The orifices measured 3.3645".

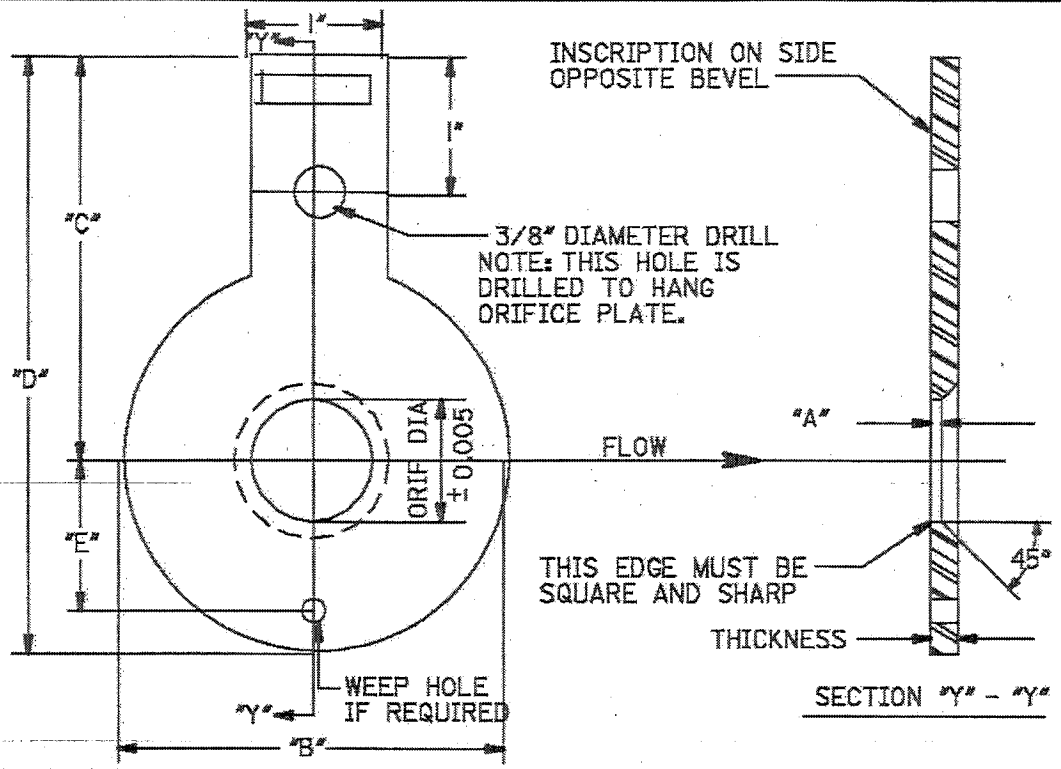
Brian Dougherty
Digital Reproduction Specialist
Eastman Chemical Co
Ph. 423-229-2641
E-Mail: bgdougherty@ eastman.com

STANDARD DETAIL

CONCENTRIC ORIFICE PLATE
SEPTEMBER, 1991

13406-032

RESPONSIBLE GROUP: APPLIED CONTROLS TECHNOLOGY



MATERIAL TO BE

JOB NUMBER	TAG NUMBER	BLDG.	NO. REQ'D	SERVICE	DIMENSIONS "A"	"B"	"C"	"D"	ORIFICE DIA 0.005	THICKNESS	WEEP HOLE DIA
	FE3062	248D	1	Liquid	2.09	2 7/8	3 1/2	4 5/16	0.346	1/8	N/A

PROJECT ENGINEER | PROJECT SUPERVISOR

*FABRICATE FROM SCRAP MATERIAL; BREAK SHARP EDGES ON TAB

SPECIAL INSTRUCTIONS TO SHOPS AND FIELD

SHIP TO B-481, Missy Jennings

NOTES:

1. COPIES OF THIS STANDARD ARE AVAILABLE UPON REQUEST FROM ENGINEERING PUBLICATIONS, EX. 3356.
2. OUTLINE DIMENSIONS FOR SEVERAL SIZES OF ORIFICE PLATES ARE SHOWN ON DETAIL F032.

CONCENTRIC ORIFICE PLATE | F032

CADD FILE NO. 00747665.DGN CER/WFE

ABSOLUTE LEVELS: 3 & 46

This document is the property of Eastman Chemical Company and must only be used in connection with work done for this company.

Installation complete
by 9/17/12

LWCI Calibrations for 2012 Comprehensive Performance Test

Tag Name	Measured Parameter(s)	Instrument	Calibration Prior to Performance Testing	Calibration Procedure #	Date	Signature
TI-3105, 3104 & 3566	Combustion chamber exit temperature	Type K Metal Thermocouples	Calibrate per procedure	TEMS-5123-4	See 4th quar cal sheet	Carl Zeuthen
TI-3528	Stack gas temperature	Resistance Temperature Detector (RTDs)	Calibrate per procedure	TEMS-5038-4	See 4th quar cal sheet	Carl Zeuthen
FI-3552	Stack gas flowrate	McCrometer V-Cone® Gas Flowmeter /DP Pressure Transmitter	Field comparison to pitot measurements	DCS values compared to EPA Method 2 results	11/26/12	John King
PI-3529	Stack gas pressure	Rosemount Pressure Sensor	Calibrate transmitter	TEMS-5013-4	See 4th quar cal sheet	Carl Zeuthen
PIC-3106, 3657, & 3106C	Combustion chamber pressure	Rosemount Pressure Sensor	Calibrate transmitter	TEMS-5013-4	See 4th quar cal sheet	Carl Zeuthen
FIC-3076, 3091, 3083,	Feedrates of wastes, surrogates and spikes	Micro Motion Flowmeter	Zero flowmeter	TEMS-5116-4	See 4th quar cal sheet	Carl Zeuthen
			Perform flow test	TEMS-5117-4	12/6/12	Carl Zeuthen
FIC-1058, 3043	Feedrates of wastes, surrogates and spikes	Micro Motion Flowmeter	Zero flowmeter	TEMS-5116-4	9:07a 12/3/12	Carl Zeuthen
			Perform flow test	TEMS-5117-4	9:11a 12/3/12	Carl Zeuthen
FE/FT-3062	Feedrate of waste-derived fuel	Rosemount Flowmeter/Orifice Plate	Calibrate transmitter	TEMS-5013-4	2:29pm 12/6/12	Carl Zeuthen
			Verify orifice dimensions	Physical measurement	see cal sheet	John King
AIC-3527	WESP #2 recirculation liquid pH	Rosemount pH Analyzer	Calibrate per section 9.0 of Eastman Services Laboratory Method No. THSE-A-ES-9001-POT-32-1	Method THSE-A-ES-9001-POT-32	6:30a 12/11/12	John King
FI-3521	Liquid flowrate to rod scrubber	Bailey, Fischer & Porter Flowmeter	Zero flowmeter	TEMS-5116-4	See 4th quar cal sheet	Carl Zeuthen

			Perform flow test	TEMS-5122-4	see cal sheet	John King
FI-3548 & 3537	Liquid flowrates to WESPs #1 and 2	Rosemount Flowmeter/Orifice Plate	Calibrate transmitter	TEMS-5013-4	See 4th quar Cal Sheet	Carl Zwalka
			Verify orifice dimensions	Physical measurement	see cal sheet	John King
FI-3556	Caustic solution flowrate	Rosemount	Zero Flowmeter	TEMS-5116-4	See 4th quar cal sheet	Carl Zwalka
			Perform flow test	TEMS-5117-4	"	Carl Zwalka
FI-3504	Quench/rod scrubber blowdown liquid flowrate	Endress Hauser Flowmeter	Zero flowmeter	TEMS-5116-4	See 4th quar cal sheet	Carl Zwalka
			Perform flow test	TEMS-5117-4	see cal sheet	John King
FI-3547	WESP #1 blowdown flowrate	Bailey, Fischer & Porter flowmeter	Zero flowmeter	TEMS-5116-4	See 4th quar cal sheet	Carl Zwalka
			Perform flow test	TEMS-5117-4	see cal sheet	John King
EI-3633 & 3613	WESP # 1 and 2 secondary voltage	Transducer Output From WESPs Power Units	Calibrate per procedure	TEMS-5120-4	See 4th quar cal sheet	Carl Zwalka
EI-3633 & 3613	WESP #1 and 2 secondary current	Transducer Output From WESPs Power Units	Calibrate per procedure	TEMS-5121-4	See 4th quar cal sheet	Carl Zwalka
TE-3515	Multi-rod scrubber exit gas temperature (°F)	Resistance Temperature Device (RTD)	Calibrate per procedure	TEMS-5038-4	See 4th quar cal sheet	Carl Zwalka
PS-3058	Atomization air pressure	Dwyer Pressure Switch	Calibrate per procedure	TEMS-5003-4	See 4th quar cal sheet	Carl Zwalka
PS-3096, PS-3097	Atomization steam pressure	Barksdale & United/Ashcroft Pressure Switches	Calibrate per procedure	TEMS-5003-4	See 4th quar cal sheet	Carl Zwalka
248-WI-1524	Weight of metals spike solution	Toledo Puma Weight Indicator	Calibrate per procedure	TEMS-5085-4	see cal sheet	John King

KILN #1, KILN #2 AND LIQUID CHEMICAL DESTRUCTOR
ANNUAL CALIBRATION & REQUIREMENTS
FOR HAZARDOUS WASTE T/S/D FACILITIES

CMS LOG SHEET

Permit Descriptor	Process Descriptor	Tag Name	Range	Units	Trip	Time	Signature	Date
1. Waste Flow Meter Kiln 1. High Liquid Feed	Waste Burner Number 1	FT 1087	0-150	LBM			N/A	
2. Waste Flow Meter Kiln 1. High Liquid Feed Rate	Waste Burner Number 2	FT-1096	0-150	LBM			N/A	
3. Waste Flow Meter Kiln 1. High Liquid Feed Rate To Any One Nozzle	Waste Burner Number 3	FT-1105	0-150	LBM				
4. Waste Flow Meter Kiln 1. High Liquid Feed Rate To Any One Nozzle (SCC)	Waste Burner Number 4	FT-1414	0-115	LBM				
5. Waste Flow Meter Kiln 1. High Liquid Feed Rate To Any One Nozzle (SCC)	Waste Burner Number 5	FT-1380	0-115	LBM				
6. Waste Flow Meter Kiln 1. High Liquid Feed Rate To Any One Nozzle (SCC)	Waste Burner Number 6	FT-1400	0-115	LBM				
7. Waste Flow Meter Kiln 1. High Liquid Feed Rate To Any One Nozzle (SCC)	Waste Burner Number 7	FT-1393	0-115	LBM				
8. Waste Flow Meter Kiln 2. High Liquid Feed Rate To Any One Nozzle	Waste Burner Number 1	FT-2046	0-150	LBM				
9. Waste Flow Meter Kiln 2. High Liquid Feed Rate To Any One Nozzle	Waste Burner Number 2	FT-2053	0-150	LBM				
10. Waste Flow Meter Kiln 2. High Liquid Feed Rate To Any One Nozzle	Waste Burner Number 3	FT-2060	0-150	LBM				
11. Waste Flow Meter Kiln 2. High Liquid Feed Rate To Any One Nozzle	Waste Burner Number 4	FT-2414	0-115	LBM				
12. Waste Flow Meter Kiln 2. High Liquid Feed Rate To Any One Nozzle	Waste Burner Number 5	FT-2380	0-115	LBM				
13. Waste Flow Meter Kiln 2. High Liquid Feed Rate To Any One Nozzle	Waste Burner Number 6	FT-2400	0-115	LBM				
14. Waste Flow Meter Kiln 2. High Liquid Feed Rate To Any One Nozzle	Waste Burner Number 7	FT-2393	0-115	LBM				

15. Waste Flow Meter LCWI. High Liquid Feed Rate To Any One Nozzle	Waste Burner "G"	FT-3076	0-150	LBM		1:59 pm	Carl Dunlap	12/6/12
16. Waste Flow Meter LCWI. High Liquid Feed Rate To Any One Nozzle	Waste Burner "C"	FT-3083	0-150	LBM		2:04 pm	Carl Dunlap	12/6/12
17. Waste Flow Meter LCWI. High Liquid Feed Rate To Any One Nozzle	Waste Burner "D"	FT-3091	0-150	LBM		2:09 pm	Carl Dunlap	12/6/12
18. Caustic Solution Flow Rate (Perform Flow Test)	Caustic Flow	FT-3555	0-5	GPM				
19. Caustic Solution Flow Rate (Perform Flow Test)	Caustic Flow	FT-3554	0-5	GPM				
20. Caustic Solution Flow Rate (Perform Flow Test)	Caustic Flow	FT-3556	0-5	GPM		2:56 pm	Carl Dunlap	12/7/12

** Trip value is checked via the weekly "SELF-CHECK" system.

** All MICROMOTION meters are to be flow tested annually for accuracy: #1 Kiln meters, #2 Kiln meters, SCC and the Liquid Chemical Destructor meters.

** This check sheet covers requirements for MACT and RCRA.

INSTRUMENT CALIBRATION REPORT - OOT ITEMS IN RED

Scale

Tag ID 248-WI-FS1
Description Floor Scale used Testing Purposes
Calibration Date 12/7/2012

Manufacturer	Mettler Toledo	Building	248		
Model Number	Jaguar	Location		Calibration Frequency	2 Years
Serial Number	5119255-5ab	Department	Waste Disposal Services	Classification	EPA
CIL	YES	Calibration Type		Temperature	
Process	248-SCALE	Status	Active	Humidity	

Calibration Specifications

Group Number 1 Group Name Group 1

Nominal/Input	Signal Type		Acc %	+/-	Output		Found As	Fnd As Dev	Pass/Fail	Left As	Dev %	Pass/Fail
0.0000 / 0.0000	LBS	Plus / Minus		2.00	0.00	LBS	0.00	0.000%	Pass	0.00	0.000%	Pass
1000.0000 / 250.0000	LBS	Plus / Minus		2.00	250.00	LBS	249.50	-0.025%	Pass	249.50	-0.030%	Pass
2000.0000 / 500.0000	LBS	Plus / Minus		2.00	500.00	LBS	499.50	-0.025%	Pass	499.50	-0.030%	Pass

Test Instruments Used During the Calibration

Test Instrument ID	Description	Manufacturer	Model Number	Serial Number	(As Of Cal Entry Date) Last Cal Date	Next Cal Date
277A-WM-12-0369	Weight Set B-277A Buggy 0369 (6 each 50lb)	WEIGHTS	NIST F	12-0369	3/16/2012	3/16/2013
277A-WM-7-0552	Scale Shop Test Weights in Van (Yellow Dot)	Mettler Toledo	N/A	7-0552	7/3/2012	7/3/2013

Manufacturer's manuals are located in the Document Control Coordinator's office.

Notes about this calibration

Calibrated by: U855769

Calibration Result Calibration Successful

INSTRUMENT CALIBRATION REPORT - OOT ITEMS IN RED

Tennessee Operations

Tag ID 481-FI-TESTSTAND
Description Test stand with 2" MicroMotion and indicator
Calibration Date 6/20/2012

Manufacturer	Micro-Motion	Building	481		
Model Number	CMF200M341NQBAEZZZ	Location		Calibration Frequency	1 Years
Serial Number	11033431	Department	Utilities Maintenance	Classification	NA
CIL	NO	Calibration Type		Temperature	
Process	NA	Status	Active	Humidity	

Calibration Specifications

Group Number 1 — Group Name: Group 1

Nominal/Input	Signal Type		Acc %	+/-	Output		Found As	Fnd As Dev	Pass/Fail	Left As	Dev %	Pass/Fail
0.00 / 0.00	LBS	Pct of Range	0.2500	0.00	0.00	LBS	0.00	0.000%	Pass	0.00	0.000%	Pass
500.00 / 502.33	LBS	Pct of Range	0.2500	0.00	502.33	LBS	502.17	-0.032%	Pass	502.17	-0.030%	Pass

Group Number 2 — Group Name: Group 2

Nominal/Input	Signal Type		Acc %	+/-	Output		Found As	Fnd As Dev	Pass/Fail	Left As	Dev %	Pass/Fail
0.00 / 0.00	LBS	Pct of Range	0.2500	0.00	0.00	LBS	0.00	0.000%	Pass	0.00	0.000%	Pass
8000.00 / 7918.50	LBS	Pct of Range	0.2500	0.00	7918.50	LBS	7,924.14	0.070%	Pass	7,924.14	0.070%	Pass

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

Test Instrument ID	Description	Manufacturer	Model Number	Serial Number	Last Cal Date	Next Cal Date
277A-FT-078B	inch test line	Micro-Motion	RFT9739	1523238	4/11/2012	10/11/2012
277A-FT-078C	inch test line	Micro-Motion	RFT9739	1523227	4/11/2012	10/11/2012

Manufacturer's manuals are located in the Document Control Coordinator's office.

Notes about this calibration

INSTRUMENT CALIBRATION REPORT - OOT ITEMS IN RED

Tennessee Operations

Tag ID 481-FI-TESTSTAND
Description Test stand with 2" MicroMotion and indicator
Calibration Date 12/13/2012

Manufacturer	Micro-Motion	Building	481		
Model Number	CMF200M341NQBAEZZZ	Location		Calibration Frequency	1 Years
Serial Number	11033431	Department	Utilities Maintenance	Classification	NA
CIL	NO	Calibration Type		Temperature	
Process	NA	Status	Active	Humidity	

Calibration Specifications

Group Number 1 — Group Name: Group 1

Nominal/Input	Signal Type		Acc %	+/-	Output		Found As	Fnd As Dev	Pass/Fail	Left As	Dev %	Pass/Fail
0.00 / 0.00	LBS	Pct of Range	0.2500	0.00	0.00	LBS	0.00	0.000%	Pass	0.00	0.000%	Pass
500.00 / 505.29	LBS	Pct of Range	0.2500	0.00	505.29	LBS	505.24	-0.010%	Pass	505.24	-0.010%	Pass

Group Number 2 — Group Name: Group 2

Nominal/Input	Signal Type		Acc %	+/-	Output		Found As	Fnd As Dev	Pass/Fail	Left As	Dev %	Pass/Fail
0.00 / 0.00	LBS	Pct of Range	0.2500	0.00	0.00	LBS	0.00	0.000%	Pass	0.00	0.000%	Pass
8000.00 / 8143.38	LBS	Pct of Range	0.2500	0.00	8143.38	LBS	8,142.87	-0.006%	Pass	8,142.87	-0.010%	Pass

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

Test Instrument ID	Description	Manufacturer	Model Number	Serial Number	Last Cal Date	Next Cal Date
277A-FT-078B	inch test line	Micro-Motion	RFT9739	1523238	10/11/2012	4/11/2013
277A-FT-078C	inch test line	Micro-Motion	RFT9739	1523227	10/11/2012	4/11/2013

Manufacturer's manuals are located in the Document Control Coordinator's office.

Notes about this calibration

APPENDIX III

CEMS CALIBRATION DATA

Incinerator Relative Accuracy Test Audit Results

RATA for: O_2

Source: Destructor B-248

Units: %

Reference Methods: Method 3A for O_2

Date: 11/28/2012

Applicable Regulation: 40 CFR Part 60 Performance Specification 3

Operators: D. Arnold, T. Hensley, J, Kellogg, R. Zimmerman

	Run	RM	CEMS	Difference[a]
OK	1	14.74	14.86	-0.12
OK	2	13.98	14.16	-0.18
OK	3	13.96	14.12	-0.16
OK	4	13.96	14.11	-0.14
OK	5	13.97	14.11	-0.14
OK	6	13.96	14.12	-0.16
Void	7	13.51	13.91	-0.41
OK	8	14.42	14.51	-0.09
OK	9	13.45	13.59	-0.14
OK	10	13.43	13.54	-0.10
OK	11	13.42	13.55	-0.13
	12			
	13			
	14			
	15			
	16			
Average		**13.93**	**14.07**	**-0.135**

Test Statistics	
Standard Deviation (S_a)[b]:	0.028
t-value($t_{0.975}$):	2.262
Confidence Coefficient (cc)[c]:	0.020

Relative Accuracy (RA)[d]:	%	Accept. Criteria
Based Upon Absolute Difference:	0.1	<=1

Total Valid Runs (OK): 10
Total Void Runs (Void): 1

Comments:

---

[a] *Average Difference* ($\bar{d}$): $d = \frac{1}{n}\sum_{i=1}^{n} d_i$

d = *Difference* (*RM* – *CEMS*)
n = *Number of valid runs*

[b] *Standard Deviation* (S_d): $S_d^2 = \frac{\sum_{i=1}^{n} d_i^2 - \frac{(\sum_{i=1}^{n} d_i)^2}{n}}{n-1}$

[c] *Confidence Coefficient* (cc): $cc = t_{0.975}\frac{S_d}{n^{1/2}}$

$t_{0.975}$ = *t – value for* 2.5% *error*

[d] *Relative Accuracy* (RA): $RA = \frac{|\bar{d}| + |cc|}{RM_{avg}} \times 100$

or $RA = |\bar{d}| + |cc|$

$|\bar{d}|$ = *Absolute value of average difference*
$|cc|$ = *Absolute value of confidence coefficient*
RM_{avg} = *Average value of reference method or applicable s*

Incinerator Gas RATA Data Entry Sheet

Date: 11/28/2012
Source: Destructor B-248
Operators: D. Arnold, T. Hensley, J, Kellogg, R. Zimmerman

			RM Uncorrected Values	RM Corrected Values	CEMS Concentrations
Run	Start Time	End Time	O_2 (%)	O_2 (%)	O_2 (%)
1	8:10	8:30	14.72	14.74	14.86
2	8:39	8:59	13.96	13.98	14.16
3	9:09	9:29	13.95	13.96	14.12
4	9:38	9:58	13.96	13.96	14.11
5	10:07	10:27	13.97	13.97	14.11
6	10:36	10:56	13.94	13.96	14.12
7	11:05	11:25	13.48	13.51	13.91
8	11:34	11:54	14.40	14.42	14.51
9	12:03	12:23	13.43	13.45	13.59
10	12:32	12:52	13.41	13.43	13.54
11	13:06	13:26	13.38	13.42	13.55
12					
13					
14					
15					
16					

Calibration Error Determination for MACT O_2

Date:	11/24/2012		**Reason for Test:**	4th Quarter Cal Error	
Source:	Destructor		**Reason for Test:**	Diagnostic	
Building:	B-248		**Test Aborted:**	No	
Primary Analyzer:	Servomex 1440	01440DIVO2/3593	**Alternate Analyzer:**		

Performed By:	MTR,WL

Monitor:	**O_2**		**Span:**	25	%
Level	**Cylinder Number**	**Concentration**	**Units**	**Expiration Date**	**Check**
Low	Nitrogen	0	%		
Mid	SG895063ALB	9.008	%	3/22/2013	OK: 8-10
High	CC337707	15.07	%	2/15/2015	OK: 14-16
Start Time:	10:19		**Finish Time:**	10:58	

Run Number	**Reference Value %**	**Actual Value %**	**Difference**		
			Low %	**Mid %**	**High %**
Low - 1	0	0.0	0.0	——	——
Mid - 1	9.008	9.1	——	0.1	——
High - 1	15.07	15.1	——	——	0.0
Low -2	0	0.0	0.0	——	——
Mid - 2	9.008	9.1	——	0.1	——
High - 2	15.07	15.1	——	——	0.0
Low - 3	0	0.0	0.0	——	——
Mid - 3	9.008	9.1	——	0.1	——
High - 3	15.07	15.1	——	——	0.0
		Calibration Error	0.0	0.1	0.0
		Limit <= 0.5%	PASS	PASS	PASS

Comments: Explain "Reason for Test," e.g., cite the maintenance event, if "Diagnostic."	4th Qtr PM/QA Cal Error

Reviewed By:	KM

Seven Day Calibration Drift Determination for MACT or RCRA CEMS

Date:	11/27/2012	**Reason for Test:**	Other		
Source:	Destructor	**Reason for Test:**	Other		
Building:	B-248				
Monitor:	O2	**Span:**	25	%	
Primary Analyzer:	Servomex 1440	01440DIVO2/3593	**Alternate Analyzer:**		
Performed By:	Kevin Murdock, Greg Harper				

Cylinder Number	Concentration	Units	Expiration Date	Check Exp.
Nitrogen	0	%		
CC337707	15.070	%	2/15/2015	OK
		%		
		%		

	Day	Date	Time	Reference Values %	Actual Values %	Absolute Difference %	Percent of Span
ZERO (LOW LEVEL)	1	11/21/2012	8:32	0	0.0	0.0	0.0%
	2	11/22/2012	5:06	0	0.0	0.0	0.0%
	3	11/23/2012	5:06	0	0.0	0.0	0.0%
	4	11/24/2012	5:06	0	0.0	0.0	0.0%
	5	11/25/2012	5:06	0	0.0	0.0	0.0%
	6	11/26/2012	5:06	0	0.0	0.0	0.0%
	7	11/27/2012	5:06	0	0.0	0.0	0.0%
					Maximum	0.0	0.0%
					Limit <= 0.5% Difference	PASS	
HIGH LEVEL	1	11/21/2012	8:32	15.1	15.1	0.0	0.0%
	2	11/22/2012	5:06	15.1	15.1	0.0	0.0%
	3	11/23/2012	5:06	15.1	15.1	0.0	0.0%
	4	11/24/2012	5:06	15.1	15.1	0.0	0.0%
	5	11/25/2012	5:06	15.1	15.1	0.0	0.0%
	6	11/26/2012	5:06	15.1	15.1	0.0	0.0%
	7	11/27/2012	5:06	15.1	15.1	0.0	0.0%
					Maximum	0.0	0.0%
					Limit <= 0.5% Difference	PASS	

Comments: Explain "Reason for Test," e.g., cite the maintenance event, if "Diagnostic."	7-Day Drift Determination Test for O2 conducted prior to the LCD HWC CPT.
Reviewed By:	GH

Response Time Determination for MACT CO or O2

Date:	11/24/2012	**Reason for Test:**	Diagnostic	
Source:	Destructor	**Reason for Test:**	Diagnostic	
Building:	B-248			
Monitor:	CO		O2	
Primary Analyzer:	N/A	N/A	Servomex 1440	01440DIVO2/3593
Alternate Analyzer:				

Performed By:	MTR,WL

Level	**Cylinder Number**	**CO (ppm)**	**O2 (%)**	**Expiration Date**	**Check Exp.**
Zero:	Nitrogen	0	0	N/A	N/A
High Span:	CC337707		15.07	2/15/2015	OK
Low Span (CO only):					

Run	**Description**	**CO High Range**	**CO Low Range**	**O2**
	95%			**14.3**
	5%			**0.8**
	Start Time(s) (hr:min)	NA	NA	9:54
Upscale Run 1	zero to high (sec)	NA	NA	29
Downscale Run 1	high to zero (sec)	NA	NA	31
Upscale Run 2	zero to high (sec)	NA	NA	30
Downscale Run 2	high to zero (sec)	NA	NA	31
Upscale Run 3	zero to high (sec)	NA	NA	29
Downscale Run 3	high to zero (sec)	NA	NA	31
	End Time(s) (hr:min)	NA	NA	10:15
Average Upscale Response Time (min)		#DIV/0!	#DIV/0!	0.5
Average Downscale Response Time (min)		#DIV/0!	#DIV/0!	0.5
Limit <= 2 min (for both)				PASS

Comments: Explain "Reason for Test," e.g., cite the maintenance event, if "Diagnostic."	LCD 4th Qtr O2 Response Time.

Reviewed By:	KM

Calibration Error Determination for MACT CO or THC

Date:	11/24/2012		**Reason for Test:**	4th Quarter Cal Error	
Source:	Destructor		**Reason for Test:**	Diagnostic	
Building:	B-248		**Test Aborted:**	No	
Primary Analyzer:	Thermo 51i-HT	1127349670	**Alternate Analyzer:**		

Performed By:	MTR,WL

Low Span

Monitor:	THC		**Span:**	100	ppmv
Level	**Cylinder Number**	**Concentration**	**Units**	**Expiration Date**	**Check**
Low	Nitrogen	0	ppmv		
Mid	SG895063ALB	36.05	ppmv	3/22/2013	OK: 30-40
High	CC337707	75.59	ppmv	2/15/2015	OK: 70-80
Start Time:	10:19		**Finish Time:**	10:58	

Run	**Reference Value** ppmv	**Actual Value** ppmv	**Difference**		
			Low ppmv	**Mid** ppmv	**High** ppmv
Low - 1	0	0.0	0.0	——	——
Mid - 1	36.05	36.7	——	0.7	——
High - 1	75.59	76.1	——	——	0.5
Low -2	0	0.0	0.0	——	——
Mid - 2	36.05	36.7	——	0.7	——
High - 2	75.59	76.1	——	——	0.5
Low - 3	0	0.0	0.0	——	——
Mid - 3	36.05	36.7	——	0.7	——
High - 3	75.59	76.0	——	——	0.4
		Mean Difference	0.0	0.7	0.5
		Calibration Error (Percent of Span)	0.0%	0.7%	0.5%
		Limit <= 5% of Span	PASS	PASS	PASS

High Span (CO only)

Monitor:			**Span:**		ppmv
Level	**Cylinder Number**	**Concentration**	**Units**	**Expiration Date**	**Check**
Low	Nitrogen	0	ppmv		
Mid			ppmv		
High			ppmv		
Start Time:			**Finish Time:**		

Run	**Reference Value** ppmv	**Actual Value** ppmv	**Difference**		
			Low ppmv	**Mid** ppmv	**High** ppmv
Low - 1	0			——	——
Mid - 1			——		——
High - 1			——	——	
Low -2	0			——	——
Mid - 2			——		——
High - 2			——	——	
Low - 3	0			——	——
Mid - 3			——		——
High - 3			——	——	
		Mean Difference			
		Calibration Error (Percent of Span)			
		Limit <= 5% of Span			

Comments: Explain "Reason for Test," e.g., cite the maintenance event, if "Diagnostic."	4th Qtr LCD THC Cal Error

Reviewed By:	KM

Seven Day Calibration Drift Determination for MACT or RCRA CEMS

Date:	11/27/2012	**Reason for Test:**	Other		
Source:	Destructor	**Reason for Test:**	Other		
Building:	B-248				
Monitor:	THC	**Span:**	100	ppmv	
Primary Analyzer:	Thermo 51i-HT	1127349670	**Alternate Analyzer:**		
Performed By:	Kevin Murdock, Greg Harper				

Cylinder Number	Concentration	Units	Expiration Date	Check Exp.
Nitrogen	0	ppmv		
CC337707	75.590	ppmv	2/15/2015	OK
		ppmv		
		ppmv		

	Day	Date	Time	Reference Values ppmv	Actual Values ppmv	Absolute Difference ppmv	Percent of Span
ZERO (LOW LEVEL)	1	11/21/2012	8:32	0	0.0	0.0	0.0%
	2	11/22/2012	5:06	0	0.0	0.0	0.0%
	3	11/23/2012	5:06	0	0.0	0.0	0.0%
	4	11/24/2012	5:06	0	-0.1	0.1	0.1%
	5	11/25/2012	5:06	0	-0.1	0.1	0.1%
	6	11/26/2012	5:06	0	-0.1	0.1	0.1%
	7	11/27/2012	5:06	0	0.0	0.0	0.0%
					Maximum	0.1	0.1%
					Limit <= 3% of Span		PASS
HIGH LEVEL	1	11/21/2012	8:32	75.6	75.7	0.1	0.1%
	2	11/22/2012	5:06	75.6	76.4	0.8	0.8%
	3	11/23/2012	5:06	75.6	76.7	1.1	1.1%
	4	11/24/2012	5:06	75.6	76.6	1.0	1.0%
	5	11/25/2012	5:06	75.6	75.8	0.2	0.2%
	6	11/26/2012	5:06	75.6	75.6	0.0	0.0%
	7	11/27/2012	5:06	75.6	75.4	0.2	0.2%
					Maximum	1.1	1.1%
					Limit <= 3% of Span		PASS

Comments: Explain "Reason for Test," e.g., cite the maintenance event, if "Diagnostic."	7-Day Drift Determination Test for THC conducted prior to the LCD HWC CPT.
Reviewed By:	GH

Response Time Determination for MACT THC

Date:	11/24/2012	**Reason for Test:**	Diagnostic
Source:	Destructor	**Reason for Test:**	Diagnostic
Building:	B-248		
Monitor:	THC		
Primary Analyzer:	Thermo 51i-HT	1127349670	
Alternate Analyzer:			

Performed By:	MTR,WL

Level	Cylinder Number	Concentration	Units	Expiration Date	Check Exp.
Zero:	Nitrogen	0	ppmv		
Span:	CC337707	75.59	ppmv	2/15/2015	OK

Run	Description	Response Time Data
	Start Time(s) (hr:min)	9:18
Upscale Run 1	stack to zero	——
	zero to stack (sec)	20
Downscale Run 1	stack to high	——
	high to stack (sec)	40
Upscale Run 2	stack to zero	——
	zero to stack (sec)	20
Downscale Run 2	stack to high	——
	high to stack (sec)	40
Upscale Run 3	stack to zero	——
	zero to stack (sec)	20
Downscale Run 3	stack to high	——
	high to stack (sec)	40
	End Time(s) (hr:min)	9:54
Average Upscale Response Time (min)		0.3
Average Downscale Response Time (min)		0.7
Limit <= 2 min (for both)		PASS

Comments: Explain "Reason for Test," e.g., cite the maintenance event, if "Diagnostic."	4th Qtr PM/QA Testing.

Reviewed By:	KM

V-Cone Certification Summary Sheet

Date: 11/26/2012
Source: Destructor B-248
Personnel: D. Arnold, C. Ashworth, T. Hensley, R. Zimmerman

Load	Start Time	End Time	V-Cone flow (acfm)	Corrected RM flow (acfm)[1]	Percent difference	V-Cone flow (dscfm)[2]	RM flow (dscfm)	Percent difference	Abs Stack Temp (°R)	Abs Stack Press (in Hg)	Abs V-Cone Temp (°R)	Abs V-Cone Press (in Hg)
Low	13:38	13:58	15264	15868	3.8	11986	12597	4.9	571.0	28.68	573.4	28.36
Mid	14:32	14:52	18825	19504	3.5	14551	15257	4.6	574.3	28.67	573.6	28.02
High	15:24	15:44	22613	23112	2.2	17194	17746	3.1	577.7	28.67	574.1	27.66
Certification Acceptance: <= 10%			**ACFM Status: Pass**			**DSCFM Status: Pass**						

[1] RM acfm stack flow is corrected to match V-Cone absolute temperature and pressure.

[2] V-Cone dscfm stack flow is combustion gas flow from Destructor DCS tag KFT3552A plus contributions to stack flow totaling 1600 dscfm, from air flow through the wet electrostatic precipitators not included in KFT3552A, i.e., V-Cone dscfm stack flow = KFT3552A + 1600.

V-Cone Flow Data Entry Sheet

Date: 11/26/2012
Source: Destructor B-248
Personnel: D. Arnold, C. Ashworth, T. Hensley, R. Zimmerman
Barometric Pressure (in Hg): 28.69

Series	Load	Run	Run Times		Reference Method Data				V-Cone Data			
			Start	End	Static Pressure (in H_2O)	Stack Temp (°F)	Flow (acfm)	Flow (dscfm)	Differential Pressure (in H_2O)[1]	Temp (°F)[2]	Flow (acfm)[3]	Flow (dscfm)[4]
1	Low	1	13:38	13:44	-0.15	111	15511	12505	-4.8	113.3	15216	10348
		2	13:45	13:51	-0.15	111	15603	12578	-4.3	113.5	15271	10378
		3	13:52	13:58	-0.15	111	15767	12708	-4.2	113.6	15305	10431
			Averages		**-0.15**	**111.0**	**15627**	**12597**	**-4.4**	**113.4**	**15264**	**10386**
2	Mid	1	14:32	14:38	-0.25	114	18972	15177	-9.1	113.0	18764	12956
		2	14:39	14:45	-0.25	115	19143	15291	-9.2	113.9	18899	12955
		3	14:46	14:52	-0.25	114	19130	15303	-9.2	113.9	18813	12941
			Averages		**-0.25**	**114.3**	**19082**	**15257**	**-9.2**	**113.6**	**18825**	**12951**
3	High	1	15:24	15:30	-0.33	119	22458	17728	-13.9	114.4	22495	15461
		2	15:31	15:37	-0.33	117	22673	17930	-13.9	114.5	22745	15645
		3	15:38	15:44	-0.33	117	22203	17580	-14.0	113.3	22600	15676
			Averages		**-0.33**	**117.7**	**22445**	**17746**	**-13.9**	**114.1**	**22613**	**15594**

[1] V-Cone stack gas pressure from Destructor DCS tag KPT3529.

[2] V-Cone stack gas temperature from Destructor DCS tag KTE3528.

[3] V-Cone acfm stack flow from Destructor DCS tag KFT3552.

[4] V-Cone dscfm combustion gas flow from Destructor DCS tag KFT3552A.
Contributions to stack flow totaling 1600 dscfm from air flow through the wet electrostatic precipitators are not included in KFT3552A.

APPENDIX IV

EXAMPLE CALCULATIONS

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1.0 CALCULATIONS FOR ESTABLISHING OPERATING PARAMETER LIMITS

Per 40 CFR §63.1209, values for most operating parameter limits (OPLs) are established based on either an average of the test run averages or on the average of the maximum hourly rolling averages (HRAs) for each test run. For limits based on the average of test runs, the one-minute values for the specified parameter were averaged over the timeframe of each sampling run for each emission sampling train. The averages from each of the three test runs were then averaged to determine the OPL. For limits based on the average of the maximum HRAs for each test run, the hourly rolling average was calculated based on the current one-minute value and the 59 previous one-minute values. The first HRA was calculated on the 60^{th} minute into the run. To determine the OPL, the maximum HRAs from each run were averaged.

Several parameters used to set OPLs were not directly recorded by the PI system during the CPT. These include total hazardous waste feedrates, constituent feedrates, metals feedrates, and solids concentration in the quench and WESP #1 blowdown streams. The methods used to calculate these parameters are discussed in this section.

It should be noted that the calculations presented below are examples based on spreadsheet calculations used for data reduction. The spreadsheet calculations are more precise than the calculations presented below. As a result of the precision of the spreadsheet calculations, some of the values in the examples presented below may appear to have minor rounding errors. Unless stated otherwise, the example calculations that follow utilize one-minute values collected during Run 1 on December 11, 2012.

1.1 Total Hazardous Waste Feedrate

Each one-minute value for the feedrates of the surrogate waste (Burners C and D), waste EDA (Burner G), chlorine spike (Burner G), and ash spike (Burner C) were converted to units of lb/hr. The one-minute values for the weight of the metal spiking solution were used to calculate the metal spike feedrate (Burner D) in units of pounds per hour.

The surrogate waste, waste EDA, chlorine spike, and ash spike were recorded in units of lb/min. During the first minute of Run 1, the ash spike feedrate in lb/hr was:

$$2{,}021\frac{lb\ AshSpike}{hr} = 33.68\frac{lb\ AshSpike}{min} * 60\frac{min}{hr}$$

The metal spike feedrates in units of lb/hr were calculated using the following equation.

$$Metals\ Spike\ Feedrate_{Current\ \ Minute}\ \frac{lb\ \ metal\ \ spike}{hr} =$$

$$\frac{Tank\ Weight_{Previous\ \ Minute}(lb) - Tank\ Weight_{Current\ \ Minute}(lb)}{1\ \ min} * 60\ \frac{min}{hr}$$

Raw data for the tank weight were collected at 59-second intervals. Linear interpolation was used to calculate the tank weight at 60-second intervals so the data would be consistent with the other feedrate data. During the first minute of Run 1, the metal spike feedrate was:

$$112.2\ \frac{lb\ metal\ \ spike}{hr} = \frac{854.95\ \ lb - 853.08\ \ lb}{1 \cdot min} * 60\ \frac{min}{hr}$$

For each minute, the feedrates of the waste streams and spike streams in units of lb/hr were summed to give the total hazardous feedrate. These one-minute values for total hazardous waste feedrates were used to calculate the HRA by averaging the current one-minute value and the previous 59 one-minute values. The maximum HRA from each run (3 runs total) were then averaged to determine the OPL.

1.2 Constituent Feedrates

Constituent feedrates were determined for each stream using the stream feedrate and the mass fraction of the constituent in each feed stream. Generally, the feedrate of the constituent, denoted by X, can be described by the following equation:

$$Constituent\ Feedrate\left(\frac{lb\ X}{hr}\right) = Stream\ Feedrate\left(\frac{lb\ stream}{hr}\right) * Mass\ Fraction\ of\ \ X\left(\frac{lb\ X}{lb\ stream}\right)$$

The constituent concentrations of each feed stream were obtained through analysis of the samples collected during the test, Certificates of Analysis (COA) for the metal spike, or Certificates of Formulations (COFs) for the chlorine spike. The constituent concentrations were expressed in units of mass percent or μg/g. In accordance with the CPT Plan, for the constituent concentrations (metals, chlorine, and ash) that were determined not to be present at detectable levels, it was assumed that the constituent was present at one-half the analytical detection limit. Each of these units can be converted to the mass fraction of the constituent in the stream. The calculations for determining the individual feedrates for ash, chlorine, chromium, and lead are discussed below.

1.2.1 Ash Feedrate

The total ash feedrate to the LCD was calculated by summing the ash feedrates from the following feed streams:

- Waste-derived fuel
- Surrogate waste
- Waste EDA
- Ash spike
- Metal spike

Ash from the chlorine spike was not determined or included in the ash feedrate, because it was expected to be negligible.

For waste EDA, surrogate waste, and waste-derived fuel, the ash concentration was reported in units of mass percent (i.e., lb constituent/100 lb stream), therefore the mass fraction is the mass percent divided by 100.

For example, the mass fraction of ash in the Run 1 Waste EDA stream was:

$$0.0017 \frac{lb\,ash}{lb\,stream} = \frac{0.17\%\ ash}{100\%}$$

The ash spike was fed as a solution of NaCl in water. This stream was analyzed to determine total suspended solids (TSS) and total dissolved solids (TDS), expressed in mg/L. The mass fraction of ash in the ash spike stream was determined from the following equation:

$$Mass\ Fraction\ Ash_{ash\ spike}, \frac{lb\ ash}{lb\ ash\ spike} = \frac{\left(TDS \frac{mg\ ash}{L} + TSS \frac{mg\ ash}{L} \right) * \frac{1 \cdot kg\ ash}{10^6\, mg\ ash}}{ash\ spike\ density \frac{kg\ ash\ spike}{L}} * \frac{lb\ ash * kg\ ash\ spike}{lb\ ash\ spike * kg\ ash}$$

Reference data on NaCl solutions (Perry's Chemical Engineer Handbook, 7th Edition, page 2-105, Table 2-88) were used to approximate the stream density. The mass fraction of ash in the Run 1 ash spike stream was:

$$0.1762\frac{lb\ ash}{lb\ ash\ spike}=\frac{\left(198000\frac{mg\ ash}{L}+29.2\frac{mg\ ash}{L}\right)*\frac{1\cdot kg\ ash}{10^{6}mg\ ash}}{1.1239\frac{kg\ ash\ spike}{L}}*\frac{lb\ ash*kg\ ash\ spike}{lb\ ash\ spike*kg\ ash}$$

For the mass fraction of ash in the metal spike the following equation was used:

$$Mass\ Fraction\ Ash_{metal\ spike},\frac{lb\,ash}{lb\,metal\ \ spike}=$$

$$\frac{Mass\ \ Percent\ \ Cr,\%}{100\%}\frac{lb\ \ Cr}{lb\ \ metal\ \ spike}*\frac{lb\ \ ash}{lb\ \ Cr}+\frac{Mass\ \ Percent\ \ Pb,\%}{100\%}\frac{lb\ \ Pb}{lb\ \ metal\ \ spike}*\frac{lb\ \ ash}{lb\ \ Pb}$$

Using the COA, the mass fraction of ash in the metal spike stream was:

$$0.0734\frac{lb\,ash}{lb\,metal\ \ spike}=\frac{5.27\%}{100\%}\frac{lb\ Cr}{lb\ metal\ \ spike}*\frac{lb\ ash}{lb\ Cr}+\frac{2.07\%}{100\%}\frac{lb\ Pb}{lb\ metal\ \ spike}*\frac{lb\ ash}{lb\ Pb}$$

After calculating the mass fraction of ash in each feed stream, the feedrate of ash from each feed stream was determined using the following equation:

$$Ash\ Feedrate_{stream},\frac{lb\,ash}{hr}=Stream\ Feedrate\frac{lb\,stream}{hr}*Mass\ Fraction\ Ash_{stream},\frac{lb\,ash}{lb\,stream}$$

The calculations for stream feedrates in units of lb/hr are presented in Section 1.1. During the first minute of Run 1, the ash feedrate from the ash spike stream was:

$$356\frac{lb\,ash}{hr}=2021\frac{lb\,ash\ \ spike}{hr}*0.1762\frac{lb\,ash}{lb\,ash\ \ spike}$$

For each minute, the feedrates of ash contributed from each feed stream were summed to give the total ash feedrate. These one-minute values for total ash feedrate were used to establish an OPL as the average of the test run averages.

1.2.2 Chlorine Feedrate

The total chlorine (organic and inorganic) feedrate was calculated by summing the contribution of chlorine from the following feed streams:

- Waste-derived fuel
- Surrogate waste
- Waste EDA
- Ash spike
- Chlorine spike

Chlorine from the metals spikes was not determined or included in the chlorine feedrate, because it was expected to be negligible in comparison to the chlorine from the other feed streams and spikes.

For Waste EDA, surrogate waste, and waste-derived fuel, the chlorine concentration was reported in units of mass percent. As discussed previously, mass fraction is mass percent divided by 100. For example, the mass fraction of chlorine in the Run 1 Waste EDA stream was:

$$0.00024 \frac{lb\,Cl}{lb\,Waste\ EDA} = \frac{0.024\%\ Cl}{100\%}$$

The mass fraction of chlorine in the ash spike stream was determined using the mass fraction of ash in that stream. The calculations for determining the mass fraction of ash in the ash spike stream are presented in Section 1.2.1. Because the ash spike stream was a solution of NaCl and water, the mass fraction of ash is equivalent to the mass fraction of NaCl in that stream. The mass fraction of chloride in the ash spike stream was determined by the following equation:

$$Mass\ \ fraction\ \ Cl_{ash\ spike} \frac{lb\ \ Cl}{lb\ \ ash\ \ spike} =$$

$$Mass\ \ fraction\ \ ash\ \ (NaCl)_{ash\ spike} \frac{lb\ \ NaCl}{lb\ \ ash\ \ spike} * \frac{35.453\ \ lb\ \ Cl}{58.443\ \ lb\ \ NaCl}$$

For example, the mass fraction of chlorine in the Run 1 ash spike stream was:

$$0.1069 \frac{lb\,Cl}{lb\,ash\ spike} = 0.1762 \frac{lb\ NaCl}{lb\,ash\ spike} * \frac{35.453\ lb\ Cl}{58.443\ lb\ NaCl}$$

For determining the chlorine concentration of the chlorine spike stream, the mass fraction of perchloroethylene (perc) was determined. Since methanol does not contain chlorine, it was left out of the chlorine concentration calculations. Based on the COF, the mass fraction of perchloroethylene in the chlorine spike stream was:

$$0.86987 \frac{lb\ perc}{lb\ chlorine\ spike} = \frac{87.0\%\ perc}{100\%} * \frac{99.985\%\ pure}{100\%}$$

Using these results, the mass fraction of chlorine in the chlorine spike was determined by the following equation:

$$\text{Mass fraction } Cl_{\text{chlorine spike}} \frac{lb\ Cl}{lb\ chlorine\ spike} =$$

$$\text{Mass fraction perc}_{\text{clorine spike}} \frac{lb\ perc}{lb\ chlorine\ spike} * \frac{141.812\ lb\ Cl}{165.834\ lb\ perc}$$

The equation above presents a chlorine to perchloroethylene ratio. This ratio is based on the chemical formula and molecular weight of perchloroethylene. Perchloroethylene contains four chlorine atoms (4 x 35.453 grams/mole = 141.812 grams/mole) and has a total molecular weight of 165.834 grams/mole. The chlorine concentration in the chlorine spike stream was:

$$0.7439 \frac{lb\ Cl}{lb\ chlorine\ spike} = 0.86987 \frac{lb\ perc}{lb\ chlorine\ spike} * \frac{141.812\ lb\ Cl}{165.834\ lb\ perc}$$

After calculating the mass fraction of chlorine in each feed stream, the feedrate of chlorine from each feed stream was determined using the following equation:

$$\text{Chlorine Feedrate}_{stream}, \frac{lb\ Cl}{hr} = \text{Stream Feedrate} \frac{lb\ stream}{hr} * \text{Mass Fraction Chlorine}_{stream}, \frac{lb\ Cl}{lb\ stream}$$

The calculations for stream feedrates in units of lb/hr are presented in Section 1.1. During the first minute of Run 1, the chlorine feedrate from the chlorine spike stream was:

$$521.27 \frac{lb\ Cl}{hr} = 700.73 \frac{lb\ chlorine\ spike}{hr} * 0.7439 \frac{lb\ Cl}{lb\ chlorine\ spike}$$

For each minute, the feedrates of chlorine contributed from each feed stream were summed to give the total chlorine feedrate. These one-minute values for total chlorine feedrate were used to establish an OPL as the average of the test run averages.

1.2.3 Metal Feedrates

The feedrate of chromium (Cr) was representative of total low-volatility metals (LVM) feedrate. The feedrate of lead (Pb) was representative of total semi-volatile metals (SVM) feedrate. Feedrates of chromium and lead were determined for the following feed streams:

- Waste-derived fuel
- Surrogate waste
- Waste EDA
- Ash spike
- Metal spike

Cr and Pb from the chlorine spike stream were not determined or included in the feedrate, because they were expected to be negligible.

First, the mass fraction of Cr and Pb in each stream was determined. For Waste EDA, surrogate waste, waste-derived fuel, and ash spike, the Cr and Pb concentrations were reported in units of μg metal/g stream (i.e. parts per million, ppm), therefore:

$$Mass\ Fraction\ Metal_{stream}, \frac{lb\,metal}{lb\,stream} = Metal\ Content \frac{\mu g\ \ metal}{g\ \ stream} * \frac{1 \cdot g\ \ metal}{10^6\,\mu g\ \ metal} * \frac{lb\ metal * g\ \ stream}{lb\ stream * g\ \ metal}$$

For example, the mass fractions of Cr and Pb in the Run 1 Waste EDA stream were:

$$2.06 \cdot 10^{-4} \frac{lb\,Cr}{lb\,Waste\ \ EDA} = 206 \frac{\mu g\ \ Cr}{g\ \ Waste\ \ EDA} * \frac{1 \cdot g\ \ Cr}{10^6\,\mu g\ \ Cr} * \frac{lb\ Cr * g\ \ Waste\ \ EDA}{lb\ Waste\ \ EDA * g\ \ Cr}$$

$$2.4 \cdot 10^{-7} \frac{lb\,Pb}{lb\,Waste\ \ EDA} = 0.24 \frac{\mu g\ \ Pb}{g\ \ Waste\ \ EDA} * \frac{1 \cdot g\ \ Pb}{10^6\,\mu g\ \ Pb} * \frac{lb\ Pb * g\ \ Waste\ \ EDA}{lb\ Waste\ \ EDA * g\ \ Pb}$$

Note that lead was not detected in the Run 1 Waste EDA sample, so one-half of the detection limit (0.48 μg/g) was used.

Based on the COA, the mass fractions of Cr and Pb in the metal spike stream were:

$$0.0527 \frac{lb\,Cr}{lb\,metal\ \ spike} = \frac{5.27\%\ \ Cr}{100\%}$$

$$0.0207 \frac{lb\,Pb}{lb\,metal\ \ spike} = \frac{2.07\%\ \ Pb}{100\%}$$

After calculating the mass fractions of Cr and Pb in each feed stream, the feedrate of Cr and the feedrate of Pb from each feed stream were determined separately using the following equation:

$$Metal\ Feedrate_{stream}, \frac{lb\ X}{hr} = Stream\ Feedrate \frac{lb\ stream}{hr} * Mass\ Fraction\ Metal_{stream}, \frac{lb\ X}{lb\ stream}$$

The calculations for determining stream feedrates in units of lb/hr are presented in Section 1.1. During the first minute of Run 1, the Cr and Pb feedrates from the metal spike stream were:

$$5.91 \frac{lb\,Cr}{hr} = 112.2 \frac{lb\,metal\ \ spike}{hr} * 0.0527 \frac{lb\,Cr}{lb\,metal\ \ spike}$$

$$2.32 \frac{lb\,Pb}{hr} = 112.2 \frac{lb\,metal\ \ spike}{hr} * 0.0207 \frac{lb\,Pb}{lb\,metal\ \ spike}$$

For each minute, the feedrates of Cr and Pb contributed from each feed stream were summed separately to give the Cr and Pb feedrates. These one-minute values for Cr feedrate and Pb feedrate were used to establish LVM and SVM OPLs, respectively.

1.3 Solids Concentration in the Blowdown Streams

The purpose of this section is to present examples of the calculations used for establishing the OPLs on the maximum solids concentration in the quench blowdown and WESP #1 blowdown streams. No samples of the quench and WESP #1 blowdown liquids were collected during this CPT. Instead, the calculation method presented in the CPT Plan (and used to establish the OPLs

based on the previous CPT results) was used to determine the solids content in the quench and WESP #1 blowdown liquids. This calculation was verified during the initial CPT when samples of the quench and WESP #1 blowdown liquids were collected and analyzed for total dissolved and suspended solids. A comparison was performed between the calculated blowdown solids contents and the analytical results (see Table 7-6 of the initial CPT Report). The solids contents as determined by the analyses of blowdown samples did not exceed the levels observed utilizing the proposed calculations. Therefore, this substantiates the methodology used to calculate the CPT demonstrated maximum quench and WESP #1 blowdown solids concentrations.

For each run, the following parameters were used in the calculations:

- The average total ash feedrate
- The average caustic feedrate
- The average flowrate of the quench blowdown stream
- The average flowrate of the WESP #1 blowdown streams

The example calculations for determining the total ash feedrate in lb/hr are presented in Section 1.2.1.

1.3.1 Quench Blowdown Solids Concentration

To calculate the maximum solids concentration in the quench blowdown stream, the following equation was used:

$$\text{Quench Blowdown Solids Concentration},\% = \frac{X\ lb\ solids}{100\ lb\ quench\ blowdown} =$$

$$\frac{\text{total ash feedrate}\frac{lb\ ash}{hr} * 1.0\frac{lb\ solids}{lb\ ash} + caustic\ \ flowrate,\ \ gpm * 561\frac{lb\ solids/hr}{gpm\ caustic}}{quench\ blowdown\ \ flowrate,\ \ gpm * 500\frac{lb/hr}{gpm}} * 100\%$$

The quench blowdown solids concentration for Run 1 (using parameters averaged over the time spans 12:10-13:10, 13:25-13:45, and 13:51-14:31), was:

$$2.16\% = \frac{2.16\ lb\ solids}{100\ lb\ quench\ blowdown} = \frac{366.2\frac{lb\ ash}{hr} * 1\frac{lb\ solids}{lb\ ash} + 1.32\ \ gpm\ caustic * 561\frac{lb\ solids/hr}{gpm\ caustic}}{102.38\ \ gpm * 500\frac{lb/hr}{gpm}} * 100\%$$

1.3.2 WESP #1 Blowdown Solids Concentration

To calculate the maximum solids concentration in the WESP #1 blowdown, the following equation was used:

$$W\!ESP\ \text{Blowdown Solids Concentration},\% = \frac{X\ \ lb\ \ solids}{100\ \ lb\ WESP\ blowdown} =$$

$$\frac{\text{total ash feedrate}\dfrac{lb\ \ solids}{hr} * 0.5\dfrac{lb\ solids}{lb\ ash} + caustic\ \ flowrate,\ \ gpm * 5.61\dfrac{lb\ \ solids/hr}{gpm\ \ caustic}}{WESP\ blowdown\ \ \ flowrate,\ \ gpm * 500\dfrac{lb/hr}{gpm}} * 100\%$$

The WESP #1 blowdown solids concentration for Run 1 (using parameters averaged over time spans 14:20-15:20, 15:36-16:11, and 16:17-16:42), was:

$$3.32\% = \frac{3.32\ \ lb\ \ solids}{100\ \ lb\ WESP\ blowdown} = \frac{366.2\dfrac{lb\ \ ash}{hr} * 0.5\dfrac{lb\ solids}{lb\ ash} + 1.32\ \ gpm\ caustic * 5.61\dfrac{lb\ \ solids/hr}{gpm\ \ caustic}}{11.47\ \ gpm * 500\dfrac{lb/hr}{gpm}} * 100\%$$

2.0 EMISSION PERFORMANCE CALCULATIONS

The purpose of this section is to present examples of the equations and calculations for determining the particulate matter (PM) and HCl/Cl_2 removal efficiencies.

2.1 PM Removal Efficiency

The following equation was used to calculate the demonstrated PM removal efficiency from the data collected during the CPT:

$$\%\ RE\ of\ PM = \frac{Total\ ash\ \ feedrate\frac{lb\ ash}{hr} - PM\ \ emission\ \ rate\frac{lb\ PM}{hr}}{Total\ \ ash\ \ \ feedrate\frac{lb\ ash}{hr}} * 100\%$$

Using this equation and the average data from Run 1 yields:

$$99.92\%\ \ RE\ of\ \ PM = \frac{366\frac{lb\ ash}{hr} - 0.289\frac{lb\ PM}{hr}}{366\frac{lb\ ash}{hr}} * 100\%$$

2.2 HCl/Cl_2 Removal Efficiency

The following equation was used to calculate the demonstrated HCl/Cl_2 removal efficiency from the data collected during the CPT:

$$\%\ \ RE\ of\ \ HCl/Cl_2\ \ (on\ a\ \ HCl\ \ equivalent\ \ basis) =$$

$$\frac{HCl\ \ equivalent\ \ \ feedrate\frac{lb}{hr} - HCl\ \ equivalent\ \ emission\ \ rate\frac{lb}{hr}}{HCl\ \ equivalent\ \ \ feedrate\frac{lb}{hr}} * 100\%$$

The HCl equivalent feedrate was calculated using the following equation:

$$HCl\ \ equivalent\ \ \ feedrate\frac{lb}{hr} = Cl\ \ \ feedrate\frac{lb\ Cl}{hr} * \frac{36.461\ lb\ HCl}{35.453\ lb\ Cl}$$

The HCl equivalent emission rate was calculated using the following equation:

$$HCl\ equivalent\ emission\ rate \frac{lb}{hr} =$$

$$HCl\ emission\ rate \frac{lb\ HCl}{hr} + Cl_2\ emission\ rate \frac{lb\ Cl_2}{hr} * \frac{2 * 36.461\ lb\ HCl}{70.906\ lb\ Cl_2}$$

Appling the above equations, the demonstrated HCl/Cl_2 removal efficiency for Run 1 was:

$$99.84\%\ \ RE\ of\ HCl/Cl_2\ (on\ a\ HCl\ equivalent\ basis) =$$

$$\frac{\left(729.0 \frac{lb\ Cl}{hr} * \frac{36.461\ lb\ HCl}{35.453\ lb\ Cl}\right) - \left(0.0850 \frac{lb\ HCl}{hr} + 1.0968 \frac{lb\ Cl_2}{hr} * \frac{2 * 36.461\ lb\ HCl}{70.906\ lb\ Cl_2}\right)}{\left(729.0 \frac{lb\ Cl}{hr} * \frac{36.461\ lb\ HCl}{35.453\ lb\ Cl}\right)} * 100\%$$

3.0 TOTAL HYDROCARBON EMISSIONS

The MACT emission standard for total hydrocarbons (THC) is 10 ppmdv (expressed as propane), corrected to 7% O_2, on an HRA basis. A continuous emissions monitoring system (CEMS) must be used to demonstrate on-going compliance with the THC emission standard. A CEMS for demonstrating carbon monoxide (CO) emissions below 100 ppmdv, corrected to 7% O_2, on an HRA basis may be used in lieu of the requirements for continuous monitoring of THC emissions. However, this CPT did not include demonstration of compliance with the CO emission standard because Eastman has chosen to comply with the THC standard instead, as provided by 40 CFR §63.1219(a)(5).

The concentrations of THC and O_2 in the stack gas are continuously monitored and recorded by a CEMS. The Distributive Control System (DCS) displays and records gas concentration on both an uncorrected and corrected basis. The DCS performs the correction of THC data to 7% oxygen, on a dry basis. From the instantaneous data, the DCS computes the one-minute averages and hourly rolling averages. If the THC level exceeds its permitted value the CEMS notifies the DCS and hazardous waste feeds are cut off.

The DCS calculates THC concentration on a dry volume basis using the measured wet THC concentration and the calculated volume fraction of water vapor in the gas using the following equation.

$$ppmdv\ THC = ppmv\ THC * \frac{1}{1 - \frac{Moisture\%}{100\%}}$$

Next, the DCS then corrects each one-minute average of dry THC concentration to 7% O_2 using the following equation:

$$ppmdv\ THC,\ 7\%\ O_2 = ppmdv\ THC * \frac{(21-7)\%}{21\% - Measured\ O_2\ Concentration\ \%}$$

THC concentrations (ppmdv, 7% O_2 as propane) are recorded in the Plant Information (PI) system. THC values recorded in PI over the duration of the performance test were used to calculate HRAs. These HRAs were used to demonstrate compliance with the THC emission standard.

4.0 CALCULATIONS FOR ON-GOING COMPLIANCE

The purpose of this section is to describe the calculations that will be used to demonstrate on-going compliance with the mercury emission standard and the OPLs for maximum blowdown solids concentration.

4.1 Compliance with the OPLs for Maximum Blowdown Solids Concentration

For on-going compliance with the OPLs for maximum blowdown solids concentrations, the established limits for maximum solids concentrations will be used to calculate the minimum allowable blowdown flowrates.

For the quench, minimum allowable blowdown flowrate is:

$$(q_{Bdn})_Q = \frac{F_{Ash} + 682\, q_{cs}}{500\ (X_{Sol})_{Bdn,Q}}$$

For the WESP, minimum allowable blowdown flowrate is:

$$(q_{Bdn})_{WESP} = \frac{0.5\, F_{Ash} + 6.82\, q_{cs}}{500\, (X_{Sol})_{Bdn,\,WESP}}$$

where F_{Ash} and q_{cs} are instantaneous values of total ash feedrate (lb/hr) and caustic flowrate (gpm), respectively

$(X_{Sol})_{Bdn,Q}$ is the CPT demonstrated OPL value for maximum quench blowdown solids concentration

$(X_{Sol})_{Bdn,WESP}$ is the CPT demonstrated OPL value for maximum WESP #1 blowdown solids concentration

The minimum allowable blowdown flowrate will be calculated every 15 seconds. The four 15-second values for each minute will be used to calculate a one-minute average (OMA). The current OMA and the previous 719 OMAs of the calculated blowdown flowrate will be averaged to obtain the current minute 12-HRA. If the 12-HRA of the actual blowdown flowrate is greater than the 12-HRA of the calculated blowdown flowrate, PI data system will store a “normal.” If the 12-HRA of the actual blowdown flowrate is less than or equal to the 12-HRA of the calculated blowdown flowrate, PI data system will store a “trip” and an AWFCO will occur.

Until 720 OMAs are available to calculate a 12-HRA, the hourly rolling average value will be used as the trip value.

4.2 Combustion Gas Flowrate

Stack gas flowrate is measured on a wet volumetric basis downstream of WESP #2 and prior to the ID Fan. Dry stack gas flowrate is continuously calculated by the DCS from the wet volumetric flowrate using the following approach:

1. The actual wet stack gas volumetric flow, pressure, and temperature are measured downstream of WESP #2:
   - q_{TG}, acfm, wet
   - T_G, °F → R
   - P_G, psia (measured as inches w.c. gauge and converted to psia in the DCS)

2. The vapor pressure of water at the gas temperature is calculated using a Wagner constant relationship or other numerical method where:

$$VP_{H_2O} = f(T_G)$$

   The Wagner vapor pressure equation is:

$$\ln\left(\frac{VP}{P_C}\right) = \frac{A\left(1 - \frac{T_G}{T_C}\right) + B\left(1 - \frac{T_G}{T_C}\right)^{1.5} + C\left(1 - \frac{T_G}{T_C}\right)^{3} + D\left(1 - \frac{T_G}{T_C}\right)^{6}}{\left(\frac{T_G}{T_C}\right)}$$

   where P_c and T_c are the critical pressure and temperature and A, B, C, and D are the Wagner constants for water.

3. The volume fraction of water vapor in the gas is calculated, assuming saturated conditions:

$$y_{H_2O} = \frac{VP_{H_2O}}{P_G}, \frac{mol\ H_2O}{mol\ total\ gas}$$

   Actually, the gas downstream of WESP #2 will be slightly unsaturated due to the addition of WESP #2 purge air. However, the resulting error will be small and overestimates the gas flowrate, which results in a conservative value.

4. The dry stack gas flowrate at actual gas conditions is calculated as follows.

$$\textit{Dry stack gas flowrate, acfm} = \textit{Wet acfm} * (1 - y_{H20})$$

5. The dry stack gas flowrate is converted to standard conditions

$$\textit{Dry stack gas flowrate, scfm} = \textit{Dry acfm} * \left(\frac{528}{460 + T_G}\right) * \left(\frac{P_G}{14.7}\right)$$

6. The dry gas contribution from the WESP purge air is subtracted out using the rated capacity of 800 scfm per WESP stage to yield a dry combustion gas flowrate:

$$\textit{Dry combustion gas flowrate, scfm} = \textit{Dry stack gas, scfm (from 5)} - 1600 \textit{ scfm}$$

7. The dry combustion gas flowrate calculated in step 6 is multiplied by a calibration factor. This calibration factor is determined by comparing the stack gas flowrate recorded by the DCS (using the calculations described in steps 1-6 above) with manual stack pitot measurements, during a planned calibration test.

$$\textit{Dry gas flowrate, scfm} = \textit{Dry stack gas, scfm (from 6)} \times \textit{Calibration factor}$$

The above steps were performed in the DCS during the CPT to generate one-minute values for the dry combustion gas. These one-minute values were used to establish an OPL as the average of the maximum HRA from each test run.

4.3 Compliance with Mercury Emission Standard

Eastman will utilize the maximum theoretical emission concentration (MTEC) approach to document on-going compliance with the mercury emission standard per 40 CFR §63.1207(m)(1). This approach is based on all the mercury fed to the combustor being emitted through the stack (i.e., does not take any credit for mercury removal in the APCS). The mercury concentration in all feed streams will be determined per the feed stream analysis plan (FAP) required by 40 CFR §63.1209(c). Per 40 CFR §63.1207(m)(3), the full detection limit will be assumed for feed streams where mercury is not detected. The mercury feedrate of each feed stream will be determined using the following equation:

$$Hg\ Feedrate_{stream}, \frac{lb\ X}{hr} = Hg\ Feedrate \frac{lb\ stream}{hr} * Mass\ Fraction\ Hg_{stream}, \frac{lb\ X}{lb\ stream}$$

The DCS sums the mercury feedrate contributed from each waste stream being fed to calculate a total mercury feedrate (lb/hr). Also calculated in the DCS is the combustion gas flowrate in dscfm, as determined using the calculations presented in Section 4.2. Using these calculated parameters and the stack gas oxygen concentration, the MTEC is calculated per the following equation:

$$Hg\ MTEC,\ \mu g/dscm,\ 7\%\ O_2 = \frac{Hg\ \ feedrate,\ \frac{lb}{hr} * 4.536 \cdot 10^8 \frac{\mu g}{lb} * \frac{1\ hr}{60\ \text{min}}}{Gas\ \ flowrate,\ \ dcsfm * \frac{(21\% - Stack\ O_2\ \%\ dry\ vol.)}{14\%} * \frac{1\ dscm}{35.315\ dscf}}$$

The Hg MTEC is interlocked to the AWFCO system and is set to assure that the MTEC is less than the emission standard, 130 μg/dscm, 7% O_2. The Hg MTEC is determined on a 12-HRA basis.

The Hg MTEC was initially included as an OPL in Eastman's September 15, 2003 NOC and the LCD has been operated in compliance with this limit. Eastman will continue to comply with the LCD Hg MTEC.

APPENDIX V

OPERATING PARAMETER DATA

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
PM/HCl/CL_2/Metals						
Run 1 Maximum	1,677.72	128.31	5.88	1.53	106.68	12.85
Run 1 Minimum	1,648.16	126.94	4.30	1.22	98.62	9.48
Run 1 Average	1,666.82	127.71	5.20	1.32	102.38	11.47
Run 2 Maximum	1,675.82	128.54	3.67	1.31	110.77	13.34
Run 2 Minimum	1,650.69	126.94	3.36	1.27	97.71	8.17
Run 2 Average	1,664.61	127.68	3.50	1.29	103.20	11.33
Run 3 Maximum	1,687.90	128.54	5.53	1.34	118.09	22.55
Run 3 Minimum	1,658.11	127.40	3.94	1.30	92.15	4.70
Run 3 Average	1,673.81	127.73	4.71	1.31	107.37	12.02
**Run 3 - PM/Metals only*						
Run 4 Maximum	1,682.88	128.31	4.62	2.32	110.34	15.06
Run 4 Minimum	1,652.00	127.40	3.70	0.00	95.39	7.84
Run 4 Average	1,673.33	127.74	4.02	1.14	100.58	11.44
**Run 4 - HCl/Cl2 only*						
D/F						
Run 1 Maximum	1,679.74	128.31	5.88	1.53	109.24	13.21
Run 1 Minimum	1,648.16	126.94	3.88	1.19	98.68	8.71
Run 1 Average	1,666.85	127.71	4.89	1.29	103.13	11.26
Run 2 Maximum	1,687.73	128.54	3.67	1.31	107.47	14.34
Run 2 Minimum	1,655.05	126.26	3.25	1.27	95.39	8.17
Run 2 Average	1,669.89	127.69	3.43	1.29	102.66	10.94
Run 3 Maximum	1,686.46	128.54	5.53	1.35	118.09	22.55
Run 3 Minimum	1,658.11	127.17	3.64	1.30	93.19	4.70
Run 3 Average	1,672.35	127.72	4.46	1.31	107.13	11.57
Run 1						
11-Dec-12 12:10:00	1,666.25	127.86	5.88	1.50	98.86	11.32
11-Dec-12 12:11:00	1,665.67	127.86	5.88	1.50	101.06	11.64
11-Dec-12 12:12:00	1,665.08	127.86	5.87	1.50	101.06	11.68
11-Dec-12 12:13:00	1,664.50	127.17	5.87	1.50	98.68	11.86
11-Dec-12 12:14:00	1,663.92	127.17	5.87	1.50	99.90	11.86
11-Dec-12 12:15:00	1,663.66	127.17	5.86	1.49	99.90	12.85
11-Dec-12 12:16:00	1,663.43	127.17	5.85	1.49	99.90	12.78
11-Dec-12 12:17:00	1,665.28	127.17	5.84	1.49	99.90	12.74
11-Dec-12 12:18:00	1,668.61	128.08	5.84	1.50	101.06	12.55

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 12:19:00	1,671.95	128.08	5.83	1.50	101.06	12.35
11-Dec-12 12:20:00	1,674.91	128.08	5.82	1.51	101.06	12.16
11-Dec-12 12:21:00	1,677.72	128.08	5.82	1.52	101.06	11.80
11-Dec-12 12:22:00	1,672.81	128.08	5.81	1.53	103.20	11.29
11-Dec-12 12:23:00	1,671.00	127.63	5.80	1.52	103.20	10.97
11-Dec-12 12:24:00	1,670.05	127.63	5.79	1.45	102.16	10.92
11-Dec-12 12:25:00	1,669.10	127.63	5.79	1.45	103.20	11.39
11-Dec-12 12:26:00	1,668.16	127.63	5.78	1.45	102.16	12.19
11-Dec-12 12:27:00	1,667.21	127.63	5.77	1.45	103.20	12.17
11-Dec-12 12:28:00	1,666.26	128.08	5.77	1.45	101.86	12.17
11-Dec-12 12:29:00	1,666.26	128.08	5.77	1.46	101.86	11.97
11-Dec-12 12:30:00	1,666.42	128.08	5.76	1.47	101.86	11.72
11-Dec-12 12:31:00	1,666.59	128.08	5.75	1.48	102.95	11.87
11-Dec-12 12:32:00	1,666.55	126.94	5.74	1.48	101.92	12.14
11-Dec-12 12:33:00	1,666.26	126.94	5.74	1.48	101.92	12.14
11-Dec-12 12:34:00	1,665.96	126.94	5.73	1.44	101.92	12.09
11-Dec-12 12:35:00	1,665.67	128.08	5.72	1.42	101.92	11.89
11-Dec-12 12:36:00	1,666.95	128.08	5.71	1.44	101.92	11.57
11-Dec-12 12:37:00	1,668.50	128.08	5.71	1.42	101.12	11.35
11-Dec-12 12:38:00	1,670.06	128.08	5.71	1.42	101.12	11.35
11-Dec-12 12:39:00	1,671.62	128.08	5.69	1.35	101.12	11.45
11-Dec-12 12:40:00	1,670.14	127.40	5.69	1.35	101.12	11.45
11-Dec-12 12:41:00	1,668.32	127.40	5.68	1.36	101.12	11.41
11-Dec-12 12:42:00	1,666.51	127.40	5.67	1.36	99.96	11.34
11-Dec-12 12:43:00	1,666.22	127.40	5.66	1.36	101.12	11.17
11-Dec-12 12:44:00	1,666.31	127.40	5.65	1.36	102.16	10.66
11-Dec-12 12:45:00	1,666.40	127.63	5.65	1.36	101.12	10.66
11-Dec-12 12:46:00	1,666.49	127.63	5.64	1.33	101.12	10.67
11-Dec-12 12:47:00	1,666.58	127.63	5.64	1.33	101.12	10.67
11-Dec-12 12:48:00	1,666.40	127.63	5.62	1.32	100.02	11.27
11-Dec-12 12:49:00	1,664.72	127.63	5.62	1.32	101.31	11.27
11-Dec-12 12:50:00	1,663.60	127.63	5.60	1.31	102.77	11.33
11-Dec-12 12:51:00	1,664.66	127.63	5.60	1.32	102.71	11.36
11-Dec-12 12:52:00	1,665.73	127.63	5.60	1.32	102.71	11.36
11-Dec-12 12:53:00	1,666.80	127.63	5.58	1.31	102.71	11.36
11-Dec-12 12:54:00	1,667.87	127.63	5.57	1.32	102.71	11.52
11-Dec-12 12:55:00	1,668.93	128.08	5.56	1.33	103.75	11.65
11-Dec-12 12:56:00	1,670.00	128.08	5.55	1.35	102.71	11.64
11-Dec-12 12:57:00	1,670.76	128.08	5.54	1.36	102.71	11.57
11-Dec-12 12:58:00	1,667.21	128.08	5.53	1.35	102.71	11.63
11-Dec-12 12:59:00	1,665.28	128.08	5.52	1.35	102.71	11.54
11-Dec-12 13:00:00	1,664.17	127.63	5.51	1.34	102.71	11.29

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 13:01:00	1,663.05	127.63	5.50	1.34	103.32	11.37
11-Dec-12 13:02:00	1,661.94	127.63	5.50	1.33	102.22	11.73
11-Dec-12 13:03:00	1,660.83	127.63	5.49	1.32	104.72	11.58
11-Dec-12 13:04:00	1,660.61	127.63	5.48	1.33	102.53	11.06
11-Dec-12 13:05:00	1,660.68	128.08	5.47	1.32	102.53	11.04
11-Dec-12 13:06:00	1,660.76	128.08	5.46	1.34	102.53	11.25
11-Dec-12 13:07:00	1,660.84	128.08	5.46	1.34	102.53	11.25
11-Dec-12 13:08:00	1,660.92	128.08	5.44	1.34	102.53	11.81
11-Dec-12 13:09:00	1,660.99	128.08	5.44	1.34	103.56	11.81
11-Dec-12 13:10:00	1,661.36	127.40	5.42	1.32	102.65	11.81
11-Dec-12 13:11:00	1,661.93	127.40	5.42	1.32	103.75	11.81
11-Dec-12 13:12:00	1,662.50	127.40	5.40	1.31	103.75	12.08
11-Dec-12 13:13:00	1,663.06	127.40	5.39	1.32	104.85	12.07
11-Dec-12 13:14:00	1,663.47	127.40	5.37	1.31	104.85	11.69
11-Dec-12 13:15:00	1,664.43	127.63	5.36	1.31	105.88	11.05
11-Dec-12 13:16:00	1,667.83	127.63	5.36	1.31	103.50	11.05
11-Dec-12 13:17:00	1,667.45	127.63	5.34	1.30	104.60	11.07
11-Dec-12 13:18:00	1,665.70	127.63	5.33	1.30	104.60	11.13
11-Dec-12 13:19:00	1,663.94	127.63	5.32	1.30	103.56	11.15
11-Dec-12 13:20:00	1,665.42	127.86	5.32	1.30	103.56	11.15
11-Dec-12 13:21:00	1,668.77	127.86	5.29	1.29	102.47	11.25
11-Dec-12 13:22:00	1,668.85	127.86	5.29	1.29	102.47	11.25
11-Dec-12 13:23:00	1,668.93	127.86	5.27	1.27	102.47	12.11
11-Dec-12 13:24:00	1,669.00	127.86	5.27	1.27	104.91	12.11
11-Dec-12 13:25:00	1,669.08	127.63	5.24	1.27	103.69	11.75
11-Dec-12 13:26:00	1,669.16	127.63	5.22	1.26	102.22	11.55
11-Dec-12 13:27:00	1,669.77	127.63	5.21	1.26	103.38	11.68
11-Dec-12 13:28:00	1,672.52	127.63	5.20	1.24	104.66	11.56
11-Dec-12 13:29:00	1,675.28	127.63	5.18	1.25	99.72	11.12
11-Dec-12 13:30:00	1,676.98	128.08	5.17	1.27	99.90	11.06
11-Dec-12 13:31:00	1,676.87	128.08	5.16	1.27	102.28	11.56
11-Dec-12 13:32:00	1,676.75	126.94	5.16	1.27	102.28	11.56
11-Dec-12 13:33:00	1,676.64	126.94	5.13	1.26	102.28	12.63
11-Dec-12 13:34:00	1,675.39	126.94	5.13	1.26	102.28	12.63
11-Dec-12 13:35:00	1,671.60	128.08	5.09	1.26	102.28	12.58
11-Dec-12 13:36:00	1,673.72	128.08	5.09	1.26	103.75	12.58
11-Dec-12 13:37:00	1,673.16	128.08	5.06	1.27	100.39	11.63
11-Dec-12 13:38:00	1,671.63	128.08	5.06	1.27	100.39	11.63
11-Dec-12 13:39:00	1,670.10	128.08	5.04	1.28	100.39	11.83
11-Dec-12 13:40:00	1,668.77	127.40	5.02	1.28	101.55	11.91
11-Dec-12 13:41:00	1,670.25	127.40	5.02	1.28	101.55	11.91
11-Dec-12 13:42:00	1,671.74	127.40	4.99	1.27	101.55	11.81

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 13:43:00	1,673.23	127.40	4.99	1.27	101.55	11.81
11-Dec-12 13:44:00	1,674.71	127.40	4.97	1.26	100.51	11.72
11-Dec-12 13:45:00	1,676.20	127.86	4.96	1.26	99.23	11.35
11-Dec-12 13:46:00	1,676.08	127.86	4.94	1.26	99.23	11.49
11-Dec-12 13:47:00	1,673.72	127.86	4.90	1.52	99.23	11.86
11-Dec-12 13:48:00	1,671.73	127.86	4.90	1.52	99.23	11.86
11-Dec-12 13:49:00	1,673.02	127.86	4.88	1.26	99.23	11.74
11-Dec-12 13:50:00	1,674.31	126.94	4.88	1.26	99.66	11.74
11-Dec-12 13:51:00	1,675.61	126.94	4.84	1.25	99.66	11.41
11-Dec-12 13:52:00	1,676.90	126.94	4.83	1.24	99.66	11.34
11-Dec-12 13:53:00	1,675.10	128.08	4.83	1.24	98.62	11.34
11-Dec-12 13:54:00	1,672.90	128.08	4.80	1.25	99.90	11.86
11-Dec-12 13:55:00	1,670.69	128.08	4.80	1.25	102.28	11.86
11-Dec-12 13:56:00	1,668.76	128.08	4.76	1.25	98.93	10.56
11-Dec-12 13:57:00	1,668.91	128.08	4.76	1.25	102.10	10.56
11-Dec-12 13:58:00	1,669.05	127.63	4.74	1.24	100.76	9.48
11-Dec-12 13:59:00	1,669.20	127.63	4.74	1.24	104.11	9.48
11-Dec-12 14:00:00	1,669.35	127.63	4.72	1.24	104.11	9.51
11-Dec-12 14:01:00	1,669.28	127.63	4.69	1.23	103.08	10.74
11-Dec-12 14:02:00	1,669.08	127.63	4.69	1.23	103.08	10.74
11-Dec-12 14:03:00	1,668.88	128.08	4.67	1.23	103.08	11.11
11-Dec-12 14:04:00	1,668.65	128.08	4.66	1.23	104.24	10.79
11-Dec-12 14:05:00	1,668.44	128.08	4.64	1.23	104.24	10.57
11-Dec-12 14:06:00	1,669.74	128.08	4.64	1.23	104.24	10.57
11-Dec-12 14:07:00	1,671.05	128.08	4.61	1.22	104.24	12.33
11-Dec-12 14:08:00	1,670.39	127.40	4.61	1.22	104.24	12.33
11-Dec-12 14:09:00	1,668.13	127.40	4.59	1.22	106.68	12.75
11-Dec-12 14:10:00	1,666.45	127.40	4.57	1.23	104.24	12.55
11-Dec-12 14:11:00	1,670.05	127.40	4.56	1.23	104.24	11.76
11-Dec-12 14:12:00	1,670.21	127.40	4.54	1.23	102.95	11.45
11-Dec-12 14:13:00	1,667.74	128.31	4.52	1.23	104.05	11.47
11-Dec-12 14:14:00	1,665.27	128.31	4.51	1.23	106.13	11.94
11-Dec-12 14:15:00	1,662.80	128.31	4.51	1.23	106.13	11.94
11-Dec-12 14:16:00	1,657.81	127.17	4.50	1.23	105.09	12.23
11-Dec-12 14:17:00	1,648.16	127.17	4.47	1.23	105.09	11.77
11-Dec-12 14:18:00	1,649.01	127.17	4.47	1.23	105.09	11.77
11-Dec-12 14:19:00	1,651.49	127.17	4.44	1.24	105.09	11.24
11-Dec-12 14:20:00	1,653.96	127.17	4.44	1.24	103.99	11.24
11-Dec-12 14:21:00	1,655.36	128.08	4.43	1.24	104.11	11.03
11-Dec-12 14:22:00	1,654.64	128.08	4.41	1.24	101.98	10.89
11-Dec-12 14:23:00	1,652.88	128.08	4.40	1.24	103.14	10.90
11-Dec-12 14:24:00	1,651.13	128.08	4.37	1.24	101.98	10.73

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 14:25:00	1,652.19	128.08	4.37	1.24	103.20	10.73
11-Dec-12 14:26:00	1,657.76	127.40	4.35	1.23	105.58	10.46
11-Dec-12 14:27:00	1,663.32	127.40	4.35	1.23	104.30	10.46
11-Dec-12 14:28:00	1,663.49	127.40	4.33	1.24	104.30	10.06
11-Dec-12 14:29:00	1,663.66	127.40	4.33	1.24	103.14	10.06
11-Dec-12 14:30:00	1,663.82	127.40	4.31	1.24	104.24	10.52
11-Dec-12 14:31:00	1,663.47	128.08	4.30	1.24	104.24	10.27
11-Dec-12 14:32:00	1,662.75	128.08	4.28	1.24	104.24	9.81
11-Dec-12 14:33:00	1,659.70	128.08	4.27	1.24	104.30	9.70
11-Dec-12 14:34:00	1,659.71	128.08	4.27	1.24	104.30	9.70
11-Dec-12 14:35:00	1,665.19	128.08	4.26	1.24	107.90	9.98
11-Dec-12 14:36:00	1,670.68	127.63	4.25	1.23	107.90	9.54
11-Dec-12 14:37:00	1,672.38	127.63	4.24	1.22	104.30	9.06
11-Dec-12 14:38:00	1,673.88	127.63	4.23	1.22	104.30	8.71
11-Dec-12 14:39:00	1,671.38	127.63	4.22	1.22	109.24	8.77
11-Dec-12 14:40:00	1,668.00	127.63	4.20	1.22	106.62	9.11
11-Dec-12 14:41:00	1,665.72	127.63	4.20	1.22	107.84	9.11
11-Dec-12 14:42:00	1,668.13	127.63	4.18	1.22	105.27	8.85
11-Dec-12 14:43:00	1,671.27	127.63	4.18	1.22	105.27	8.85
11-Dec-12 14:44:00	1,670.50	127.63	4.16	1.22	105.27	10.22
11-Dec-12 14:45:00	1,669.60	127.63	4.15	1.21	105.27	11.21
11-Dec-12 14:46:00	1,668.70	127.63	4.15	1.21	102.83	11.21
11-Dec-12 14:47:00	1,667.81	127.63	4.14	1.20	105.21	11.98
11-Dec-12 14:48:00	1,666.91	127.63	4.14	1.20	103.87	11.98
11-Dec-12 14:49:00	1,666.01	127.63	4.12	1.20	103.99	13.00
11-Dec-12 14:50:00	1,666.06	127.63	4.12	1.20	103.99	13.00
11-Dec-12 14:51:00	1,666.20	127.63	4.11	1.20	103.99	13.21
11-Dec-12 14:52:00	1,665.52	127.63	4.10	1.20	102.89	13.19
11-Dec-12 14:53:00	1,664.69	127.63	4.08	1.19	102.89	13.03
11-Dec-12 14:54:00	1,663.74	127.63	4.08	1.19	101.73	13.03
11-Dec-12 14:55:00	1,662.78	127.63	4.08	1.19	101.73	13.02
11-Dec-12 14:56:00	1,661.83	127.63	4.06	1.20	101.73	12.48
11-Dec-12 14:57:00	1,660.88	127.63	4.06	1.19	101.73	12.48
11-Dec-12 14:58:00	1,665.29	127.63	4.04	1.19	103.02	11.09
11-Dec-12 14:59:00	1,668.22	127.63	4.04	1.19	104.05	10.47
11-Dec-12 15:00:00	1,668.09	127.63	4.03	1.19	102.95	10.28
11-Dec-12 15:01:00	1,667.97	127.63	4.03	1.19	102.95	10.28
11-Dec-12 15:02:00	1,667.85	127.63	4.02	1.19	104.11	9.42
11-Dec-12 15:03:00	1,673.74	127.63	4.01	1.19	104.11	8.99
11-Dec-12 15:04:00	1,679.74	127.63	4.00	1.19	104.30	9.47
11-Dec-12 15:05:00	1,678.02	127.63	3.99	1.19	104.30	10.15
11-Dec-12 15:06:00	1,676.30	127.86	3.99	1.19	103.08	10.15

Date/Time	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 15:07:00	1,674.72	127.86	3.98	1.19	103.08	10.78
11-Dec-12 15:08:00	1,672.37	127.86	3.98	1.19	103.08	11.27
11-Dec-12 15:09:00	1,668.87	127.86	3.97	1.19	104.24	11.50
11-Dec-12 15:10:00	1,669.69	127.86	3.97	1.19	101.98	11.52
11-Dec-12 15:11:00	1,670.52	127.63	3.96	1.19	105.33	10.84
11-Dec-12 15:12:00	1,671.34	127.63	3.95	1.20	105.09	10.84
11-Dec-12 15:13:00	1,671.83	127.63	3.95	1.20	105.09	10.84
11-Dec-12 15:14:00	1,671.40	127.63	3.94	1.19	105.09	11.42
11-Dec-12 15:15:00	1,668.30	127.63	3.93	1.19	106.37	11.75
11-Dec-12 15:16:00	1,665.59	127.40	3.93	1.19	104.17	11.82
11-Dec-12 15:17:00	1,665.92	127.40	3.92	1.19	104.17	11.74
11-Dec-12 15:18:00	1,666.24	127.40	3.92	1.19	105.58	11.65
11-Dec-12 15:19:00	1,666.56	127.40	3.90	1.28	105.58	11.06
11-Dec-12 15:20:00	1,667.01	127.40	3.90	1.30	106.68	10.41
11-Dec-12 15:21:00	1,667.47	128.08	3.89	1.31	104.48	9.99
11-Dec-12 15:22:00	1,667.93	128.08	3.89	1.31	104.48	9.99
11-Dec-12 15:23:00	1,668.40	128.08	3.88	1.31	104.48	10.37
Run 2						
11-Dec-12 16:12:00	1,666.02	127.63	3.68	1.33	102.77	10.45
11-Dec-12 16:13:00	1,668.49	127.63	3.67	1.31	101.73	10.64
11-Dec-12 16:14:00	1,668.22	127.63	3.67	1.31	101.73	10.64
11-Dec-12 16:15:00	1,666.36	127.63	3.67	1.31	101.73	10.67
11-Dec-12 16:16:00	1,663.59	127.63	3.66	1.30	101.73	10.75
11-Dec-12 16:17:00	1,660.81	127.63	3.66	1.30	101.73	10.91
11-Dec-12 16:18:00	1,661.73	127.63	3.66	1.31	102.59	11.09
11-Dec-12 16:19:00	1,663.30	127.86	3.66	1.31	102.59	11.09
11-Dec-12 16:20:00	1,664.87	127.86	3.65	1.31	102.59	11.22
11-Dec-12 16:21:00	1,666.44	127.86	3.65	1.31	102.59	11.24
11-Dec-12 16:22:00	1,668.01	127.86	3.65	1.31	102.59	11.24
11-Dec-12 16:23:00	1,665.93	127.86	3.64	1.29	101.61	11.32
11-Dec-12 16:24:00	1,662.20	127.63	3.63	1.30	101.61	11.49
11-Dec-12 16:25:00	1,659.60	127.63	3.63	1.30	102.77	11.49
11-Dec-12 16:26:00	1,657.14	127.63	3.63	1.30	104.17	11.15
11-Dec-12 16:27:00	1,658.76	127.63	3.62	1.29	103.08	10.67
11-Dec-12 16:28:00	1,660.39	127.63	3.62	1.29	103.08	10.90
11-Dec-12 16:29:00	1,660.85	127.63	3.62	1.29	103.08	11.33
11-Dec-12 16:30:00	1,660.86	127.63	3.62	1.29	103.08	11.30
11-Dec-12 16:31:00	1,660.86	127.63	3.62	1.29	104.17	10.95
11-Dec-12 16:32:00	1,660.86	127.63	3.62	1.29	104.17	10.95
11-Dec-12 16:33:00	1,660.86	127.63	3.61	1.30	103.14	10.44
11-Dec-12 16:34:00	1,660.87	127.40	3.61	1.30	103.14	10.44

Date/Time	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 16:35:00	1,660.87	127.40	3.60	1.30	104.17	11.28
11-Dec-12 16:36:00	1,660.56	127.40	3.60	1.30	104.17	11.28
11-Dec-12 16:37:00	1,659.93	127.40	3.60	1.30	101.92	10.91
11-Dec-12 16:38:00	1,665.18	127.40	3.60	1.30	103.02	10.91
11-Dec-12 16:39:00	1,671.62	127.86	3.59	1.30	103.02	11.48
11-Dec-12 16:40:00	1,671.99	127.86	3.59	1.29	104.36	11.66
11-Dec-12 16:41:00	1,668.33	127.86	3.59	1.30	103.26	11.51
11-Dec-12 16:42:00	1,665.37	127.86	3.58	1.30	104.36	11.33
11-Dec-12 16:43:00	1,663.93	127.86	3.58	1.30	103.20	11.33
11-Dec-12 16:44:00	1,663.07	127.63	3.58	1.29	103.20	11.39
11-Dec-12 16:45:00	1,663.22	127.63	3.57	1.30	103.20	11.63
11-Dec-12 16:46:00	1,663.36	127.63	3.57	1.29	103.20	11.34
11-Dec-12 16:47:00	1,663.51	127.63	3.57	1.29	103.20	11.03
11-Dec-12 16:48:00	1,663.37	127.63	3.57	1.29	102.77	11.03
11-Dec-12 16:49:00	1,662.07	128.08	3.57	1.29	104.05	11.29
11-Dec-12 16:50:00	1,660.77	128.08	3.57	1.29	104.05	11.29
11-Dec-12 16:51:00	1,659.47	128.08	3.56	1.29	104.05	11.45
11-Dec-12 16:52:00	1,658.17	128.08	3.56	1.29	104.05	11.45
11-Dec-12 16:53:00	1,657.42	128.08	3.55	1.29	104.05	11.14
11-Dec-12 16:54:00	1,657.20	127.40	3.55	1.29	103.32	11.15
11-Dec-12 16:55:00	1,656.97	127.40	3.55	1.29	102.22	11.15
11-Dec-12 16:56:00	1,664.52	127.40	3.54	1.29	103.32	11.13
11-Dec-12 16:57:00	1,672.94	127.40	3.54	1.29	103.32	11.13
11-Dec-12 16:58:00	1,673.64	127.40	3.54	1.30	103.32	12.23
11-Dec-12 16:59:00	1,671.52	128.31	3.54	1.29	103.32	12.39
11-Dec-12 17:00:00	1,669.77	128.31	3.53	1.30	103.32	11.95
11-Dec-12 17:01:00	1,670.13	128.31	3.53	1.30	101.61	11.95
11-Dec-12 17:02:00	1,668.41	127.17	3.53	1.29	100.51	11.46
11-Dec-12 17:03:00	1,663.78	127.17	3.53	1.29	104.24	10.65
11-Dec-12 17:04:00	1,665.71	127.17	3.53	1.29	102.83	10.65
11-Dec-12 17:05:00	1,667.09	127.17	3.52	1.29	102.83	9.89
11-Dec-12 17:06:00	1,665.37	127.17	3.52	1.29	101.79	9.89
11-Dec-12 17:07:00	1,662.98	128.08	3.52	1.29	102.71	9.93
11-Dec-12 17:08:00	1,660.21	128.08	3.52	1.29	102.71	10.73
11-Dec-12 17:09:00	1,666.66	128.08	3.51	1.29	102.71	11.10
11-Dec-12 17:10:00	1,673.77	128.08	3.51	1.29	101.49	11.52
11-Dec-12 17:11:00	1,675.37	128.08	3.51	1.29	101.49	12.20
11-Dec-12 17:12:00	1,671.81	127.40	3.50	1.28	101.49	12.67
11-Dec-12 17:13:00	1,668.26	127.40	3.50	1.28	102.65	12.95
11-Dec-12 17:14:00	1,668.01	127.40	3.50	1.28	103.75	12.95
11-Dec-12 17:15:00	1,671.07	127.40	3.49	1.28	101.55	11.40
11-Dec-12 17:16:00	1,671.33	127.40	3.49	1.28	101.55	11.40

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 17:17:00	1,671.10	128.08	3.49	1.28	102.59	11.84
11-Dec-12 17:18:00	1,670.72	128.08	3.49	1.28	102.59	12.00
11-Dec-12 17:19:00	1,666.26	128.08	3.49	1.28	102.59	12.18
11-Dec-12 17:20:00	1,666.24	128.08	3.48	1.28	104.79	11.91
11-Dec-12 17:21:00	1,663.90	128.08	3.48	1.28	104.79	11.11
11-Dec-12 17:22:00	1,659.48	127.40	3.48	1.28	104.79	10.20
11-Dec-12 17:23:00	1,655.05	127.40	3.48	1.28	102.16	10.20
11-Dec-12 17:24:00	1,656.72	127.40	3.47	1.28	104.66	8.67
11-Dec-12 17:25:00	1,662.49	127.40	3.47	1.28	104.66	8.67
11-Dec-12 17:26:00	1,671.35	127.40	3.47	1.28	104.72	8.17
11-Dec-12 17:27:00	1,675.51	127.63	3.47	1.28	104.72	8.17
11-Dec-12 17:28:00	1,675.82	127.63	3.47	1.28	107.47	8.38
11-Dec-12 17:29:00	1,675.38	127.63	3.47	1.28	107.47	8.38
11-Dec-12 17:30:00	1,674.76	127.63	3.46	1.28	106.31	8.78
11-Dec-12 17:31:00	1,674.72	127.63	3.46	1.28	105.09	9.16
11-Dec-12 17:32:00	1,674.70	127.63	3.46	1.28	105.09	9.61
11-Dec-12 17:33:00	1,673.71	127.63	3.46	1.27	106.13	10.06
11-Dec-12 17:34:00	1,671.52	127.63	3.45	1.28	105.03	10.35
11-Dec-12 17:35:00	1,669.32	127.63	3.45	1.28	107.17	10.54
11-Dec-12 17:36:00	1,667.13	127.63	3.45	1.28	106.13	10.48
11-Dec-12 17:37:00	1,664.04	127.40	3.45	1.28	106.13	10.89
11-Dec-12 17:38:00	1,661.78	127.40	3.44	1.28	105.03	11.12
11-Dec-12 17:39:00	1,662.95	127.40	3.44	1.28	106.13	11.12
11-Dec-12 17:40:00	1,664.12	127.40	3.44	1.28	107.17	11.70
11-Dec-12 17:41:00	1,664.52	127.40	3.44	1.29	105.94	12.08
11-Dec-12 17:42:00	1,663.69	127.63	3.44	1.29	106.01	12.78
11-Dec-12 17:43:00	1,668.56	127.63	3.44	1.29	103.69	13.15
11-Dec-12 17:44:00	1,669.31	127.63	3.44	1.29	103.69	13.15
11-Dec-12 17:45:00	1,668.77	127.63	3.43	1.28	103.69	13.15
11-Dec-12 17:46:00	1,668.22	127.63	3.43	1.29	103.75	13.17
11-Dec-12 17:47:00	1,667.68	127.63	3.43	1.29	98.68	13.17
11-Dec-12 17:48:00	1,667.14	127.63	3.43	1.28	101.98	12.92
11-Dec-12 17:49:00	1,666.60	127.63	3.43	1.29	103.20	11.63
11-Dec-12 17:50:00	1,666.06	127.63	3.42	1.28	103.20	10.66
11-Dec-12 17:51:00	1,665.52	127.63	3.42	1.28	104.24	10.66
11-Dec-12 17:52:00	1,664.98	127.17	3.41	1.28	104.24	11.70
11-Dec-12 17:53:00	1,664.44	127.17	3.41	1.28	105.52	11.70
11-Dec-12 17:54:00	1,665.26	127.17	3.41	1.28	105.52	13.34
11-Dec-12 17:55:00	1,666.75	127.17	3.41	1.28	103.20	13.34
11-Dec-12 17:56:00	1,664.86	127.17	3.41	1.28	103.20	13.30
11-Dec-12 17:57:00	1,662.97	128.08	3.41	1.28	104.24	13.15
11-Dec-12 17:58:00	1,661.08	128.08	3.41	1.28	103.02	12.90

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 17:59:00	1,659.19	128.08	3.41	1.28	103.02	12.13
11-Dec-12 18:00:00	1,663.21	128.08	3.41	1.28	103.02	12.13
11-Dec-12 18:01:00	1,665.19	128.08	3.40	1.28	103.02	11.13
11-Dec-12 18:02:00	1,662.15	126.94	3.40	1.28	103.02	11.13
11-Dec-12 18:03:00	1,660.00	126.94	3.40	1.28	102.59	11.42
11-Dec-12 18:04:00	1,658.44	128.08	3.40	1.28	102.59	11.42
11-Dec-12 18:05:00	1,656.88	128.08	3.40	1.28	102.59	10.93
11-Dec-12 18:06:00	1,655.28	128.08	3.40	1.28	102.59	10.93
11-Dec-12 18:07:00	1,650.69	128.08	3.39	1.27	99.17	11.21
11-Dec-12 18:08:00	1,654.48	128.08	3.39	1.28	97.77	12.04
11-Dec-12 18:09:00	1,660.14	127.86	3.39	1.28	101.12	12.11
11-Dec-12 18:10:00	1,662.40	127.86	3.39	1.28	103.75	12.27
11-Dec-12 18:11:00	1,664.14	127.86	3.39	1.28	102.65	12.27
11-Dec-12 18:12:00	1,665.87	127.86	3.39	1.28	98.93	12.63
11-Dec-12 18:13:00	1,663.85	127.86	3.39	1.28	102.53	12.63
11-Dec-12 18:14:00	1,661.39	128.54	3.38	1.28	99.11	11.96
11-Dec-12 18:15:00	1,662.70	128.54	3.38	1.29	98.07	12.09
11-Dec-12 18:16:00	1,664.02	127.40	3.38	1.29	101.73	12.09
11-Dec-12 18:17:00	1,665.33	127.40	3.37	1.29	102.77	12.53
11-Dec-12 18:18:00	1,665.85	127.40	3.37	1.29	103.87	12.53
11-Dec-12 18:19:00	1,662.82	127.40	3.36	1.29	110.77	12.78
11-Dec-12 18:20:00	1,661.63	127.40	3.36	1.29	101.37	12.78
11-Dec-12 18:21:00	1,663.61	128.54	3.37	1.29	97.71	12.65
11-Dec-12 18:22:00	1,665.59	128.54	3.37	1.29	97.71	12.65
11-Dec-12 18:23:00	1,667.57	128.54	3.36	1.29	95.39	13.90
11-Dec-12 18:24:00	1,668.68	127.40	3.36	1.30	96.42	14.34
11-Dec-12 18:25:00	1,664.13	127.40	3.36	1.30	97.58	14.34
11-Dec-12 18:26:00	1,659.58	127.40	3.36	1.30	98.62	13.82
11-Dec-12 18:27:00	1,660.42	127.40	3.36	1.30	100.94	13.82
11-Dec-12 18:28:00	1,663.17	127.40	3.36	1.29	102.22	13.04
11-Dec-12 18:29:00	1,666.29	128.08	3.36	1.30	101.12	12.42
11-Dec-12 18:30:00	1,674.91	128.08	3.36	1.30	105.76	12.42
11-Dec-12 18:31:00	1,679.32	128.08	3.35	1.30	103.14	12.69
11-Dec-12 18:32:00	1,671.04	128.08	3.35	1.30	99.72	12.69
11-Dec-12 18:33:00	1,671.97	128.08	3.35	1.29	99.66	12.01
11-Dec-12 18:34:00	1,677.87	127.63	3.35	1.29	100.88	11.34
11-Dec-12 18:35:00	1,678.20	127.63	3.35	1.29	100.76	11.42
11-Dec-12 18:36:00	1,676.83	127.63	3.34	1.29	98.50	11.50
11-Dec-12 18:37:00	1,677.60	127.63	3.35	1.29	101.61	11.00
11-Dec-12 18:38:00	1,682.04	127.63	3.34	1.29	105.15	10.60
11-Dec-12 18:39:00	1,680.44	127.63	3.34	1.29	105.15	10.99
11-Dec-12 18:40:00	1,679.29	127.63	3.34	1.29	105.15	10.99

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 18:41:00	1,678.99	127.63	3.34	1.29	100.27	11.67
11-Dec-12 18:42:00	1,679.07	127.63	3.34	1.29	103.99	11.45
11-Dec-12 18:43:00	1,679.34	127.63	3.33	1.29	106.43	11.11
11-Dec-12 18:44:00	1,680.60	127.86	3.33	1.29	106.43	10.56
11-Dec-12 18:45:00	1,682.01	127.86	3.33	1.29	105.40	9.87
11-Dec-12 18:46:00	1,681.59	127.86	3.33	1.29	105.40	9.75
11-Dec-12 18:47:00	1,679.57	127.86	3.33	1.29	105.40	9.32
11-Dec-12 18:48:00	1,681.02	127.86	3.33	1.29	103.14	9.40
11-Dec-12 18:49:00	1,682.63	127.40	3.33	1.29	103.14	9.40
11-Dec-12 18:50:00	1,681.05	127.40	3.33	1.29	103.14	10.57
11-Dec-12 18:51:00	1,679.48	127.40	3.33	1.29	105.52	10.57
11-Dec-12 18:52:00	1,677.90	127.40	3.32	1.29	105.33	10.65
11-Dec-12 18:53:00	1,676.33	127.40	3.32	1.29	103.02	10.65
11-Dec-12 18:54:00	1,674.75	128.08	3.32	1.29	103.02	9.74
11-Dec-12 18:55:00	1,670.40	128.08	3.32	1.29	103.02	9.19
11-Dec-12 18:56:00	1,673.88	128.08	3.32	1.29	102.89	8.92
11-Dec-12 18:57:00	1,678.53	128.08	3.32	1.29	103.99	8.85
11-Dec-12 18:58:00	1,673.19	128.08	3.31	1.29	103.99	9.12
11-Dec-12 18:59:00	1,674.52	127.40	3.31	1.29	106.43	9.33
11-Dec-12 19:00:00	1,678.27	127.40	3.31	1.29	100.82	9.29
11-Dec-12 19:01:00	1,682.01	127.40	3.31	1.29	100.82	9.47
11-Dec-12 19:02:00	1,685.12	127.40	3.31	1.29	101.98	9.53
11-Dec-12 19:03:00	1,685.08	127.40	3.31	1.29	99.78	9.53
11-Dec-12 19:04:00	1,682.68	128.54	3.31	1.29	106.74	8.71
11-Dec-12 19:05:00	1,680.29	128.54	3.31	1.29	101.92	8.71
11-Dec-12 19:06:00	1,667.43	127.40	3.31	1.29	101.92	8.67
11-Dec-12 19:07:00	1,668.08	127.40	3.30	1.28	100.88	10.15
11-Dec-12 19:08:00	1,670.06	127.40	3.30	1.28	99.84	11.31
11-Dec-12 19:09:00	1,673.83	127.40	3.30	1.28	100.88	11.64
11-Dec-12 19:10:00	1,680.71	126.26	3.30	1.29	101.92	11.49
11-Dec-12 19:11:00	1,680.58	126.26	3.30	1.28	101.92	11.84
11-Dec-12 19:12:00	1,677.22	127.40	3.29	1.28	99.84	12.15
11-Dec-12 19:13:00	1,675.23	127.40	3.29	1.28	99.84	12.25
11-Dec-12 19:14:00	1,678.75	127.40	3.29	1.28	99.84	11.89
11-Dec-12 19:15:00	1,678.99	127.40	3.29	1.28	99.84	11.89
11-Dec-12 19:16:00	1,677.34	127.40	3.29	1.28	99.84	11.31
11-Dec-12 19:17:00	1,670.80	127.17	3.29	1.28	100.51	11.31
11-Dec-12 19:18:00	1,674.09	127.17	3.29	1.28	97.95	10.50
11-Dec-12 19:19:00	1,679.81	127.17	3.29	1.28	97.95	10.50
11-Dec-12 19:20:00	1,684.48	128.31	3.28	1.28	97.95	10.57
11-Dec-12 19:21:00	1,687.73	128.31	3.29	1.28	97.95	10.76
11-Dec-12 19:22:00	1,682.91	128.31	3.29	1.28	99.23	10.76

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 19:23:00	1,682.71	128.31	3.28	1.28	99.23	11.11
11-Dec-12 19:24:00	1,682.50	128.31	3.28	1.28	100.57	11.31
11-Dec-12 19:25:00	1,682.29	127.63	3.28	1.28	100.57	11.15
11-Dec-12 19:26:00	1,684.37	127.63	3.28	1.28	98.38	10.76
11-Dec-12 19:27:00	1,684.73	127.63	3.28	1.28	101.06	10.76
11-Dec-12 19:28:00	1,683.40	127.63	3.27	1.28	101.06	10.58
11-Dec-12 19:29:00	1,679.30	127.63	3.27	1.28	101.06	10.58
11-Dec-12 19:30:00	1,674.94	128.08	3.27	1.28	101.06	11.27
11-Dec-12 19:31:00	1,672.60	128.08	3.27	1.28	101.06	11.27
11-Dec-12 19:32:00	1,670.26	128.08	3.27	1.28	102.10	11.22
11-Dec-12 19:33:00	1,667.92	128.08	3.27	1.28	98.86	11.22
11-Dec-12 19:34:00	1,665.58	128.08	3.26	1.28	101.25	10.53
11-Dec-12 19:35:00	1,663.24	127.63	3.26	1.28	103.69	10.53
11-Dec-12 19:36:00	1,660.89	127.63	3.26	1.28	102.34	9.95
11-Dec-12 19:37:00	1,659.38	127.63	3.26	1.28	101.12	9.53
11-Dec-12 19:38:00	1,659.01	127.63	3.26	1.28	101.12	10.12
11-Dec-12 19:39:00	1,663.75	127.63	3.26	1.28	101.12	10.56
11-Dec-12 19:40:00	1,663.47	128.08	3.26	1.28	105.03	10.42
11-Dec-12 19:41:00	1,661.46	128.08	3.26	1.28	102.71	10.22
11-Dec-12 19:42:00	1,659.82	128.08	3.26	1.28	102.71	10.22
11-Dec-12 19:43:00	1,658.99	128.08	3.25	1.27	104.91	10.17
11-Dec-12 19:44:00	1,665.80	128.08	3.25	1.27	104.79	10.18
11-Dec-12 19:45:00	1,669.81	127.17	3.25	1.28	101.31	10.51
11-Dec-12 19:46:00	1,670.57	127.17	3.25	1.27	104.66	11.05
11-Dec-12 19:47:00	1,670.46	127.17	3.25	1.27	105.82	11.05
11-Dec-12 19:48:00	1,670.35	127.17	3.25	1.28	102.59	11.09
11-Dec-12 19:49:00	1,670.24	128.31	3.25	1.28	103.63	10.67
11-Dec-12 19:50:00	1,670.13	128.31	3.25	1.28	102.47	9.94
Run 3						
11-Dec-12 20:41:00	1,670.91	127.63	5.54	1.32	108.45	14.80
11-Dec-12 20:42:00	1,673.24	127.63	5.53	1.32	110.58	14.64
11-Dec-12 20:43:00	1,674.35	127.63	5.52	1.31	111.62	15.21
11-Dec-12 20:44:00	1,673.93	127.63	5.51	1.32	110.46	15.88
11-Dec-12 20:45:00	1,665.57	127.63	5.50	1.32	111.74	15.84
11-Dec-12 20:46:00	1,662.51	127.63	5.50	1.31	111.74	15.55
11-Dec-12 20:47:00	1,661.47	127.63	5.49	1.32	110.71	15.49
11-Dec-12 20:48:00	1,665.53	127.63	5.48	1.32	109.55	14.92
11-Dec-12 20:49:00	1,667.52	127.63	5.48	1.31	109.55	13.98
11-Dec-12 20:50:00	1,669.31	127.86	5.47	1.31	108.14	13.76
11-Dec-12 20:51:00	1,670.98	127.86	5.45	1.32	109.24	13.21
11-Dec-12 20:52:00	1,671.70	127.86	5.44	1.31	110.28	12.78

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 20:53:00	1,671.19	127.86	5.44	1.32	112.41	12.79
11-Dec-12 20:54:00	1,669.47	127.86	5.43	1.32	115.16	13.08
11-Dec-12 20:55:00	1,669.58	127.63	5.42	1.32	112.66	13.82
11-Dec-12 20:56:00	1,670.90	127.63	5.41	1.32	108.94	14.10
11-Dec-12 20:57:00	1,672.23	127.63	5.41	1.32	111.01	14.10
11-Dec-12 20:58:00	1,673.55	127.63	5.39	1.32	112.23	13.59
11-Dec-12 20:59:00	1,674.87	127.63	5.39	1.32	112.23	13.38
11-Dec-12 21:00:00	1,676.20	127.63	5.38	1.32	110.77	13.76
11-Dec-12 21:01:00	1,677.22	127.63	5.37	1.32	113.39	13.79
11-Dec-12 21:02:00	1,675.93	127.63	5.35	1.32	109.55	13.91
11-Dec-12 21:03:00	1,671.85	127.63	5.34	1.32	109.55	13.21
11-Dec-12 21:04:00	1,673.47	127.63	5.33	1.31	112.84	12.64
11-Dec-12 21:05:00	1,675.08	127.63	5.32	1.32	112.84	12.50
11-Dec-12 21:06:00	1,676.70	127.63	5.32	1.32	107.78	12.50
11-Dec-12 21:07:00	1,676.31	127.63	5.31	1.33	107.78	14.84
11-Dec-12 21:08:00	1,675.08	127.63	5.31	1.33	110.03	14.84
11-Dec-12 21:09:00	1,673.84	127.63	5.28	1.33	110.03	15.01
11-Dec-12 21:10:00	1,672.60	127.86	5.27	1.32	108.94	14.72
11-Dec-12 21:11:00	1,672.82	127.86	5.26	1.33	107.53	14.44
11-Dec-12 21:12:00	1,675.95	127.86	5.25	1.33	107.53	13.70
11-Dec-12 21:13:00	1,677.15	127.86	5.24	1.31	107.53	12.93
11-Dec-12 21:14:00	1,676.96	127.86	5.22	1.33	109.97	12.81
11-Dec-12 21:15:00	1,676.77	127.40	5.22	1.33	114.61	12.81
11-Dec-12 21:16:00	1,675.50	127.40	5.20	1.33	110.77	12.00
11-Dec-12 21:17:00	1,673.40	127.40	5.19	1.32	110.77	11.13
11-Dec-12 21:18:00	1,672.26	127.40	5.18	1.31	114.25	10.91
11-Dec-12 21:19:00	1,674.90	127.40	5.17	1.33	109.48	10.64
11-Dec-12 21:20:00	1,677.54	127.86	5.15	1.32	114.12	10.27
11-Dec-12 21:21:00	1,680.02	127.86	5.14	1.32	115.53	10.54
11-Dec-12 21:22:00	1,677.54	127.86	5.13	1.33	113.33	11.20
11-Dec-12 21:23:00	1,675.98	127.86	5.12	1.34	110.10	11.13
11-Dec-12 21:24:00	1,674.77	127.86	5.10	1.31	112.41	10.68
11-Dec-12 21:25:00	1,673.57	127.63	5.09	1.33	113.82	10.20
11-Dec-12 21:26:00	1,672.36	127.63	5.07	1.34	112.96	10.22
11-Dec-12 21:27:00	1,673.36	127.63	5.07	1.34	117.85	10.22
11-Dec-12 21:28:00	1,675.64	127.63	5.04	1.33	115.77	11.47
11-Dec-12 21:29:00	1,677.00	127.63	5.04	1.33	113.45	11.47
11-Dec-12 21:30:00	1,675.37	127.40	5.01	1.31	117.91	12.18
11-Dec-12 21:31:00	1,673.73	127.40	5.01	1.31	114.37	12.39
11-Dec-12 21:32:00	1,672.10	127.40	4.98	1.34	118.03	11.37
11-Dec-12 21:33:00	1,670.47	127.40	4.97	1.31	111.80	10.79
11-Dec-12 21:34:00	1,668.84	127.40	4.97	1.31	113.27	10.79

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 21:35:00	1,667.21	127.86	4.94	1.33	113.27	10.05
11-Dec-12 21:36:00	1,667.68	127.86	4.94	1.33	114.31	9.99
11-Dec-12 21:37:00	1,670.41	127.86	4.90	1.31	118.09	9.81
11-Dec-12 21:38:00	1,669.40	127.86	4.89	1.34	113.27	9.77
11-Dec-12 21:39:00	1,663.52	127.86	4.87	1.31	110.71	9.80
11-Dec-12 21:40:00	1,664.58	127.40	4.86	1.34	109.61	9.88
11-Dec-12 21:41:00	1,669.86	127.40	4.84	1.34	111.99	10.10
11-Dec-12 21:42:00	1,677.49	127.40	4.82	1.31	111.87	10.21
11-Dec-12 21:43:00	1,678.09	127.40	4.82	1.31	110.46	10.21
11-Dec-12 21:44:00	1,674.58	127.40	4.79	1.31	111.68	10.40
11-Dec-12 21:45:00	1,667.61	127.63	4.79	1.31	109.30	10.40
11-Dec-12 21:46:00	1,665.68	127.63	4.76	1.31	106.68	11.09
11-Dec-12 21:47:00	1,665.58	127.63	4.75	1.33	109.00	12.01
11-Dec-12 21:48:00	1,665.49	127.63	4.73	1.33	107.96	11.92
11-Dec-12 21:49:00	1,665.39	127.63	4.71	1.31	107.96	11.89
11-Dec-12 21:50:00	1,665.29	127.86	4.70	1.34	106.86	12.28
11-Dec-12 21:51:00	1,667.55	127.86	4.69	1.31	106.86	12.62
11-Dec-12 21:52:00	1,668.47	127.86	4.67	1.34	104.72	12.02
11-Dec-12 21:53:00	1,668.26	127.86	4.65	1.31	109.85	11.48
11-Dec-12 21:54:00	1,667.51	127.86	4.64	1.35	103.99	11.02
11-Dec-12 21:55:00	1,664.30	127.40	4.63	1.31	102.83	10.70
11-Dec-12 21:56:00	1,664.30	127.40	4.61	1.31	102.83	10.14
11-Dec-12 21:57:00	1,666.05	127.40	4.61	1.31	102.83	10.14
11-Dec-12 21:58:00	1,667.79	127.40	4.58	1.31	101.73	9.84
11-Dec-12 21:59:00	1,669.53	127.40	4.58	1.31	104.42	9.84
11-Dec-12 22:00:00	1,671.27	128.31	4.56	1.31	103.02	10.11
11-Dec-12 22:01:00	1,667.20	128.31	4.54	1.31	99.54	10.07
11-Dec-12 22:02:00	1,663.50	128.31	4.52	1.31	102.95	9.78
11-Dec-12 22:03:00	1,668.30	128.31	4.51	1.31	110.10	10.19
11-Dec-12 22:04:00	1,668.94	128.31	4.49	1.31	107.90	9.91
11-Dec-12 22:05:00	1,669.06	127.40	4.48	1.31	96.85	9.30
11-Dec-12 22:06:00	1,668.50	127.40	4.47	1.31	96.97	8.74
11-Dec-12 22:07:00	1,668.94	127.40	4.46	1.31	98.13	8.46
11-Dec-12 22:08:00	1,671.27	128.54	4.44	1.31	95.75	8.75
11-Dec-12 22:09:00	1,673.60	128.54	4.42	1.31	94.65	10.31
11-Dec-12 22:10:00	1,675.93	127.40	4.41	1.31	95.75	13.37
11-Dec-12 22:11:00	1,680.57	127.40	4.41	1.31	107.53	13.37
11-Dec-12 22:12:00	1,682.69	127.40	4.38	1.31	100.70	15.17
11-Dec-12 22:13:00	1,682.77	127.40	4.38	1.31	104.05	15.22
11-Dec-12 22:14:00	1,682.85	127.40	4.35	1.30	100.21	11.75
11-Dec-12 22:15:00	1,682.93	128.08	4.35	1.30	100.33	11.75
11-Dec-12 22:16:00	1,683.00	128.08	4.32	1.30	111.25	10.97

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 22:17:00	1,683.08	128.08	4.32	1.31	96.61	9.71
11-Dec-12 22:18:00	1,682.56	128.08	4.31	1.30	92.15	10.51
11-Dec-12 22:19:00	1,682.70	128.08	4.29	1.30	108.75	12.17
11-Dec-12 22:20:00	1,687.90	128.08	4.28	1.30	110.22	11.93
11-Dec-12 22:21:00	1,686.36	128.08	4.27	1.30	99.66	10.70
11-Dec-12 22:22:00	1,684.82	128.08	4.26	1.30	98.56	10.13
11-Dec-12 22:23:00	1,683.28	128.08	4.24	1.30	104.17	9.99
11-Dec-12 22:24:00	1,679.49	128.08	4.23	1.30	109.06	9.61
11-Dec-12 22:25:00	1,679.42	127.40	4.22	1.30	105.94	9.33
11-Dec-12 22:26:00	1,685.22	127.40	4.21	1.30	104.91	9.65
11-Dec-12 22:27:00	1,686.46	127.40	4.20	1.30	108.63	10.58
11-Dec-12 22:28:00	1,682.82	127.40	4.19	1.30	105.15	11.63
11-Dec-12 22:29:00	1,680.53	127.40	4.19	1.30	99.35	11.63
11-Dec-12 22:30:00	1,683.14	127.86	4.17	1.30	103.87	14.51
11-Dec-12 22:31:00	1,685.37	127.86	4.16	1.30	106.01	14.80
11-Dec-12 22:32:00	1,683.55	127.86	4.15	1.30	108.39	14.26
11-Dec-12 22:33:00	1,681.72	127.86	4.14	1.30	112.78	13.79
11-Dec-12 22:34:00	1,679.22	127.86	4.14	1.30	113.33	13.79
11-Dec-12 22:35:00	1,675.13	127.63	4.12	1.30	114.55	10.24
11-Dec-12 22:36:00	1,671.57	127.63	4.12	1.30	109.48	10.24
11-Dec-12 22:37:00	1,671.47	127.63	4.10	1.31	108.26	6.20
11-Dec-12 22:38:00	1,671.37	127.63	4.10	1.31	106.98	6.20
11-Dec-12 22:39:00	1,671.27	127.63	4.08	1.31	100.94	4.70
11-Dec-12 22:40:00	1,671.17	128.08	4.07	1.31	98.38	5.47
11-Dec-12 22:41:00	1,670.19	128.08	4.07	1.31	96.12	7.40
11-Dec-12 22:42:00	1,665.70	128.08	4.06	1.31	96.06	11.46
11-Dec-12 22:43:00	1,661.21	128.08	4.06	1.31	93.49	11.46
11-Dec-12 22:44:00	1,658.11	128.08	4.04	1.31	97.09	20.55
11-Dec-12 22:45:00	1,658.79	127.63	4.03	1.31	101.79	22.55
11-Dec-12 22:46:00	1,669.53	127.63	4.02	1.31	103.08	21.91
11-Dec-12 22:47:00	1,672.80	127.63	4.01	1.31	104.11	20.38
11-Dec-12 22:48:00	1,672.87	127.63	4.01	1.31	102.83	20.38
11-Dec-12 22:49:00	1,672.94	127.63	4.00	1.31	109.12	17.33
11-Dec-12 22:50:00	1,673.02	128.08	3.99	1.31	101.31	15.17
11-Dec-12 22:51:00	1,673.09	128.08	3.98	1.31	101.18	13.62
11-Dec-12 22:52:00	1,673.16	128.08	3.98	1.31	102.59	13.62
11-Dec-12 22:53:00	1,671.77	128.08	3.97	1.31	106.37	11.84
11-Dec-12 22:54:00	1,667.85	128.08	3.96	1.31	107.47	10.02
11-Dec-12 22:55:00	1,667.37	127.63	3.95	1.30	98.74	8.22
11-Dec-12 22:56:00	1,667.67	127.63	3.95	1.30	103.93	8.22
11-Dec-12 22:57:00	1,667.69	127.63	3.94	1.31	97.95	7.13
11-Dec-12 22:58:00	1,667.68	127.63	3.93	1.31	93.19	9.17

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 22:59:00	1,667.66	127.63	3.93	1.31	104.42	9.17
11-Dec-12 23:00:00	1,667.64	127.63	3.92	1.31	102.04	10.95
11-Dec-12 23:01:00	1,668.86	127.63	3.91	1.31	102.04	11.98
11-Dec-12 23:02:00	1,670.11	127.63	3.90	1.31	102.04	13.33
11-Dec-12 23:03:00	1,671.36	127.63	3.89	1.31	107.65	13.28
11-Dec-12 23:04:00	1,673.60	127.63	3.89	1.31	107.84	13.28
11-Dec-12 23:05:00	1,674.28	128.08	3.88	1.31	106.68	13.22
11-Dec-12 23:06:00	1,672.06	128.08	3.88	1.31	105.40	13.22
11-Dec-12 23:07:00	1,669.84	128.08	3.87	1.30	105.40	11.58
11-Dec-12 23:08:00	1,670.16	128.08	3.87	1.30	107.04	11.58
11-Dec-12 23:09:00	1,672.23	128.08	3.85	1.30	108.14	9.95
11-Dec-12 23:10:00	1,676.85	127.63	3.84	1.31	108.51	9.23
11-Dec-12 23:11:00	1,676.07	127.63	3.84	1.31	103.93	9.23
11-Dec-12 23:12:00	1,673.16	127.63	3.83	1.30	107.53	9.35
11-Dec-12 23:13:00	1,670.26	127.63	3.83	1.30	97.89	9.35
11-Dec-12 23:14:00	1,668.45	127.63	3.83	1.30	97.89	9.07
11-Dec-12 23:15:00	1,666.87	127.63	3.82	1.30	97.89	8.50
11-Dec-12 23:16:00	1,669.04	127.63	3.81	1.30	100.15	8.15
11-Dec-12 23:17:00	1,672.83	127.63	3.80	1.30	102.28	7.95
11-Dec-12 23:18:00	1,673.95	127.63	3.80	1.30	104.72	7.87
11-Dec-12 23:19:00	1,674.31	127.63	3.79	1.33	104.72	7.92
11-Dec-12 23:20:00	1,674.61	128.08	3.78	1.34	105.76	8.62
11-Dec-12 23:21:00	1,674.48	128.08	3.78	1.34	105.76	8.62
11-Dec-12 23:22:00	1,674.12	128.08	3.78	1.30	104.66	8.92
11-Dec-12 23:23:00	1,673.76	128.08	3.77	1.30	106.98	9.50
11-Dec-12 23:24:00	1,670.97	128.08	3.76	1.31	106.98	10.08
11-Dec-12 23:25:00	1,669.41	127.40	3.76	1.30	106.98	10.90
11-Dec-12 23:26:00	1,671.27	127.40	3.76	1.30	111.62	10.90
11-Dec-12 23:27:00	1,673.13	127.40	3.75	1.30	115.10	11.75
11-Dec-12 23:28:00	1,674.99	127.40	3.75	1.30	109.30	12.21
11-Dec-12 23:29:00	1,676.85	127.40	3.75	1.30	104.72	11.90
11-Dec-12 23:30:00	1,674.98	128.08	3.73	1.31	103.69	10.62
11-Dec-12 23:31:00	1,672.69	128.08	3.73	1.31	103.69	10.62
11-Dec-12 23:32:00	1,673.36	128.08	3.72	1.30	103.69	10.56
11-Dec-12 23:33:00	1,677.02	128.08	3.72	1.30	106.92	10.56
11-Dec-12 23:34:00	1,677.11	128.08	3.71	1.30	106.92	9.71
11-Dec-12 23:35:00	1,677.20	127.40	3.71	1.30	106.92	9.70
11-Dec-12 23:36:00	1,677.30	127.40	3.70	1.30	106.92	10.04
11-Dec-12 23:37:00	1,677.39	127.40	3.70	1.30	107.04	10.04
11-Dec-12 23:38:00	1,677.48	127.40	3.70	1.33	108.14	10.41
11-Dec-12 23:39:00	1,677.58	127.40	3.69	1.30	108.14	10.65
11-Dec-12 23:40:00	1,677.67	128.08	3.69	1.30	110.58	10.65

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
11-Dec-12 23:41:00	1,674.82	128.08	3.68	1.30	109.48	11.40
11-Dec-12 23:42:00	1,671.65	128.08	3.68	1.30	109.48	11.33
11-Dec-12 23:43:00	1,668.77	128.08	3.67	1.30	109.48	11.40
11-Dec-12 23:44:00	1,668.59	128.08	3.67	1.30	105.09	11.87
11-Dec-12 23:45:00	1,668.41	127.17	3.67	1.30	107.29	11.87
11-Dec-12 23:46:00	1,668.23	127.17	3.66	1.30	107.17	12.40
11-Dec-12 23:47:00	1,668.80	127.17	3.66	1.30	105.76	12.40
11-Dec-12 23:48:00	1,670.00	127.17	3.65	1.30	103.50	11.51
11-Dec-12 23:49:00	1,671.20	127.17	3.65	1.30	109.12	10.97
11-Dec-12 23:50:00	1,670.57	128.08	3.64	1.30	106.68	10.82
Run 4						
12/12/2012 15:00:00	1,662.87	127.63	4.65	0.00	98.25	12.15
12/12/2012 15:01:00	1,664.94	127.86	4.62	0.00	98.25	11.69
12/12/2012 15:02:00	1,667.00	127.86	4.60	0.00	97.09	11.42
12/12/2012 15:03:00	1,669.07	127.86	4.58	0.02	96.97	11.32
12/12/2012 15:04:00	1,671.13	127.86	4.56	0.32	96.97	11.28
12/12/2012 15:05:00	1,671.56	127.86	4.54	0.93	98.19	11.20
12/12/2012 15:06:00	1,671.43	127.86	4.53	1.67	98.01	10.89
12/12/2012 15:07:00	1,669.59	127.86	4.50	1.95	98.01	10.66
12/12/2012 15:08:00	1,667.74	127.86	4.48	1.99	98.01	10.52
12/12/2012 15:09:00	1,665.89	127.86	4.46	2.00	98.01	10.48
12/12/2012 15:10:00	1,667.31	127.86	4.45	2.03	99.41	10.79
12/12/2012 15:11:00	1,669.15	127.63	4.43	2.09	98.32	10.81
12/12/2012 15:12:00	1,670.99	127.63	4.42	2.24	100.57	10.59
12/12/2012 15:13:00	1,670.89	127.63	4.40	2.30	100.57	10.55
12/12/2012 15:14:00	1,670.72	127.63	4.38	2.31	100.57	11.03
12/12/2012 15:15:00	1,670.55	127.63	4.36	2.32	99.54	11.53
12/12/2012 15:16:00	1,669.81	128.08	4.35	2.31	99.54	11.92
12/12/2012 15:17:00	1,668.31	128.08	4.34	2.29	99.54	12.00
12/12/2012 15:18:00	1,666.81	128.08	4.32	2.27	99.54	11.26
12/12/2012 15:19:00	1,664.50	128.08	4.31	2.26	100.88	10.59
12/12/2012 15:20:00	1,658.36	128.08	4.29	2.26	100.88	10.43
12/12/2012 15:21:00	1,663.03	127.63	4.28	2.27	103.02	10.74
12/12/2012 15:22:00	1,665.15	127.63	4.27	2.26	103.02	10.99
12/12/2012 15:23:00	1,658.04	127.63	4.26	2.26	100.63	11.11
12/12/2012 15:24:00	1,652.00	127.63	4.25	2.26	100.63	11.18
12/12/2012 15:25:00	1,666.21	127.63	4.24	2.26	100.63	11.29
12/12/2012 15:26:00	1,671.73	127.86	4.23	2.20	100.63	10.90
12/12/2012 15:27:00	1,669.24	127.86	4.22	2.12	99.23	10.60
12/12/2012 15:28:00	1,666.78	127.86	4.22	1.92	99.23	10.44
12/12/2012 15:29:00	1,668.20	127.86	4.21	1.56	109.36	10.29

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
12/12/2012 15:30:00	1,669.61	127.86	4.20	1.66	98.50	9.08
12/12/2012 15:31:00	1,671.03	128.31	4.19	1.71	96.12	8.58
12/12/2012 15:32:00	1,672.44	128.31	4.18	1.65	98.74	8.92
12/12/2012 15:33:00	1,673.85	128.31	4.18	1.60	97.40	9.70
12/12/2012 15:34:00	1,673.51	128.31	4.17	1.70	99.78	10.37
12/12/2012 15:35:00	1,672.29	128.31	4.16	1.28	99.35	11.17
12/12/2012 15:36:00	1,671.07	127.63	4.15	1.34	101.73	11.45
12/12/2012 15:37:00	1,670.00	127.63	4.15	1.40	101.73	11.18
12/12/2012 15:38:00	1,671.08	127.63	4.14	1.40	104.17	11.02
12/12/2012 15:39:00	1,672.15	127.63	4.13	1.40	106.56	11.47
12/12/2012 15:40:00	1,673.22	127.63	4.13	1.40	102.71	12.14
12/12/2012 15:41:00	1,674.30	127.86	4.12	1.41	101.37	12.82
12/12/2012 15:42:00	1,675.37	127.86	4.11	1.41	102.10	12.99
12/12/2012 15:43:00	1,676.44	127.86	4.10	1.41	97.58	12.53
12/12/2012 15:44:00	1,677.51	127.86	4.10	1.42	96.36	12.11
12/12/2012 15:45:00	1,678.59	127.86	4.09	1.42	96.36	12.54
12/12/2012 15:46:00	1,679.66	127.63	4.08	1.42	96.36	13.20
12/12/2012 15:47:00	1,680.73	127.63	4.08	1.42	97.40	13.39
12/12/2012 15:48:00	1,681.81	127.63	4.07	1.42	98.68	12.97
12/12/2012 15:49:00	1,682.88	127.63	4.07	1.43	98.68	12.55
12/12/2012 15:50:00	1,682.32	127.63	4.06	1.43	98.68	12.71
12/12/2012 15:51:00	1,681.77	127.86	4.05	1.43	97.58	13.03
12/12/2012 15:52:00	1,681.21	127.86	4.05	1.44	97.58	12.47
12/12/2012 15:53:00	1,680.66	127.86	4.05	1.44	97.58	11.23
12/12/2012 15:54:00	1,680.10	127.86	4.04	1.45	98.62	10.64
12/12/2012 15:55:00	1,679.55	127.86	4.03	1.45	106.98	10.78
12/12/2012 15:56:00	1,678.99	127.86	4.03	1.45	102.16	10.70
12/12/2012 15:57:00	1,678.44	127.86	4.02	1.45	100.88	10.85
12/12/2012 15:58:00	1,677.71	127.86	4.01	1.45	101.12	10.93
12/12/2012 15:59:00	1,675.86	127.86	4.01	1.45	101.12	11.32
12/12/2012 16:00:00	1,674.70	127.86	4.00	1.45	106.07	11.47
12/12/2012 16:01:00	1,674.94	127.40	4.00	1.45	102.59	11.08
12/12/2012 16:02:00	1,675.18	127.40	4.00	1.45	98.80	11.28
12/12/2012 16:03:00	1,675.42	127.40	3.99	1.44	98.68	11.64
12/12/2012 16:04:00	1,675.67	127.40	3.98	1.45	100.88	11.84
12/12/2012 16:05:00	1,675.91	127.40	3.98	1.45	105.40	11.35
12/12/2012 16:06:00	1,676.15	127.40	3.97	1.45	104.17	10.89
12/12/2012 16:07:00	1,676.39	127.40	3.97	1.46	106.37	10.78
12/12/2012 16:08:00	1,676.63	127.40	3.96	1.46	101.98	10.77
12/12/2012 16:09:00	1,676.87	127.40	3.96	1.45	100.82	10.80
12/12/2012 16:10:00	1,677.11	127.40	3.95	1.45	103.56	10.55
12/12/2012 16:11:00	1,677.35	127.86	3.95	1.45	98.93	10.84

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
12/12/2012 16:12:00	1,677.59	127.86	3.94	1.44	109.18	11.11
12/12/2012 16:13:00	1,677.70	127.86	3.94	1.44	102.34	9.83
12/12/2012 16:14:00	1,677.82	127.86	3.94	1.44	99.84	8.62
12/12/2012 16:15:00	1,677.93	127.86	3.93	1.46	96.30	8.90
12/12/2012 16:16:00	1,677.93	127.86	3.93	1.47	103.56	10.21
12/12/2012 16:17:00	1,677.74	127.86	3.92	1.48	104.05	11.35
12/12/2012 16:18:00	1,677.55	127.86	3.91	1.48	101.92	11.79
12/12/2012 16:19:00	1,677.16	127.86	3.91	1.47	104.24	11.63
12/12/2012 16:20:00	1,676.35	127.86	3.90	1.47	101.92	11.72
12/12/2012 16:21:00	1,675.55	127.63	3.90	1.47	104.48	11.74
12/12/2012 16:22:00	1,674.74	127.63	3.90	1.47	103.20	11.38
12/12/2012 16:23:00	1,674.89	127.63	3.89	1.46	105.94	11.52
12/12/2012 16:24:00	1,675.08	127.63	3.88	1.46	102.28	12.05
12/12/2012 16:25:00	1,675.27	127.63	3.88	1.45	104.42	12.13
12/12/2012 16:26:00	1,675.45	127.40	3.88	1.45	102.16	11.40
12/12/2012 16:27:00	1,675.64	127.40	3.87	1.45	97.58	11.05
12/12/2012 16:28:00	1,675.83	127.40	3.87	1.45	108.02	11.38
12/12/2012 16:29:00	1,676.01	127.40	3.87	0.85	110.34	10.45
12/12/2012 16:30:00	1,676.20	127.40	3.86	0.30	106.98	8.79
12/12/2012 16:31:00	1,676.39	127.86	3.85	0.30	100.02	7.84
12/12/2012 16:32:00	1,676.57	127.86	3.85	0.30	96.55	8.47
12/12/2012 16:33:00	1,676.04	127.86	3.85	0.30	97.77	9.72
12/12/2012 16:34:00	1,675.48	127.86	3.84	0.30	95.39	11.13
12/12/2012 16:35:00	1,674.93	127.86	3.84	0.29	99.54	12.71
12/12/2012 16:36:00	1,674.37	127.63	3.83	0.28	102.28	14.10
12/12/2012 16:37:00	1,673.81	127.63	3.83	0.28	108.75	14.43
12/12/2012 16:38:00	1,673.26	127.63	3.82	0.28	100.39	14.21
12/12/2012 16:39:00	1,672.70	127.63	3.82	0.29	101.55	14.39
12/12/2012 16:40:00	1,672.14	127.63	3.81	0.28	101.61	14.51
12/12/2012 16:41:00	1,671.58	127.40	3.81	0.28	99.84	14.62
12/12/2012 16:42:00	1,671.10	127.40	3.80	0.29	96.30	15.06
12/12/2012 16:43:00	1,671.12	127.40	3.80	0.29	100.15	14.38
12/12/2012 16:44:00	1,671.15	127.40	3.80	0.29	101.43	13.68
12/12/2012 16:45:00	1,671.18	127.40	3.79	0.29	100.09	13.74
12/12/2012 16:46:00	1,671.21	127.86	3.79	0.29	102.59	13.22
12/12/2012 16:47:00	1,671.24	127.86	3.78	0.29	102.59	12.94
12/12/2012 16:48:00	1,671.26	127.86	3.78	0.29	101.12	13.08
12/12/2012 16:49:00	1,671.29	127.86	3.78	0.28	98.62	13.08
12/12/2012 16:50:00	1,671.53	127.86	3.77	0.28	100.82	13.13
12/12/2012 16:51:00	1,672.52	127.63	3.77	0.28	100.82	13.63
12/12/2012 16:52:00	1,673.50	127.63	3.76	0.28	98.74	13.99
12/12/2012 16:53:00	1,674.49	127.63	3.76	0.28	97.52	13.51

	Combustion Chamber Outlet Temperature	Rod Scrubber Exit Gas Temperature	WESP #2 Recirculation Liquid pH	Caustic Feedrate	Quench Blowdown Stream Flowrate	WESP #1 Blowdown Stream Flowrate
Date/Time	KTY3104	KTE3515	KAT3527m	KFT3556m	KFT3526	KFT3547m
	°F	°F	pH	gpm	gpm	gpm
12/12/2012 16:54:00	1,675.48	127.63	3.76	0.28	98.68	13.07
12/12/2012 16:55:00	1,676.47	127.63	3.75	0.28	97.64	12.65
12/12/2012 16:56:00	1,677.46	127.63	3.75	0.28	97.64	11.68
12/12/2012 16:57:00	1,678.44	127.63	3.74	0.28	97.64	10.72
12/12/2012 16:58:00	1,678.99	127.63	3.74	0.27	98.86	10.44
12/12/2012 16:59:00	1,676.66	127.63	3.73	0.27	104.85	10.12
12/12/2012 17:00:00	1,674.34	127.63	3.73	0.27	103.63	9.62
12/12/2012 17:01:00	1,672.01	127.86	3.73	0.28	99.96	9.19
12/12/2012 17:02:00	1,669.68	127.86	3.73	0.28	99.84	9.19
12/12/2012 17:03:00	1,668.34	127.86	3.72	0.28	99.84	9.00
12/12/2012 17:04:00	1,668.96	127.86	3.72	0.28	101.06	9.72
12/12/2012 17:05:00	1,669.59	127.86	3.71	0.28	99.96	10.01
12/12/2012 17:06:00	1,670.21	127.40	3.71	0.28	101.06	9.92
12/12/2012 17:07:00	1,670.83	127.40	3.71	0.28	102.16	9.92
12/12/2012 17:08:00	1,671.46	127.40	3.70	0.28	99.41	10.51
12/12/2012 17:09:00	1,672.08	127.40	3.70	0.28	104.17	11.18

Date/Time	Scrubber Liquid to Gas Ratio KFF3521m gpm/kacfm	WESP #1 Liquid to Gas Ratio KFF3548m gpm/kacfm	WESP #2 Liquid to Gas Ratio KFF3537m gpm/kacfm	Combustion Gas Flowrate (Minute Average) KFT3552m dscfm	Combustion Gas Flowrate (HRA) *Calculated* dscfm	WESP #2 Power to Gas Ratio KFF3633m watts/kacfm	Burner F - Waste Derived Fuel Feedrate KFT3062 gpm
PM/HCl/CL_2/Metals							
Run 1 Maximum	84.11	11.13	11.13	16,957.74	16,781.77	327.15	0.97
Run 1 Minimum	76.41	10.89	10.88	16,600.13	16,688.50	262.50	0.95
Run 1 Average	77.61	10.99	11.03	16,756.48	16,730.88	295.58	0.96
Run 2 Maximum	84.36	11.27	11.16	16,906.02	16,795.75	333.38	0.97
Run 2 Minimum	76.47	10.96	10.90	16,498.13	16,714.43	246.30	0.96
Run 2 Average	77.72	11.09	11.03	16,732.95	16,776.70	284.76	0.97
Run 3 Maximum	82.11	10.91	11.06	16,958.83	16,908.26	301.52	0.98
Run 3 Minimum	76.18	10.49	10.86	16,673.62	16,749.11	230.62	0.96
Run 3 Average	77.06	10.72	10.95	16,832.15	16,798.07	270.43	0.97
**Run 3 - PM/Metals onl*							
Run 4 Maximum	78.09	10.93	10.61	16,992.83	16,913.36	266.23	0.96
Run 4 Minimum	76.62	10.67	10.42	16,705.05	16,829.21	180.86	0.94
Run 4 Average	77.13	10.78	10.49	16,876.13	16,894.29	221.34	0.95
**Run 4 - HCl/Cl2 only*							
D/F							
Run 1 Maximum	84.11	11.13	11.13	16,980.48	16,935.65	327.15	0.97
Run 1 Minimum	76.05	10.82	10.86	16,600.13	16,688.50	239.88	0.95
Run 1 Average	77.25	10.96	10.99	16,809.49	16,781.54	291.13	0.96
Run 2 Maximum	82.71	11.30	11.10	16,954.70	16,863.96	333.38	0.97
Run 2 Minimum	76.42	10.92	10.89	16,615.20	16,684.22	246.30	0.96
Run 2 Average	77.12	11.11	10.98	16,805.62	16,770.27	278.13	0.97
Run 3 Maximum	78.64	10.91	11.06	16,958.83	16,908.26	301.52	0.98
Run 3 Minimum	76.18	10.49	10.86	16,673.62	16,749.11	230.62	0.96
Run 3 Average	76.93	10.73	10.95	16,838.22	16,811.93	271.27	0.97
Run 1							
11-Dec-12 12:10:00	77.92	10.98	11.04	16,709.60	-	325.20	0.95
11-Dec-12 12:11:00	77.72	10.97	11.04	16,736.79	-	308.81	0.95
11-Dec-12 12:12:00	77.45	10.94	11.01	16,749.33	-	302.89	0.95
11-Dec-12 12:13:00	77.59	10.93	11.02	16,770.50	-	296.40	0.95
11-Dec-12 12:14:00	77.59	10.93	11.02	16,770.50	-	296.40	0.95
11-Dec-12 12:15:00	77.75	10.95	11.04	16,788.62	-	327.15	0.95
11-Dec-12 12:16:00	77.50	10.93	11.04	16,781.89	-	302.71	0.95
11-Dec-12 12:17:00	77.54	10.96	11.05	16,807.45	-	286.17	0.95
11-Dec-12 12:18:00	77.71	10.97	11.04	16,760.13	-	302.56	0.95

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 12:19:00	77.54	10.92	11.00	16,767.02	-	293.24	0.95
11-Dec-12 12:20:00	77.70	10.97	11.04	16,770.77	-	310.44	0.95
11-Dec-12 12:21:00	77.51	10.98	11.04	16,768.90	-	321.95	0.95
11-Dec-12 12:22:00	77.36	10.97	11.02	16,796.00	-	295.56	0.95
11-Dec-12 12:23:00	77.39	10.97	11.03	16,763.30	-	307.54	0.95
11-Dec-12 12:24:00	77.82	10.96	11.01	16,781.66	-	320.83	0.95
11-Dec-12 12:25:00	77.63	10.97	11.03	16,766.17	-	296.66	0.95
11-Dec-12 12:26:00	77.40	10.97	11.02	16,775.20	-	304.64	0.95
11-Dec-12 12:27:00	77.56	10.97	11.05	16,759.47	-	284.52	0.96
11-Dec-12 12:28:00	77.56	10.97	11.05	16,759.47	-	284.52	0.96
11-Dec-12 12:29:00	77.56	10.96	11.04	16,763.78	-	281.02	0.96
11-Dec-12 12:30:00	77.35	10.97	11.03	16,779.88	-	303.30	0.96
11-Dec-12 12:31:00	77.43	10.94	11.01	16,773.20	-	303.84	0.96
11-Dec-12 12:32:00	77.52	10.92	11.01	16,794.88	-	284.16	0.96
11-Dec-12 12:33:00	77.52	10.92	11.01	16,794.88	-	284.16	0.96
11-Dec-12 12:34:00	77.37	10.93	11.02	16,808.84	-	285.12	0.96
11-Dec-12 12:35:00	77.31	10.93	11.03	16,803.08	-	306.84	0.96
11-Dec-12 12:36:00	77.44	10.96	11.04	16,780.43	-	262.50	0.96
11-Dec-12 12:37:00	77.76	10.95	11.02	16,780.35	-	289.87	0.96
11-Dec-12 12:38:00	77.76	10.95	11.02	16,780.35	-	289.87	0.96
11-Dec-12 12:39:00	77.52	10.97	11.04	16,780.51	-	304.80	0.96
11-Dec-12 12:40:00	77.52	10.97	11.04	16,780.51	-	304.80	0.96
11-Dec-12 12:41:00	77.36	10.94	11.02	16,818.62	-	296.52	0.96
11-Dec-12 12:42:00	77.83	10.97	11.03	16,821.42	-	285.25	0.96
11-Dec-12 12:43:00	77.59	10.98	11.03	16,804.34	-	291.93	0.96
11-Dec-12 12:44:00	77.55	10.99	11.01	16,778.91	-	294.11	0.96
11-Dec-12 12:45:00	77.55	10.99	11.01	16,778.91	-	294.11	0.96
11-Dec-12 12:46:00	77.59	10.98	11.01	16,777.44	-	280.53	0.96
11-Dec-12 12:47:00	77.59	10.98	11.01	16,777.44	-	280.53	0.96
11-Dec-12 12:48:00	77.38	10.98	11.04	16,767.83	-	293.39	0.96
11-Dec-12 12:49:00	77.38	10.98	11.04	16,767.83	-	293.39	0.96
11-Dec-12 12:50:00	77.44	10.97	11.03	16,765.27	-	293.07	0.96
11-Dec-12 12:51:00	77.39	10.95	11.00	16,834.75	-	287.44	0.96
11-Dec-12 12:52:00	77.39	10.95	11.00	16,834.75	-	287.44	0.96
11-Dec-12 12:53:00	77.54	10.96	11.02	16,789.36	-	297.77	0.96
11-Dec-12 12:54:00	77.49	10.98	11.04	16,756.56	-	301.62	0.96
11-Dec-12 12:55:00	77.60	10.95	11.01	16,790.21	-	271.26	0.96
11-Dec-12 12:56:00	78.42	10.97	11.03	16,777.84	-	264.28	0.96
11-Dec-12 12:57:00	78.49	10.95	11.03	16,766.43	-	296.32	0.96
11-Dec-12 12:58:00	77.08	10.95	11.01	16,775.94	-	299.14	0.96
11-Dec-12 12:59:00	77.59	10.98	11.04	16,762.10	-	313.85	0.96
11-Dec-12 13:00:00	77.44	10.98	11.03	16,785.10	-	281.45	0.96

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 13:01:00	77.39	10.98	11.04	16,790.42	-	310.18	0.96
11-Dec-12 13:02:00	78.24	10.96	11.02	16,801.00	-	290.19	0.96
11-Dec-12 13:03:00	77.56	10.98	11.03	16,778.46	-	297.06	0.96
11-Dec-12 13:04:00	77.56	10.97	11.01	16,809.49	-	301.49	0.96
11-Dec-12 13:05:00	76.97	10.97	11.02	16,785.71	-	293.37	0.96
11-Dec-12 13:06:00	77.09	10.92	11.00	16,776.31	-	304.18	0.96
11-Dec-12 13:07:00	77.09	10.92	11.00	16,776.31	-	304.18	0.96
11-Dec-12 13:08:00	77.75	10.95	11.01	16,789.88	-	304.39	0.96
11-Dec-12 13:09:00	77.75	10.95	11.01	16,789.88	-	304.39	0.96
11-Dec-12 13:10:00	77.47	10.98	11.03	16,783.65	16,781.77	301.72	0.96
11-Dec-12 13:11:00	77.47	10.98	11.03	16,783.65	16,782.55	301.72	0.96
11-Dec-12 13:12:00	77.49	10.99	11.03	16,780.08	16,783.06	274.03	0.96
11-Dec-12 13:13:00	77.49	10.97	11.05	16,764.55	16,782.96	292.16	0.96
11-Dec-12 13:14:00	77.55	10.98	11.04	16,745.59	16,782.55	292.65	0.96
11-Dec-12 13:15:00	77.29	10.99	11.03	16,778.41	16,782.38	281.10	0.96
11-Dec-12 13:16:00	77.29	10.99	11.03	16,778.41	16,782.32	281.10	0.96
11-Dec-12 13:17:00	77.48	10.99	11.03	16,749.32	16,781.35	296.12	0.96
11-Dec-12 13:18:00	77.64	11.00	11.06	16,730.10	16,780.85	311.56	0.96
11-Dec-12 13:19:00	77.64	11.01	11.07	16,726.09	16,780.17	324.59	0.96
11-Dec-12 13:20:00	77.64	11.01	11.07	16,726.09	16,779.42	324.59	0.96
11-Dec-12 13:21:00	77.62	11.00	11.03	16,739.02	16,778.92	304.67	0.96
11-Dec-12 13:22:00	77.62	11.00	11.03	16,739.02	16,777.97	304.67	0.96
11-Dec-12 13:23:00	77.35	10.98	11.02	16,777.81	16,778.22	298.08	0.96
11-Dec-12 13:24:00	77.35	10.98	11.02	16,777.81	16,778.15	298.08	0.96
11-Dec-12 13:25:00	77.74	11.01	11.06	16,739.97	16,777.72	289.55	0.96
11-Dec-12 13:26:00	77.74	11.05	11.10	16,707.18	16,776.58	281.97	0.96
11-Dec-12 13:27:00	77.59	11.00	11.05	16,733.32	16,776.15	271.21	0.96
11-Dec-12 13:28:00	78.53	11.03	11.09	16,705.11	16,775.24	293.08	0.96
11-Dec-12 13:29:00	84.11	11.03	11.08	16,668.93	16,773.66	290.61	0.96
11-Dec-12 13:30:00	80.08	11.00	11.04	16,704.66	16,772.41	275.76	0.96
11-Dec-12 13:31:00	77.61	11.00	11.03	16,729.10	16,771.67	298.75	0.96
11-Dec-12 13:32:00	77.61	11.00	11.03	16,729.10	16,770.57	298.75	0.96
11-Dec-12 13:33:00	77.68	11.00	11.06	16,749.84	16,769.82	301.20	0.96
11-Dec-12 13:34:00	77.68	11.00	11.06	16,749.84	16,768.84	301.20	0.97
11-Dec-12 13:35:00	77.66	11.01	11.06	16,723.93	16,767.52	285.75	0.97
11-Dec-12 13:36:00	77.66	11.01	11.06	16,723.93	16,766.58	284.79	0.97
11-Dec-12 13:37:00	77.91	11.04	11.08	16,654.87	16,764.49	293.29	0.97
11-Dec-12 13:38:00	77.91	11.04	11.08	16,654.87	16,762.40	293.29	0.97
11-Dec-12 13:39:00	77.75	11.01	11.06	16,712.90	16,761.27	305.46	0.97
11-Dec-12 13:40:00	77.60	11.03	11.06	16,678.27	16,759.57	269.14	0.97
11-Dec-12 13:41:00	77.60	11.03	11.06	16,678.27	16,757.23	269.14	0.97
11-Dec-12 13:42:00	77.87	11.02	11.06	16,721.95	16,755.57	303.16	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 13:43:00	77.87	11.02	11.06	16,721.95	16,754.20	303.16	0.97
11-Dec-12 13:44:00	77.63	11.02	11.07	16,726.18	16,753.32	297.72	0.97
11-Dec-12 13:45:00	77.72	11.04	11.05	16,699.79	16,752.00	299.29	0.97
11-Dec-12 13:46:00	77.66	11.04	11.08	16,692.88	16,750.59	290.70	0.97
11-Dec-12 13:47:00	77.51	11.01	11.07	16,717.49	16,749.59	307.48	0.97
11-Dec-12 13:48:00	77.51	11.01	11.07	16,717.49	16,748.75	305.63	0.97
11-Dec-12 13:49:00	78.00	11.04	11.08	16,681.79	16,747.32	288.94	0.97
11-Dec-12 13:50:00	78.00	11.04	11.08	16,681.79	16,745.93	288.94	0.97
11-Dec-12 13:51:00	77.79	11.04	11.08	16,684.81	16,743.43	306.65	0.97
11-Dec-12 13:52:00	77.85	11.04	11.09	16,677.56	16,740.81	317.88	0.97
11-Dec-12 13:53:00	77.85	11.04	11.09	16,677.56	16,738.94	317.88	0.97
11-Dec-12 13:54:00	77.90	11.07	11.10	16,660.43	16,737.34	307.52	0.97
11-Dec-12 13:55:00	77.90	11.07	11.10	16,660.43	16,735.18	309.13	0.97
11-Dec-12 13:56:00	77.86	11.07	11.09	16,667.58	16,733.34	325.08	0.97
11-Dec-12 13:57:00	77.86	11.07	11.09	16,667.58	16,731.69	325.08	0.97
11-Dec-12 13:58:00	77.73	11.10	11.07	16,679.45	16,730.08	308.64	0.97
11-Dec-12 13:59:00	77.73	11.10	11.07	16,679.45	16,728.71	308.64	0.97
11-Dec-12 14:00:00	77.64	11.08	11.07	16,669.87	16,726.79	301.52	0.97
11-Dec-12 14:01:00	77.95	11.11	11.13	16,642.40	16,724.32	308.08	0.97
11-Dec-12 14:02:00	77.95	11.11	11.13	16,642.40	16,721.68	308.08	0.97
11-Dec-12 14:03:00	77.83	11.09	11.09	16,694.88	16,720.28	315.03	0.97
11-Dec-12 14:04:00	78.04	11.13	11.12	16,604.70	16,716.87	310.79	0.97
11-Dec-12 14:05:00	77.92	11.09	11.09	16,600.13	16,713.78	301.22	0.97
11-Dec-12 14:06:00	77.92	11.09	11.09	16,600.13	16,710.84	301.22	0.97
11-Dec-12 14:07:00	77.82	11.03	11.08	16,664.19	16,708.97	286.03	0.97
11-Dec-12 14:08:00	77.82	11.03	11.08	16,664.19	16,706.88	286.03	0.97
11-Dec-12 14:09:00	77.69	11.03	11.09	16,639.63	16,704.37	282.36	0.97
11-Dec-12 14:10:00	78.06	11.06	11.12	16,640.74	16,701.99	326.40	0.97
11-Dec-12 14:11:00	77.92	11.06	11.10	16,679.75	16,700.26	298.94	0.97
11-Dec-12 14:12:00	77.85	11.09	11.10	16,636.31	16,697.86	292.91	0.97
11-Dec-12 14:13:00	77.99	11.08	11.09	16,621.43	16,695.48	326.79	0.97
11-Dec-12 14:14:00	77.91	11.05	11.09	16,611.61	16,693.24	275.35	0.97
11-Dec-12 14:15:00	77.91	11.05	11.09	16,611.61	16,690.47	275.35	0.97
11-Dec-12 14:16:00	77.70	11.04	11.07	16,660.72	16,688.50	303.42	0.97
11-Dec-12 14:17:00	77.06	10.98	10.98	16,814.45	16,689.59	288.70	0.97
11-Dec-12 14:18:00	77.06	10.98	10.98	16,814.45	16,690.99	288.70	0.97
11-Dec-12 14:19:00	77.05	10.96	11.02	16,816.13	16,692.50	289.30	0.97
11-Dec-12 14:20:00	77.05	10.96	11.02	16,816.13	16,694.00	289.30	0.97
11-Dec-12 14:21:00	76.92	10.94	10.97	16,864.15	16,696.08	273.25	0.97
11-Dec-12 14:22:00	76.76	10.95	10.96	16,886.64	16,698.54	282.54	0.97
11-Dec-12 14:23:00	76.41	10.89	10.88	16,937.44	16,701.20	276.48	0.97
11-Dec-12 14:24:00	76.52	10.90	10.89	16,924.18	16,703.64	284.70	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 14:25:00	76.52	10.90	10.89	16,924.18	16,706.71	284.70	0.97
11-Dec-12 14:26:00	76.48	10.92	10.90	16,927.61	16,710.39	302.77	0.97
11-Dec-12 14:27:00	76.48	10.92	10.90	16,927.61	16,713.62	302.77	0.97
11-Dec-12 14:28:00	76.49	10.91	10.89	16,957.74	16,717.83	276.39	0.97
11-Dec-12 14:29:00	76.49	10.91	10.89	16,957.74	16,722.65	276.39	0.97
11-Dec-12 14:30:00	76.58	10.90	10.89	16,933.04	16,726.45	284.64	0.97
11-Dec-12 14:31:00	76.56	10.91	10.90	16,940.90	16,729.98	275.30	0.97
11-Dec-12 14:32:00	76.50	10.92	10.89	16,931.42	16,733.36	250.59	0.97
11-Dec-12 14:33:00	76.41	10.92	10.91	16,905.78	16,735.96	296.86	0.97
11-Dec-12 14:34:00	76.41	10.92	10.91	16,905.78	16,738.55	296.86	0.97
11-Dec-12 14:35:00	76.43	10.93	10.89	16,905.51	16,741.58	252.56	0.97
11-Dec-12 14:36:00	76.27	10.90	10.87	16,954.34	16,745.42	283.45	0.97
11-Dec-12 14:37:00	76.33	10.91	10.91	16,939.77	16,750.17	296.55	0.97
11-Dec-12 14:38:00	76.38	10.96	10.91	16,921.17	16,754.61	288.27	0.97
11-Dec-12 14:39:00	76.61	10.99	10.92	16,912.94	16,757.94	299.18	0.97
11-Dec-12 14:40:00	76.37	10.91	10.89	16,959.79	16,762.63	277.12	0.97
11-Dec-12 14:41:00	76.37	10.91	10.89	16,959.79	16,767.33	277.12	0.97
11-Dec-12 14:42:00	76.15	10.91	10.87	16,951.60	16,771.15	276.15	0.96
11-Dec-12 14:43:00	76.15	10.91	10.87	16,951.60	16,774.98	276.15	0.96
11-Dec-12 14:44:00	76.08	10.90	10.88	16,957.39	16,778.83	250.61	0.96
11-Dec-12 14:45:00	76.28	10.88	10.89	16,979.29	16,783.49	291.94	0.96
11-Dec-12 14:46:00	76.28	10.88	10.89	16,979.29	16,788.27	291.94	0.96
11-Dec-12 14:47:00	76.56	10.88	10.92	16,939.46	16,791.97	278.09	0.96
11-Dec-12 14:48:00	76.56	10.88	10.92	16,939.46	16,795.66	278.09	0.96
11-Dec-12 14:49:00	76.37	10.85	10.91	16,909.29	16,799.46	307.25	0.96
11-Dec-12 14:50:00	76.37	10.85	10.91	16,909.29	16,803.25	307.25	0.96
11-Dec-12 14:51:00	76.55	10.88	10.89	16,957.62	16,807.79	291.61	0.96
11-Dec-12 14:52:00	76.38	10.86	10.89	16,918.10	16,811.80	276.26	0.96
11-Dec-12 14:53:00	76.11	10.82	10.86	16,930.89	16,816.03	275.54	0.96
11-Dec-12 14:54:00	76.11	10.82	10.86	16,930.89	16,820.53	275.54	0.96
11-Dec-12 14:55:00	76.49	10.90	10.91	16,950.45	16,825.37	265.96	0.96
11-Dec-12 14:56:00	76.18	10.82	10.87	16,972.10	16,830.44	282.98	0.96
11-Dec-12 14:57:00	76.18	10.82	10.87	16,972.10	16,835.52	281.91	0.96
11-Dec-12 14:58:00	76.61	10.93	10.91	16,918.73	16,839.51	283.81	0.97
11-Dec-12 14:59:00	76.05	10.88	10.86	16,980.48	16,844.52	283.58	0.97
11-Dec-12 15:00:00	76.55	10.91	10.91	16,912.68	16,848.57	272.47	0.97
11-Dec-12 15:01:00	76.55	10.91	10.91	16,912.68	16,853.07	272.47	0.97
11-Dec-12 15:02:00	76.64	10.96	10.94	16,909.64	16,857.53	239.88	0.97
11-Dec-12 15:03:00	76.50	10.96	10.91	16,942.95	16,861.66	286.62	0.97
11-Dec-12 15:04:00	76.41	10.91	10.92	16,928.47	16,867.06	273.41	0.97
11-Dec-12 15:05:00	76.42	10.91	10.90	16,920.03	16,872.39	251.69	0.97
11-Dec-12 15:06:00	76.42	10.91	10.90	16,920.03	16,877.72	251.69	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 15:07:00	76.54	10.90	10.90	16,923.46	16,882.04	278.62	0.97
11-Dec-12 15:08:00	76.67	10.91	10.93	16,863.70	16,885.37	299.24	0.97
11-Dec-12 15:09:00	76.38	10.89	10.90	16,937.97	16,890.34	287.76	0.97
11-Dec-12 15:10:00	76.42	10.88	10.90	16,946.05	16,895.43	278.80	0.97
11-Dec-12 15:11:00	76.55	10.90	10.91	16,938.47	16,899.74	258.00	0.97
11-Dec-12 15:12:00	76.40	10.91	10.89	16,923.24	16,904.52	276.81	0.97
11-Dec-12 15:13:00	76.40	10.91	10.89	16,923.24	16,909.55	276.81	0.97
11-Dec-12 15:14:00	76.45	10.88	10.91	16,916.13	16,914.63	258.76	0.97
11-Dec-12 15:15:00	76.64	10.90	10.93	16,959.95	16,920.43	304.85	0.97
11-Dec-12 15:16:00	76.64	10.90	10.93	16,959.95	16,925.42	304.85	0.97
11-Dec-12 15:17:00	76.43	10.91	10.91	16,928.53	16,927.32	279.70	0.97
11-Dec-12 15:18:00	76.43	10.91	10.91	16,928.53	16,929.22	279.70	0.97
11-Dec-12 15:19:00	76.40	10.90	10.91	16,917.34	16,930.91	274.95	0.97
11-Dec-12 15:20:00	76.49	10.96	10.92	16,914.23	16,932.55	296.92	0.97
11-Dec-12 15:21:00	76.34	10.91	10.89	16,968.41	16,934.28	289.85	0.97
11-Dec-12 15:22:00	76.34	10.91	10.89	16,968.41	16,935.65	289.85	0.97
11-Dec-12 15:23:00	76.35	10.93	10.89	16,918.77	16,935.34	289.85	0.97
Run 2							
11-Dec-12 16:12:00	77.22	11.05	11.02	16,768.23	-	287.06	0.96
11-Dec-12 16:13:00	77.20	11.07	11.01	16,770.78	-	299.29	0.96
11-Dec-12 16:14:00	77.20	11.07	11.01	16,770.78	-	299.29	0.96
11-Dec-12 16:15:00	77.11	11.03	11.00	16,793.42	-	308.38	0.97
11-Dec-12 16:16:00	77.17	11.03	11.02	16,797.51	-	287.25	0.97
11-Dec-12 16:17:00	77.17	11.01	11.00	16,785.22	-	293.88	0.97
11-Dec-12 16:18:00	77.35	11.03	11.03	16,758.32	-	304.89	0.97
11-Dec-12 16:19:00	77.35	11.03	11.03	16,758.32	-	304.89	0.97
11-Dec-12 16:20:00	77.34	11.04	11.04	16,744.02	-	262.28	0.97
11-Dec-12 16:21:00	77.26	11.04	11.04	16,744.33	-	295.07	0.97
11-Dec-12 16:22:00	77.26	11.04	11.04	16,744.33	-	295.07	0.97
11-Dec-12 16:23:00	77.19	11.02	11.01	16,763.26	-	267.26	0.97
11-Dec-12 16:24:00	77.08	11.03	11.00	16,775.07	-	275.69	0.97
11-Dec-12 16:25:00	77.08	11.03	11.00	16,775.07	-	275.69	0.97
11-Dec-12 16:26:00	77.25	11.01	11.00	16,783.82	-	282.32	0.97
11-Dec-12 16:27:00	77.27	11.06	11.05	16,780.53	-	258.08	0.97
11-Dec-12 16:28:00	77.32	11.06	11.04	16,755.19	-	294.20	0.97
11-Dec-12 16:29:00	77.32	11.06	11.02	16,754.32	-	279.21	0.97
11-Dec-12 16:30:00	77.33	11.06	11.03	16,740.71	-	278.34	0.97
11-Dec-12 16:31:00	77.28	11.04	11.05	16,743.51	-	285.43	0.97
11-Dec-12 16:32:00	77.28	11.04	11.05	16,743.51	-	285.43	0.97
11-Dec-12 16:33:00	77.24	11.05	11.03	16,754.38	-	298.81	0.97
11-Dec-12 16:34:00	77.24	11.05	11.03	16,754.38	-	297.33	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 16:35:00	77.38	11.05	11.04	16,720.77	-	279.44	0.97
11-Dec-12 16:36:00	77.38	11.05	11.04	16,720.77	-	279.44	0.97
11-Dec-12 16:37:00	77.35	11.07	11.03	16,740.93	-	295.53	0.97
11-Dec-12 16:38:00	77.35	11.07	11.03	16,740.93	-	295.53	0.97
11-Dec-12 16:39:00	77.38	11.06	11.06	16,764.58	-	285.84	0.97
11-Dec-12 16:40:00	77.45	11.07	11.08	16,705.53	-	285.28	0.97
11-Dec-12 16:41:00	77.34	11.08	11.05	16,693.69	-	277.69	0.97
11-Dec-12 16:42:00	77.20	11.03	10.99	16,761.93	-	283.78	0.97
11-Dec-12 16:43:00	77.20	11.03	10.99	16,761.93	-	283.78	0.97
11-Dec-12 16:44:00	77.40	11.06	11.02	16,742.98	-	282.50	0.97
11-Dec-12 16:45:00	77.26	11.04	11.04	16,744.43	-	282.08	0.97
11-Dec-12 16:46:00	77.44	11.04	11.05	16,729.36	-	295.93	0.97
11-Dec-12 16:47:00	77.48	11.07	11.04	16,719.46	-	271.32	0.97
11-Dec-12 16:48:00	77.48	11.07	11.04	16,719.46	-	271.32	0.97
11-Dec-12 16:49:00	77.47	11.09	11.05	16,707.87	-	274.63	0.97
11-Dec-12 16:50:00	77.47	11.09	11.05	16,707.87	-	274.63	0.97
11-Dec-12 16:51:00	77.31	11.06	11.02	16,752.86	-	269.34	0.97
11-Dec-12 16:52:00	77.31	11.06	11.02	16,752.86	-	269.34	0.97
11-Dec-12 16:53:00	77.49	11.07	11.05	16,736.20	-	318.99	0.97
11-Dec-12 16:54:00	77.31	11.07	11.04	16,742.93	-	282.19	0.97
11-Dec-12 16:55:00	77.31	11.07	11.04	16,742.93	-	282.19	0.97
11-Dec-12 16:56:00	77.49	11.13	11.07	16,692.02	-	333.38	0.97
11-Dec-12 16:57:00	77.49	11.13	11.07	16,692.02	-	333.38	0.97
11-Dec-12 16:58:00	77.56	11.12	11.10	16,664.86	-	276.78	0.97
11-Dec-12 16:59:00	77.47	11.05	11.04	16,717.00	-	280.11	0.97
11-Dec-12 17:00:00	77.41	11.08	11.04	16,725.06	-	271.89	0.97
11-Dec-12 17:01:00	77.41	11.08	11.04	16,725.06	-	271.89	0.97
11-Dec-12 17:02:00	77.57	11.11	11.07	16,671.23	-	284.56	0.97
11-Dec-12 17:03:00	77.46	11.10	11.05	16,735.10	-	276.65	0.97
11-Dec-12 17:04:00	77.46	11.10	11.05	16,735.10	-	276.65	0.97
11-Dec-12 17:05:00	77.49	11.16	11.06	16,703.55	-	311.82	0.97
11-Dec-12 17:06:00	77.49	11.16	11.06	16,703.55	-	311.82	0.97
11-Dec-12 17:07:00	77.22	11.09	11.02	16,750.02	-	263.34	0.97
11-Dec-12 17:08:00	76.56	10.99	10.92	16,891.70	-	266.82	0.97
11-Dec-12 17:09:00	76.81	11.00	10.95	16,850.37	-	277.36	0.97
11-Dec-12 17:10:00	76.49	10.98	10.90	16,902.28	-	266.60	0.97
11-Dec-12 17:11:00	76.69	10.96	10.93	16,870.39	-	266.18	0.97
11-Dec-12 17:12:00	76.75	10.98	10.94	16,858.22	16,751.48	264.18	0.97
11-Dec-12 17:13:00	76.42	10.92	10.92	16,954.70	16,754.54	267.86	0.97
11-Dec-12 17:14:00	76.42	10.92	10.92	16,954.70	16,757.61	267.86	0.97
11-Dec-12 17:15:00	76.61	11.00	10.93	16,893.56	16,759.28	278.10	0.97
11-Dec-12 17:16:00	76.61	11.00	10.93	16,893.56	16,760.88	278.10	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 17:17:00	76.81	11.03	10.96	16,827.27	16,761.58	299.06	0.97
11-Dec-12 17:18:00	76.80	11.01	10.94	16,828.71	16,762.75	292.17	0.97
11-Dec-12 17:19:00	76.57	10.96	10.91	16,895.88	16,765.04	255.04	0.97
11-Dec-12 17:20:00	76.63	10.99	10.92	16,867.05	16,767.09	292.69	0.97
11-Dec-12 17:21:00	76.80	11.01	10.94	16,863.32	16,769.08	282.11	0.97
11-Dec-12 17:22:00	76.82	11.04	10.96	16,854.61	16,770.91	277.67	0.97
11-Dec-12 17:23:00	76.82	11.04	10.96	16,854.61	16,772.44	277.67	0.97
11-Dec-12 17:24:00	76.47	11.05	10.93	16,906.02	16,774.62	295.52	0.97
11-Dec-12 17:25:00	76.47	11.05	10.93	16,906.02	16,776.80	295.52	0.97
11-Dec-12 17:26:00	76.90	11.11	10.96	16,816.33	16,777.34	277.68	0.97
11-Dec-12 17:27:00	76.90	11.11	10.96	16,816.33	16,777.94	277.68	0.96
11-Dec-12 17:28:00	76.83	11.11	10.99	16,798.14	16,778.66	290.91	0.96
11-Dec-12 17:29:00	76.83	11.11	10.99	16,798.14	16,779.39	290.91	0.96
11-Dec-12 17:30:00	76.78	11.09	10.95	16,845.15	16,781.13	246.30	0.96
11-Dec-12 17:31:00	76.50	11.05	10.92	16,869.64	16,783.23	263.72	0.96
11-Dec-12 17:32:00	76.79	11.06	10.94	16,826.71	16,784.62	296.41	0.96
11-Dec-12 17:33:00	76.88	11.07	10.94	16,806.99	16,785.49	284.67	0.96
11-Dec-12 17:34:00	76.75	11.08	10.97	16,817.33	16,786.54	269.73	0.96
11-Dec-12 17:35:00	76.76	11.04	10.96	16,818.75	16,788.18	254.05	0.96
11-Dec-12 17:36:00	76.65	11.04	10.92	16,878.49	16,790.80	269.70	0.96
11-Dec-12 17:37:00	76.74	11.02	10.94	16,848.80	16,792.60	266.93	0.96
11-Dec-12 17:38:00	76.70	11.05	10.93	16,847.27	16,794.37	276.85	0.96
11-Dec-12 17:39:00	76.70	11.05	10.93	16,847.27	16,795.75	276.85	0.96
11-Dec-12 17:40:00	77.83	11.18	11.09	16,615.20	16,794.25	275.73	0.96
11-Dec-12 17:41:00	77.57	11.15	11.05	16,680.75	16,794.03	299.74	0.96
11-Dec-12 17:42:00	77.45	11.13	11.04	16,703.34	16,793.06	265.07	0.96
11-Dec-12 17:43:00	77.35	11.09	11.04	16,718.79	16,792.34	277.72	0.96
11-Dec-12 17:44:00	77.47	11.09	11.05	16,685.46	16,791.38	277.72	0.96
11-Dec-12 17:45:00	77.61	11.09	11.05	16,688.37	16,790.44	297.99	0.96
11-Dec-12 17:46:00	78.50	11.12	11.01	16,683.39	16,789.68	267.86	0.96
11-Dec-12 17:47:00	83.53	11.11	11.03	16,743.95	16,790.08	294.87	0.96
11-Dec-12 17:48:00	79.40	11.15	11.06	16,722.25	16,790.13	293.32	0.97
11-Dec-12 17:49:00	77.48	11.12	11.02	16,665.27	16,789.42	272.92	0.97
11-Dec-12 17:50:00	77.53	11.16	11.04	16,697.48	16,789.25	274.65	0.97
11-Dec-12 17:51:00	77.53	11.16	11.04	16,677.77	16,788.00	274.65	0.97
11-Dec-12 17:52:00	77.45	11.13	11.03	16,720.37	16,787.46	281.33	0.97
11-Dec-12 17:53:00	77.45	11.13	11.03	16,727.72	16,787.31	281.33	0.97
11-Dec-12 17:54:00	77.39	11.08	11.01	16,714.28	16,786.84	286.78	0.97
11-Dec-12 17:55:00	77.39	11.08	11.01	16,766.93	16,787.24	286.78	0.97
11-Dec-12 17:56:00	77.54	11.13	11.04	16,699.27	16,787.36	263.68	0.97
11-Dec-12 17:57:00	77.58	11.13	11.05	16,697.51	16,787.45	276.75	0.97
11-Dec-12 17:58:00	77.49	11.15	11.07	16,663.37	16,787.42	265.53	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 17:59:00	77.29	11.12	11.05	16,739.93	16,787.81	287.71	0.97
11-Dec-12 18:00:00	77.29	11.12	11.05	16,697.19	16,787.34	287.71	0.97
11-Dec-12 18:01:00	77.40	11.14	11.03	16,740.02	16,787.59	282.19	0.97
11-Dec-12 18:02:00	77.40	11.14	11.03	16,726.02	16,788.50	282.19	0.97
11-Dec-12 18:03:00	77.53	11.14	11.05	16,757.57	16,788.88	303.89	0.97
11-Dec-12 18:04:00	77.53	11.14	11.05	16,701.58	16,788.32	303.89	0.97
11-Dec-12 18:05:00	77.53	11.16	11.04	16,693.74	16,788.16	297.12	0.97
11-Dec-12 18:06:00	77.53	11.16	11.04	16,697.76	16,788.06	295.33	0.97
11-Dec-12 18:07:00	77.60	11.16	11.05	16,669.48	16,786.72	282.01	0.97
11-Dec-12 18:08:00	83.44	11.11	11.02	16,681.99	16,783.22	288.92	0.97
11-Dec-12 18:09:00	83.44	11.11	11.02	16,742.88	16,781.43	288.03	0.97
11-Dec-12 18:10:00	78.20	11.23	11.13	16,581.80	16,776.09	316.56	0.97
11-Dec-12 18:11:00	78.18	11.25	11.14	16,539.47	16,770.57	316.56	0.97
11-Dec-12 18:12:00	84.36	11.26	11.14	16,544.51	16,765.35	295.13	0.97
11-Dec-12 18:13:00	84.36	11.23	11.15	16,566.06	16,758.87	295.13	0.97
11-Dec-12 18:14:00	84.12	11.27	11.13	16,504.67	16,751.37	308.30	0.97
11-Dec-12 18:15:00	81.50	11.25	11.13	16,518.89	16,745.12	273.03	0.97
11-Dec-12 18:16:00	81.50	11.23	11.13	16,550.46	16,739.41	273.03	0.97
11-Dec-12 18:17:00	78.39	11.22	11.16	16,556.81	16,734.90	319.05	0.97
11-Dec-12 18:18:00	78.39	11.27	11.16	16,498.13	16,729.39	319.05	0.97
11-Dec-12 18:19:00	77.61	11.21	11.06	16,602.36	16,724.50	289.04	0.97
11-Dec-12 18:20:00	77.61	11.17	11.06	16,662.03	16,721.08	290.62	0.97
11-Dec-12 18:21:00	77.79	11.18	11.07	16,642.09	16,717.39	274.56	0.97
11-Dec-12 18:22:00	77.79	11.15	11.07	16,676.61	16,714.43	274.56	0.97
11-Dec-12 18:23:00	77.55	11.13	11.05	16,656.92	16,711.13	280.75	0.97
11-Dec-12 18:24:00	77.66	11.13	11.04	16,662.54	16,707.07	287.29	0.97
11-Dec-12 18:25:00	77.66	11.11	11.04	16,682.38	16,703.34	287.29	0.97
11-Dec-12 18:26:00	77.49	11.09	11.04	16,713.34	16,701.63	268.40	0.97
11-Dec-12 18:27:00	77.49	11.09	11.04	16,682.78	16,699.40	268.40	0.97
11-Dec-12 18:28:00	77.84	11.16	11.06	16,650.09	16,696.93	265.37	0.97
11-Dec-12 18:29:00	77.49	11.18	11.04	16,689.97	16,695.13	283.79	0.97
11-Dec-12 18:30:00	77.49	11.13	11.04	16,689.97	16,692.55	282.31	0.97
11-Dec-12 18:31:00	77.41	11.17	11.05	16,676.41	16,689.33	256.60	0.97
11-Dec-12 18:32:00	77.41	11.15	11.05	16,676.41	16,686.82	256.60	0.97
11-Dec-12 18:33:00	77.24	11.10	11.01	16,748.54	16,685.85	259.27	0.97
11-Dec-12 18:34:00	76.89	11.06	10.95	16,825.98	16,685.99	262.95	0.97
11-Dec-12 18:35:00	76.81	11.08	10.95	16,801.69	16,685.71	267.65	0.97
11-Dec-12 18:36:00	76.79	11.05	10.94	16,840.98	16,685.08	303.39	0.97
11-Dec-12 18:37:00	76.96	11.10	10.95	16,813.56	16,684.49	279.50	0.97
11-Dec-12 18:38:00	76.73	11.08	10.94	16,845.60	16,684.47	253.44	0.97
11-Dec-12 18:39:00	76.80	11.08	10.94	16,832.24	16,684.22	278.82	0.97
11-Dec-12 18:40:00	76.80	11.08	10.94	16,832.24	16,687.83	278.82	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 18:41:00	82.71	11.04	10.92	16,850.33	16,690.66	275.17	0.97
11-Dec-12 18:42:00	79.95	11.10	10.95	16,793.19	16,692.16	291.74	0.97
11-Dec-12 18:43:00	76.66	11.07	10.91	16,836.90	16,694.12	252.87	0.97
11-Dec-12 18:44:00	76.59	11.07	10.91	16,850.43	16,696.87	259.41	0.97
11-Dec-12 18:45:00	76.74	11.11	10.92	16,828.27	16,699.21	273.34	0.97
11-Dec-12 18:46:00	76.86	11.13	10.94	16,819.11	16,701.47	269.36	0.97
11-Dec-12 18:47:00	76.64	11.11	10.90	16,863.44	16,703.46	258.73	0.97
11-Dec-12 18:48:00	76.72	11.10	10.92	16,855.31	16,705.68	270.09	0.97
11-Dec-12 18:49:00	76.72	11.10	10.92	16,855.31	16,708.84	270.09	0.97
11-Dec-12 18:50:00	76.83	11.12	10.95	16,841.36	16,711.24	280.85	0.97
11-Dec-12 18:51:00	76.83	11.12	10.95	16,841.36	16,713.97	280.85	0.97
11-Dec-12 18:52:00	76.84	11.10	10.93	16,853.57	16,716.19	268.96	0.97
11-Dec-12 18:53:00	76.84	11.10	10.93	16,853.57	16,718.29	268.96	0.97
11-Dec-12 18:54:00	76.72	11.15	10.94	16,827.60	16,720.17	279.15	0.97
11-Dec-12 18:55:00	76.89	11.15	10.94	16,822.52	16,721.10	272.26	0.97
11-Dec-12 18:56:00	76.88	11.17	10.94	16,815.21	16,723.03	290.04	0.97
11-Dec-12 18:57:00	76.67	11.17	10.91	16,868.47	16,725.88	263.25	0.97
11-Dec-12 18:58:00	76.63	11.14	10.91	16,891.38	16,729.68	246.74	0.97
11-Dec-12 18:59:00	76.64	11.13	10.94	16,884.73	16,732.10	291.97	0.97
11-Dec-12 19:00:00	76.77	11.17	10.93	16,857.51	16,734.77	263.13	0.97
11-Dec-12 19:01:00	76.79	11.17	10.95	16,861.76	16,736.80	287.49	0.97
11-Dec-12 19:02:00	76.77	11.18	10.92	16,855.93	16,738.96	267.90	0.97
11-Dec-12 19:03:00	76.77	11.18	10.92	16,855.93	16,740.60	267.90	0.97
11-Dec-12 19:04:00	80.74	11.19	10.96	16,810.60	16,742.42	281.40	0.97
11-Dec-12 19:05:00	80.74	11.19	10.96	16,810.60	16,744.37	283.77	0.97
11-Dec-12 19:06:00	76.95	11.22	10.96	16,796.71	16,746.02	299.47	0.97
11-Dec-12 19:07:00	76.58	11.15	10.91	16,852.65	16,749.07	252.76	0.97
11-Dec-12 19:08:00	76.72	11.17	10.94	16,833.12	16,751.59	265.02	0.97
11-Dec-12 19:09:00	76.85	11.12	10.91	16,906.86	16,754.32	277.90	0.97
11-Dec-12 19:10:00	76.60	11.13	10.90	16,911.86	16,759.82	300.98	0.97
11-Dec-12 19:11:00	76.58	11.13	10.90	16,932.80	16,766.38	258.31	0.97
11-Dec-12 19:12:00	76.64	11.19	10.95	16,879.95	16,771.97	273.81	0.97
11-Dec-12 19:13:00	76.85	11.12	10.92	16,905.44	16,777.62	275.53	0.97
11-Dec-12 19:14:00	76.73	11.13	10.91	16,905.34	16,784.30	266.97	0.97
11-Dec-12 19:15:00	76.86	11.13	10.91	16,905.34	16,790.74	266.97	0.97
11-Dec-12 19:16:00	76.71	11.16	10.92	16,878.72	16,796.21	285.29	0.97
11-Dec-12 19:17:00	76.70	11.16	10.92	16,878.72	16,801.58	285.29	0.97
11-Dec-12 19:18:00	76.60	11.16	10.89	16,948.40	16,809.08	275.89	0.97
11-Dec-12 19:19:00	76.57	11.16	10.89	16,948.40	16,814.85	275.89	0.97
11-Dec-12 19:20:00	76.76	11.24	10.95	16,863.47	16,818.21	272.45	0.97
11-Dec-12 19:21:00	76.90	11.22	10.97	16,833.23	16,821.39	286.53	0.97
11-Dec-12 19:22:00	76.95	11.22	10.97	16,833.23	16,824.00	286.53	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 19:23:00	76.71	11.20	10.95	16,845.09	16,827.14	267.72	0.97
11-Dec-12 19:24:00	76.81	11.16	10.90	16,916.98	16,831.38	265.58	0.97
11-Dec-12 19:25:00	76.92	11.23	10.95	16,845.17	16,834.09	285.84	0.97
11-Dec-12 19:26:00	76.71	11.19	10.91	16,886.94	16,836.99	269.68	0.97
11-Dec-12 19:27:00	76.71	11.19	10.91	16,886.94	16,840.39	269.68	0.97
11-Dec-12 19:28:00	76.75	11.20	10.91	16,902.26	16,844.59	293.52	0.97
11-Dec-12 19:29:00	76.75	11.20	10.91	16,902.26	16,848.13	292.75	0.97
11-Dec-12 19:30:00	76.87	11.21	10.92	16,869.39	16,851.12	265.68	0.97
11-Dec-12 19:31:00	76.87	11.21	10.92	16,869.39	16,854.34	265.68	0.97
11-Dec-12 19:32:00	76.73	11.22	10.95	16,845.80	16,857.16	254.93	0.97
11-Dec-12 19:33:00	76.73	11.22	10.95	16,845.80	16,858.78	254.93	0.97
11-Dec-12 19:34:00	76.82	11.24	10.96	16,852.63	16,859.23	260.06	0.97
11-Dec-12 19:35:00	76.82	11.24	10.96	16,852.63	16,860.07	260.06	0.97
11-Dec-12 19:36:00	76.76	11.24	10.94	16,869.58	16,860.55	283.47	0.97
11-Dec-12 19:37:00	76.93	11.26	10.97	16,837.44	16,860.95	278.64	0.97
11-Dec-12 19:38:00	76.70	11.27	10.95	16,879.22	16,861.51	278.50	0.97
11-Dec-12 19:39:00	76.90	11.26	10.96	16,848.35	16,861.78	273.64	0.97
11-Dec-12 19:40:00	76.65	11.24	10.94	16,882.40	16,862.61	260.54	0.97
11-Dec-12 19:41:00	76.90	11.29	10.95	16,830.97	16,862.29	289.47	0.97
11-Dec-12 19:42:00	76.90	11.29	10.95	16,830.97	16,862.92	289.47	0.97
11-Dec-12 19:43:00	76.67	11.24	10.92	16,865.38	16,863.40	271.00	0.97
11-Dec-12 19:44:00	76.73	11.30	10.96	16,827.53	16,863.01	267.72	0.97
11-Dec-12 19:45:00	76.80	11.25	10.93	16,861.05	16,863.56	295.54	0.97
11-Dec-12 19:46:00	76.92	11.25	10.95	16,843.28	16,863.96	255.85	0.97
11-Dec-12 19:47:00	76.92	11.25	10.95	16,843.28	16,863.63	255.85	0.97
11-Dec-12 19:48:00	76.77	11.25	10.94	16,875.15	16,863.96	274.82	0.97
11-Dec-12 19:49:00	76.95	11.29	10.97	16,822.78	16,863.42	277.04	0.97
11-Dec-12 19:50:00	80.06	11.30	10.97	16,790.22	16,862.56	271.10	0.97
Run 3							
11-Dec-12 20:41:00	76.69	10.65	10.90	16,910.29	-	301.78	0.97
11-Dec-12 20:42:00	76.62	10.61	10.92	16,913.72	-	259.90	0.97
11-Dec-12 20:43:00	76.54	10.59	10.91	16,908.95	-	271.99	0.97
11-Dec-12 20:44:00	76.47	10.61	10.88	16,948.12	-	270.51	0.97
11-Dec-12 20:45:00	76.48	10.57	10.89	16,946.36	-	272.34	0.97
11-Dec-12 20:46:00	76.67	10.62	10.93	16,910.43	-	258.93	0.97
11-Dec-12 20:47:00	76.58	10.60	10.91	16,926.36	-	268.90	0.97
11-Dec-12 20:48:00	76.70	10.63	10.93	16,922.07	-	246.00	0.97
11-Dec-12 20:49:00	76.62	10.63	10.92	16,922.45	-	260.83	0.97
11-Dec-12 20:50:00	76.68	10.65	10.91	16,884.15	-	245.83	0.97
11-Dec-12 20:51:00	76.62	10.66	10.91	16,893.96	-	284.52	0.97
11-Dec-12 20:52:00	76.66	10.69	10.93	16,877.91	-	288.13	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 20:53:00	76.50	10.67	10.90	16,904.59	-	286.16	0.97
11-Dec-12 20:54:00	76.50	10.67	10.91	16,888.86	-	272.08	0.97
11-Dec-12 20:55:00	76.51	10.65	10.91	16,895.70	-	271.88	0.97
11-Dec-12 20:56:00	76.60	10.61	10.91	16,900.57	-	265.27	0.97
11-Dec-12 20:57:00	76.60	10.61	10.91	16,900.57	-	265.27	0.97
11-Dec-12 20:58:00	76.45	10.64	10.91	16,899.64	-	271.54	0.97
11-Dec-12 20:59:00	76.45	10.64	10.91	16,899.64	-	271.54	0.97
11-Dec-12 21:00:00	76.44	10.62	10.90	16,914.77	-	248.31	0.97
11-Dec-12 21:01:00	76.44	10.62	10.90	16,914.77	-	248.31	0.97
11-Dec-12 21:02:00	76.47	10.64	10.92	16,900.87	-	270.78	0.97
11-Dec-12 21:03:00	76.39	10.63	10.88	16,948.52	-	274.16	0.97
11-Dec-12 21:04:00	76.53	10.65	10.90	16,906.67	-	291.96	0.97
11-Dec-12 21:05:00	76.63	10.66	10.90	16,923.71	-	272.42	0.97
11-Dec-12 21:06:00	76.63	10.66	10.90	16,923.71	-	272.42	0.97
11-Dec-12 21:07:00	76.50	10.62	10.90	16,936.31	-	263.97	0.97
11-Dec-12 21:08:00	76.50	10.62	10.90	16,936.31	-	263.97	0.97
11-Dec-12 21:09:00	76.18	10.58	10.88	16,937.57	-	251.70	0.97
11-Dec-12 21:10:00	76.85	10.63	10.93	16,879.59	-	286.25	0.97
11-Dec-12 21:11:00	76.36	10.60	10.89	16,935.92	-	268.91	0.97
11-Dec-12 21:12:00	76.43	10.62	10.90	16,916.71	-	260.92	0.97
11-Dec-12 21:13:00	76.56	10.64	10.89	16,938.79	-	277.51	0.97
11-Dec-12 21:14:00	76.42	10.65	10.90	16,933.37	-	287.34	0.97
11-Dec-12 21:15:00	76.42	10.65	10.90	16,933.37	-	287.34	0.97
11-Dec-12 21:16:00	76.47	10.67	10.91	16,927.99	-	276.99	0.97
11-Dec-12 21:17:00	76.60	10.69	10.93	16,877.23	-	260.07	0.97
11-Dec-12 21:18:00	76.76	10.74	10.94	16,867.57	-	284.78	0.97
11-Dec-12 21:19:00	76.54	10.68	10.89	16,916.64	-	268.07	0.97
11-Dec-12 21:20:00	76.46	10.68	10.86	16,898.16	-	288.54	0.97
11-Dec-12 21:21:00	76.43	10.70	10.90	16,905.20	-	277.44	0.97
11-Dec-12 21:22:00	76.57	10.69	10.91	16,883.54	-	261.46	0.97
11-Dec-12 21:23:00	76.45	10.66	10.89	16,927.81	-	267.88	0.97
11-Dec-12 21:24:00	76.35	10.67	10.89	16,930.07	-	275.58	0.97
11-Dec-12 21:25:00	76.47	10.68	10.88	16,915.71	-	271.39	0.97
11-Dec-12 21:26:00	76.48	10.70	10.91	16,900.65	-	265.43	0.97
11-Dec-12 21:27:00	76.48	10.70	10.91	16,900.65	-	265.43	0.97
11-Dec-12 21:28:00	76.35	10.66	10.89	16,958.83	-	266.73	0.97
11-Dec-12 21:29:00	76.35	10.66	10.89	16,958.83	-	266.73	0.97
11-Dec-12 21:30:00	76.64	10.66	10.91	16,919.46	-	263.74	0.98
11-Dec-12 21:31:00	76.64	10.66	10.91	16,919.46	-	263.74	0.98
11-Dec-12 21:32:00	76.66	10.70	10.93	16,893.97	-	246.33	0.98
11-Dec-12 21:33:00	76.64	10.68	10.90	16,905.91	-	267.53	0.98
11-Dec-12 21:34:00	76.64	10.68	10.90	16,905.91	-	267.53	0.98

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 21:35:00	76.52	10.72	10.90	16,894.41	-	260.92	0.98
11-Dec-12 21:36:00	76.52	10.72	10.90	16,894.41	-	260.92	0.98
11-Dec-12 21:37:00	76.61	10.71	10.90	16,898.24	-	263.69	0.98
11-Dec-12 21:38:00	76.48	10.70	10.89	16,934.21	-	282.74	0.97
11-Dec-12 21:39:00	76.57	10.69	10.88	16,933.56	-	271.13	0.97
11-Dec-12 21:40:00	77.08	10.80	10.98	16,779.74	-	269.45	0.97
11-Dec-12 21:41:00	77.37	10.84	11.02	16,722.33	16,908.26	264.92	0.97
11-Dec-12 21:42:00	77.23	10.81	11.00	16,749.95	16,905.53	284.68	0.97
11-Dec-12 21:43:00	77.23	10.81	11.00	16,749.95	16,902.88	284.68	0.97
11-Dec-12 21:44:00	77.22	10.81	11.03	16,747.73	16,899.54	265.28	0.97
11-Dec-12 21:45:00	77.22	10.81	11.03	16,747.73	16,896.23	265.28	0.97
11-Dec-12 21:46:00	77.44	10.81	11.02	16,756.63	16,893.66	275.94	0.97
11-Dec-12 21:47:00	77.23	10.78	11.02	16,730.13	16,890.39	260.83	0.97
11-Dec-12 21:48:00	77.33	10.78	11.01	16,743.38	16,887.42	281.80	0.97
11-Dec-12 21:49:00	77.21	10.76	11.02	16,755.38	16,884.63	262.34	0.97
11-Dec-12 21:50:00	77.29	10.77	11.05	16,736.62	16,882.17	267.15	0.97
11-Dec-12 21:51:00	77.27	10.74	11.01	16,744.57	16,879.68	275.66	0.97
11-Dec-12 21:52:00	77.24	10.76	11.00	16,764.30	16,877.79	273.06	0.97
11-Dec-12 21:53:00	77.27	10.80	11.02	16,718.45	16,874.69	284.85	0.97
11-Dec-12 21:54:00	77.06	10.77	11.00	16,777.67	16,872.83	271.74	0.97
11-Dec-12 21:55:00	77.10	10.79	11.00	16,784.91	16,870.99	269.84	0.97
11-Dec-12 21:56:00	77.28	10.82	11.00	16,759.56	16,868.64	286.06	0.97
11-Dec-12 21:57:00	77.28	10.82	11.00	16,759.56	16,866.29	286.06	0.97
11-Dec-12 21:58:00	77.55	10.84	11.03	16,724.57	16,863.37	270.11	0.97
11-Dec-12 21:59:00	77.55	10.84	11.03	16,724.57	16,860.45	268.56	0.97
11-Dec-12 22:00:00	77.41	10.82	11.00	16,713.93	16,857.10	283.37	0.97
11-Dec-12 22:01:00	77.48	10.85	11.02	16,728.37	16,854.00	274.12	0.97
11-Dec-12 22:02:00	77.58	10.86	11.02	16,731.61	16,851.18	288.43	0.97
11-Dec-12 22:03:00	77.43	10.83	11.03	16,752.25	16,847.91	286.78	0.97
11-Dec-12 22:04:00	77.29	10.82	11.01	16,743.10	16,845.18	274.60	0.97
11-Dec-12 22:05:00	77.41	10.84	11.01	16,728.39	16,841.92	286.53	0.97
11-Dec-12 22:06:00	77.12	10.83	10.99	16,804.67	16,839.94	274.46	0.97
11-Dec-12 22:07:00	77.64	10.90	11.04	16,702.86	16,836.05	267.00	0.97
11-Dec-12 22:08:00	77.58	10.84	11.02	16,730.93	16,832.63	272.20	0.97
11-Dec-12 22:09:00	77.39	10.79	11.02	16,758.77	16,829.65	282.44	0.97
11-Dec-12 22:10:00	77.50	10.75	11.00	16,759.95	16,827.65	281.58	0.97
11-Dec-12 22:11:00	77.50	10.75	11.00	16,759.95	16,824.72	281.58	0.97
11-Dec-12 22:12:00	77.39	10.68	10.99	16,789.88	16,822.61	287.49	0.97
11-Dec-12 22:13:00	77.39	10.68	10.99	16,789.88	16,820.12	287.49	0.97
11-Dec-12 22:14:00	77.49	10.77	11.00	16,730.36	16,816.74	264.71	0.97
11-Dec-12 22:15:00	77.49	10.77	11.00	16,730.36	16,813.36	262.76	0.97
11-Dec-12 22:16:00	77.36	10.81	11.01	16,729.27	16,810.04	282.53	0.97

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 22:17:00	77.60	10.84	11.02	16,712.84	16,807.30	292.71	0.97
11-Dec-12 22:18:00	81.78	10.81	11.01	16,726.94	16,804.96	276.34	0.97
11-Dec-12 22:19:00	82.11	10.74	10.98	16,746.71	16,802.13	286.96	0.97
11-Dec-12 22:20:00	77.42	10.80	11.03	16,713.74	16,799.05	285.66	0.97
11-Dec-12 22:21:00	77.52	10.81	11.02	16,718.74	16,795.95	283.34	0.97
11-Dec-12 22:22:00	77.41	10.82	11.00	16,710.97	16,793.07	273.04	0.97
11-Dec-12 22:23:00	77.38	10.83	11.02	16,722.70	16,789.65	271.28	0.97
11-Dec-12 22:24:00	77.41	10.84	11.01	16,732.74	16,786.36	264.25	0.97
11-Dec-12 22:25:00	77.56	10.90	11.05	16,673.62	16,782.33	285.83	0.97
11-Dec-12 22:26:00	77.70	10.91	11.06	16,677.44	16,778.61	276.24	0.97
11-Dec-12 22:27:00	77.54	10.84	11.05	16,705.67	16,775.36	272.45	0.97
11-Dec-12 22:28:00	77.52	10.81	11.04	16,694.59	16,770.96	255.20	0.97
11-Dec-12 22:29:00	77.52	10.81	11.04	16,694.59	16,766.55	255.20	0.97
11-Dec-12 22:30:00	77.34	10.71	10.99	16,722.80	16,763.27	249.19	0.97
11-Dec-12 22:31:00	77.45	10.71	11.02	16,711.49	16,759.81	272.27	0.97
11-Dec-12 22:32:00	77.46	10.75	11.02	16,717.54	16,756.87	265.28	0.97
11-Dec-12 22:33:00	77.27	10.72	10.98	16,773.09	16,754.65	279.87	0.97
11-Dec-12 22:34:00	77.27	10.72	10.98	16,773.09	16,752.44	279.87	0.97
11-Dec-12 22:35:00	76.55	10.71	10.90	16,905.86	16,752.63	266.97	0.96
11-Dec-12 22:36:00	76.55	10.71	10.90	16,905.86	16,752.82	266.97	0.96
11-Dec-12 22:37:00	76.77	10.83	10.93	16,856.03	16,752.12	254.76	0.96
11-Dec-12 22:38:00	76.77	10.83	10.93	16,856.03	16,750.81	254.76	0.96
11-Dec-12 22:39:00	77.01	10.87	10.93	16,831.51	16,749.11	279.13	0.96
11-Dec-12 22:40:00	77.21	10.89	10.97	16,825.96	16,749.88	248.84	0.96
11-Dec-12 22:41:00	76.92	10.81	10.94	16,878.41	16,752.49	257.26	0.96
11-Dec-12 22:42:00	78.03	10.71	10.93	16,909.30	16,755.14	244.45	0.96
11-Dec-12 22:43:00	78.03	10.71	10.93	16,909.30	16,757.80	244.45	0.96
11-Dec-12 22:44:00	78.64	10.49	10.91	16,903.41	16,760.39	286.30	0.96
11-Dec-12 22:45:00	77.32	10.50	10.97	16,776.18	16,760.87	282.17	0.96
11-Dec-12 22:46:00	77.58	10.53	11.02	16,742.90	16,760.64	301.52	0.96
11-Dec-12 22:47:00	77.29	10.57	11.00	16,765.24	16,761.22	270.78	0.96
11-Dec-12 22:48:00	77.29	10.57	11.00	16,765.24	16,761.59	270.78	0.96
11-Dec-12 22:49:00	77.70	10.68	11.03	16,705.01	16,760.75	287.41	0.96
11-Dec-12 22:50:00	77.41	10.71	11.04	16,690.88	16,759.98	270.47	0.96
11-Dec-12 22:51:00	77.56	10.74	11.03	16,697.55	16,759.20	272.35	0.96
11-Dec-12 22:52:00	77.56	10.74	11.03	16,697.55	16,758.09	272.35	0.96
11-Dec-12 22:53:00	76.99	10.74	10.96	16,826.60	16,759.89	249.74	0.96
11-Dec-12 22:54:00	76.69	10.73	10.92	16,880.13	16,761.60	230.62	0.96
11-Dec-12 22:55:00	76.98	10.81	10.95	16,828.45	16,762.32	273.74	0.96
11-Dec-12 22:56:00	76.98	10.81	10.95	16,828.45	16,763.47	273.74	0.96
11-Dec-12 22:57:00	76.83	10.81	10.93	16,885.94	16,765.58	271.71	0.96
11-Dec-12 22:58:00	77.13	10.77	10.95	16,868.80	16,767.98	256.64	0.96

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 22:59:00	77.13	10.77	10.95	16,868.80	16,770.39	256.64	0.96
11-Dec-12 23:00:00	77.02	10.71	10.93	16,898.52	16,773.46	266.14	0.96
11-Dec-12 23:01:00	76.92	10.71	10.95	16,880.73	16,776.00	239.93	0.96
11-Dec-12 23:02:00	76.71	10.63	10.89	16,895.32	16,778.73	274.85	0.96
11-Dec-12 23:03:00	76.92	10.67	10.93	16,885.76	16,780.96	285.24	0.96
11-Dec-12 23:04:00	76.92	10.67	10.93	16,885.76	16,783.33	285.24	0.96
11-Dec-12 23:05:00	76.76	10.68	10.93	16,870.29	16,785.70	270.72	0.96
11-Dec-12 23:06:00	76.76	10.68	10.93	16,870.29	16,786.79	270.72	0.96
11-Dec-12 23:07:00	76.79	10.68	10.90	16,845.00	16,789.16	291.09	0.96
11-Dec-12 23:08:00	76.79	10.68	10.90	16,845.00	16,791.06	291.09	0.97
11-Dec-12 23:09:00	76.93	10.76	10.96	16,826.80	16,792.20	274.50	0.97
11-Dec-12 23:10:00	76.96	10.79	10.96	16,815.00	16,793.11	289.00	0.97
11-Dec-12 23:11:00	76.96	10.79	10.96	16,815.00	16,794.03	289.00	0.97
11-Dec-12 23:12:00	77.05	10.80	10.95	16,815.67	16,794.46	266.97	0.97
11-Dec-12 23:13:00	77.05	10.80	10.95	16,815.67	16,794.89	266.97	0.97
11-Dec-12 23:14:00	77.02	10.77	10.94	16,812.53	16,796.26	292.32	0.97
11-Dec-12 23:15:00	76.83	10.80	10.95	16,830.96	16,797.94	267.63	0.97
11-Dec-12 23:16:00	76.99	10.80	10.97	16,840.04	16,799.78	271.12	0.97
11-Dec-12 23:17:00	76.79	10.82	10.93	16,831.66	16,801.76	276.29	0.98
11-Dec-12 23:18:00	76.77	10.81	10.93	16,834.40	16,803.55	268.37	0.98
11-Dec-12 23:19:00	77.04	10.83	10.96	16,791.17	16,804.30	289.90	0.98
11-Dec-12 23:20:00	76.81	10.82	10.95	16,831.52	16,806.26	257.56	0.98
11-Dec-12 23:21:00	76.81	10.82	10.95	16,831.52	16,808.14	257.56	0.98
11-Dec-12 23:22:00	76.87	10.78	10.93	16,845.87	16,810.39	273.30	0.98
11-Dec-12 23:23:00	76.65	10.76	10.92	16,874.28	16,812.91	289.13	0.98
11-Dec-12 23:24:00	76.95	10.77	10.94	16,830.74	16,814.55	280.20	0.98
11-Dec-12 23:25:00	76.81	10.74	10.93	16,867.43	16,817.78	275.00	0.98
11-Dec-12 23:26:00	76.81	10.74	10.93	16,867.43	16,820.94	275.00	0.98
11-Dec-12 23:27:00	76.69	10.68	10.92	16,910.21	16,824.35	288.05	0.98
11-Dec-12 23:28:00	76.66	10.69	10.93	16,850.67	16,826.95	271.34	0.98
11-Dec-12 23:29:00	76.59	10.69	10.93	16,852.17	16,829.58	273.54	0.98
11-Dec-12 23:30:00	76.59	10.72	10.89	16,872.86	16,832.08	267.60	0.98
11-Dec-12 23:31:00	76.59	10.72	10.89	16,872.86	16,834.77	267.60	0.98
11-Dec-12 23:32:00	76.82	10.75	10.94	16,840.68	16,836.82	294.46	0.98
11-Dec-12 23:33:00	76.82	10.75	10.94	16,840.68	16,837.95	294.46	0.98
11-Dec-12 23:34:00	76.96	10.76	10.95	16,848.99	16,839.21	288.56	0.98
11-Dec-12 23:35:00	76.96	10.76	10.95	16,848.99	16,838.27	288.56	0.97
11-Dec-12 23:36:00	76.94	10.78	10.93	16,851.41	16,837.36	244.75	0.97
11-Dec-12 23:37:00	76.94	10.78	10.93	16,851.41	16,837.28	244.75	0.97
11-Dec-12 23:38:00	76.98	10.77	10.95	16,843.57	16,837.07	288.15	0.97
11-Dec-12 23:39:00	76.92	10.77	10.95	16,827.51	16,837.01	270.26	0.97
11-Dec-12 23:40:00	76.92	10.77	10.95	16,827.51	16,837.03	270.26	0.97

	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
Date/Time	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
11-Dec-12 23:41:00	76.71	10.71	10.92	16,863.22	16,836.78	263.65	0.97
11-Dec-12 23:42:00	76.79	10.71	10.93	16,836.80	16,835.57	274.50	0.97
11-Dec-12 23:43:00	76.78	10.75	10.95	16,834.64	16,834.33	276.34	0.97
11-Dec-12 23:44:00	76.74	10.70	10.91	16,892.72	16,834.15	279.14	0.97
11-Dec-12 23:45:00	76.74	10.70	10.91	16,892.72	16,836.09	279.14	0.97
11-Dec-12 23:46:00	76.89	10.71	10.94	16,850.54	16,837.89	246.30	0.97
11-Dec-12 23:47:00	76.89	10.71	10.94	16,850.54	16,839.31	246.30	0.97
11-Dec-12 23:48:00	76.84	10.74	10.94	16,850.29	16,840.72	289.17	0.97
11-Dec-12 23:49:00	76.69	10.71	10.92	16,870.70	16,843.49	264.02	0.97
11-Dec-12 23:50:00	76.92	10.73	10.96	16,818.58	16,845.61	270.25	0.97
Run 4							
12/12/2012 15:00:00	77.67	10.80	10.54	16,790.88	-	253.10	0.95
12/12/2012 15:01:00	77.68	10.84	10.56	16,762.64	-	241.25	0.95
12/12/2012 15:02:00	77.77	10.88	10.56	16,769.85	-	249.30	0.95
12/12/2012 15:03:00	77.85	10.86	10.57	16,766.31	-	231.70	0.95
12/12/2012 15:04:00	78.00	10.84	10.58	16,755.30	-	226.05	0.95
12/12/2012 15:05:00	77.83	10.88	10.57	16,778.88	-	229.23	0.95
12/12/2012 15:06:00	77.96	10.88	10.57	16,756.02	-	242.70	0.95
12/12/2012 15:07:00	77.75	10.85	10.57	16,760.03	-	227.02	0.95
12/12/2012 15:08:00	77.89	10.91	10.56	16,764.18	-	210.38	0.95
12/12/2012 15:09:00	77.86	10.88	10.58	16,760.04	-	235.54	0.95
12/12/2012 15:10:00	77.82	10.86	10.57	16,765.68	-	240.96	0.95
12/12/2012 15:11:00	77.82	10.90	10.56	16,775.23	-	240.30	0.94
12/12/2012 15:12:00	78.09	10.88	10.57	16,770.58	-	242.15	0.94
12/12/2012 15:13:00	77.76	10.85	10.55	16,726.92	-	266.23	0.94
12/12/2012 15:14:00	77.79	10.85	10.58	16,759.08	-	240.08	0.94
12/12/2012 15:15:00	77.85	10.86	10.57	16,754.65	-	233.77	0.94
12/12/2012 15:16:00	77.73	10.84	10.56	16,770.77	-	230.42	0.94
12/12/2012 15:17:00	77.66	10.85	10.58	16,748.21	-	234.48	0.94
12/12/2012 15:18:00	77.80	10.86	10.59	16,762.10	-	220.91	0.94
12/12/2012 15:19:00	77.77	10.86	10.58	16,705.05	-	238.54	0.94
12/12/2012 15:20:00	77.81	10.87	10.59	16,760.99	-	226.04	0.95
12/12/2012 15:21:00	77.75	10.87	10.58	16,733.45	-	202.55	0.95
12/12/2012 15:22:00	77.59	10.84	10.56	16,786.60	-	191.86	0.95
12/12/2012 15:23:00	77.72	10.88	10.58	16,756.00	-	223.12	0.94
12/12/2012 15:24:00	77.77	10.86	10.59	16,762.21	-	186.11	0.94
12/12/2012 15:25:00	77.61	10.86	10.56	16,810.53	-	180.86	0.94
12/12/2012 15:26:00	77.73	10.88	10.57	16,770.10	-	200.24	0.94
12/12/2012 15:27:00	77.74	10.86	10.57	16,752.62	-	226.41	0.94
12/12/2012 15:28:00	77.71	10.92	10.57	16,727.80	-	232.95	0.95
12/12/2012 15:29:00	78.03	10.94	10.61	16,754.75	-	233.07	0.95

Date/Time	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
12/12/2012 15:30:00	77.98	10.93	10.61	16,732.19	-	254.84	0.95
12/12/2012 15:31:00	77.82	10.90	10.58	16,754.30	-	236.41	0.95
12/12/2012 15:32:00	76.94	10.79	10.46	16,887.37	-	216.93	0.95
12/12/2012 15:33:00	76.90	10.79	10.49	16,917.08	-	212.71	0.95
12/12/2012 15:34:00	77.08	10.78	10.49	16,897.53	-	228.13	0.95
12/12/2012 15:35:00	77.25	10.81	10.50	16,920.02	-	207.43	0.95
12/12/2012 15:36:00	77.04	10.76	10.48	16,882.50	-	222.23	0.95
12/12/2012 15:37:00	76.95	10.74	10.48	16,904.80	-	216.65	0.95
12/12/2012 15:38:00	76.90	10.78	10.47	16,880.50	-	232.01	0.95
12/12/2012 15:39:00	76.92	10.74	10.47	16,863.95	-	218.15	0.95
12/12/2012 15:40:00	77.02	10.74	10.48	16,879.55	-	212.94	0.94
12/12/2012 15:41:00	76.99	10.72	10.47	16,890.06	-	221.01	0.94
12/12/2012 15:42:00	77.11	10.73	10.47	16,922.54	-	186.30	0.94
12/12/2012 15:43:00	76.94	10.72	10.49	16,894.57	-	194.22	0.94
12/12/2012 15:44:00	76.89	10.72	10.45	16,892.27	-	213.32	0.94
12/12/2012 15:45:00	77.13	10.74	10.48	16,910.61	-	218.04	0.94
12/12/2012 15:46:00	77.16	10.74	10.48	16,904.20	-	219.02	0.94
12/12/2012 15:47:00	77.05	10.73	10.47	16,891.56	-	238.83	0.94
12/12/2012 15:48:00	76.93	10.74	10.47	16,909.58	-	246.75	0.94
12/12/2012 15:49:00	76.94	10.73	10.47	16,904.59	-	224.59	0.94
12/12/2012 15:50:00	76.96	10.74	10.48	16,901.30	-	199.59	0.94
12/12/2012 15:51:00	76.95	10.71	10.47	16,948.60	-	200.70	0.95
12/12/2012 15:52:00	77.03	10.76	10.47	16,924.37	-	208.94	0.94
12/12/2012 15:53:00	76.76	10.74	10.47	16,934.19	-	220.87	0.94
12/12/2012 15:54:00	76.79	10.75	10.44	16,898.68	-	196.72	0.94
12/12/2012 15:55:00	76.91	10.76	10.45	16,906.47	-	221.81	0.95
12/12/2012 15:56:00	76.95	10.77	10.46	16,918.24	-	232.11	0.95
12/12/2012 15:57:00	76.85	10.75	10.45	16,902.27	-	231.50	0.95
12/12/2012 15:58:00	76.87	10.75	10.47	16,912.54	-	207.50	0.95
12/12/2012 15:59:00	76.84	10.76	10.44	16,908.58	-	220.78	0.95
12/12/2012 16:00:00	77.01	10.76	10.46	16,930.88	16,829.21	223.42	0.95
12/12/2012 16:01:00	76.92	10.78	10.48	16,938.61	16,832.14	202.64	0.95
12/12/2012 16:02:00	76.91	10.75	10.48	16,946.55	16,835.09	212.85	0.95
12/12/2012 16:03:00	76.82	10.73	10.46	16,928.24	16,837.78	205.61	0.95
12/12/2012 16:04:00	76.78	10.75	10.46	16,899.07	16,840.18	234.16	0.95
12/12/2012 16:05:00	76.93	10.74	10.44	16,928.48	16,842.67	223.38	0.94
12/12/2012 16:06:00	76.96	10.78	10.48	16,924.16	16,845.48	218.10	0.94
12/12/2012 16:07:00	76.88	10.77	10.46	16,921.49	16,848.17	230.14	0.94
12/12/2012 16:08:00	76.97	10.77	10.47	16,927.63	16,850.89	228.56	0.94
12/12/2012 16:09:00	77.26	10.82	10.49	16,935.97	16,853.82	209.14	0.94
12/12/2012 16:10:00	77.04	10.80	10.48	16,888.38	16,855.87	195.23	0.94
12/12/2012 16:11:00	76.99	10.79	10.48	16,882.63	16,857.66	201.74	0.94

	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
Date/Time	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
12/12/2012 16:12:00	76.94	10.76	10.46	16,910.10	16,859.98	237.66	0.94
12/12/2012 16:13:00	77.01	10.80	10.48	16,904.69	16,862.95	225.13	0.94
12/12/2012 16:14:00	77.15	10.83	10.48	16,882.91	16,865.01	227.00	0.94
12/12/2012 16:15:00	77.02	10.84	10.48	16,889.65	16,867.26	219.82	0.94
12/12/2012 16:16:00	76.81	10.78	10.46	16,910.10	16,869.58	228.36	0.94
12/12/2012 16:17:00	76.82	10.75	10.45	16,883.73	16,871.84	212.17	0.94
12/12/2012 16:18:00	77.03	10.76	10.46	16,871.45	16,873.66	219.01	0.94
12/12/2012 16:19:00	77.02	10.79	10.48	16,898.05	16,876.88	221.89	0.94
12/12/2012 16:20:00	77.06	10.76	10.47	16,927.68	16,879.66	223.95	0.94
12/12/2012 16:21:00	76.83	10.75	10.46	16,903.32	16,882.49	240.48	0.94
12/12/2012 16:22:00	76.90	10.75	10.46	16,870.62	16,883.89	225.13	0.94
12/12/2012 16:23:00	76.87	10.74	10.47	16,935.77	16,886.89	234.02	0.94
12/12/2012 16:24:00	77.04	10.76	10.47	16,922.43	16,889.56	197.43	0.94
12/12/2012 16:25:00	76.81	10.74	10.46	16,923.76	16,891.44	233.22	0.94
12/12/2012 16:26:00	76.95	10.77	10.48	16,893.91	16,893.51	190.24	0.94
12/12/2012 16:27:00	77.07	10.77	10.48	16,925.28	16,896.39	210.22	0.94
12/12/2012 16:28:00	77.02	10.79	10.47	16,923.46	16,899.65	205.21	0.94
12/12/2012 16:29:00	77.04	10.81	10.50	16,894.58	16,901.98	228.18	0.95
12/12/2012 16:30:00	77.04	10.80	10.47	16,917.29	16,905.06	217.61	0.95
12/12/2012 16:31:00	76.72	10.85	10.46	16,859.15	16,906.81	223.34	0.95
12/12/2012 16:32:00	77.06	10.84	10.46	16,853.26	16,906.24	202.64	0.95
12/12/2012 16:33:00	77.11	10.80	10.48	16,903.96	16,906.02	215.91	0.95
12/12/2012 16:34:00	77.03	10.77	10.49	16,879.34	16,905.72	226.18	0.95
12/12/2012 16:35:00	77.11	10.74	10.46	16,891.22	16,905.24	234.20	0.95
12/12/2012 16:36:00	77.01	10.70	10.45	16,872.13	16,905.07	205.03	0.95
12/12/2012 16:37:00	76.84	10.68	10.45	16,938.13	16,905.62	238.85	0.95
12/12/2012 16:38:00	76.62	10.67	10.45	16,946.71	16,906.72	237.83	0.95
12/12/2012 16:39:00	76.94	10.68	10.47	16,934.65	16,907.90	221.85	0.95
12/12/2012 16:40:00	76.94	10.69	10.47	16,918.79	16,908.56	203.23	0.94
12/12/2012 16:41:00	76.88	10.67	10.46	16,924.14	16,909.13	214.67	0.94
12/12/2012 16:42:00	76.91	10.67	10.44	16,902.35	16,908.79	225.43	0.95
12/12/2012 16:43:00	77.03	10.68	10.47	16,904.89	16,908.96	220.98	0.95
12/12/2012 16:44:00	76.73	10.70	10.44	16,919.23	16,909.41	210.16	0.95
12/12/2012 16:45:00	76.84	10.69	10.47	16,917.08	16,909.52	219.69	0.95
12/12/2012 16:46:00	76.66	10.71	10.47	16,896.67	16,909.39	239.85	0.95
12/12/2012 16:47:00	76.83	10.68	10.44	16,909.08	16,909.68	193.59	0.95
12/12/2012 16:48:00	76.65	10.71	10.44	16,944.28	16,910.26	212.24	0.95
12/12/2012 16:49:00	76.74	10.72	10.45	16,935.09	16,910.77	203.49	0.95
12/12/2012 16:50:00	76.84	10.72	10.45	16,920.14	16,911.08	218.92	0.95
12/12/2012 16:51:00	76.98	10.71	10.46	16,925.91	16,910.71	228.05	0.95
12/12/2012 16:52:00	76.96	10.71	10.46	16,925.92	16,910.73	194.90	0.95
12/12/2012 16:53:00	76.72	10.68	10.44	16,954.32	16,911.07	211.94	0.96

	Scrubber Liquid to Gas Ratio	WESP #1 Liquid to Gas Ratio	WESP #2 Liquid to Gas Ratio	Combustion Gas Flowrate (Minute Average)	Combustion Gas Flowrate (HRA)	WESP #2 Power to Gas Ratio	Burner F - Waste Derived Fuel Feedrate
Date/Time	KFF3521m	KFF3548m	KFF3537m	KFT3552m	*Calculated*	KFF3633m	KFT3062
	gpm/kacfm	gpm/kacfm	gpm/kacfm	dscfm	dscfm	watts/kacfm	gpm
12/12/2012 16:54:00	76.88	10.69	10.44	16,925.25	16,911.51	235.95	0.96
12/12/2012 16:55:00	76.93	10.72	10.46	16,911.53	16,911.60	220.73	0.96
12/12/2012 16:56:00	76.81	10.76	10.44	16,936.94	16,911.91	228.86	0.96
12/12/2012 16:57:00	76.93	10.78	10.47	16,957.83	16,912.83	198.51	0.96
12/12/2012 16:58:00	77.15	10.79	10.48	16,909.02	16,912.77	233.46	0.96
12/12/2012 16:59:00	77.03	10.80	10.49	16,943.48	16,913.36	240.81	0.95
12/12/2012 17:00:00	76.87	10.80	10.47	16,895.29	16,912.76	224.00	0.95
12/12/2012 17:01:00	77.17	10.83	10.49	16,881.29	16,911.81	245.44	0.95
12/12/2012 17:02:00	77.17	10.83	10.49	16,881.29	16,910.72	245.44	0.94
12/12/2012 17:03:00	77.12	10.79	10.47	16,906.80	16,910.36	213.55	0.94
12/12/2012 17:04:00	76.73	10.79	10.42	16,938.48	16,911.02	242.23	0.94
12/12/2012 17:05:00	76.74	10.79	10.46	16,931.59	16,911.07	223.15	0.95
12/12/2012 17:06:00	76.69	10.75	10.44	16,939.50	16,911.33	219.49	0.95
12/12/2012 17:07:00	76.69	10.75	10.44	16,939.50	16,911.63	219.49	0.95
12/12/2012 17:08:00	76.83	10.77	10.45	16,954.83	16,912.08	232.51	0.95
12/12/2012 17:09:00	76.80	10.74	10.44	16,992.83	16,913.03	230.69	0.95

Date/Time	Burner C - Surrogate Waste Feedrate KFT3083 lb/min	Burner C - Ash Spike Feedrate KFT1058 lb/min	Burner D - Surrogate Waste Feedrate KFT3091 lb/min	Burner G - Chlorine Spike Feedrate KFT3076 lb/min	Burner G - Waste EDA Feedrate (Portable Flowmeter) *Portable Flowmeter* lb/min	THC (Minute Average) KAT3271M ppm	THC (HRA) *Calculated* ppmdv @7%O2
PM/HCl/CL_2/Metals							
Run 1 Maximum	21.14	38.98	33.28	12.16	19.10	0.11	0.06
Run 1 Minimum	20.31	33.21	29.29	9.90	16.20	0.00	0.02
Run 1 Average	20.91	33.73	30.87	11.48	17.34	0.04	0.04
Run 2 Maximum	21.37	34.29	34.14	12.00	17.40	0.21	0.01
Run 2 Minimum	19.78	33.18	32.03	11.07	16.80	0.00	0.00
Run 2 Average	20.83	33.98	32.65	11.50	17.29	0.01	0.01
Run 3 Maximum	21.50	34.45	35.19	11.66	20.10	0.08	0.04
Run 3 Minimum	20.50	33.48	31.09	11.07	18.30	0.00	0.01
Run 3 Average	20.86	34.11	33.56	11.30	18.96	0.01	0.03
**Run 3 - PM/Metals onl*							
Run 4 Maximum	20.71	35.02	34.63	21.43	21.00	0.12	0.06
Run 4 Minimum	20.13	34.31	27.45	-4.70	17.00	0.00	0.03
Run 4 Average	20.38	34.68	31.45	11.33	19.20	0.05	0.04
**Run 4 - HCl/Cl2 only*							
D/F							
Run 1 Maximum	21.73	38.98	34.69	12.16	19.10	0.11	0.06
Run 1 Minimum	20.31	33.11	29.29	9.90	16.20	0.00	0.01
Run 1 Average	20.91	33.74	31.60	11.39	17.33	0.03	0.03
Run 2 Maximum	21.76	34.45	35.10	12.34	18.50	0.08	0.02
Run 2 Minimum	20.23	33.48	31.36	11.07	16.80	0.00	0.00
Run 2 Average	20.87	34.03	33.27	11.53	17.46	0.01	0.01
Run 3 Maximum	21.50	34.45	35.19	11.66	21.60	0.10	0.04
Run 3 Minimum	20.27	33.48	30.12	10.94	18.30	0.00	0.00
Run 3 Average	20.81	34.11	32.89	11.27	19.46	0.01	0.02
Run 1							
11-Dec-12 12:10:00	21.01	33.63	29.53	11.67	17.10	0.00	-
11-Dec-12 12:11:00	21.01	33.68	29.49	11.68	17.10	0.01	-
11-Dec-12 12:12:00	21.02	33.72	29.45	11.69	17.10	0.00	-
11-Dec-12 12:13:00	21.02	33.82	29.41	11.70	17.10	0.00	-
11-Dec-12 12:14:00	21.03	33.43	29.37	11.70	17.10	0.00	-
11-Dec-12 12:15:00	21.03	33.61	29.33	11.71	17.10	0.00	-
11-Dec-12 12:16:00	21.04	33.69	29.29	11.72	17.10	0.00	-
11-Dec-12 12:17:00	21.04	33.48	29.81	11.73	17.10	0.01	-
11-Dec-12 12:18:00	20.93	33.26	30.43	11.74	17.10	0.00	-

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 12:19:00	20.61	33.39	31.05	11.74	17.10	0.02	-
11-Dec-12 12:20:00	20.41	33.87	31.57	11.75	17.10	0.03	-
11-Dec-12 12:21:00	20.32	33.76	31.05	11.67	17.10	0.01	-
11-Dec-12 12:22:00	20.31	33.60	30.60	11.54	17.40	0.00	-
11-Dec-12 12:23:00	20.39	33.74	30.23	11.41	17.10	0.01	-
11-Dec-12 12:24:00	20.48	33.69	30.14	11.29	17.40	0.00	-
11-Dec-12 12:25:00	20.58	38.98	30.07	11.16	17.10	0.00	-
11-Dec-12 12:26:00	20.75	33.84	29.99	10.94	17.40	0.00	-
11-Dec-12 12:27:00	20.92	33.36	29.96	10.66	17.40	0.00	-
11-Dec-12 12:28:00	20.94	33.78	30.23	10.39	17.40	0.00	-
11-Dec-12 12:29:00	20.93	33.67	29.94	10.12	17.40	0.02	-
11-Dec-12 12:30:00	20.91	33.94	30.00	9.90	17.10	0.01	-
11-Dec-12 12:31:00	20.89	33.47	30.10	10.05	17.10	0.01	-
11-Dec-12 12:32:00	20.88	33.63	30.07	10.21	17.10	0.01	-
11-Dec-12 12:33:00	20.86	33.45	30.11	10.36	17.10	0.01	-
11-Dec-12 12:34:00	20.84	33.84	30.80	10.51	17.00	0.01	-
11-Dec-12 12:35:00	20.83	33.66	30.80	10.67	17.10	0.01	-
11-Dec-12 12:36:00	20.81	33.79	30.68	10.82	17.10	0.01	-
11-Dec-12 12:37:00	20.80	33.63	30.53	10.97	17.10	0.05	-
11-Dec-12 12:38:00	20.78	33.21	30.66	11.13	17.10	0.05	-
11-Dec-12 12:39:00	20.76	33.77	30.78	11.28	17.10	0.08	-
11-Dec-12 12:40:00	20.75	33.26	30.91	11.43	17.10	0.08	-
11-Dec-12 12:41:00	20.73	33.58	31.04	11.59	17.10	0.09	-
11-Dec-12 12:42:00	20.75	33.54	31.16	11.74	17.10	0.08	-
11-Dec-12 12:43:00	20.78	33.52	31.10	11.64	17.10	0.06	-
11-Dec-12 12:44:00	20.81	33.69	31.16	11.12	17.10	0.09	-
11-Dec-12 12:45:00	20.84	33.66	31.23	11.14	17.00	0.09	-
11-Dec-12 12:46:00	20.86	33.55	30.25	11.16	17.00	0.10	-
11-Dec-12 12:47:00	20.89	33.46	30.34	11.19	17.00	0.10	-
11-Dec-12 12:48:00	20.92	33.75	30.42	11.21	17.00	0.08	-
11-Dec-12 12:49:00	20.95	33.63	30.50	11.23	17.00	0.08	-
11-Dec-12 12:50:00	20.95	33.72	30.58	11.25	16.80	0.11	-
11-Dec-12 12:51:00	20.93	33.54	30.64	11.27	16.80	0.10	-
11-Dec-12 12:52:00	20.92	33.68	30.76	11.30	17.00	0.10	-
11-Dec-12 12:53:00	20.90	33.44	30.91	11.32	17.10	0.11	-
11-Dec-12 12:54:00	20.88	33.63	31.06	11.34	17.10	0.10	-
11-Dec-12 12:55:00	20.87	33.54	31.02	11.36	17.30	0.06	-
11-Dec-12 12:56:00	20.85	33.87	30.96	11.38	17.30	0.02	-
11-Dec-12 12:57:00	20.84	33.96	30.88	11.41	17.30	0.02	-
11-Dec-12 12:58:00	20.82	33.45	30.92	11.43	17.30	0.02	-
11-Dec-12 12:59:00	20.80	33.96	31.06	11.45	17.10	0.10	-
11-Dec-12 13:00:00	20.79	33.59	31.14	11.47	17.10	0.08	-

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 13:01:00	20.77	33.68	31.11	11.49	17.10	0.09	-
11-Dec-12 13:02:00	20.76	33.25	30.95	11.51	17.10	0.09	-
11-Dec-12 13:03:00	20.74	33.97	30.80	11.54	16.80	0.10	-
11-Dec-12 13:04:00	20.73	33.63	31.02	11.56	16.80	0.09	-
11-Dec-12 13:05:00	20.71	33.95	31.22	11.58	16.80	0.10	-
11-Dec-12 13:06:00	20.69	33.67	30.88	11.60	17.00	0.08	-
11-Dec-12 13:07:00	20.68	33.84	30.57	11.62	17.10	0.08	-
11-Dec-12 13:08:00	20.66	33.69	30.59	11.65	17.10	0.10	-
11-Dec-12 13:09:00	20.65	33.56	30.62	11.67	17.10	0.10	-
11-Dec-12 13:10:00	20.63	33.51	30.74	11.69	17.10	0.09	0.05
11-Dec-12 13:11:00	20.61	34.00	30.84	11.71	17.10	0.09	0.05
11-Dec-12 13:12:00	20.60	33.84	30.88	11.73	17.10	0.01	0.05
11-Dec-12 13:13:00	20.58	33.57	30.91	11.75	17.10	0.00	0.05
11-Dec-12 13:14:00	20.57	33.90	30.75	11.70	17.30	0.07	0.05
11-Dec-12 13:15:00	20.55	33.83	30.25	11.65	17.40	0.06	0.05
11-Dec-12 13:16:00	20.53	33.53	30.44	11.60	17.40	0.06	0.05
11-Dec-12 13:17:00	20.52	33.77	30.63	11.54	17.70	0.07	0.05
11-Dec-12 13:18:00	20.50	33.25	30.83	11.49	17.70	0.01	0.05
11-Dec-12 13:19:00	21.14	33.90	30.93	11.44	17.70	0.04	0.05
11-Dec-12 13:20:00	21.73	33.74	30.90	11.39	18.00	0.04	0.06
11-Dec-12 13:21:00	21.54	33.77	30.88	11.34	18.30	0.01	0.06
11-Dec-12 13:22:00	21.35	33.56	30.86	11.28	18.00	0.01	0.06
11-Dec-12 13:23:00	21.16	33.54	30.82	11.23	18.00	0.00	0.06
11-Dec-12 13:24:00	21.13	33.74	30.77	11.23	18.00	0.00	0.06
11-Dec-12 13:25:00	21.12	33.54	30.70	11.28	18.00	0.00	0.06
11-Dec-12 13:26:00	21.11	33.87	30.62	11.33	18.30	0.01	0.06
11-Dec-12 13:27:00	21.10	33.80	30.69	11.38	18.00	0.02	0.06
11-Dec-12 13:28:00	21.09	33.71	30.76	11.43	18.00	0.02	0.06
11-Dec-12 13:29:00	21.08	33.92	30.77	11.47	18.00	0.01	0.06
11-Dec-12 13:30:00	21.07	33.37	30.79	11.52	18.00	0.02	0.06
11-Dec-12 13:31:00	21.06	33.72	30.82	11.57	18.30	0.02	0.06
11-Dec-12 13:32:00	21.05	33.69	30.89	11.62	18.00	0.02	0.06
11-Dec-12 13:33:00	21.05	33.68	31.02	11.67	17.70	0.03	0.06
11-Dec-12 13:34:00	21.05	33.92	31.23	11.72	18.00	0.03	0.06
11-Dec-12 13:35:00	21.06	33.67	31.44	11.77	17.70	0.06	0.06
11-Dec-12 13:36:00	21.06	33.84	31.35	11.81	17.70	0.06	0.06
11-Dec-12 13:37:00	21.06	33.84	30.89	11.86	17.90	0.03	0.06
11-Dec-12 13:38:00	21.07	33.42	30.89	11.91	17.70	0.03	0.06
11-Dec-12 13:39:00	21.07	33.48	30.89	11.96	17.70	0.07	0.06
11-Dec-12 13:40:00	21.07	33.88	30.88	12.01	17.70	0.07	0.06
11-Dec-12 13:41:00	21.08	33.99	30.87	12.06	18.00	0.07	0.06
11-Dec-12 13:42:00	21.08	33.74	30.86	12.11	18.00	0.01	0.06

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 13:43:00	21.08	33.70	30.78	12.07	18.00	0.01	0.06
11-Dec-12 13:44:00	21.09	33.69	30.27	11.99	18.00	0.07	0.05
11-Dec-12 13:45:00	21.09	33.43	30.75	11.92	18.00	0.05	0.05
11-Dec-12 13:46:00	21.09	33.63	30.93	11.84	18.00	0.00	0.05
11-Dec-12 13:47:00	21.10	33.84	31.11	11.77	18.00	0.03	0.05
11-Dec-12 13:48:00	21.10	33.63	31.19	11.69	18.00	0.03	0.05
11-Dec-12 13:49:00	21.10	33.84	31.13	11.61	18.00	0.01	0.05
11-Dec-12 13:50:00	21.11	33.79	31.08	11.54	18.00	0.01	0.05
11-Dec-12 13:51:00	21.11	33.28	31.02	11.46	18.00	0.01	0.05
11-Dec-12 13:52:00	21.11	33.65	31.02	11.39	18.00	0.00	0.04
11-Dec-12 13:53:00	21.12	33.41	31.15	11.36	18.00	0.00	0.04
11-Dec-12 13:54:00	21.12	33.68	31.28	11.40	18.00	0.01	0.04
11-Dec-12 13:55:00	21.12	33.21	31.54	11.45	18.00	0.01	0.04
11-Dec-12 13:56:00	21.13	33.58	31.80	11.49	18.00	0.01	0.04
11-Dec-12 13:57:00	21.13	33.63	31.29	11.53	18.00	0.01	0.04
11-Dec-12 13:58:00	21.13	33.84	30.66	11.57	18.00	0.00	0.04
11-Dec-12 13:59:00	21.14	33.74	30.54	11.61	17.70	0.00	0.04
11-Dec-12 14:00:00	21.14	33.81	30.67	11.66	17.70	0.01	0.04
11-Dec-12 14:01:00	21.12	33.79	30.72	11.70	17.70	0.00	0.04
11-Dec-12 14:02:00	21.11	33.71	30.76	11.74	17.90	0.00	0.03
11-Dec-12 14:03:00	21.09	33.78	30.80	11.78	17.90	0.01	0.03
11-Dec-12 14:04:00	21.08	33.98	30.80	11.82	17.90	0.00	0.03
11-Dec-12 14:05:00	21.06	33.86	30.80	11.87	17.90	0.01	0.03
11-Dec-12 14:06:00	21.05	33.55	30.80	11.91	17.90	0.01	0.03
11-Dec-12 14:07:00	21.03	33.84	30.80	11.95	18.00	0.01	0.03
11-Dec-12 14:08:00	21.02	33.91	30.80	11.99	18.00	0.01	0.03
11-Dec-12 14:09:00	21.00	33.49	30.80	12.03	18.20	0.01	0.02
11-Dec-12 14:10:00	20.99	33.84	30.80	12.08	18.30	0.00	0.02
11-Dec-12 14:11:00	20.97	33.39	30.80	12.12	19.10	0.00	0.02
11-Dec-12 14:12:00	20.96	34.00	30.76	12.16	17.90	0.02	0.02
11-Dec-12 14:13:00	20.95	34.11	30.62	12.10	17.40	0.01	0.02
11-Dec-12 14:14:00	20.94	33.84	30.48	12.01	17.00	0.01	0.02
11-Dec-12 14:15:00	20.94	33.84	30.33	11.93	16.70	0.01	0.02
11-Dec-12 14:16:00	20.93	33.80	30.19	11.84	16.50	0.01	0.02
11-Dec-12 14:17:00	20.92	34.15	30.33	11.76	16.40	0.01	0.02
11-Dec-12 14:18:00	20.92	33.93	30.79	11.68	16.20	0.01	0.02
11-Dec-12 14:19:00	20.91	33.78	31.25	11.59	16.20	0.08	0.02
11-Dec-12 14:20:00	20.90	34.00	31.71	11.51	16.40	0.08	0.02
11-Dec-12 14:21:00	20.90	33.54	32.17	11.42	16.40	0.07	0.02
11-Dec-12 14:22:00	20.89	33.51	32.11	11.34	16.40	0.06	0.02
11-Dec-12 14:23:00	20.88	33.92	31.99	11.30	16.40	0.07	0.02
11-Dec-12 14:24:00	20.88	33.82	31.88	11.30	16.40	0.06	0.02

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 14:25:00	20.87	33.69	32.30	11.31	17.00	0.06	0.02
11-Dec-12 14:26:00	20.86	33.49	33.16	11.31	17.00	0.07	0.03
11-Dec-12 14:27:00	20.86	33.42	33.19	11.32	17.00	0.07	0.03
11-Dec-12 14:28:00	20.86	33.33	32.66	11.32	17.00	0.09	0.03
11-Dec-12 14:29:00	20.86	33.60	33.28	11.33	17.10	0.09	0.03
11-Dec-12 14:30:00	20.86	34.00	33.12	11.33	17.10	0.04	0.03
11-Dec-12 14:31:00	20.86	33.80	32.94	11.34	17.30	0.01	0.03
11-Dec-12 14:32:00	20.86	33.92	33.01	11.34	17.30	0.01	0.03
11-Dec-12 14:33:00	20.86	33.74	32.68	11.35	17.30	0.01	0.03
11-Dec-12 14:34:00	20.86	33.69	32.63	11.35	17.30	0.01	0.03
11-Dec-12 14:35:00	20.86	33.78	33.42	11.36	17.30	0.00	0.03
11-Dec-12 14:36:00	20.86	33.84	33.98	11.36	17.30	0.00	0.03
11-Dec-12 14:37:00	20.86	33.68	34.53	11.37	17.30	0.00	0.03
11-Dec-12 14:38:00	20.86	33.80	34.69	11.37	17.30	0.00	0.03
11-Dec-12 14:39:00	20.86	34.00	34.63	11.37	17.30	0.00	0.02
11-Dec-12 14:40:00	20.86	33.51	34.56	11.38	17.30	0.00	0.02
11-Dec-12 14:41:00	20.86	33.55	34.49	11.38	17.30	0.00	0.02
11-Dec-12 14:42:00	20.86	33.85	34.43	11.39	17.30	0.00	0.02
11-Dec-12 14:43:00	20.86	33.89	34.36	10.94	17.30	0.00	0.02
11-Dec-12 14:44:00	20.85	34.00	33.89	10.86	17.30	0.00	0.02
11-Dec-12 14:45:00	20.85	33.72	32.83	10.88	17.30	0.01	0.02
11-Dec-12 14:46:00	20.84	34.00	32.26	10.90	17.30	0.01	0.02
11-Dec-12 14:47:00	20.84	33.95	32.89	10.92	17.10	0.00	0.02
11-Dec-12 14:48:00	20.83	34.00	33.52	10.94	17.10	0.00	0.02
11-Dec-12 14:49:00	20.83	33.74	33.79	10.96	17.10	0.00	0.02
11-Dec-12 14:50:00	20.82	33.93	33.48	10.99	17.10	0.00	0.02
11-Dec-12 14:51:00	20.82	33.95	33.07	11.01	17.10	0.01	0.02
11-Dec-12 14:52:00	20.85	34.00	32.97	11.03	17.10	0.00	0.02
11-Dec-12 14:53:00	20.87	33.28	32.86	11.05	17.10	0.01	0.02
11-Dec-12 14:54:00	20.89	33.69	33.06	11.07	17.10	0.01	0.02
11-Dec-12 14:55:00	20.92	34.15	33.04	11.09	17.00	0.01	0.02
11-Dec-12 14:56:00	20.94	33.78	32.91	11.12	17.00	0.00	0.02
11-Dec-12 14:57:00	20.96	33.76	32.98	11.14	17.00	0.00	0.02
11-Dec-12 14:58:00	20.98	34.08	33.56	11.16	17.10	0.00	0.02
11-Dec-12 14:59:00	21.01	34.00	33.73	11.18	17.10	0.00	0.02
11-Dec-12 15:00:00	21.03	33.69	33.45	11.20	17.30	0.01	0.02
11-Dec-12 15:01:00	21.03	33.54	33.48	11.22	17.40	0.01	0.02
11-Dec-12 15:02:00	20.98	33.68	34.07	11.24	17.40	0.01	0.02
11-Dec-12 15:03:00	20.92	33.43	34.07	11.27	17.40	0.00	0.02
11-Dec-12 15:04:00	20.87	33.84	34.05	11.29	17.40	0.00	0.02
11-Dec-12 15:05:00	20.81	34.03	33.83	11.31	17.40	0.00	0.02
11-Dec-12 15:06:00	20.75	33.86	33.51	11.33	17.40	0.00	0.02

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 15:07:00	20.75	33.77	33.63	11.35	17.40	0.01	0.02
11-Dec-12 15:08:00	20.80	33.11	33.70	11.37	17.40	0.00	0.02
11-Dec-12 15:09:00	20.85	33.63	32.52	11.40	17.40	0.01	0.02
11-Dec-12 15:10:00	20.89	33.54	32.90	11.42	17.40	0.00	0.02
11-Dec-12 15:11:00	20.94	33.69	33.38	11.44	17.40	0.01	0.02
11-Dec-12 15:12:00	20.99	33.81	33.57	11.46	17.40	0.00	0.02
11-Dec-12 15:13:00	21.04	33.90	33.54	11.48	17.40	0.00	0.02
11-Dec-12 15:14:00	21.08	33.87	33.24	11.42	17.30	0.00	0.02
11-Dec-12 15:15:00	21.10	33.84	33.31	11.36	17.30	0.00	0.02
11-Dec-12 15:16:00	21.10	34.01	33.28	11.30	17.30	0.00	0.02
11-Dec-12 15:17:00	21.10	33.77	33.25	11.25	17.40	0.00	0.02
11-Dec-12 15:18:00	21.11	34.06	33.22	11.19	17.30	0.00	0.02
11-Dec-12 15:19:00	21.11	33.80	33.16	11.13	17.30	0.00	0.02
11-Dec-12 15:20:00	21.12	33.90	33.36	11.07	17.30	0.00	0.02
11-Dec-12 15:21:00	21.12	34.00	33.22	11.01	17.30	0.00	0.01
11-Dec-12 15:22:00	21.12	33.23	32.97	10.96	17.30	0.00	0.01
11-Dec-12 15:23:00	21.13	33.56	33.20	10.90	17.30	0.00	0.01
Run 2							
11-Dec-12 16:12:00	21.33	33.75	33.14	11.21	17.30	0.00	-
11-Dec-12 16:13:00	21.05	34.02	33.20	11.21	17.30	0.01	-
11-Dec-12 16:14:00	20.75	34.29	32.94	11.21	17.30	0.01	-
11-Dec-12 16:15:00	20.44	33.57	32.44	11.14	17.30	0.00	-
11-Dec-12 16:16:00	20.37	33.97	32.28	11.07	17.30	0.01	-
11-Dec-12 16:17:00	20.38	33.89	32.61	11.09	17.30	0.02	-
11-Dec-12 16:18:00	20.39	33.93	32.63	11.10	17.30	0.01	-
11-Dec-12 16:19:00	20.40	34.15	32.37	11.12	17.30	0.01	-
11-Dec-12 16:20:00	20.41	33.59	32.27	11.14	17.30	0.00	-
11-Dec-12 16:21:00	20.41	34.13	32.22	11.15	17.30	0.00	-
11-Dec-12 16:22:00	20.42	33.89	32.16	11.17	17.30	0.00	-
11-Dec-12 16:23:00	20.43	34.00	32.16	11.19	17.30	0.00	-
11-Dec-12 16:24:00	20.44	34.24	32.27	11.21	17.30	0.00	-
11-Dec-12 16:25:00	20.45	33.91	32.35	11.22	17.40	0.00	-
11-Dec-12 16:26:00	20.46	34.09	32.40	11.24	17.30	0.00	-
11-Dec-12 16:27:00	20.47	33.93	32.44	11.26	17.30	0.00	-
11-Dec-12 16:28:00	20.48	34.02	32.29	11.27	17.40	0.01	-
11-Dec-12 16:29:00	20.49	34.15	32.14	11.29	17.40	0.01	-
11-Dec-12 16:30:00	20.50	34.16	32.31	11.31	17.40	0.00	-
11-Dec-12 16:31:00	20.51	34.12	32.50	11.33	17.40	0.00	-
11-Dec-12 16:32:00	20.53	34.28	32.68	11.34	17.40	0.00	-
11-Dec-12 16:33:00	20.54	33.85	32.75	11.36	17.40	0.01	-
11-Dec-12 16:34:00	20.56	33.93	32.82	11.38	17.40	0.01	-

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 16:35:00	20.57	33.60	32.89	11.39	17.40	0.00	-
11-Dec-12 16:36:00	20.59	34.00	32.95	11.41	17.40	0.00	-
11-Dec-12 16:37:00	20.60	34.01	33.00	11.43	17.40	0.00	-
11-Dec-12 16:38:00	20.62	34.14	33.02	11.44	17.40	0.00	-
11-Dec-12 16:39:00	20.64	33.89	33.01	11.46	17.40	0.00	-
11-Dec-12 16:40:00	20.65	33.83	32.78	11.48	17.40	0.00	-
11-Dec-12 16:41:00	20.67	33.76	32.55	11.50	17.40	0.00	-
11-Dec-12 16:42:00	20.68	34.09	32.32	11.51	17.40	0.00	-
11-Dec-12 16:43:00	20.53	34.00	32.09	11.52	17.40	0.00	-
11-Dec-12 16:44:00	20.37	33.85	32.16	11.52	17.40	0.00	-
11-Dec-12 16:45:00	20.46	34.00	32.42	11.51	17.40	0.01	-
11-Dec-12 16:46:00	20.68	34.15	32.56	11.50	17.40	0.01	-
11-Dec-12 16:47:00	20.90	34.04	32.71	11.49	17.40	0.00	-
11-Dec-12 16:48:00	21.12	34.24	32.86	11.48	17.40	0.00	-
11-Dec-12 16:49:00	21.23	34.00	33.01	11.47	17.40	0.01	-
11-Dec-12 16:50:00	21.24	33.84	33.16	11.47	17.40	0.01	-
11-Dec-12 16:51:00	21.25	33.72	33.18	11.46	17.40	0.00	-
11-Dec-12 16:52:00	21.25	33.74	33.11	11.45	17.40	0.00	-
11-Dec-12 16:53:00	21.26	33.77	33.04	11.44	17.40	0.01	-
11-Dec-12 16:54:00	21.27	33.94	32.96	11.44	17.40	0.00	-
11-Dec-12 16:55:00	21.27	33.73	32.97	11.44	17.40	0.00	-
11-Dec-12 16:56:00	21.28	34.23	33.00	11.45	17.40	0.03	-
11-Dec-12 16:57:00	21.29	33.67	33.02	11.45	17.40	0.03	-
11-Dec-12 16:58:00	21.29	34.14	33.02	11.45	17.40	0.00	-
11-Dec-12 16:59:00	21.30	34.15	32.93	11.46	17.40	0.00	-
11-Dec-12 17:00:00	21.31	33.94	32.85	11.46	17.40	0.01	-
11-Dec-12 17:01:00	21.31	33.48	32.76	11.47	17.40	0.01	-
11-Dec-12 17:02:00	21.32	34.15	32.68	11.47	17.40	0.00	-
11-Dec-12 17:03:00	21.33	34.21	32.59	11.47	17.40	0.00	-
11-Dec-12 17:04:00	21.33	34.17	32.51	11.48	17.40	0.00	-
11-Dec-12 17:05:00	21.34	34.09	32.42	11.48	17.40	0.03	-
11-Dec-12 17:06:00	21.35	33.91	32.34	11.49	17.40	0.03	-
11-Dec-12 17:07:00	21.35	34.23	32.35	11.49	17.40	0.00	-
11-Dec-12 17:08:00	21.36	34.10	32.42	11.50	17.40	0.00	-
11-Dec-12 17:09:00	21.37	34.15	32.49	11.50	17.40	0.01	-
11-Dec-12 17:10:00	21.24	34.00	32.56	11.50	17.40	0.01	-
11-Dec-12 17:11:00	20.98	33.77	32.62	11.51	17.40	0.00	-
11-Dec-12 17:12:00	20.71	33.95	32.69	11.51	17.40	0.00	0.01
11-Dec-12 17:13:00	20.45	33.81	32.76	11.52	17.40	0.00	0.01
11-Dec-12 17:14:00	20.23	33.74	32.88	11.52	17.40	0.00	0.01
11-Dec-12 17:15:00	20.28	34.10	33.26	11.52	17.40	0.00	0.01
11-Dec-12 17:16:00	20.34	33.85	33.30	11.53	17.40	0.00	0.01

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 17:17:00	20.39	34.15	33.29	11.54	17.40	0.01	0.01
11-Dec-12 17:18:00	20.45	33.95	33.28	11.55	17.40	0.00	0.01
11-Dec-12 17:19:00	20.50	34.02	33.26	11.56	17.40	0.01	0.01
11-Dec-12 17:20:00	20.55	33.80	33.25	11.57	17.40	0.01	0.01
11-Dec-12 17:21:00	20.61	34.16	33.24	11.58	17.40	0.00	0.00
11-Dec-12 17:22:00	20.66	34.09	33.22	11.58	17.40	0.00	0.00
11-Dec-12 17:23:00	20.71	34.17	32.92	11.59	17.40	0.00	0.00
11-Dec-12 17:24:00	20.77	33.54	33.01	11.60	17.40	0.00	0.00
11-Dec-12 17:25:00	20.80	34.07	33.37	11.61	17.40	0.00	0.00
11-Dec-12 17:26:00	20.83	34.11	34.14	11.62	17.40	0.00	0.00
11-Dec-12 17:27:00	20.85	34.00	34.05	11.63	17.40	0.00	0.00
11-Dec-12 17:28:00	20.88	34.00	33.97	11.64	17.40	0.00	0.00
11-Dec-12 17:29:00	20.91	34.14	33.88	11.65	17.40	0.00	0.00
11-Dec-12 17:30:00	20.93	34.11	33.72	11.66	17.40	0.00	0.00
11-Dec-12 17:31:00	20.96	33.92	33.40	11.67	17.10	0.00	0.00
11-Dec-12 17:32:00	20.97	34.12	33.07	11.68	17.10	0.00	0.00
11-Dec-12 17:33:00	20.98	34.06	32.75	11.69	17.10	0.00	0.00
11-Dec-12 17:34:00	21.00	34.13	32.43	11.71	17.10	0.00	0.00
11-Dec-12 17:35:00	21.01	33.75	32.37	11.72	17.10	0.00	0.00
11-Dec-12 17:36:00	21.02	33.96	32.35	11.73	17.10	0.00	0.00
11-Dec-12 17:37:00	21.03	34.15	32.32	11.74	17.10	0.00	0.00
11-Dec-12 17:38:00	21.04	33.71	32.29	11.75	17.10	0.01	0.00
11-Dec-12 17:39:00	20.92	33.91	32.26	11.76	17.40	0.01	0.00
11-Dec-12 17:40:00	20.69	34.15	32.23	11.77	17.40	0.00	0.00
11-Dec-12 17:41:00	20.46	33.74	32.20	11.78	17.40	0.00	0.00
11-Dec-12 17:42:00	20.24	34.00	32.18	11.79	17.40	0.00	0.00
11-Dec-12 17:43:00	20.01	33.99	32.15	11.80	17.40	0.00	0.00
11-Dec-12 17:44:00	19.78	33.84	32.12	11.76	17.10	0.00	0.00
11-Dec-12 17:45:00	20.11	34.28	32.08	11.71	17.40	0.01	0.00
11-Dec-12 17:46:00	20.49	34.11	32.04	11.67	17.40	0.00	0.00
11-Dec-12 17:47:00	20.86	33.90	32.03	11.62	17.40	0.01	0.00
11-Dec-12 17:48:00	21.23	34.02	32.03	11.58	17.40	0.00	0.00
11-Dec-12 17:49:00	21.23	33.39	32.03	11.53	17.40	0.01	0.00
11-Dec-12 17:50:00	21.18	34.04	32.03	11.49	17.40	0.01	0.00
11-Dec-12 17:51:00	21.13	34.16	32.04	11.44	17.10	0.01	0.00
11-Dec-12 17:52:00	21.08	34.20	32.07	11.40	17.40	0.00	0.00
11-Dec-12 17:53:00	21.02	34.05	32.10	11.35	17.40	0.00	0.00
11-Dec-12 17:54:00	20.97	33.95	32.13	11.37	17.40	0.01	0.00
11-Dec-12 17:55:00	20.92	34.00	32.16	11.41	17.10	0.01	0.01
11-Dec-12 17:56:00	20.87	34.01	32.19	11.44	17.10	0.00	0.00
11-Dec-12 17:57:00	20.82	34.16	32.22	11.48	17.10	0.00	0.00
11-Dec-12 17:58:00	20.76	33.96	32.25	11.51	17.10	0.02	0.00

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 17:59:00	20.73	33.88	32.28	11.55	17.10	0.01	0.00
11-Dec-12 18:00:00	20.75	34.15	32.31	11.58	17.10	0.01	0.00
11-Dec-12 18:01:00	20.76	33.18	32.22	11.62	17.10	0.21	0.01
11-Dec-12 18:02:00	20.77	34.15	32.21	11.65	17.10	0.21	0.01
11-Dec-12 18:03:00	20.79	33.93	32.31	11.69	17.10	0.01	0.01
11-Dec-12 18:04:00	20.80	34.15	32.40	11.72	17.10	0.01	0.01
11-Dec-12 18:05:00	20.81	33.69	32.61	11.76	17.10	0.01	0.01
11-Dec-12 18:06:00	20.83	34.11	32.89	11.79	16.80	0.02	0.01
11-Dec-12 18:07:00	20.84	33.99	33.02	11.83	17.10	0.02	0.01
11-Dec-12 18:08:00	20.86	34.08	32.82	11.86	17.10	0.00	0.01
11-Dec-12 18:09:00	20.86	34.00	32.75	11.90	17.10	0.00	0.01
11-Dec-12 18:10:00	20.86	33.74	32.93	11.93	17.10	0.01	0.01
11-Dec-12 18:11:00	20.86	34.27	32.82	11.97	17.10	0.01	0.01
11-Dec-12 18:12:00	20.86	33.96	32.71	12.00	17.10	0.01	0.01
11-Dec-12 18:13:00	20.86	33.87	32.61	11.88	17.10	0.01	0.01
11-Dec-12 18:14:00	20.86	33.79	32.50	11.17	17.10	0.00	0.01
11-Dec-12 18:15:00	20.86	33.93	32.79	11.21	16.80	0.00	0.01
11-Dec-12 18:16:00	20.86	34.00	33.17	11.25	16.80	0.00	0.01
11-Dec-12 18:17:00	20.86	34.21	33.03	11.29	17.10	0.00	0.01
11-Dec-12 18:18:00	20.85	34.24	33.17	11.33	17.10	0.00	0.01
11-Dec-12 18:19:00	20.85	33.70	33.40	11.37	17.10	0.01	0.01
11-Dec-12 18:20:00	20.84	33.95	33.54	11.41	17.10	0.00	0.01
11-Dec-12 18:21:00	20.83	33.88	33.54	11.45	17.40	0.00	0.01
11-Dec-12 18:22:00	20.82	34.14	33.54	11.49	17.10	0.00	0.01
11-Dec-12 18:23:00	20.81	34.09	33.64	11.53	17.40	0.01	0.01
11-Dec-12 18:24:00	20.80	34.15	33.66	11.57	17.40	0.01	0.01
11-Dec-12 18:25:00	20.79	34.03	33.31	11.61	17.40	0.02	0.01
11-Dec-12 18:26:00	20.78	34.15	33.29	11.65	17.10	0.08	0.01
11-Dec-12 18:27:00	20.78	34.24	33.31	11.69	17.10	0.08	0.02
11-Dec-12 18:28:00	20.77	34.06	33.42	11.73	17.10	0.00	0.02
11-Dec-12 18:29:00	20.76	34.24	33.79	11.77	17.10	0.00	0.02
11-Dec-12 18:30:00	20.75	34.04	34.28	11.81	17.10	0.00	0.02
11-Dec-12 18:31:00	20.74	33.65	34.73	11.85	17.10	0.00	0.02
11-Dec-12 18:32:00	20.73	34.02	34.68	11.89	17.10	0.00	0.02
11-Dec-12 18:33:00	20.70	33.98	34.57	11.93	17.10	0.00	0.02
11-Dec-12 18:34:00	20.66	34.17	34.37	11.98	17.10	0.01	0.02
11-Dec-12 18:35:00	20.62	33.64	34.46	12.02	17.10	0.01	0.02
11-Dec-12 18:36:00	20.58	34.03	34.48	12.06	17.10	0.01	0.02
11-Dec-12 18:37:00	20.53	34.29	34.43	12.10	17.10	0.00	0.02
11-Dec-12 18:38:00	20.49	33.57	34.38	12.14	17.10	0.00	0.02
11-Dec-12 18:39:00	20.45	34.30	34.33	12.18	17.10	0.01	0.02
11-Dec-12 18:40:00	20.40	34.23	34.28	12.22	17.10	0.01	0.02

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 18:41:00	20.36	33.69	35.10	12.26	17.10	0.00	0.02
11-Dec-12 18:42:00	20.32	34.06	35.03	12.30	17.10	0.00	0.02
11-Dec-12 18:43:00	20.36	34.00	34.89	12.34	17.10	0.01	0.02
11-Dec-12 18:44:00	20.41	33.94	34.84	12.27	17.10	0.00	0.02
11-Dec-12 18:45:00	20.46	34.15	34.90	12.17	17.00	0.00	0.02
11-Dec-12 18:46:00	20.51	34.30	34.97	12.06	17.00	0.01	0.02
11-Dec-12 18:47:00	20.56	34.12	34.90	11.95	17.00	0.00	0.02
11-Dec-12 18:48:00	20.62	34.14	34.70	11.85	17.00	0.01	0.02
11-Dec-12 18:49:00	20.67	34.30	34.88	11.74	17.00	0.01	0.02
11-Dec-12 18:50:00	20.72	34.05	34.63	11.63	16.80	0.01	0.02
11-Dec-12 18:51:00	20.77	34.04	34.59	11.53	17.10	0.01	0.02
11-Dec-12 18:52:00	20.82	33.86	35.05	11.42	17.10	0.00	0.02
11-Dec-12 18:53:00	20.87	33.94	34.69	11.31	17.10	0.00	0.02
11-Dec-12 18:54:00	20.96	34.13	34.56	11.21	17.10	0.00	0.02
11-Dec-12 18:55:00	21.04	34.15	34.50	11.21	17.10	0.00	0.02
11-Dec-12 18:56:00	21.13	34.12	34.58	11.21	17.10	0.01	0.02
11-Dec-12 18:57:00	21.21	34.00	34.88	11.21	17.10	0.01	0.02
11-Dec-12 18:58:00	21.29	34.01	33.99	11.22	17.10	0.00	0.02
11-Dec-12 18:59:00	21.38	34.15	34.37	11.22	17.10	0.01	0.02
11-Dec-12 19:00:00	21.46	33.92	34.16	11.22	17.10	0.00	0.02
11-Dec-12 19:01:00	21.55	34.45	34.41	11.22	17.10	0.00	0.01
11-Dec-12 19:02:00	21.63	34.20	34.62	11.22	17.10	0.01	0.01
11-Dec-12 19:03:00	21.72	34.18	34.35	11.23	17.10	0.01	0.01
11-Dec-12 19:04:00	21.76	33.84	33.50	11.23	17.40	0.01	0.01
11-Dec-12 19:05:00	21.69	34.28	33.28	11.23	17.70	0.01	0.01
11-Dec-12 19:06:00	21.62	34.15	33.07	11.23	18.00	0.00	0.01
11-Dec-12 19:07:00	21.54	33.75	32.86	11.24	18.20	0.00	0.01
11-Dec-12 19:08:00	21.47	34.05	32.88	11.24	18.30	0.00	0.01
11-Dec-12 19:09:00	21.40	33.84	33.06	11.24	18.50	0.00	0.01
11-Dec-12 19:10:00	21.33	34.21	33.25	11.24	18.00	0.00	0.01
11-Dec-12 19:11:00	21.25	34.15	33.33	11.25	17.70	0.00	0.01
11-Dec-12 19:12:00	21.18	33.78	33.36	11.25	17.70	0.00	0.01
11-Dec-12 19:13:00	21.13	34.05	33.38	11.25	17.90	0.00	0.01
11-Dec-12 19:14:00	21.12	34.01	33.40	11.26	17.90	0.01	0.01
11-Dec-12 19:15:00	21.10	34.00	33.23	11.35	17.90	0.01	0.01
11-Dec-12 19:16:00	21.09	34.20	33.03	11.43	17.90	0.01	0.01
11-Dec-12 19:17:00	21.07	34.02	32.89	11.43	18.00	0.01	0.01
11-Dec-12 19:18:00	21.06	33.69	33.16	11.42	18.00	0.00	0.01
11-Dec-12 19:19:00	21.04	34.12	33.42	11.41	18.00	0.00	0.01
11-Dec-12 19:20:00	21.03	34.15	33.69	11.40	18.00	0.00	0.01
11-Dec-12 19:21:00	21.01	34.30	33.76	11.39	18.00	0.00	0.01
11-Dec-12 19:22:00	21.00	33.91	33.80	11.38	18.00	0.00	0.01

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 19:23:00	20.98	34.04	33.84	11.37	18.00	0.00	0.01
11-Dec-12 19:24:00	20.97	34.14	33.88	11.36	18.00	0.00	0.01
11-Dec-12 19:25:00	20.95	34.18	33.93	11.35	18.00	0.00	0.01
11-Dec-12 19:26:00	20.93	33.95	33.98	11.35	18.00	0.01	0.01
11-Dec-12 19:27:00	20.92	34.06	33.57	11.38	18.00	0.01	0.01
11-Dec-12 19:28:00	20.90	33.94	32.90	11.43	18.00	0.00	0.01
11-Dec-12 19:29:00	20.89	34.15	32.73	11.48	18.00	0.00	0.01
11-Dec-12 19:30:00	20.87	34.30	31.57	11.52	18.00	0.00	0.01
11-Dec-12 19:31:00	20.86	33.97	31.36	11.57	18.00	0.00	0.01
11-Dec-12 19:32:00	20.84	34.04	31.59	11.62	18.00	0.00	0.01
11-Dec-12 19:33:00	20.83	33.82	31.70	11.67	18.00	0.00	0.01
11-Dec-12 19:34:00	20.81	34.17	31.81	11.71	18.00	0.00	0.01
11-Dec-12 19:35:00	20.80	34.14	32.11	11.76	18.00	0.00	0.01
11-Dec-12 19:36:00	20.78	34.36	32.54	11.81	18.00	0.00	0.00
11-Dec-12 19:37:00	20.77	34.15	32.98	11.85	18.00	0.00	0.00
11-Dec-12 19:38:00	20.75	34.18	33.42	11.90	18.00	0.00	0.00
11-Dec-12 19:39:00	20.74	34.15	33.69	11.95	18.00	0.00	0.00
11-Dec-12 19:40:00	20.72	34.30	33.58	12.00	18.00	0.00	0.00
11-Dec-12 19:41:00	20.71	34.30	33.49	12.04	18.00	0.00	0.00
11-Dec-12 19:42:00	20.69	34.17	33.43	11.97	18.00	0.00	0.00
11-Dec-12 19:43:00	20.80	34.15	33.73	11.63	18.00	0.00	0.00
11-Dec-12 19:44:00	21.16	34.19	34.39	11.53	18.00	0.01	0.00
11-Dec-12 19:45:00	21.51	34.26	34.24	11.47	18.00	0.00	0.00
11-Dec-12 19:46:00	21.45	34.00	33.96	11.42	18.00	0.00	0.00
11-Dec-12 19:47:00	21.40	33.75	33.45	11.37	18.00	0.00	0.00
11-Dec-12 19:48:00	21.34	34.19	32.94	11.31	18.00	0.00	0.00
11-Dec-12 19:49:00	21.29	34.30	33.57	11.26	17.90	0.00	0.00
11-Dec-12 19:50:00	21.23	33.84	34.49	11.21	17.90	0.00	0.00
Run 3							
11-Dec-12 20:41:00	21.49	34.10	34.71	11.15	18.30	0.00	-
11-Dec-12 20:42:00	21.50	34.09	34.77	11.14	18.30	0.00	-
11-Dec-12 20:43:00	21.50	34.00	34.84	11.13	18.60	0.00	-
11-Dec-12 20:44:00	21.50	34.26	33.94	11.12	18.60	0.00	-
11-Dec-12 20:45:00	21.48	34.15	32.99	11.11	18.30	0.00	-
11-Dec-12 20:46:00	21.45	34.15	33.52	11.11	18.60	0.00	-
11-Dec-12 20:47:00	21.41	34.19	34.05	11.11	18.60	0.00	-
11-Dec-12 20:48:00	21.38	34.25	34.49	11.10	18.60	0.00	-
11-Dec-12 20:49:00	21.34	34.30	34.93	11.10	18.60	0.00	-
11-Dec-12 20:50:00	21.31	33.78	35.15	11.09	18.60	0.00	-
11-Dec-12 20:51:00	21.28	34.17	35.15	11.09	18.60	0.00	-
11-Dec-12 20:52:00	21.24	34.00	35.16	11.08	18.60	0.00	-

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 20:53:00	21.21	34.15	35.16	11.08	18.60	0.00	-
11-Dec-12 20:54:00	21.17	34.15	35.16	11.07	18.60	0.00	-
11-Dec-12 20:55:00	21.14	34.34	35.17	11.07	18.60	0.00	-
11-Dec-12 20:56:00	21.10	34.15	35.17	11.09	18.60	0.00	-
11-Dec-12 20:57:00	21.07	33.87	35.17	11.13	18.60	0.00	-
11-Dec-12 20:58:00	21.04	34.17	35.17	11.16	18.60	0.00	-
11-Dec-12 20:59:00	21.00	34.30	35.18	11.19	18.60	0.00	-
11-Dec-12 21:00:00	20.97	33.69	35.18	11.22	18.60	0.00	-
11-Dec-12 21:01:00	20.93	34.30	35.18	11.25	18.60	0.00	-
11-Dec-12 21:02:00	20.90	34.30	35.19	11.29	18.60	0.01	-
11-Dec-12 21:03:00	20.86	34.15	35.19	11.32	18.60	0.00	-
11-Dec-12 21:04:00	20.83	34.12	35.12	11.35	18.30	0.00	-
11-Dec-12 21:05:00	20.80	34.11	34.95	11.38	18.30	0.00	-
11-Dec-12 21:06:00	20.76	34.30	34.79	11.41	18.30	0.00	-
11-Dec-12 21:07:00	20.73	33.48	34.63	11.44	18.30	0.00	-
11-Dec-12 21:08:00	20.69	33.73	34.58	11.48	18.30	0.00	-
11-Dec-12 21:09:00	20.66	34.11	34.62	11.51	18.30	0.01	-
11-Dec-12 21:10:00	20.62	33.70	34.67	11.54	18.30	0.00	-
11-Dec-12 21:11:00	20.59	33.76	34.72	11.57	18.30	0.00	-
11-Dec-12 21:12:00	20.56	34.00	34.76	11.60	18.30	0.00	-
11-Dec-12 21:13:00	20.52	34.02	34.81	11.64	18.30	0.00	-
11-Dec-12 21:14:00	20.50	34.15	34.76	11.66	18.30	0.00	-
11-Dec-12 21:15:00	20.51	34.09	34.66	11.60	18.30	0.00	-
11-Dec-12 21:16:00	20.52	34.28	34.55	11.54	18.30	0.00	-
11-Dec-12 21:17:00	20.53	34.16	34.45	11.49	18.30	0.00	-
11-Dec-12 21:18:00	20.54	33.89	34.35	11.43	18.30	0.00	-
11-Dec-12 21:19:00	20.55	34.30	34.73	11.37	18.30	0.00	-
11-Dec-12 21:20:00	20.56	34.05	35.16	11.32	18.60	0.00	-
11-Dec-12 21:21:00	20.56	34.19	34.93	11.26	18.60	0.00	-
11-Dec-12 21:22:00	20.57	34.32	34.70	11.20	18.60	0.00	-
11-Dec-12 21:23:00	20.58	34.28	34.47	11.15	18.60	0.00	-
11-Dec-12 21:24:00	20.59	34.24	34.24	11.09	18.60	0.00	-
11-Dec-12 21:25:00	20.60	34.30	34.19	11.08	18.90	0.00	-
11-Dec-12 21:26:00	20.61	34.03	34.15	11.11	18.90	0.00	-
11-Dec-12 21:27:00	20.62	33.73	34.11	11.13	18.90	0.00	-
11-Dec-12 21:28:00	20.63	34.24	34.06	11.16	18.90	0.00	-
11-Dec-12 21:29:00	20.64	33.87	34.02	11.18	18.90	0.00	-
11-Dec-12 21:30:00	20.65	34.26	33.57	11.21	18.90	0.00	-
11-Dec-12 21:31:00	20.65	34.00	32.85	11.23	18.90	0.00	-
11-Dec-12 21:32:00	20.66	34.36	32.29	11.26	18.90	0.02	-
11-Dec-12 21:33:00	20.67	33.87	32.91	11.28	18.90	0.03	-
11-Dec-12 21:34:00	20.68	34.42	33.08	11.31	18.90	0.03	-

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 21:35:00	20.69	34.41	32.78	11.33	18.90	0.01	-
11-Dec-12 21:36:00	20.70	34.11	32.60	11.35	18.90	0.01	-
11-Dec-12 21:37:00	20.71	34.17	32.63	11.38	18.90	0.01	-
11-Dec-12 21:38:00	20.72	34.15	32.66	11.40	18.90	0.01	-
11-Dec-12 21:39:00	20.73	34.05	33.20	11.43	18.90	0.02	-
11-Dec-12 21:40:00	20.76	34.27	33.84	11.45	18.90	0.02	-
11-Dec-12 21:41:00	20.80	34.15	34.13	11.48	18.90	0.07	0.01
11-Dec-12 21:42:00	20.84	34.01	34.22	11.50	18.90	0.08	0.01
11-Dec-12 21:43:00	20.88	34.08	33.88	11.53	18.90	0.08	0.01
11-Dec-12 21:44:00	20.92	34.00	32.69	11.55	18.90	0.03	0.01
11-Dec-12 21:45:00	20.96	34.15	31.77	11.57	18.90	0.03	0.01
11-Dec-12 21:46:00	21.00	34.30	32.05	11.56	18.90	0.06	0.01
11-Dec-12 21:47:00	20.98	34.11	32.34	11.55	18.90	0.05	0.01
11-Dec-12 21:48:00	20.96	34.37	32.56	11.54	18.90	0.09	0.01
11-Dec-12 21:49:00	20.94	33.89	32.69	11.53	18.90	0.08	0.01
11-Dec-12 21:50:00	20.91	34.15	32.83	11.53	18.90	0.07	0.01
11-Dec-12 21:51:00	20.89	34.11	32.97	11.52	18.90	0.08	0.02
11-Dec-12 21:52:00	20.87	34.15	33.51	11.51	18.90	0.08	0.02
11-Dec-12 21:53:00	20.85	34.03	33.24	11.50	18.90	0.08	0.02
11-Dec-12 21:54:00	20.83	34.08	33.06	11.49	18.90	0.10	0.02
11-Dec-12 21:55:00	20.81	34.27	33.59	11.48	18.90	0.08	0.02
11-Dec-12 21:56:00	20.78	33.76	32.62	11.49	18.80	0.05	0.02
11-Dec-12 21:57:00	20.76	34.30	32.98	11.50	18.80	0.05	0.02
11-Dec-12 21:58:00	20.74	34.15	32.96	11.50	18.80	0.07	0.02
11-Dec-12 21:59:00	20.72	34.00	33.20	11.51	18.60	0.07	0.03
11-Dec-12 22:00:00	20.70	34.16	33.40	11.52	18.60	0.05	0.03
11-Dec-12 22:01:00	20.67	34.05	33.27	11.53	18.60	0.02	0.03
11-Dec-12 22:02:00	20.65	34.28	33.18	11.53	18.60	0.07	0.03
11-Dec-12 22:03:00	20.64	34.07	33.09	11.54	18.60	0.08	0.03
11-Dec-12 22:04:00	20.65	34.15	33.00	11.55	18.80	0.08	0.03
11-Dec-12 22:05:00	20.66	34.31	32.91	11.56	18.80	0.02	0.03
11-Dec-12 22:06:00	20.67	33.94	33.17	11.56	18.80	0.07	0.03
11-Dec-12 22:07:00	20.68	33.87	33.72	11.57	18.80	0.08	0.03
11-Dec-12 22:08:00	20.70	34.30	34.03	11.58	18.80	0.07	0.03
11-Dec-12 22:09:00	20.71	34.30	33.89	11.59	18.90	0.04	0.03
11-Dec-12 22:10:00	20.72	34.21	33.75	11.59	18.90	0.03	0.03
11-Dec-12 22:11:00	20.73	34.24	33.61	11.60	18.90	0.03	0.04
11-Dec-12 22:12:00	20.74	34.17	33.57	11.61	19.10	0.00	0.04
11-Dec-12 22:13:00	20.75	34.30	33.87	11.62	19.10	0.00	0.04
11-Dec-12 22:14:00	20.76	34.39	33.89	11.57	19.20	0.00	0.04
11-Dec-12 22:15:00	20.78	34.11	33.91	11.52	19.20	0.00	0.04
11-Dec-12 22:16:00	20.79	33.63	33.89	11.46	19.20	0.00	0.04

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 22:17:00	20.80	33.68	33.88	11.41	19.20	0.00	0.04
11-Dec-12 22:18:00	20.81	34.13	33.88	11.36	19.20	0.00	0.04
11-Dec-12 22:19:00	20.82	34.11	33.90	11.30	19.20	0.00	0.04
11-Dec-12 22:20:00	20.83	34.38	33.91	11.25	19.20	0.00	0.04
11-Dec-12 22:21:00	20.84	33.75	33.90	11.19	19.20	0.00	0.04
11-Dec-12 22:22:00	20.85	34.12	33.89	11.14	19.20	0.01	0.04
11-Dec-12 22:23:00	20.87	34.30	33.89	11.09	19.20	0.01	0.04
11-Dec-12 22:24:00	20.88	33.88	33.88	11.07	19.20	0.03	0.04
11-Dec-12 22:25:00	20.89	34.24	33.87	11.08	19.20	0.01	0.04
11-Dec-12 22:26:00	20.90	34.07	33.76	11.08	19.20	0.01	0.04
11-Dec-12 22:27:00	20.91	34.30	33.41	11.09	19.20	0.00	0.04
11-Dec-12 22:28:00	20.92	34.45	33.06	11.09	19.20	0.01	0.04
11-Dec-12 22:29:00	20.93	34.28	33.37	11.09	19.20	0.01	0.04
11-Dec-12 22:30:00	20.95	34.41	33.61	11.10	19.50	0.00	0.04
11-Dec-12 22:31:00	20.96	34.09	33.72	11.10	19.50	0.00	0.04
11-Dec-12 22:32:00	20.97	34.11	32.76	11.11	19.50	0.00	0.04
11-Dec-12 22:33:00	20.98	34.30	31.75	11.11	19.50	0.00	0.04
11-Dec-12 22:34:00	20.99	33.93	31.47	11.12	19.50	0.00	0.04
11-Dec-12 22:35:00	21.00	34.31	31.90	11.12	19.50	0.00	0.04
11-Dec-12 22:36:00	21.01	34.15	31.62	11.13	19.50	0.00	0.04
11-Dec-12 22:37:00	21.02	34.15	31.34	11.13	19.50	0.00	0.04
11-Dec-12 22:38:00	21.04	34.45	31.09	11.14	19.50	0.00	0.04
11-Dec-12 22:39:00	21.05	33.67	31.48	11.14	19.50	0.00	0.04
11-Dec-12 22:40:00	21.06	34.20	31.55	11.14	19.50	0.00	0.04
11-Dec-12 22:41:00	21.07	33.60	31.57	11.15	19.50	0.00	0.03
11-Dec-12 22:42:00	21.08	34.38	31.60	11.15	19.50	0.00	0.03
11-Dec-12 22:43:00	21.09	33.81	31.62	11.16	19.70	0.00	0.03
11-Dec-12 22:44:00	21.08	33.86	31.75	11.16	19.70	0.00	0.03
11-Dec-12 22:45:00	21.06	34.11	32.31	11.17	19.70	0.03	0.03
11-Dec-12 22:46:00	21.05	34.36	33.00	11.17	19.70	0.00	0.03
11-Dec-12 22:47:00	21.03	33.86	32.60	11.18	19.70	0.00	0.03
11-Dec-12 22:48:00	21.01	34.06	32.26	11.18	19.80	0.00	0.03
11-Dec-12 22:49:00	20.99	33.94	32.25	11.18	19.80	0.01	0.03
11-Dec-12 22:50:00	20.97	33.75	32.24	11.19	19.80	0.01	0.03
11-Dec-12 22:51:00	20.95	34.40	32.23	11.19	20.00	0.00	0.02
11-Dec-12 22:52:00	20.93	33.76	32.22	11.20	19.80	0.00	0.02
11-Dec-12 22:53:00	20.91	34.41	32.22	11.20	19.80	0.01	0.02
11-Dec-12 22:54:00	20.93	33.88	32.23	11.21	19.80	0.00	0.02
11-Dec-12 22:55:00	20.95	34.30	32.24	11.21	19.80	0.00	0.02
11-Dec-12 22:56:00	20.97	34.04	32.25	11.22	19.80	0.00	0.02
11-Dec-12 22:57:00	20.99	34.15	32.26	11.22	20.10	0.00	0.02
11-Dec-12 22:58:00	21.01	34.01	32.26	11.23	20.00	0.01	0.02

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 22:59:00	21.04	34.15	32.19	11.23	20.00	0.01	0.02
11-Dec-12 23:00:00	21.06	34.30	32.12	11.23	20.10	0.00	0.01
11-Dec-12 23:01:00	21.08	34.08	32.05	11.24	20.00	0.01	0.01
11-Dec-12 23:02:00	21.10	34.26	31.98	11.24	20.00	0.00	0.01
11-Dec-12 23:03:00	21.12	34.02	31.91	11.25	20.10	0.00	0.01
11-Dec-12 23:04:00	21.14	34.15	31.85	11.25	20.10	0.00	0.01
11-Dec-12 23:05:00	21.16	34.30	31.78	11.26	20.10	0.00	0.01
11-Dec-12 23:06:00	21.18	34.26	31.71	11.26	20.10	0.00	0.01
11-Dec-12 23:07:00	21.21	34.45	31.65	11.27	20.10	0.01	0.01
11-Dec-12 23:08:00	21.23	34.42	31.58	11.27	20.10	0.01	0.01
11-Dec-12 23:09:00	21.08	34.15	31.69	11.28	20.30	0.00	0.01
11-Dec-12 23:10:00	20.91	34.00	31.82	11.28	20.30	0.00	0.01
11-Dec-12 23:11:00	20.73	34.06	31.46	11.28	20.30	0.00	0.01
11-Dec-12 23:12:00	20.55	34.29	31.08	11.29	20.40	0.00	0.01
11-Dec-12 23:13:00	20.37	34.06	30.89	11.29	20.40	0.00	0.01
11-Dec-12 23:14:00	20.27	34.41	31.22	11.29	20.40	0.01	0.01
11-Dec-12 23:15:00	20.27	34.16	31.75	11.26	20.40	0.00	0.01
11-Dec-12 23:16:00	20.27	34.30	31.71	11.22	20.40	0.00	0.01
11-Dec-12 23:17:00	20.27	33.69	31.67	11.19	20.40	0.00	0.01
11-Dec-12 23:18:00	20.27	34.15	31.63	11.15	20.40	0.00	0.01
11-Dec-12 23:19:00	20.27	34.41	31.60	11.11	20.40	0.00	0.00
11-Dec-12 23:20:00	20.27	34.00	31.56	11.08	20.70	0.01	0.01
11-Dec-12 23:21:00	20.27	34.06	31.52	11.04	20.70	0.01	0.01
11-Dec-12 23:22:00	20.27	34.15	31.49	11.01	20.70	0.00	0.01
11-Dec-12 23:23:00	20.27	33.65	31.50	10.97	20.70	0.00	0.00
11-Dec-12 23:24:00	20.28	34.02	31.52	10.94	20.70	0.00	0.00
11-Dec-12 23:25:00	20.31	34.15	31.53	10.95	21.00	0.00	0.00
11-Dec-12 23:26:00	20.33	34.30	31.55	10.97	21.00	0.00	0.00
11-Dec-12 23:27:00	20.35	34.15	31.57	11.00	21.00	0.00	0.00
11-Dec-12 23:28:00	20.37	34.04	31.58	11.02	21.00	0.00	0.00
11-Dec-12 23:29:00	20.39	34.13	31.60	11.04	21.00	0.00	0.00
11-Dec-12 23:30:00	20.42	33.98	31.62	11.06	21.00	0.00	0.00
11-Dec-12 23:31:00	20.44	33.72	31.52	11.08	21.00	0.00	0.00
11-Dec-12 23:32:00	20.46	33.89	31.37	11.11	21.00	0.00	0.00
11-Dec-12 23:33:00	20.48	34.15	31.22	11.13	21.00	0.00	0.00
11-Dec-12 23:34:00	20.50	34.30	31.26	11.15	21.30	0.00	0.00
11-Dec-12 23:35:00	20.53	33.64	31.32	11.17	21.00	0.00	0.00
11-Dec-12 23:36:00	20.55	33.87	31.37	11.20	21.30	0.00	0.00
11-Dec-12 23:37:00	20.57	34.35	31.43	11.22	21.30	0.00	0.00
11-Dec-12 23:38:00	20.59	34.13	31.49	11.24	21.30	0.00	0.00
11-Dec-12 23:39:00	20.61	34.00	31.09	11.26	21.30	0.00	0.00
11-Dec-12 23:40:00	20.64	34.45	30.12	11.29	21.30	0.00	0.00

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
11-Dec-12 23:41:00	20.66	34.03	30.25	11.31	21.30	0.01	0.00
11-Dec-12 23:42:00	20.68	34.27	30.38	11.33	21.30	0.00	0.00
11-Dec-12 23:43:00	20.70	34.25	30.51	11.35	21.30	0.01	0.00
11-Dec-12 23:44:00	20.72	33.95	30.64	11.37	21.30	0.00	0.00
11-Dec-12 23:45:00	20.91	34.12	30.56	11.38	21.30	0.00	0.00
11-Dec-12 23:46:00	21.13	34.19	30.42	11.35	21.30	0.00	0.00
11-Dec-12 23:47:00	21.03	34.28	30.53	11.32	21.30	0.00	0.00
11-Dec-12 23:48:00	20.91	34.10	30.80	11.28	21.30	0.00	0.00
11-Dec-12 23:49:00	20.79	33.97	30.68	11.25	21.60	0.00	0.00
11-Dec-12 23:50:00	20.67	33.91	30.56	11.22	21.60	0.00	0.00
Run 4							
12/12/2012 15:00:00	20.36	34.54	33.31	11.61	18.90	0.07	-
12/12/2012 15:01:00	20.36	34.76	32.96	11.61	18.60	0.07	-
12/12/2012 15:02:00	20.38	34.49	32.97	11.51	18.60	0.08	-
12/12/2012 15:03:00	20.55	34.76	33.10	11.30	18.60	0.09	-
12/12/2012 15:04:00	20.71	34.91	33.20	11.26	18.50	0.10	-
12/12/2012 15:05:00	20.71	34.85	33.31	11.26	18.50	0.09	-
12/12/2012 15:06:00	20.69	34.84	33.50	11.26	18.50	0.08	-
12/12/2012 15:07:00	20.67	35.02	33.62	11.27	18.50	0.07	-
12/12/2012 15:08:00	20.65	34.38	33.82	11.27	18.50	0.08	-
12/12/2012 15:09:00	20.63	34.86	33.85	11.28	18.30	0.10	-
12/12/2012 15:10:00	20.61	34.48	33.58	11.28	18.50	0.10	-
12/12/2012 15:11:00	20.59	34.66	33.55	11.29	18.50	0.09	-
12/12/2012 15:12:00	20.56	34.76	33.51	11.29	18.50	0.09	-
12/12/2012 15:13:00	20.54	34.64	33.15	11.30	18.50	0.08	-
12/12/2012 15:14:00	20.52	34.71	32.95	11.25	18.50	0.10	-
12/12/2012 15:15:00	20.50	34.61	33.36	11.14	18.80	0.10	-
12/12/2012 15:16:00	20.48	34.69	33.03	11.04	18.60	0.09	-
12/12/2012 15:17:00	20.46	34.61	33.14	10.93	18.30	0.10	-
12/12/2012 15:18:00	20.44	34.50	33.61	10.83	18.20	0.11	-
12/12/2012 15:19:00	20.42	34.66	33.44	13.11	18.30	0.12	-
12/12/2012 15:20:00	20.40	34.66	33.24	21.43	17.90	0.09	-
12/12/2012 15:21:00	20.38	34.61	33.72	13.34	17.90	0.06	-
12/12/2012 15:22:00	20.36	34.65	32.97	-0.39	17.30	0.08	-
12/12/2012 15:23:00	20.34	34.72	33.23	-4.70	17.00	0.10	-
12/12/2012 15:24:00	20.32	34.62	33.32	20.43	17.40	0.09	-
12/12/2012 15:25:00	20.30	34.89	33.35	13.81	17.40	0.06	-
12/12/2012 15:26:00	20.28	34.76	34.32	4.40	17.40	0.03	-
12/12/2012 15:27:00	20.26	34.59	34.49	15.22	17.40	0.01	-
12/12/2012 15:28:00	20.24	34.61	34.51	12.79	17.40	0.00	-
12/12/2012 15:29:00	20.22	34.56	34.22	11.36	17.00	0.00	-

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
12/12/2012 15:30:00	20.20	34.67	33.94	10.77	17.00	0.00	-
12/12/2012 15:31:00	20.17	34.76	33.69	10.62	17.00	0.00	-
12/12/2012 15:32:00	20.15	34.91	33.78	10.47	17.00	0.00	-
12/12/2012 15:33:00	20.13	34.81	33.91	10.80	17.00	0.00	-
12/12/2012 15:34:00	20.17	34.76	34.39	11.61	17.00	0.01	-
12/12/2012 15:35:00	20.21	34.77	33.79	11.57	17.00	0.01	-
12/12/2012 15:36:00	20.25	34.76	34.04	11.54	17.00	0.01	-
12/12/2012 15:37:00	20.29	34.76	34.49	11.50	17.10	0.01	-
12/12/2012 15:38:00	20.33	34.76	34.42	11.48	17.30	0.03	-
12/12/2012 15:39:00	20.36	34.91	34.41	11.47	17.30	0.02	-
12/12/2012 15:40:00	20.40	34.85	34.63	11.47	17.30	0.01	-
12/12/2012 15:41:00	20.44	34.48	34.49	11.46	17.40	0.03	-
12/12/2012 15:42:00	20.48	34.72	34.33	11.46	17.40	0.04	-
12/12/2012 15:43:00	20.52	34.74	34.08	11.45	17.60	0.03	-
12/12/2012 15:44:00	20.54	34.76	33.59	11.45	17.70	0.02	-
12/12/2012 15:45:00	20.53	34.69	33.59	11.44	17.70	0.04	-
12/12/2012 15:46:00	20.53	34.61	33.38	11.44	17.90	0.04	-
12/12/2012 15:47:00	20.52	34.88	32.79	11.43	18.00	0.04	-
12/12/2012 15:48:00	20.51	34.76	32.66	11.43	18.00	0.08	-
12/12/2012 15:49:00	20.50	34.81	32.87	11.43	18.00	0.09	-
12/12/2012 15:50:00	20.49	34.74	33.12	11.43	18.20	0.08	-
12/12/2012 15:51:00	20.49	34.76	33.31	11.43	18.30	0.09	-
12/12/2012 15:52:00	20.48	34.91	32.83	11.43	18.30	0.11	-
12/12/2012 15:53:00	20.47	34.63	32.67	11.43	18.50	0.11	-
12/12/2012 15:54:00	20.46	34.91	32.96	11.43	18.50	0.10	-
12/12/2012 15:55:00	20.45	34.73	32.72	11.43	18.60	0.10	-
12/12/2012 15:56:00	20.45	34.82	33.08	11.43	18.60	0.10	-
12/12/2012 15:57:00	20.44	34.63	31.42	11.43	18.70	0.10	-
12/12/2012 15:58:00	20.43	34.73	31.07	11.43	18.70	0.09	-
12/12/2012 15:59:00	20.42	34.89	31.33	11.43	18.70	0.04	-
12/12/2012 16:00:00	20.41	34.82	31.15	11.43	18.90	0.02	0.06
12/12/2012 16:01:00	20.41	34.46	31.10	11.45	18.90	0.02	0.06
12/12/2012 16:02:00	20.38	34.61	31.41	11.49	18.90	0.01	0.06
12/12/2012 16:03:00	20.36	34.55	31.10	11.52	18.90	0.02	0.06
12/12/2012 16:04:00	20.34	34.61	30.87	11.56	19.10	0.05	0.06
12/12/2012 16:05:00	20.32	34.73	30.73	11.59	19.20	0.04	0.06
12/12/2012 16:06:00	20.29	34.52	30.97	11.63	19.20	0.02	0.06
12/12/2012 16:07:00	20.27	34.96	31.53	11.67	19.40	0.01	0.05
12/12/2012 16:08:00	20.25	34.45	31.45	11.70	19.40	0.01	0.05
12/12/2012 16:09:00	20.23	34.56	31.67	11.74	19.50	0.01	0.05
12/12/2012 16:10:00	20.20	34.91	32.05	11.77	19.50	0.02	0.05
12/12/2012 16:11:00	20.18	34.89	30.75	11.80	19.50	0.04	0.05

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
12/12/2012 16:12:00	20.18	34.45	31.11	11.78	19.50	0.03	0.05
12/12/2012 16:13:00	20.18	34.50	31.39	11.77	19.50	0.01	0.05
12/12/2012 16:14:00	20.18	34.54	31.37	11.75	19.70	0.02	0.05
12/12/2012 16:15:00	20.18	34.63	31.21	11.74	19.70	0.02	0.05
12/12/2012 16:16:00	20.18	34.61	31.21	11.72	19.70	0.01	0.04
12/12/2012 16:17:00	20.18	34.56	31.16	11.71	19.70	0.01	0.04
12/12/2012 16:18:00	20.18	34.38	30.42	11.69	19.80	0.01	0.04
12/12/2012 16:19:00	20.18	34.91	29.67	11.68	19.80	0.01	0.04
12/12/2012 16:20:00	20.18	34.69	30.03	11.66	19.80	0.01	0.04
12/12/2012 16:21:00	20.18	34.69	30.63	11.65	19.80	0.01	0.04
12/12/2012 16:22:00	20.18	34.90	29.93	11.63	19.80	0.01	0.04
12/12/2012 16:23:00	20.18	34.45	30.02	11.62	20.00	0.02	0.03
12/12/2012 16:24:00	20.18	34.66	30.02	11.60	20.00	0.03	0.03
12/12/2012 16:25:00	20.18	34.88	30.02	11.59	20.00	0.07	0.03
12/12/2012 16:26:00	20.18	34.57	29.99	11.57	20.00	0.07	0.03
12/12/2012 16:27:00	20.18	34.84	29.95	11.56	20.00	0.08	0.04
12/12/2012 16:28:00	20.18	34.61	29.90	11.54	20.10	0.09	0.04
12/12/2012 16:29:00	20.18	34.61	30.37	11.53	20.10	0.05	0.04
12/12/2012 16:30:00	20.18	34.74	30.61	11.51	20.10	0.02	0.04
12/12/2012 16:31:00	20.18	34.78	29.89	11.50	20.10	0.01	0.04
12/12/2012 16:32:00	20.19	34.72	29.94	11.48	20.10	0.01	0.04
12/12/2012 16:33:00	20.21	34.82	30.01	11.47	20.10	0.00	0.04
12/12/2012 16:34:00	20.23	34.54	29.41	11.45	20.30	0.00	0.04
12/12/2012 16:35:00	20.25	34.55	29.17	11.44	20.30	0.01	0.04
12/12/2012 16:36:00	20.27	34.60	29.36	11.42	20.30	0.01	0.04
12/12/2012 16:37:00	20.29	34.61	29.46	11.41	20.30	0.00	0.04
12/12/2012 16:38:00	20.31	34.53	29.55	11.39	20.30	0.00	0.04
12/12/2012 16:39:00	20.33	34.51	29.40	11.38	20.40	0.01	0.04
12/12/2012 16:40:00	20.35	34.80	29.22	11.36	20.40	0.02	0.04
12/12/2012 16:41:00	20.37	34.56	30.07	11.35	20.40	0.01	0.04
12/12/2012 16:42:00	20.39	34.81	29.47	11.33	20.60	0.00	0.04
12/12/2012 16:43:00	20.41	34.61	29.18	11.32	20.60	0.01	0.04
12/12/2012 16:44:00	20.43	34.60	29.68	11.30	20.60	0.02	0.04
12/12/2012 16:45:00	20.45	34.31	29.92	11.29	20.70	0.03	0.04
12/12/2012 16:46:00	20.47	34.54	29.69	11.27	20.70	0.06	0.04
12/12/2012 16:47:00	20.49	34.72	29.20	11.26	20.70	0.08	0.04
12/12/2012 16:48:00	20.51	34.45	29.68	11.24	20.70	0.08	0.04
12/12/2012 16:49:00	20.53	34.59	29.57	11.23	20.70	0.06	0.04
12/12/2012 16:50:00	20.55	34.59	29.49	11.21	20.70	0.06	0.04
12/12/2012 16:51:00	20.57	34.74	29.28	11.20	20.70	0.06	0.04
12/12/2012 16:52:00	20.59	34.61	29.27	11.18	20.70	0.07	0.03
12/12/2012 16:53:00	20.61	34.84	29.60	11.17	20.90	0.08	0.03

Date/Time	Burner C - Surrogate Waste Feedrate	Burner C - Ash Spike Feedrate	Burner D - Surrogate Waste Feedrate	Burner G - Chlorine Spike Feedrate	Burner G - Waste EDA Feedrate (Portable Flowmeter)	THC (Minute Average)	THC (HRA)
	KFT3083	KFT1058	KFT3091	KFT3076	*Portable Flowmeter*	KAT3271M	*Calculated*
	lb/min	lb/min	lb/min	lb/min	lb/min	ppm	ppmdv @7%O2
12/12/2012 16:54:00	20.63	34.55	29.79	11.15	21.00	0.08	0.03
12/12/2012 16:55:00	20.61	34.62	29.84	11.14	20.90	0.10	0.03
12/12/2012 16:56:00	20.59	34.45	29.84	11.12	20.90	0.11	0.03
12/12/2012 16:57:00	20.56	34.72	29.50	11.19	20.90	0.10	0.03
12/12/2012 16:58:00	20.54	34.76	29.01	11.30	21.00	0.09	0.03
12/12/2012 16:59:00	20.51	34.76	28.08	11.41	21.00	0.10	0.03
12/12/2012 17:00:00	20.49	34.76	27.69	11.53	21.00	0.11	0.04
12/12/2012 17:01:00	20.46	34.67	28.07	11.64	20.90	0.09	0.04
12/12/2012 17:02:00	20.43	34.59	28.10	11.66	20.90	0.09	0.04
12/12/2012 17:03:00	20.41	34.63	27.45	11.65	20.90	0.10	0.04
12/12/2012 17:04:00	20.38	34.84	28.35	11.64	21.00	0.06	0.04
12/12/2012 17:05:00	20.36	34.53	28.85	11.63	21.00	0.02	0.04
12/12/2012 17:06:00	20.33	34.47	28.65	11.62	20.90	0.01	0.04
12/12/2012 17:07:00	20.31	34.71	28.57	11.61	20.90	0.01	0.04
12/12/2012 17:08:00	20.28	34.76	28.60	11.60	20.90	0.01	0.04
12/12/2012 17:09:00	20.25	34.50	28.60	11.59	20.90	0.01	0.04