EMISSION COMPLIANCE SURVEY
MONITORING REPORT
(Doris Camp Incinerator)
(July 2012 Survey)

Prepared for

Newmont Mining Ltd.

Nunavut/Vancouver, B.C.

Prepared by

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Surrey, B.C.

September 2012

Certification

The monitoring of the incinerator was conducted by three certified stack test technicians.

The field crew consisted of,

Mr. S. Harrington (certified), Mr. J. Burch (certified) and Mr. L. Agassiz (certified)

The report was prepared by Mr. A. Lanfranco and Mr. S. Harrington using reporting principles and guidelines generally acceptable to Environment Canada and US EPA. Final report review was conducted by Mr. S. Harrington.

The field crew certifies that the test methods used were Environment Canada or EPA reference methods for the parameters investigated.

Alan Lanfranco

Report reviewed by:

Shawn Harrington

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SUMMARY

The following table presents the triplicate test averages for the listed parameters from the Newmont, Doris Camp incinerator stack on July 17, 18 and 19, 2012.

PARAMETER	NEWMONT DORIS CAMP INCINERATOR RESULTS	CWS EMISSION LIMITS
Particulate (mg/Rm^3 @ 11% O_2)	11.4	N/A
Particulate (kg/hr)	0.017	N/A
Hg (ug/Rm^3 @ 11% O_2)	**1.2**	20
Hg (g/hr)	0.0017	N/A
PCDD/PCDF (ng/Rm^3 TEQ @ 11% O_2)	**0.029**	0.080
Flowrate (Rm^3/min)	20.0 (19.9 for D/F tests)	N/A

N/A = not applicable
See Tables 1 and 2 for individual results

Note : values presented in boldface are results which have CWS permitted limits.

Concentrations and flowrates are expressed at standard conditions of 25°C and 101.3 "KPa (dry). Rm^3 = reference cubic meter

1.0 INTRODUCTION

Newmont Mining Ltd. retained A. Lanfranco and Associates Inc. of Surrey, B.C., Canada to conduct an emission monitoring survey at the refuse incinerator located at Doris Camp, Hope Bay, Nunavut. The purpose of the survey was to measure and report emission levels of particulate, dioxins/furans (PCDD/PCDF), and mercury from the incinerator stack during the firing of a normal mixture of camp refuse and some biosolids.

The monitoring is the third emission monitoring of the incinerator in response to the annual emission survey requirements of the Canada Wide Standards (CWS). The CWS require, by 2006, emission measurements of dioxin/furan and mercury.

This report documents the methods used and results determined for triplicate stack samples from the Doris Camp incinerator stack collected on July 17 to July 19, 2012.

The report also presents QA/QC results for spiked samples and all blank samples.

2.0 PROCESS DESCRIPTION/TEST OPERATIONS

Doris Camp

The incinerator operated at Hope Bay, Doris Camp is a Westland Incinerator, Model CY 100 CA-D-O two stage incinerator. The incinerator utilizes a primary combustion chamber and secondary afterburner section, and is equipped with a six meter (nominal) refractory lined smokestack.

Prior to waste introduction, the secondary chamber was pre-heated to approximately 900 °C, and the primary chamber was pre-heated to 600°C. Once the primary and secondary chambers reached the set-point operating temperatures, waste was manually introduced to the primary chamber via the main charge door. Approximately 160 kg of waste, including a mixture of wet and dry waste in several bags were loaded for each test. The new operating procedure requires the 164 kg charge of waste to be incinerated during a six hour time period.

The day to day test schedule was:

Date	Feed Rate (nominal)	Test Matrix
July 17, 2012	161 kg/hr	one dioxin/furan test, then one Hg test
July 18, 2012	179 kg/hr	one dioxin/furan test, then one Hg test
July 19, 2012	159 kg/hr	one dioxin/furan test, then one Hg test

note: O_2/CO_2, temperatures and velocities measured throughout the test program with Env. Canada reference techniques.

Waste Feed Charging Schedule and Test Start Times

In general, the incinerator was charged and the system was allowed to stabilize for about ten to fifteen minutes prior to sample commencement. Once charged initially, the incinerator was not recharged during the emission survey. In other words, samples were collected during the six hour incineration process. Details of the operating conditions are summarized in Appendix 4.

3.0 METHODOLOGY

The sampling and analytical methods used throughout this survey conform to the procedures outlined in the Environment Canada emission monitoring reference method manuals. Specifically, the methods used were:

Parameter	Reference Method
Particulate Matter/Mercury	EPS Method 8 with EPA Method 29 (metals)
Sample and velocity traverse points	EPS Method 8 A
Velocity and flowrate	EPS Method 8 B
Gas molecular weight (O_2/CO_2)	EPS Method 8 C
Fluegas Moisture	EPS Method 8 D
Dioxin/furan	EPS Method 1/RM/2 with 1/RM/3 analysis

3.1 Preparation Techniques

The preparation, cleaning, and proofing of the sampling equipment and materials is an integral part of the quality assurance/quality control (QA/QC) component of each stack survey. Following are details of the cleaning and proofing of relevant sample train components.

Organic (Dioxin) Train Glassware

1. Washed twice with industrial strength cleaner/detergent
2. Rinsed with generous amounts of deionized H_2O
3. Rinsed three times with methylene chloride
4. Rinsed three times with hexane
5. Rinsed three times with acetone
6. Oven baked at 300°C overnight
7. Rinsed three times with hexane (saved for proofing)
8. Rinsed three times with acetone (saved for proofing)

Amberlite XAD-2

1. Rinsed and extracted with deionized H_2O
2. Soxhlet extraction with methanol, methylene chloride and toluene (22 hrs each)
3. Nitrogen purge
4. Oven dried @ 50°C
5. Approx. 40 gram aliquot saved for proofing
6. Individual sample traps packed and spiked with surrogate regime

Organic filters

1. Soxhlet extraction (16 hrs) with toluene
2. Nitrogen drying
3. Save 1 filter for proofing

Metal Train Glassware

1. Hot detergent wash with brushing
2. Rinse with 0.1 N HNO_3
3. Copious rinsing with deionized H_2O
4. Oven drying at 105°C

Metal Train Filters

1. Overnight extraction with 1:1 nitric acid
2. Overnight rinsing with deionized H_2O
3. Drying for 2 hrs @ 105°C, desiccation and weighing
4. Save 1 filter for blank

Other Glassware

1. Hot detergent wash with brushing
2. Copious deionized H_2O rinses

3.2 Sampling Techniques

Following are brief descriptions of the reference method sampling techniques utilized to collect the various samples. The techniques employed for isokinetic sampling of particulate/metals and dioxin/furan from this source were consistent and complied with the previously referenced stack testing methods.

EPS Method 8a - Sampling Site and Traverse Points

The stack sampling location for the Doris Camp incinerator stack was located about seven diameters downstream and greater than two diameters upstream of the nearest flow disturbances. From these criteria, and measured stack diameters of 18.0 inches, and Figure A-1 of EPS Method A, a 12 point sampling regime, where 6 points along 2 - 90° traverses were sampled for each isokinetic stack test. Test point locations for the Doris Camp incinerator stack are presented in the following table.

Point	Distance from Wall
1	0.8 (1.0)
2	2.6
3	5.3
4	12.7
5	15.4
6	17.2 (17.0)

EPS Method 8b - Stack Gas Velocity and Volumetric Flowrate

At each traverse point a series of measurements including stack temperature, velocity pressure, static pressure, and sampling rate were recorded. Velocity and static pressures were measured with a calibrated S-type pitot tube mounted alongside the sample probe. Stack temperatures were measured with a calibrated K-type chromel-alumel thermocouple with a control console mounted digital readout. Cyclonic flow angles were measured using the null velocity technique.

EPS Method 8c - Molecular Weight by Gas Analysis

Stack gas molecular weight was determined by a series of grab samples which were analyzed on site for O_2 and CO_2 by Fyrite analyzers. A minimum of four to a maximum of eight grab samples were collected per test and the results averaged for insertion in the computer programs for final result calculations and corrections to 11% O_2. As a QA/QC component, calibrated portable O_2 analyzers were also used for oxygen analysis.

EPS Method 8d - Moisture Content

Stack gas moisture content was determined from the measured condensed water vapour which was collected in the impinger (cold box) section of the sampling trains, and the gas volume sampled corrected to standard conditions of 25°C and 101.3 KPa (dry).

The contaminants investigated during this survey were collected with two independent sampling trains as follows:

EPS 1/RM/2 - Dioxin/Furan

This sample train was assembled and leak checked at the laboratory the night prior to testing. Prior to sampling initiation, the stack train was assembled as shown in Figure 1 and leak checked to code specifications. The probe (quartz or glass lined) and filter module were heated to 120 +/- 15°C and crushed ice was placed around the impingers. Iced water was circulated in the condenser and in a cooling jacket around the XAD cartridge. Once the sampling system achieved the appropriate temperatures the probe tip was positioned at point No.1, isokinetic sampling was performed using the Ko orifice constant sampling procedure. A set of recordings was taken every four minutes until four sets of readings for each sample point of traverse one was achieved. The sample pump was shut off and the sample module with attached probe was withdrawn from the stack. The system was repositioned at point No. 1 of the next traverse and an additional 96 (6 points for 16 minutes each) minutes of sampling commenced. This regime was continued until both sample ports had been sampled. The total sample volume for each PCDD/PCDF test was 3.5 to 3.6 Rm^3 for the three tests.

At the conclusion of the final traverse sampling the train was final leak checked and the probe was disassembled from the hot box/sample module.

Any open ends of the sampling module and probe assembly were immediately sealed with pre-cleaned aluminium foil or teflon tape, and leak checks were conducted with only teflon tape touching the open ends.

At the conclusion of each test the sample module and probe were lowered from the stack location and were in transport to the laboratory without delay. Approximately twenty minutes elapsed from sample conclusion to sample delivery at the sample recovery "laboratory".

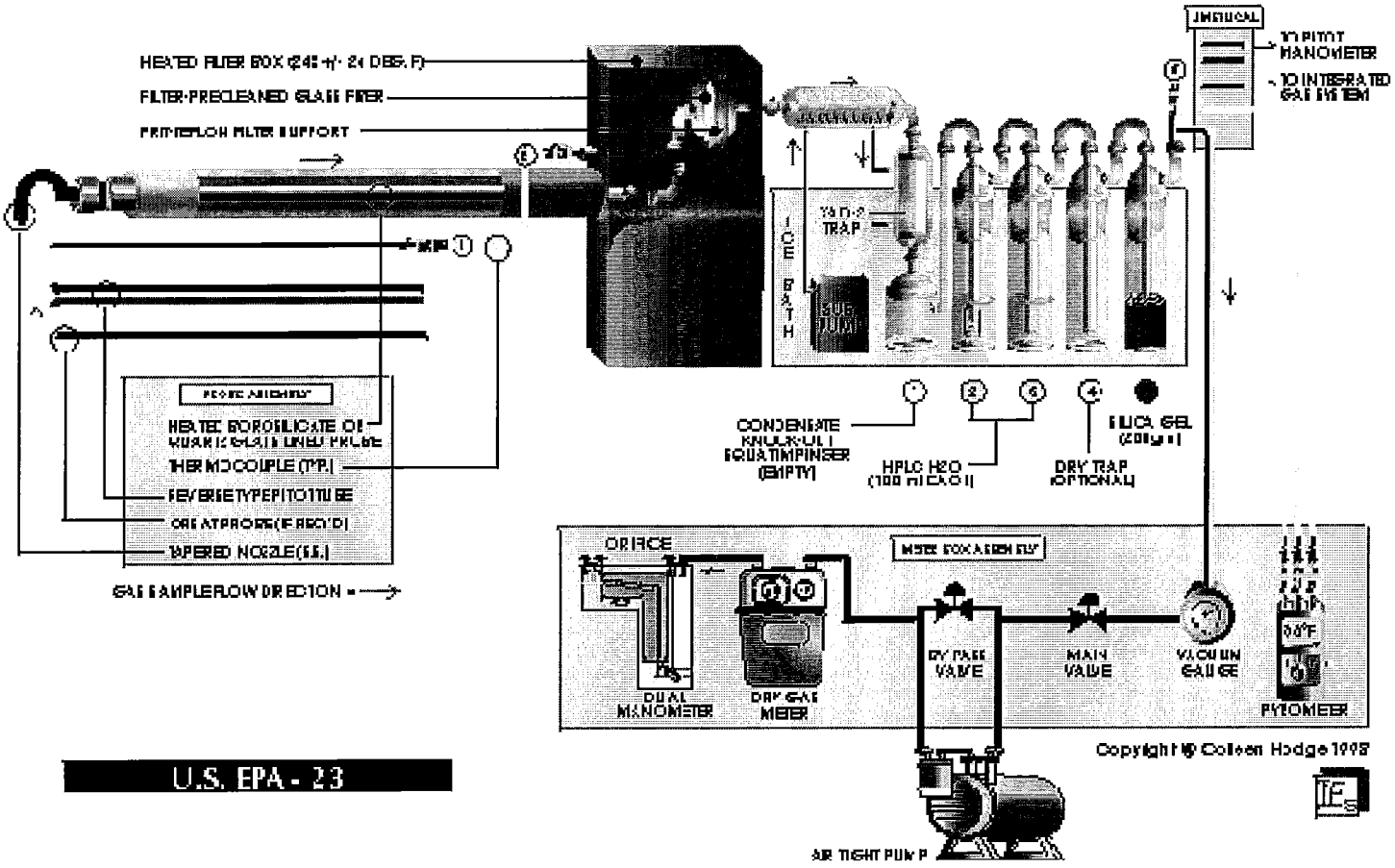


Figure 1 – Semi-Volatile (Dioxin/Furan) Sampling Train

EPS Method 8/EPA 29 - Particulate, Hg

This train was a normal Method 29 train (Fig. 2) except special (low metal) microquartz glass filters were utilized and the impinger components were:

Incinerator Stack Impingers

100 ml 5% HNO_3 in 10% H_2O_2
100 ml 5% HNO_3 in 10% H_2O_2
Empty
100 ml 4% $KMnO_4$ in 10% H_2SO_4
100 ml 4% $KMnO_4$ in 10% H_2SO_4
100 ml distilled H_2O
200 g silica gel

The train was operated isokinetically, sampling a total of 6 points on 2 - 90° traverses for five minutes each, resulting in final sample volumes of about 1.3 Rm^3. Data recordings were conducted at five minute intervals. The train utilized a three foot quartz probe and nozzle.

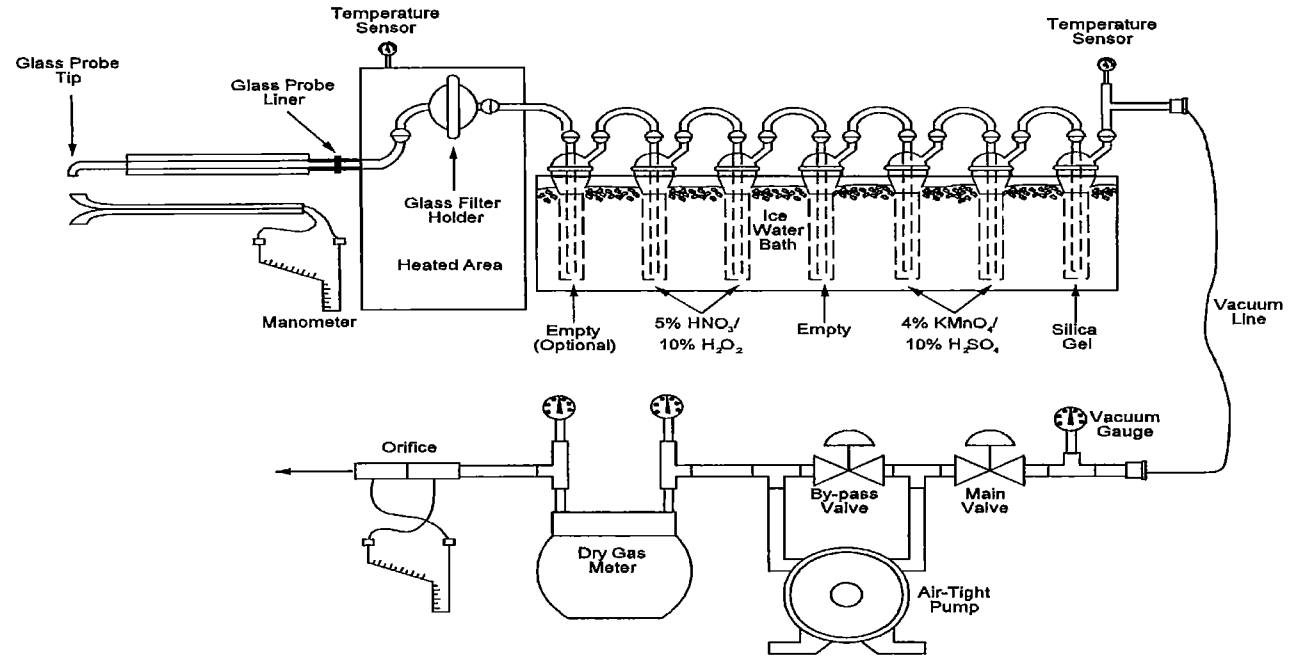


Figure 2: EPA Method 29 Particulate/Hg Sampling Train

3.3 Analytical and Sample Recovery Techniques

Following sampling for PCDD/PCDF, the sample train was sealed and transported to the field laboratory for sample recovery. At the laboratory the sample train was disassembled and six components were identified for each train. The recovery of each sample is described below:

1. Sample Filter: The exposed sample filter was removed from its holder with clean tweezers, placed on a sheet of aluminium foil, folded inside the foil and sealed in a glass petri dish. This was labelled component 1 of each test.

2. Front/Back Half Washings: This included a thorough acetone/hexane rinsing and brushing of the sample nozzle, probe liner, and connecting glassware prior to the filter. These washings were collected in a pre-cleaned one litre amber sample bottle with a teflon lined lid. This was labelled component 2 of each test. The back half of the filter holder and glassware connecting the filter holder to the condenser were rinsed and soaked with acetone and hexane with the solvents added to the component 2 sample bottle.

3. Amberlite XAD-2 Resin Trap: The resin trap was sealed with teflon tape, covered with aluminium foil and placed kept at about 4 ^{o}C prior to shipment to the analytical laboratory. This was labelled component 3 of each test.

4. Impinger Condensate: The condensate contained in the condensate trap, plus water and condensate from the impingers was measured for volume and collected in precleaned amber bottles. These samples were labelled component 4 for each test.

5. Soak: The glassware connecting the filter to the XAD module was soaked with hexane and acetone sequentially, three times, with all "soaks" and rinses collected in 1 litre amber sample bottles.

6. Final Rinse: All glassware was rinsed with hexane and acetone, sequentially three times into amber sample bottles.

   All samples were labelled appropriately and placed in a cold room at 4^{o}C until analysis was initiated. Each bottle containing solvent was marked with the liquid level and the lid was sealed.

3.3.1 Organic Sample Analysis

The organic analysis of the sample train components involved an extremely complex series of procedures as detailed in the analytical manuals.

Following is a description, in very simplified terms, of the basic procedures used to process the sample train components.

Initially the sample components are separated into liquid (containers 2,4,5,6) or solid phases (containers 1 and 3) Figure 3. Solid samples are extracted with various solvents (usually toluene), sometimes under acid conditions. The liquid samples are extracted and concentrated with a rotary evaporator, with the final concentrate added to the filter and XAD components. At this point, an internal standard solution is added to the sample for QA/QC recovery determinations. The extraction and concentrating of the various train components are shown in Figure 4.

The toluene rinse has internal standards added, with subsequent concentration by rotary evaporation. The extract volumes are fractionated, cleaned-up and analyzed by high resolution GC/MS analytical instrumentation (Figure 5).

3.3.2 Particulate/Hg Sample Recovery/Analysis

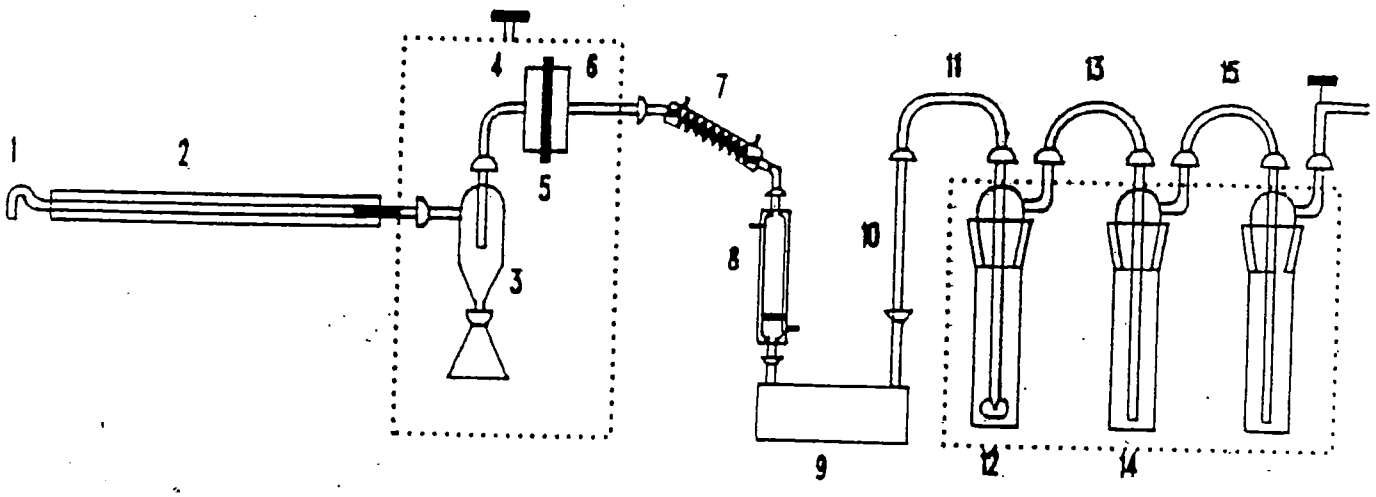
The particulate sample filters were removed from the cooled filter housing with teflon coated tweezers, with material retained on the gasket recovered with a nylon brush and added to the filter. The filter was folded and placed in an identified plastic petri dish or envelope labelled Container 1 with date, time and Run no.

Sample clean-up of the probe and front half glassware from the Hg/particulate train was conducted with sequential rinses and brushings with acetone collected in Container 2.

Impingers 1 and 2 were measured for volume and transferred with about 100 ml of deionised water to a polyethylene sample container. Impingers 3, 4, and 5 were transferred to another polyethylene container using 100 ml potassium permanganate and water rinses. HCl rinses of the permanganate impingers were not conducted as visible deposits were effectively removed by the earlier rinsings.

Silica gel from the final impinger was transferred to its original container for final weighing.

Blank filters and solutions for each component of the particulate Hg test were collected and labelled appropriately.



Container or Sample	Component(s)	Recovery Procedure
1	1, 2, 3, 4	Wash and brush 3 times each with hexane (H) and acetone (A). Rinse 3 times each with H and A.
2	5	Remove carefully from holder. Place on pre-cleaned foil. Fold in half. Place in pre-cleaned glass petri dish.
3	6, 7	Soak 5 minutes each with H and A. Rinse 3 times each with H and A.
4	8	Cap ends and wrap in foil.
5	9, 12	Empty contents into container and rinse each 3 times with HPLC water.
6	6 to 15 except 8	Rinse 3 times each with H and A.

Mark liquid levels on all bottles.
All sample containers are pre-cleaned amber glass bottles with pre-cleaned Teflon lid liners.

FIGURE 3. SEMI-VOLATILE ORGANICS RECOVERY PROCEDURES

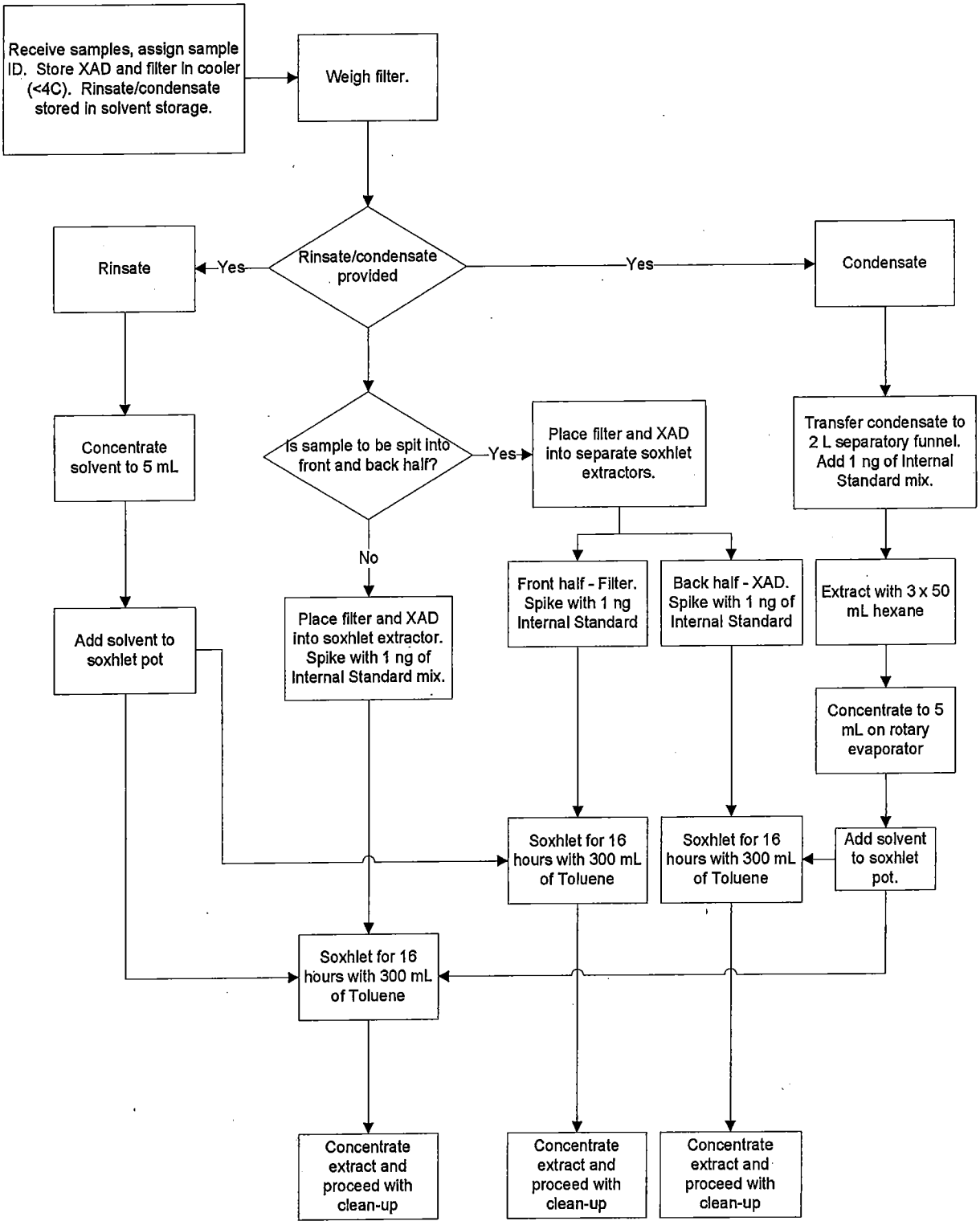


Fig 4 - Extraction schematic diagram for stack samples and components

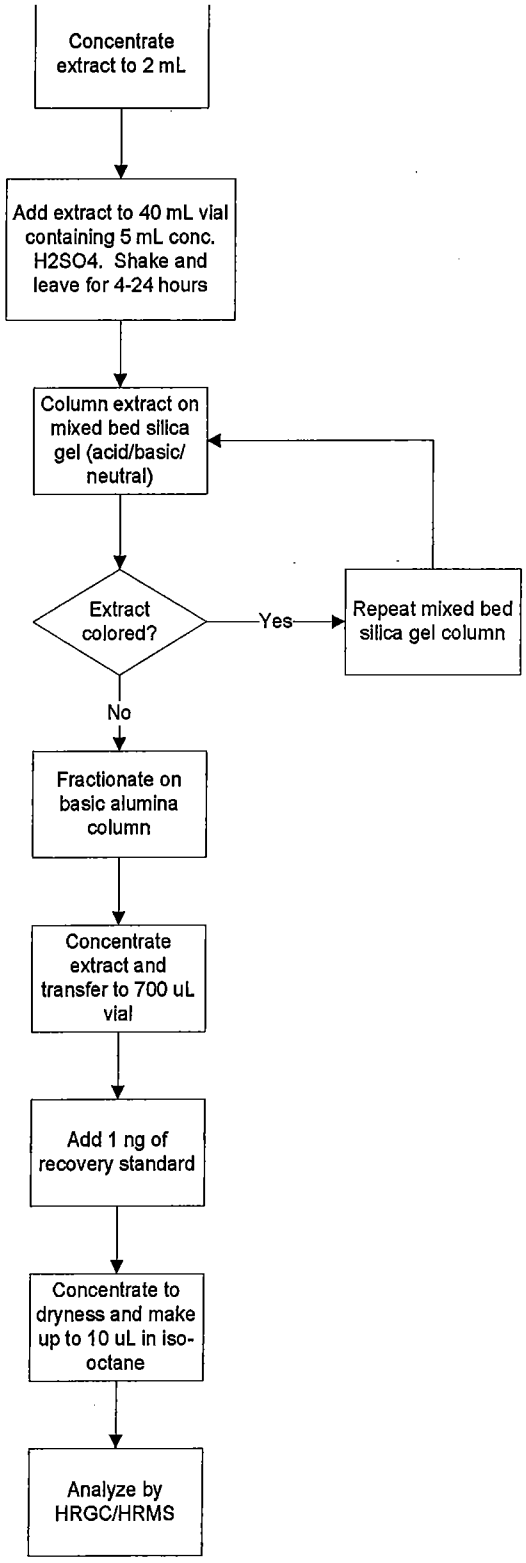


Fig. 5 Schematic of analytical methodology for Dioxin and Furan

Gravimetric Analysis

At A. Lanfranco and Associates Langley, B.C. laboratory, the sample filters were desiccated to constant weight and weighed as per EPA Method 5. Probe and front-half acetone rinsings were evaporated at about 70^{O} C in tared, precleaned 250 ml glass beakers, with subsequent weighing to constant weight. Blank filters and acetone were carried through the gravimetric process.

Hg Analysis

Following the gravimetric analysis, the filters and wash residues, along with the back half liquid samples were forwarded to Exova Laboratories in Surrey, B.C. for analysis of Hg. The samples and appropriate blanks were digested with acids and analyzed for Hg by ICAP procedures. Impingers 1,2,3, 4 and 5, for Hg, were analyzed at Exova using flameless atomic absorption.

3.4 Quality Assurance / Quality Control (QA/QC) Techniques

The QA/QC component of this survey was designed to exceed the requirements normally instituted by the regulatory agency. Additionally, QA/QC of this survey was accomplished by the following mechanisms.

1. Pre and Post test leak checks
2. Calibration of volume measuring and monitoring instrumentation
3. Proofing of organic glassware and supplies (archived proofs)
4. Analysis of all blank solutions and materials
5. Spiking and recovery analysis of organic trains
6. Use of acid cleaned microquartz filters
7. Duplicate analysis of selected samples
8. Reference material analysis with samples
9. Labelling and record-keeping
10. Surrogate spiking of dioxin trains using EPA protocols

A "Blank" test was conducted, with that sampled analysed in the same manner as test samples.

4.0 RESULTS

Most of the stack testing results were calculated using a "STACK" computer program developed for EPA and Canadian requirements. Standard conditions used in the program are 25 °C and 29.92" Hg (dry basis)

Corrections to 11% O_2 were calculated by multiplying the determined stack concentrations by;

$$\frac{20.9-11.0}{20.9-\text{measured } O_2}$$

Table 1 presents the detailed triplicate test data for Particulate, Hg, and flowrate, as well as supporting data such as temperatures, O_2/CO_2 and stack gas moistures.

PCDD/PCDF results are presented in Table 2. Table 2 presents PCDD/PCDF data in terms of actual amounts detected and toxic equivalents. In addition, all dioxin/furan results were recovery corrected according to surrogate recovery efficiencies determined for each organic analysis. Surrogates added and the recoveries determined are listed in the analytical data presented in the Appendices.

Table 3 presents particulate gravimetric results, and Table 4 presents process data.

Please note that data from the Hg and dioxin tests vary slightly for O_2, temperature and flowrates due to the timing of each test.

TABLE 1 DORIS CAMP INCINERATOR EMISSION RESULTS

Parameter	Test 1	Test 2	Test 3	Average
Test Date	July 17/12	July 18/12	July 19/12	
Test Time	15:10 - 16:12	12:45 - 13:47	11:15 - 12:17	
Duration (minutes)	60	60	60	60
Particulate (mg/Rm^3)	16.6	12.8	13.2	14.2
Particulate (mg/Rm^3 @ 11% O_2)	14.0	10.2	10.1	11.4
Particulate (Kg/hr)	0.021	0.015	0.016	0.017
Particulate (Kg/day)	0.5	0.4	0.4	0.4
Hg (ug/Rm^3 @ 11% O_2)	2.86	0.49	0.13	1.16
Flowrate (Rm^3/min)	20.7	19.4	20.1	20.0
Flowrate (acm/min)	103.5	96.1	100.6	100.0
Temperature (^oC)	1051	1045	1051	1049
O_2 (vol % dry)	9.1	8.5	7.9	8.5
CO_2 (vol % dry)	11.9	12.6	13.0	12.5
H_2O (vol %)	10.7	9.8	10.7	10.4
Isokinetic Variation (%)	101.6	100.2	101.7	101

standard conditions of 25 degrees C and 101.3kPa

TABLE 2 Detailed PCDD/PCDF Emission Results

Client: Newmont, Hope Bay
Jobsite: Doris Camp
Source: Incinerator stack

Component	TEF	Test 1 (July 17/12) Analyzed (ng)	Test 1 (July 17/12) TEQ (ng)	Test 2 (July 18/12) Analyzed (ng)	Test 2 (July 18/12) TEQ (ng)	Test 3 (July 19/12) Analyzed (ng)	Test 3 (July 19/12) TEQ (ng)
2378 TCDD	1.0000	0.0039	0.0039	0.0000	0.0000	0.0000	0.0000
12378 PCDD	0.5000	0.0140	0.0070	0.0280	0.0140	0.0340	0.0170
123478 HxCDD	0.1000	0.0130	0.0013	0.0350	0.0035	0.0330	0.0033
123678 HxCDD	0.1000	0.0320	0.0032	0.0580	0.0058	0.0680	0.0068
123789 HxCDD	0.1000	0.0200	0.0020	0.0410	0.0041	0.0470	0.0047
1234678 HpCDD	0.0100	0.2600	0.0026	0.7600	0.0076	0.8200	0.0082
OCDD	0.0010	0.6100	0.0006	1.8000	0.0018	2.2000	0.0022
2378 TCDF	0.1000	0.0067	0.0007	0.0120	0.0012	0.0120	0.0012
12378 PCDF	0.0500	0.0015	0.0001	0.0360	0.0018	0.0330	0.0017
23478 PCDF	0.5000	0.0520	0.0260	0.1100	0.0550	0.1300	0.0650
123478 HxCDF	0.1000	0.0400	0.0040	0.1000	0.0100	0.1300	0.0130
123678 HxCDF	0.1000	0.0420	0.0042	0.1300	0.0130	0.1400	0.0140
234678 HxCDF	0.1000	0.0760	0.0076	0.2100	0.0210	0.3700	0.0370
123789 HxCDF	0.1000	0.0000	0.0000	0.0360	0.0036	0.0930	0.0093
1234678 HpCDF	0.0100	0.2700	0.0027	0.6900	0.0069	1.2000	0.0120
1234789 HpCDF	0.0100	0.0140	0.0001	0.0540	0.0005	0.1500	0.0015
OCDF	0.0010	0.0280	0.0000	0.1300	0.0001	0.6200	0.0006
Summed PCDD & PCDF TEQ (ng)			**0.066**		**0.150**		**0.197**
Sample Volume (Rm3)			**3.597**		**3.472**		**3.513**
PCDD & PCDF TEQ	**ng/Rm3**		**0.018**		**0.043**		**0.056**
PCDD & PCDF TEQ	**ng/Rm3 (@11% O2)**		**0.014**		**0.034**		**0.040**
PCDD & PCDF TEQ	**grams/day**		**0.000001**		**0.000001**		**0.000002**
Particulate	mg/dscm (@ 11% O2)		14.0		10.2		10.1
Flowrate (Rm3/min)			20.5		19.6		19.6
Oxygen (Vol. %)			8.0		8.3		7.2
Carbon Dioxide (Vol. %)			11.6		11.8		12.8
Carbon Monoxide (ppm)			1 to 5		1 to 5		1 to 3
Moisture (Vol. %)			10.4		11.6		11.5
Temperature (oC)			1027		1032		1039
Isokinetic Variation (%)			99.4		101		101

Table 3 Incinerator Stack Particulate Gravimetric Results

Test No.	Filter Particulate (mg)	Probe and Washings (mg)	Total Particulate (mg)
1	4.4	17.1	21.5
2	3.3	12.0	15.3
3	4.9	11.7	16.6

Table 4 Process Summary

	Nominal for all Tests
Primary Temp.	600 °C
Secondary Temp	> 900 °C
Load Type	about 111 kg food waste, 20 kg of paper, and 29 kg Stp initial charge
Load Size (approx)	160 kg
Load Rate	27 kg/hr (nominal)

Detailed process data (recorded by Westland personnel) is presented in Appendix 4.

4.1 QA/QC Results

Pre and Post Test Leak Checks

Each test is required to be leak checked prior to, and following the test. The leak checks must show less than 0.02 cfm. All tests passed the code leak check requirements. Evidence of the leak checks is shown on each data sheet of appendix 4.

Equipment Calibrations

All emission monitoring equipment used for the Doris camp incinerator emission monitoring was calibrated to Environment Canada specifications. Dry gas meters, pitot tubes and temperature measuring devices were calibrated within four months of the test date. See appendix 5

Proofing of Dioxin Glassware and Supplies

Although not required by Nunavut/GNWT, it is our practice to verify that the glassware and sorbent used in dioxin tests is free of contamination. Proofs of the glassware and XAD are implied by the very low Blank sample results of appendix 3.

Analysis of Blank Materials and Reagents

All blank materials and reagents yielded very low or non-detectable levels of target species.

Spiking and Recovery of Dioxin/Furan Surrogates

The recovery of the five labelled surrogates ranged from 70 to 108. These recoveries comply with EPA Method 23 requirements of 70 to 130%. In addition, all data was recovery corrected for each congener. Recoveries of all internal standards ranged from 79 to 126%, complying with EPS 1/RM/2 and Method 23 requirements of 40 to 130% recovery.

Spiking and Recovery Assessments of Inorganic Samples

Blanks of all reagents used for sample collection were spiked to known contaminant concentrations and analyzed with the source samples. Normally a high and low spike was conducted. The various recoveries are reported on the analytical data in appendix 2. In summary the results are:

	Spike 1	Spike 2	Spike 3
Hg	88.4 % recovery	116 % recovery	85 % recovery

Chain of Custody

All samples were in the possession of the stack test team until relinquishing to the courier/shipping companies used. The samples were inspected on arrival, and shipping containers were observed to be sealed on arrival, with no apparent tampering or sample loss in shipment.

5.0 DISCUSSION OF RESULTS

This survey was an investigation of specific emitted contaminants during the firing of waste materials normally disposed of in the Doris Camp incinerator. The survey included monitoring of contaminants required by Canada Wide Standards (CWS), namely dioxin/furan and mercury.

The incinerator tested, consisted of Primary and Secondary (afterburner) chambers. The combustion chambers use diesel fuel as the primary fuel.

Compliance Status

Based on the CWS and the "Guidelines for the Management of Biomedical Waste in the Northwest Territories", the test results showed that the emissions from the Doris Camp incinerator were in compliance for Hg, as well as in compliance for dioxin/furan.

The average Hg emissions were 1.2 ug/Rm^3 @ 11% O_2, compared to an emission standard of 20 ug/Rm^3 @ 11% O_2. The average dioxin/furan emissions were 0.029 ng/Rm^3 @ 11% O_2, compared to an emission standard of 0.080 ng/Rm^3 @ 11% O_2.

Mercury

Mercury was found at levels significantly above method detection limits, yielding confident quantification of Hg at the levels measured. The Hg emission results suggest that the waste feed Hg content was very low, however.

Dioxin/Furan

The dioxin/furan emission concentrations from the Doris Camp incinerator for this survey were much lower than the 2009 and 2011 data, and were very low in comparison to much historical data from uncontrolled camp refuse incinerators.

General

Research into dioxin emissions from combustion sources has generally shown that dioxin is formed in two manners. The first mechanism is known as the "Precursor mechanism" where there is incomplete combustion and dioxin is formed by reactions of chlorine and organic aromatic compounds. The second mechanism is known as "DeNovo Synthesis", where dioxin formation reactions occur post-combustor, in the air pollution control systems at temperatures between 200 and 450 °C.

Another well documented condition leading to higher than expected D/F emissions is known as the "memory effect". The "memory effect" phenomenon occurs when prior operating conditions and residual emitted materials effect the subsequent test periods. In the case of batch systems, like camp incinerators, the type and amounts of waste material used in several previous burn loads (before the compliance test) could significantly impact the results of the first series of compliance tests. In this case, memory effects were apparently not a factor influencing dioxin emission levels.

The QA/QC program was successful in showing excellent analytical accuracy, in proving the avoidance of any significant sample contamination, and in maintaining leak free sampling procedures. The analysis of the dioxin/furan samples indicated complete recovery by virtue of excellent surrogate recoveries for the compounds of interest. The recovery of the five labelled surrogates ranged from 70 to 108%. These recoveries comply with EPA Method 23 requirements of 70 to 130%. In addition, all data was recovery corrected for each congener. Recoveries of all internal standards ranged from 79 to 126% complying with EPS 1/RM/2 and EPA Method 23 requirements of 40 to 130% recovery.

There were no problems encountered in sample collection or analysis and validation of the field study is provided, in large part, by the analytical QA/QC program and the use of calibrated test equipment by qualified monitoring professionals. The test results, therefore, are reported with confidence and are considered an accurate representation of emission characteristics for the process conditions maintained on the test dates.

APPENDIX 1

COMPUTER OUTPUTS OF MEASURED

AND CALCULATED DATA

A. Lanfranco and Associates Inc. - Emission Report

Client:	Newmont, Hope Bay	**Date:**	July 17/12
Jobsite:	Doris Camp	**Run:**	1 PCDD/PCDF
Source:	Incinerator stack	**Run Time:**	11:40 - 14:58

Concentration:	0.00 mg/dscm	0.0000 gr/dscf
	0.00 mg/Acm	0.0000 gr/Acf
	0.00 mg/dscm (@ 11% O2)	0.0000 gr/dscf (@ 11% O2)
Emission Rate:	0.00 Kg/hr	0.000 lb/hr
Sample Gas Volume:	3.5970 dscm	127.027 dscf
Total Sample Time:	192.0 minutes	
Average Isokineticity:	99.4 %	

Flue Gas Characteristics

Moisture:	10.44 %	
Temperature	1027.1 oC	1880.9 oF
Flow	20.5 dscm/min	722 dscf/min
	0.34 dscm/sec	12.0 dscf/sec
	100.2 Acm/min	3538 Acf/min
Velocity	10.170 m/sec	33.37 f/sec
Gas Analysis	7.99 % O2	11.60 % CO2
	30.176 Mol. Wt (g/gmole) Dry	28.904 Mol. Wt (g/gmole) Wet

*** Standard Conditions:** Metric: 25 deg C, 101.325 kPa
Imperial: 77 deg F, 29.92 in.Hg

A. Lanfranco and Associates Inc. - Emission Report

Client: Newmont, Hope Bay
Jobsite: Doris Camp
Source: Incinerator stack

Date: July 17/12
Run: 1 PCDD/PCDF
Run Time: 11:40 - 14:58

Control Unit (Y)	0.9989
Nozzle Diameter (in.)	0.5467
Pitot Factor	0.8421
Baro. Press. (in. Hg)	29.75
Static Press. (in. Hg)	0.04
Stack Height (ft)	50
Stack Diameter (in.)	18.0
Stack Area (sq.ft.)	1.767
Minutes Per Reading	4.0
Minutes Per Point	16.0

Collection:

Filter (grams)	0.0000
Washings (grams)	0.0000
Impinger (grams)	0.0000
Total (grams)	0.0000

Gas Analysis (Vol. %):

	CO2	O2
Trav 1	12.20	6.98
Trav 2	11.00	9.00
Average =	11.60	7.99

Condensate Collection:

Impinger 1 (grams)	250.0
Impinger 2 (grams)	44.0
Impinger 3 (grams)	0.0
Impinger 4 (grams)	14.6
Total Gain (grams)	308.6

Traverse	Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	XAD Exit (oF)	Stack (oF)	Wall Dist. (in.)	Isokin. (%)
		0.0	635.559									
1	1	4.0	638.628	0.100	1.78	81	81	4	48	1826	0.8	100.1
		8.0	641.761	0.110	1.78	81	81	4	48	1916	0.8	99.3
		12.0	644.761	0.100	1.88	84	81	4	50	1890	0.8	98.9
		16.0	647.808	0.100	1.72	85	81	4	50	1890	0.8	100.4
	2	20.0	650.850	0.100	1.72	86	82	4	50	1873	2.6	99.7
		24.0	653.879	0.100	1.74	87	82	4	50	1896	2.6	99.6
		28.0	656.914	0.100	1.72	88	84	4	51	1904	2.6	99.7
		32.0	659.670	0.080	1.72	90	86	4	51	1837	2.6	99.4
	3	36.0	662.440	0.080	1.42	92	86	4	51	1823	5.3	99.4
		40.0	665.030	0.070	1.43	91	86	4	51	1828	5.3	99.5
		44.0	667.800	0.080	1.25	92	88	4	51	1830	5.3	99.3
		48.0	670.540	0.080	1.43	93	89	4	52	1896	5.3	99.5
	4	52.0	673.110	0.070	1.40	94	90	4	52	1891	12.7	99.5
		56.0	675.520	0.060	1.23	96	92	4	52	1844	12.7	99.3
		60.0	677.940	0.060	1.07	97	93	4	52	1840	12.7	99.4
		64.0	680.560	0.070	1.08	98	93	4	52	1819	12.7	99.1
	5	68.0	682.990	0.060	1.27	99	94	4	52	1832	15.4	99.5
		72.0	685.420	0.060	1.08	100	95	4	53	1840	15.4	99.4
		76.0	687.850	0.060	1.08	101	96	4	53	1830	15.4	99.0
		80.0	690.280	0.060	1.09	101	97	4	53	1842	15.4	99.2
	6	84.0	692.690	0.060	1.09	102	97	4	53	1887	17.2	99.2
		88.0	695.090	0.060	1.06	102	97	4	55	1911	17.2	99.3
		92.0	697.490	0.060	1.06	102	97	4	55	1905	17.2	99.2
		96.0	699.920	0.060	1.08	103	98	4	55	1853	17.2	99.2
		0.0	699.920									
2	1	4.0	702.350	0.060	1.08	102	97	4	56	1847	0.8	99.2
		8.0	704.770	0.060	1.08	101	97	4	56	1858	0.8	99.1
		12.0	707.370	0.070	1.25	101	97	4	56	1881	0.8	99.1
		16.0	709.990	0.070	1.26	102	97	5	56	1864	0.8	99.4
	2	20.0	712.610	0.070	1.26	102	97	5	56	1865	2.6	99.5
		24.0	715.210	0.070	1.24	102	97	5	56	1895	2.6	99.3
		28.0	718.000	0.080	1.43	102	97	5	55	1873	2.6	99.3
		32.0	720.770	0.080	1.41	100	97	5	55	1903	2.6	99.4
	3	36.0	723.850	0.100	1.76	98	95	5	55	1913	5.3	99.5
		40.0	726.960	0.100	1.79	97	94	6	55	1862	5.3	99.6
		44.0	729.870	0.090	1.57	96	94	6	54	1913	5.3	99.3
		48.0	732.760	0.090	1.56	95	92	6	54	1929	5.3	99.2
	4	52.0	735.640	0.090	1.55	95	92	6	54	1945	12.7	99.2

		56.0	738.550	0.090	1.58	94	91	6			54	1891	12.7	99.3
		60.0	741.470	0.090	1.58	94	91	6			54	1886	12.7	99.5
		64.0	744.350	0.090	1.54	95	91	6			54	1947	12.7	99.3
	5	68.0	747.270	0.090	1.58	97	93	6			55	1898	15.4	99.3
		72.0	750.210	0.090	1.60	98	94	6			55	1878	15.4	99.4
		76.0	753.120	0.090	1.56	98	94	6			56	1930	15.4	99.5
		80.0	756.050	0.090	1.58	98	94	6			56	1897	15.4	99.5
	6	84.0	758.780	0.080	1.38	98	94	6			56	1943	17.2	99.2
		88.0	761.540	0.080	1.40	99	95	6			56	1908	17.2	99.4
		92.0	764.280	0.080	1.38	99	95	6			56	1940	17.2	99.3
		96.0	767.046	0.080	1.40	100	96	6			56	1912	17.2	99.5
			Average:	0.080	1.417	96.0	92.0	4.8			53.5	1880.9		99.4

A. Lanfranco and Associates Inc. - Emission Report

Client:	Newmont, Hope Bay	**Date:**	July 18/12
Jobsite:	Doris Camp	**Run:**	2 PCDD/PCDF
Source:	Incinerator stack	**Run Time:**	09:06 - 12:22

Concentration:	0.00 mg/dscm	0.0000 gr/dscf
	0.00 mg/Acm	0.0000 gr/Acf
	0.00 mg/dscm (@ 11% O2)	0.0000 gr/dscf (@ 11% O2)
Emission Rate:	0.00 Kg/hr	0.000 lb/hr
Sample Gas Volume:	3.4722 dscm	122.622 dscf
Total Sample Time:	192.0 minutes	
Average Isokineticity:	100.6 %	

Flue Gas Characteristics

Moisture:	11.63 %	
Temperature	1032.0 oC	1889.6 oF
Flow	19.6 dscm/min	691 dscf/min
	0.33 dscm/sec	11.5 dscf/sec
	98.2 Acm/min	3468 Acf/min
Velocity	9.969 m/sec	32.71 f/sec
Gas Analysis	8.25 % O2	11.79 % CO2
	30.216 Mol. Wt (g/gmole) Dry	28.795 Mol. Wt (g/gmole) Wet

*** Standard Conditions:** Metric: 25 deg C, 101.325 kPa
Imperial: 77 deg F, 29.92 in.Hg

A. Lanfranco and Associates Inc. - Emission Report

Client: Newmont, Hope Bay
Jobsite: Doris Camp
Source: Incinerator stack

Date: July 18/12
Run: 2 PCDD/PCDF
Run Time: 09:06 - 12:22

Control Unit (Y)	0.9989
Nozzle Diameter (in.)	0.5467
Pitot Factor	0.8421
Baro. Press. (in. Hg)	29.55
Static Press. (in. Hg)	0.04
Stack Height (ft)	50
Stack Diameter (in.)	18.0
Stack Area (sq.ft.)	1.767
Minutes Per Reading	4.0
Minutes Per Point	16.0

Collection:

Filter (grams)	0.0000
Washings (grams)	0.0000
Impinger (grams)	0.0000
Total (grams)	0.0000

Gas Analysis (Vol. %):

	CO2	O2
Trav 1	12.40	7.70
Trav 2	11.17	8.80
Average =	11.79	8.25

Condensate Collection:

Impinger 1 (grams)	250.0
Impinger 2 (grams)	72.0
Impinger 3 (grams)	0.0
Impinger 4 (grams)	14.1
Total Gain (grams)	336.1

Traverse	Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Outlet (oF)	Vacuum (in. Hg.)	XAD Exit (oF)	Stack (oF)	Wall Dist. (in.)	Isokin. (%)
		0.0	816.328									
1	1	4.0	819.050	0.080	1.42	71	71	3	49	1816	0.8	101.6
		8.0	822.010	0.100	1.69	72	70	3	49	1936	0.8	101.5
		12.0	825.020	0.100	1.74	72	710	3	49	1863	0.8	63.4
		16.0	827.860	0.090	1.55	73	70	3	49	1895	0.8	101.6
	2	20.0	830.830	0.100	1.70	73	70	4	50	1922	2.6	101.4
		24.0	833.690	0.090	1.58	74	70	4	50	1849	2.6	101.2
		28.0	836.550	0.090	1.57	74	70	4	50	1863	2.6	101.6
		32.0	839.420	0.090	1.57	74	70	4	50	1852	2.6	101.7
	3	36.0	842.280	0.090	1.57	74	70	4	50	1859	5.3	101.5
		40.0	845.300	0.100	1.75	75	71	5	50	1853	5.3	101.4
		44.0	847.950	0.080	1.35	75	71	5	50	1945	5.3	101.3
		48.0	850.590	0.080	1.35	75	71	5	50	1958	5.3	101.2
	4	52.0	853.240	0.080	1.35	75	71	6	50	1943	12.7	101.3
		56.0	855.910	0.080	1.36	75	72	6	50	1918	12.7	101.4
		60.0	858.230	0.060	1.04	75	72	6	50	1898	12.7	101.2
		64.0	860.570	0.060	1.04	76	72	6	50	1863	12.7	101.2
	5	68.0	863.080	0.070	1.20	76	72	6	51	1908	15.4	101.6
		72.0	865.430	0.060	1.04	76	72	6	51	1849	15.4	101.4
		76.0	867.740	0.060	1.02	76	72	6	51	1922	15.4	101.2
		80.0	870.080	0.060	1.05	76	72	6	50	1860	15.4	101.2
	6	84.0	872.430	0.060	1.05	77	73	6	50	1853	17.2	101.3
		88.0	874.780	0.060	1.05	77	73	6	50	1857	17.2	101.4
		92.0	877.130	0.060	1.05	77	73	6	50	1849	17.2	101.2
		96.0	879.450	0.060	1.03	77	74	6	52	1914	17.2	101.2
		0.0	879.450									
2	1	4.0	882.140	0.080	1.38	78	74	7	52	1909	0.8	101.5
		8.0	884.850	0.080	1.38	78	74	7	52	1865	0.8	101.3
		12.0	887.700	0.090	1.55	78	74	7	52	1905	0.8	101.3
		16.0	890.510	0.090	1.56	78	74	7	51	1889	0.8	99.6
	2	20.0	893.450	0.090	1.58	78	75	7	51	1860	2.6	103.5
		24.0	896.310	0.090	1.56	78	75	8	51	1896	2.6	101.4
		28.0	899.160	0.090	1.55	77	75	8	51	1915	2.6	101.6
		32.0	901.860	0.080	1.39	78	75	8	51	1898	2.6	101.5
	3	36.0	904.550	0.080	1.38	78	75	8	50	1918	5.3	101.6
		40.0	907.240	0.080	1.38	78	75	8	50	1920	5.3	101.6
		44.0	910.100	0.090	1.56	78	75	8	50	1895	5.3	101.4
		48.0	912.800	0.080	1.40	77	74	8	50	1886	5.3	101.5
	4	52.0	915.130	0.060	1.04	77	74	8	50	1896	12.7	101.2

		56.0	917.470	0.060	1.05	77	74	8			50	1872	12.7	101.2
		60.0	919.800	0.060	1.04	77	74	8			50	1893	12.7	101.2
		64.0	922.140	0.060	1.04	77	74	8			50	1879	12.7	101.3
	5	68.0	924.470	0.060	1.04	77	74	8			50	1902	15.4	101.4
		72.0	926.980	0.070	1.21	76	74	8			50	1903	15.4	101.3
		76.0	929.500	0.070	1.21	76	74	8			50	1885	15.4	101.3
		80.0	931.830	0.060	1.04	76	74	8			51	1894	15.4	101.3
	6	84.0	934.170	0.060	1.04	76	74	8			51	1880	17.2	101.4
		88.0	936.500	0.060	1.04	76	74	8			51	1886	17.2	101.1
		92.0	938.840	0.060	1.04	76	74	8			51	1880	17.2	101.4
		96.0	941.155	0.060	1.02	76	74	8			51	1932	17.2	101.4
			Average:	0.075	1.304	76.0	86.1	6.4			50.4	1889.6		100.6

A. Lanfranco and Associates Inc. - Emission Report

Client:	Newmont, Hope Bay	**Date:**	July 19/12
Jobsite:	Doris Camp	**Run:**	3 PCDD/PCDF
Source:	Incinerator stack	**Run Time:**	07:48 - 11:04

Concentration:	0.00 mg/dscm	0.0000 gr/dscf
	0.00 mg/Acm	0.0000 gr/Acf
	0.00 mg/dscm (@ 11% O2)	0.0000 gr/dscf (@ 11% O2)
Emission Rate:	0.00 Kg/hr	0.000 lb/hr
Sample Gas Volume:	3.5125 dscm	124.045 dscf
Total Sample Time:	192.0 minutes	
Average Isokineticity:	101.0 %	

Flue Gas Characteristics

Moisture:	11.53 %	
Temperature	1038.9 oC	1902.1 oF
Flow	19.6 dscm/min	694 dscf/min
	0.33 dscm/sec	11.6 dscf/sec
	98.4 Acm/min	3475 Acf/min
Velocity	9.989 m/sec	32.77 f/sec
Gas Analysis	7.15 % O2	12.84 % CO2
	30.340 Mol. Wt (g/gmole) Dry	28.917 Mol. Wt (g/gmole) Wet

*** Standard Conditions:** Metric: 25 deg C, 101.325 kPa
Imperial: 77 deg F, 29.92 in.Hg

A. Lanfranco and Associates Inc. - Emission Report

Client: Newmont, Hope Bay
Jobsite: Doris Camp
Source: Incinerator stack

Date: July 19/12
Run: 3 PCDD/PCDF
Run Time: 07:48 - 11:04

Control Unit (Y)	0.9989
Nozzle Diameter (in.)	0.5467
Pitot Factor	0.8421
Baro. Press. (in. Hg)	29.70
Static Press. (in. Hg)	0.04
Stack Height (ft)	50
Stack Diameter (in.)	18.0
Stack Area (sq.ft.)	1.767
Minutes Per Reading	4.0
Minutes Per Point	16.0

Collection:

Filter (grams)	**0.0000**
Washings (grams)	**0.0000**
Impinger (grams)	**0.0000**
Total (grams)	**0.0000**

Gas Analysis (Vol. %):

	CO2	O2
Trav 1	13.17	6.80
Trav 2	12.50	7.50
Average =	**12.84**	**7.15**

Condensate Collection:

Impinger 1 (grams)	250.0
Impinger 2 (grams)	72.0
Impinger 3 (grams)	0.0
Impinger 4 (grams)	14.7
Total Gain (grams)	**336.7**

Traverse	Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	XAD Exit (oF)	Stack (oF)	Wall Dist. (in.)	Isokin. (%)
		0.0	985.534									
1	1	4.0	988.320	0.090	1.52	70	69	3	48	1920	0.8	100.9
		8.0	991.110	0.090	1.52	71	69	3	47	1846	0.8	99.4
		12.0	993.950	0.090	1.57	71	69	3	48	1910	0.8	102.6
		16.0	996.740	0.090	1.57	72	68	3	46	1930	0.8	101.2
	2	20.0	999.550	0.090	1.52	72	68	3	46	1900	2.6	101.3
		24.0	1002.350	0.090	1.53	72	69	3	46	1910	2.6	101.1
		28.0	1004.990	0.080	1.53	73	69	3	46	1908	2.6	100.9
		32.0	1007.660	0.080	1.36	74	69	4	46	1859	2.6	100.9
	3	36.0	1010.290	0.080	1.39	74	70	4	47	1939	5.3	101.0
		40.0	1012.970	0.080	1.35	74	70	4	47	1858	5.3	101.1
		44.0	1015.780	0.090	1.39	74	70	4	47	1915	5.3	101.2
		48.0	1018.630	0.090	1.53	75	70	4	48	1842	5.3	101.0
	4	52.0	1021.270	0.080	1.58	75	71	4	48	1930	12.7	101.0
		56.0	1023.940	0.080	1.35	75	71	4	48	1887	12.7	101.2
		60.0	1026.590	0.080	1.38	76	71	4	48	1915	12.7	100.9
		64.0	1029.250	0.080	1.36	76	71	4	48	1909	12.7	101.2
	5	68.0	1031.760	0.070	1.37	76	72	4	47	1868	15.4	101.1
		72.0	1034.250	0.070	1.22	76	72	4	47	1908	15.4	101.1
		76.0	1036.750	0.070	1.20	76	72	4	47	1889	15.4	101.1
		80.0	1039.240	0.070	1.21	76	72	4	47	1898	15.4	100.9
	6	84.0	1041.760	0.070	1.20	76	72	4	47	1858	17.2	101.2
		88.0	1044.230	0.070	1.18	76	72	4	47	1950	17.2	101.2
		92.0	1046.530	0.060	1.02	76	72	4	47	1921	17.2	101.1
		96.0	1048.850	0.060	1.04	76	72	4	47	1867	17.2	100.8
		0.0	1048.850									
2	1	4.0	1051.350	0.070	1.21	74	72	4	45	1882	0.8	101.1
		8.0	1053.990	0.080	1.35	76	73	4	45	1948	0.8	101.1
		12.0	1056.670	0.080	1.38	77	73	4	45	1885	0.8	101.1
		16.0	1059.320	0.080	1.36	77	73	4	45	1929	0.8	100.9
	2	20.0	1061.970	0.080	1.36	77	73	4	45	1930	2.6	101.0
		24.0	1064.650	0.080	1.38	77	73	4	45	1892	2.6	101.3
		28.0	1067.320	0.080	1.38	77	73	4	46	1899	2.6	101.1
		32.0	1069.810	0.070	1.19	77	73	4	46	1922	2.6	101.2
	3	36.0	1072.310	0.070	1.20	77	73	4	48	1901	5.3	101.2
		40.0	1074.840	0.070	1.20	77	73	4	48	1898	5.3	102.3
		44.0	1077.310	0.070	1.21	77	73	4	48	1889	5.3	99.7
		48.0	1079.950	0.080	1.34	77	73	4	48	1958	5.3	101.2
	4	52.0	1082.620	0.080	1.37	77	73	4	48	1912	12.7	101.3

		56.0	1085.110	0.070	1.20	77	73	4			48	1902	12.7	100.8
		60.0	1087.600	0.070	1.20	78	74	4			48	1929	12.7	101.2
		64.0	1090.100	0.070	1.20	78	74	4			47	1895	12.7	100.9
	5	68.0	1092.610	0.070	1.20	78	74	4			47	1881	15.4	101.0
		72.0	1095.080	0.070	1.18	78	74	4			47	1952	15.4	100.8
		76.0	1097.590	0.070	1.21	77	74	4			47	1888	15.4	101.2
		80.0	1100.060	0.070	1.18	78	74	4			47	1966	15.4	101.1
	6	84.0	1102.560	0.070	1.20	78	74	4			47	1909	17.2	101.1
		88.0	1104.860	0.060	1.02	77	74	4			48	1925	17.2	100.9
		92.0	1107.180	0.060	1.03	77	74	4			48	1896	17.2	101.2
		96.0	1109.486	0.060	1.03	77	74	4			48	1776	17.2	98.0
			Average:	0.076	1.301	75.7	71.9	3.9			47.0	1902.1		101.0

STANDARD VOLUME / GAS CONCENTRATION WORKSHEET

Newmont Doris Camp		Tested for:	Hg									
Incin. Stack		DGM ID:	D621C									
29.75		DGM Y:	0.9989									
July 17, 18, 19, 2012											11.0	
	DRY GAS METER				CONSTANTS			RESULTS				
TIME	Reading (ft3)	Temp In (Avg. oF)	Temp Out (Avg. oF)	Avg. Delta H (inches H20)	Y Factor	Pb (in. Hg)	Volume Std. (m3 std.)	Lab Result (ug of Hg)	Concentration (ug Hg/m3)		Oxygen (%)	Conc. @ 11% O2 (ug/Sm3)
15:10	768.3300	92.0	89.0	1.8	0.9989	29.75	1.29325	4.40	3.40		9.1	**2.86**
16:12	815.2600	-	-	-	-	-						
12:45	942.1600	81.0	77.0	1.6	0.9989	29.55	1.19363	0.74	0.62		8.5	**0.49**
13:47	984.8800	-	-	-	-	-						
11:15	110.1200	80.0	75.0	1.7	0.9989	29.70	1.25523	0.22	0.18		7.9	**0.13**
12:17	154.6800	-	-	-	-	-						

Client:	Newmont, Hope Bay	**Date:**	July 17/12
Jobsite:	Doris Camp	**Run:**	1 Partic/ Hg
Source:	Incinerator Stack	**Run Time:**	15:10 - 16:12

Particulate Concentration:	**16.6 mg/dscm**	0.0073	gr/dscf
	3.3 mg/Acm	0.0015	gr/Acf
	14.0 mg/dscm (@ 11% O2)	0.0061	gr/dscf (@ 11% O2)
Emission Rate:	0.02 Kg/hr	0.045	lb/hr
Sample Gas Volume:	1.2933 dscm	45.674	dscf
Total Sample Time:	60.0 minutes		
Average Isokineticity:	101.6 %		

Flue Gas Characteristics

Moisture:	10.73 %		
Temperature	1050.9 oC	1923.6	oF
Flow	20.7 dscm/min	731	dscf/min
	0.34 dscm/sec	12.2	dscf/sec
	103.5 Acm/min	3656	Acf/min
Velocity	10.509 m/sec	34.48	f/sec
Gas Analysis	9.12 % O2	11.90	% CO2
	30.269 Mol. Wt (g/gmole) Dry	28.952	Mol. Wt (g/gmole) Wet

*** Standard Conditions:** Metric: 25 deg C, 101.325 kPa
Imperial: 77 deg F, 29.92 in.Hg

Client: Newmont, Hope Bay
Jobsite: Doris Camp
Source: Incinerator Stack

Date: July 17/12
Run: 1 Partic/ Hg
Run Time: 15:10 - 16:12

Control Unit (Y)	0.9989
Nozzle Diameter (in.)	0.5763
Pitot Factor	0.8421
Baro. Press. (in. Hg)	29.75
Static Press. (in. H2O)	0.04
Stack Height (ft)	50
Stack Diameter (in.)	18.0
Stack Area (sq.ft.)	1.767
Minutes Per Reading	5.0
Minutes Per Point	5.0

Gas Analysis (Vol. %):

	CO2	O2
Traverse 1	12.80	8.33
traverse 2	11.00	9.90
Average =	**11.90**	**9.12**

Condensate Collection:

Impinger 1 (grams)	78.0
Impinger 2 (grams)	22.0
Impinger 3 (grams)	3.0
Impinger 4 (grams)	2.0
Impinger 5 (grams)	1.0
Impinger 6 (grams)	8.4
Total Gain (grams)	**114.4**

Collection:

Filter (grams)	**0.0044**
Washings (grams)	**0.0171**
Impinger (grams)	**0.0000**
Total (grams)	**0.0215**

Traverse	Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Stack (oF)	Wall Dist. (in.)	Isokin. (%)
		0.0	768.331							
1	1	5.0	772.700	0.100	2.25	96	95	1911	0.8	102.3
	2	10.0	777.070	0.100	2.25	98	94	1904	2.6	102.1
	3	15.0	780.950	0.080	1.81	97	94	1893	5.3	101.1
	4	20.0	785.060	0.090	2.03	96	93	1904	12.7	101.4
	5	25.0	788.690	0.070	1.55	94	90	1932	15.4	102.5
	6	30.0	792.050	0.060	1.34	93	89	1914	17.2	102.2
		0.0	792.050							
2	1	5.0	796.090	0.090	1.95	90	87	1966	0.8	102.0
	2	10.0	800.100	0.090	1.95	89	86	1946	2.6	101.1
	3	15.0	803.900	0.080	1.76	89	85	1913	5.3	100.9
	4	20.0	807.920	0.090	1.96	89	85	1933	12.7	101.1
	5	25.0	811.700	0.080	1.73	88	84	1950	15.4	101.3
	6	30.0	815.260	0.070	1.53	88	83	1917	17.2	101.4
			Average:	0.083	1.843	92.3	88.8	1923.6		101.6

Client:	Newmont, Hope Bay	**Date:**	July 18/12
Jobsite:	Doris Camp	**Run:**	2 Partic/Hg
Source:	Incinerator Stack	**Run Time:**	12:45 - 13:47

Particulate Concentration:	**12.8 mg/dscm**	0.0056 gr/dscf
	2.6 mg/Acm	0.0011 gr/Acf
	10.2 mg/dscm (@ 11% O2)	0.0045 gr/dscf (@ 11% O2)
Emission Rate:	0.01 Kg/hr	0.033 lb/hr
Sample Gas Volume:	1.1932 dscm	42.138 dscf
Total Sample Time:	60.0 minutes	
Average Isokineticity:	100.2 %	

Flue Gas Characteristics

Moisture:	9.80 %	
Temperature	1045.0 oC	1913.1 oF
Flow	19.4 dscm/min	684 dscf/min
	0.32 dscm/sec	11.4 dscf/sec
	96.1 Acm/min	3392 Acf/min
Velocity	9.752 m/sec	31.99 f/sec
Gas Analysis	8.45 % O2	12.58 % CO2
	30.351 Mol. Wt (g/gmole) Dry	29.140 Mol. Wt (g/gmole) Wet

*** Standard Conditions:** Metric: 25 deg C, 101.325 kPa
Imperial: 77 deg F, 29.92 in.Hg

Client:	Newmont, Hope Bay	**Date:**	July 18/12
Jobsite:	Doris Camp	**Run:**	2 Partic/Hg
Source:	Incinerator Stack	**Run Time:**	12:45 - 13:47

Control Unit (Y)	0.9989
Nozzle Diameter (in.)	0.5763
Pitot Factor	0.8421
Baro. Press. (in. Hg)	29.55
Static Press. (in. H2O)	0.04
Stack Height (ft)	50
Stack Diameter (in.)	18.0
Stack Area (sq.ft.)	1.767
Minutes Per Reading	5.0
Minutes Per Point	5.0

Gas Analysis (Vol. %):

	CO2	O2
Traverse 1	12.66	8.33
Traverse 2	12.50	8.57
Average =	**12.58**	**8.450**

Condensate Collection:

Impinger 1 (grams)	66.0
Impinger 2 (grams)	20.0
Impinger 3 (grams)	0.0
Impinger 4 (grams)	0.0
Impinger 5 (grams)	0.0
Impinger 6 (grams)	9.4
Total Gain (grams)	**95.4**

Collection:

Filter (grams)	**0.0033**
Washings (grams)	**0.0120**
Impinger (grams)	**0.0000**
Total (grams)	**0.0153**

Traverse	Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Outlet (oF)	Stack (oF)	Wall Dist. (in.)	Isokin. (%)
		0.0	942.159							
1	1	5.0	946.140	0.090	1.97	78	77	1897	0.8	100.1
	2	10.0	949.900	0.080	1.75	80	77	1911	2.6	100.3
	3	15.0	953.540	0.075	1.62	81	77	1930	5.3	100.6
	4	20.0	957.070	0.070	1.53	81	77	1908	12.7	100.5
	5	25.0	960.540	0.070	1.51	80	76	1940	15.4	99.6
	6	30.0	963.800	0.060	1.31	80	76	1901	17.2	100.2
		0.0	963.800							
2	1	5.0	967.700	0.085	1.87	81	76	1888	0.8	100.5
	2	10.0	971.480	0.080	1.74	82	77	1919	2.6	100.8
	3	15.0	975.000	0.070	1.53	82	77	1908	5.3	100.1
	4	20.0	978.520	0.070	1.53	83	78	1904	12.7	99.8
	5	25.0	981.880	0.065	1.40	83	79	1947	15.4	99.7
	6	30.0	984.880	0.050	1.10	84	79	1904	17.2	100.4
			Average:	0.072	1.572	81.3	77.2	1913.1		100.2

Client:	Newmont, Hope Bay	**Date:**	July 19/12
Jobsite:	Doris Camp	**Run:**	3 Partic/ Hg
Source:	Incinerator Stack	**Run Time:**	11:15 - 12:17

Particulate Concentration:	**13.2 mg/dscm**	0.0058	gr/dscf
	2.6 mg/Acm	0.0012	gr/Acf
	10.1 mg/dscm (@ 11% O2)	0.0044	gr/dscf (@ 11% O2)
Emission Rate:	0.02 Kg/hr	0.035	lb/hr
Sample Gas Volume:	1.2548 dscm	44.313	dscf
Total Sample Time:	60.0 minutes		
Average Isokineticity:	101.7 %		

Flue Gas Characteristics

Moisture:	10.71 %		
Temperature	1051.5 oC	1924.7	oF
Flow	20.1 dscm/min	709	dscf/min
	0.33 dscm/sec	11.8	dscf/sec
	100.6 Acm/min	3552	Acf/min
Velocity	10.210 m/sec	33.50	f/sec
Gas Analysis	7.90 % O2	13.00	% CO2
	30.396 Mol. Wt (g/gmole) Dry	29.069	Mol. Wt (g/gmole) Wet

*** Standard Conditions:** Metric: 25 deg C, 101.325 kPa
Imperial: 77 deg F, 29.92 in.Hg

Client:	Newmont, Hope Bay	**Date:**	July 19/12
Jobsite:	Doris Camp	**Run:**	3 Partic/ Hg
Source:	Incinerator Stack	**Run Time:**	11:15 - 12:17

Control Unit (Y)	0.9989
Nozzle Diameter (in.)	0.5763
Pitot Factor	0.8421
Baro. Press. (in. Hg)	29.70
Static Press. (in. H2O)	0.04
Stack Height (ft)	50
Stack Diameter (in.)	18.0
Stack Area (sq.ft.)	1.767
Minutes Per Reading	5.0
Minutes Per Point	5.0

Gas Analysis (Vol. %):

	CO2	O2
Traverse 1	13.00	7.90
Traverse 2	13.00	7.90
Average =	**13.00**	**7.90**

Condensate Collection:

Impinger 1 (grams)	76.0
Impinger 2 (grams)	20.0
Impinger 3 (grams)	3.0
Impinger 4 (grams)	2.0
Impinger 5 (grams)	1.0
Impinger 6 (grams)	8.7
Total Gain (grams)	**110.7**

Collection:

Filter (grams)	**0.0049**
Washings (grams)	**0.0117**
Impinger (grams)	**0.0000**
Total (grams)	**0.0166**

Traverse	Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Outlet (oF)	Stack (oF)	Wall Dist. (in.)	Isokin. (%)
		0.0	110.118							
1	1	5.0	114.300	0.100	2.14	77	74	1940	0.8	102.2
	2	10.0	118.370	0.095	2.06	79	75	1912	2.6	101.2
	3	15.0	122.130	0.080	1.74	80	75	1904	5.3	101.5
	4	20.0	125.740	0.075	1.59	80	75	1964	12.7	101.9
	5	25.0	129.260	0.070	1.52	80	75	1918	15.4	101.8
	6	30.0	132.790	0.070	1.53	80	75	1898	17.2	101.7
		0.0	132.790							
2	1	5.0	136.780	0.090	1.96	80	75	1909	0.8	101.7
	2	10.0	140.620	0.085	1.81	81	76	1968	2.6	101.8
	3	15.0	144.240	0.075	1.61	81	76	1942	5.3	101.5
	4	20.0	147.760	0.070	1.52	81	76	1923	12.7	101.8
	5	25.0	151.290	0.070	1.53	81	76	1902	15.4	101.6
	6	30.0	154.680	0.065	1.41	81	76	1916	17.2	101.5
			Average:	0.079	1.702	80.1	75.3	1924.7		101.7

APPENDIX 2

ANALYTICAL DATA

SAMPLE RECEIPT FORM / CHEMICAL ANALYSIS FORM

FILE #: PR121371

CLIENT: A. Lanfranco & Assoc.
#101 – 9488 189 Street
Surrey, BC
V4N 4W7
Phone – 604-881-2582
Fax - 604-881-2581

RECEIVED BY: M. de Lemos **DATE/TIME:** August 1, 2012 (3:45 p.m.)
CONDITION: intact, 4°C
LABELLING: all bottles, filters and XAD columns labelled

# of Samples	Sample Type	Sample (Client Codes)	Lab Codes
5	XAD, filter, rinses	Hope Bay, Doris Camp Incinerator – Blank	PR121371
5	XAD, filter, rinses	Hope Bay, Doris Camp Incinerator – Run 1	PR121372
5	XAD, filter, rinses	Hope Bay, Doris Camp Incinerator – Run 2	PR121373
5	XAD, filter, rinses	Hope Bay, Doris Camp Incinerator – Run 3	PR121374

STORAGE: XAD and filter stored at 4 °C, others stored in dark at ambient temperature

ANALYTES: HRGC/HRMS analysis for polychlorinated dibenzo(p)dioxins and dibenzofurans (PCDD/F)

SPECIAL INSTRUCTIONS: None.

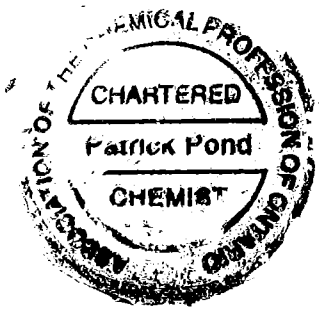
METHODOLOGY
Reference Method: PCDD/F: SOP LAB01; Environment Canada 1-RM-3; EPA Method 23

Data summarized in Data Report Attached

Report sent to: Al Lanfranco Date: August 28, 2012

Comments: Results relate only to items tested.

Patrick Pond, CTO



METHOD 23/1-RM-3 DATA REPORT

Client:	A. Lanfranco & Assoc	**Sample Date:**	17-Jul-12
Client ID:	Hope Bay - Run 1	**Date Extracted:**	21-Aug-12
PRL ID:	PR121372	**Date Analysed:**	25-Aug-12
		Filter Wt.:	0.53 g

DIOXINS		DL	# of	I-TEQs		WHO-TEQs	
				(ND=0)	(ND=½DL)	(ND=0)	(ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDD	3.9	2		3.9	3.9	3.9	3.9
Total TCDD	14	2	2				
1,2,3,7,8-PeCDD	14	4		7	7	14	14
Total PeCDD	110	4	2				
1,2,3,4,7,8-HxCDD	13	4		1.3	1.3	1.3	1.3
1,2,3,6,7,8-HxCDD	32	4		3.2	3.2	3.2	3.2
1,2,3,7,8,9-HxCDD	20	4		2	2	2	2
Total HxCDD	590	4	3				
1,2,3,4,6,7,8-HpCDD	260	4		2.6	2.6	2.6	2.6
Total HpCDD	630	4	2				
OCDD	610	15	1	0.61	0.61	0.061	0.061
		Total Dioxin TEQ		21	21	27	27

FURANS		DL	# of	I-TEQs		WHO-TEQs	
				(ND=0)	(ND=½DL)	(ND=0)	(ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDF	6.7	2		0.67	0.67	0.67	0.67
Total TCDF	150	2	8				
1,2,3,7,8-PeCDF	15	4		0.75	0.75	0.75	0.75
2,3,4,7,8-PeCDF	52	4		26	26	26	26
Total PeCDF	630	4	5				
1,2,3,4,7,8-HxCDF	40	4		4	4	4	4
1,2,3,6,7,8-HxCDF	42	4		4.2	4.2	4.2	4.2
1,2,3,7,8,9-HxCDF	ND	4		ND	0.2	ND	0.2
2,3,4,6,7,8-HxCDF	76	4		7.6	7.6	7.6	7.6
Total HxCDF	450	4	6				
1,2,3,4,6,7,8-HpCDF	270	4		2.7	2.7	2.7	2.7
1,2,3,4,7,8,9-HpCDF	14	4		0.14	0.14	0.14	0.14
Total HpCDF	300	4	2				
OCDF	28	15	1	0.028	0.028	0.0028	0.0028
		Total Furan TEQ		46	46	46	46

Total PCDD/PCDF Toxic Equivalent (pg)	67	67	73	73

Surrogate Recoveries (%)

$^{37}Cl_4$ -2,3,7,8-TCDD	91
$^{13}C_{12}$ -2,3,4,7,8-PeCDF	94
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDD	93
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDF	85
$^{13}C_{12}$ -1,2,3,4,7,8,9-HpCDF	76

ND - none detected

Internal Standards (%)

$^{13}C_{12}$ -2,3,7,8-TCDD	99
$^{13}C_{12}$ -1,2,3,7,8-PeCDD	102
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDD	96
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDD	110
$^{13}C_{12}$ -OCDD	126
$^{13}C_{12}$ -2,3,7,8-TCDF	89
$^{13}C_{12}$ -1,2,3,7,8-PeCDF	91
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDF	95
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDF	99

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METHOD 23/1-RM-3 DATA REPORT

Client:	A. Lanfranco & Assoc	**Sample Date:**	18-Jul-12
Client ID:	Hope Bay - Run 2	**Date Extracted:**	21-Aug-12
PRL ID:	PR121373	**Date Analysed:**	25-Aug-12
		Filter Wt.:	0.47 g

DIOXINS				I-TEQs		WHO-TEQs	
		DL	# of	(ND=0)	(ND=½DL)	(ND=0)	(ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDD	ND	2		ND	1	ND	1
Total TCDD	22	2	3				
1,2,3,7,8-PeCDD	28	4		14	14	28	28
Total PeCDD	160	4	5				
1,2,3,4,7,8-HxCDD	35	4		3.5	3.5	3.5	3.5
1,2,3,6,7,8-HxCDD	58	4		5.8	5.8	5.8	5.8
1,2,3,7,8,9-HxCDD	41	4		4.1	4.1	4.1	4.1
Total HxCDD	840	4	3				
1,2,3,4,6,7,8-HpCDD	760	4		7.6	7.6	7.6	7.6
Total HpCDD	1700	4	2				
OCDD	1800	15	1	1.8	1.8	0.18	0.18
		Total Dioxin TEQ		37	38	49	50

FURANS				I-TEQs		WHO-TEQs	
		DL	# of	(ND=0)	(ND=½DL)	(ND=0)	(ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDF	12	2		1.2	1.2	1.2	1.2
Total TCDF	530	2	12				
1,2,3,7,8-PeCDF	36	4		1.8	1.8	1.8	1.8
2,3,4,7,8-PeCDF	110	4		55	55	55	55
Total PeCDF	1200	4	5				
1,2,3,4,7,8-HxCDF	100	4		10	10	10	10
1,2,3,6,7,8-HxCDF	130	4		13	13	13	13
1,2,3,7,8,9-HxCDF	36	4		3.6	3.6	3.6	3.6
2,3,4,6,7,8-HxCDF	210	4		21	21	21	21
Total HxCDF	1100	4	6				
1,2,3,4,6,7,8-HpCDF	690	4		6.9	6.9	6.9	6.9
1,2,3,4,7,8,9-HpCDF	54	4		0.54	0.54	0.54	0.54
Total HpCDF	760	4	2				
OCDF	130	15	1	0.13	0.13	0.013	0.013
		Total Furan TEQ		113	113	113	113

Total PCDD/PCDF Toxic Equivalent (pg)	150	151	162	163

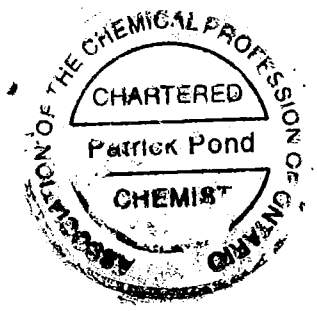
Surrogate Recoveries (%)

$^{37}Cl_4$ -2,3,7,8-TCDD	100
$^{13}C_{12}$ -2,3,4,7,8-PeCDF	91
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDD	82
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDF	79
$^{13}C_{12}$ -1,2,3,4,7,8,9-HpCDF	70

ND - none detected

Internal Standards (%)

$^{13}C_{12}$ -2,3,7,8-TCDD	88
$^{13}C_{12}$ -1,2,3,7,8-PeCDD	103
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDD	99
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDD	97
$^{13}C_{12}$ -OCDD	114
$^{13}C_{12}$ -2,3,7,8-TCDF	79
$^{13}C_{12}$ -1,2,3,7,8-PeCDF	101
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDF	101
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDF	87



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METHOD 23/1-RM-3 DATA REPORT

Client:	A. Lanfranco & Assoc	**Sample Date:**	18-Jul-12
Client ID:	Hope Bay - Run 3	**Date Extracted:**	21-Aug-12
PRL ID:	PR121374	**Date Analysed:**	25-Aug-12
		Filter Wt.:	0.47 g

DIOXINS		DL	# of	I-TEQs (ND=0)	I-TEQs (ND=½DL)	WHO-TEQs (ND=0)	WHO-TEQs (ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDD	ND	2		ND	1	ND	1
Total TCDD	47	2	6				
1,2,3,7,8-PeCDD	34	4		17	17	34	34
Total PeCDD	150	4	4				
1,2,3,4,7,8-HxCDD	33	4		3.3	3.3	3.3	3.3
1,2,3,6,7,8-HxCDD	68	4		6.8	6.8	6.8	6.8
1,2,3,7,8,9-HxCDD	47	4		4.7	4.7	4.7	4.7
Total HxCDD	840	4	3				
1,2,3,4,6,7,8-HpCDD	820	4		8.2	8.2	8.2	8.2
Total HpCDD	1800	4	2				
OCDD	2200	15	1	2.2	2.2	0.22	0.22
		Total Dioxin TEQ		42	43	57	58

FURANS		DL	# of	I-TEQs (ND=0)	I-TEQs (ND=½DL)	WHO-TEQs (ND=0)	WHO-TEQs (ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDF	12	2		1.2	1.2	1.2	1.2
Total TCDF	350	2	8				
1,2,3,7,8-PeCDF	33	4		1.65	1.65	1.65	1.65
2,3,4,7,8-PeCDF	130	4		65	65	65	65
Total PeCDF	1300	4	3				
1,2,3,4,7,8-HxCDF	130	4		13	13	13	13
1,2,3,6,7,8-HxCDF	140	4		14	14	14	14
1,2,3,7,8,9-HxCDF	93	4		9.3	9.3	9.3	9.3
2,3,4,6,7,8-HxCDF	370	4		37	37	37	37
Total HxCDF	1600	4	7				
1,2,3,4,6,7,8-HpCDF	1200	4		12	12	12	12
1,2,3,4,7,8,9-HpCDF	150	4		1.5	1.5	1.5	1.5
Total HpCDF	2100	4	3				
OCDF	620	15	1	0.62	0.62	0.062	0.062
		Total Furan TEQ		155	155	155	155
Total PCDD/PCDF Toxic Equivalent (pg)				197	198	212	213

Surrogate Recoveries (%)

$^{37}Cl_4$ -2,3,7,8-TCDD	108
$^{13}C_{12}$ -2,3,4,7,8-PeCDF	106
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDD	97
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDF	95
$^{13}C_{12}$ -1,2,3,4,7,8,9-HpCDF	82

ND - none detected

Internal Standards (%)

$^{13}C_{12}$ -2,3,7,8-TCDD	114
$^{13}C_{12}$ -1,2,3,7,8-PeCDD	103
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDD	96
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDD	92
$^{13}C_{12}$ -OCDD	117
$^{13}C_{12}$ -2,3,7,8-TCDF	91
$^{13}C_{12}$ -1,2,3,7,8-PeCDF	98
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDF	94
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDF	99

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Report Transmission Cover Page

Bill To:	A. Lanfranco & Associates	Project:		Lot ID:	**885609**
Report To:	A. Lanfranco & Associates	ID:	Hope Bay Doris Camp	Control Number:	A216646
	#101, 9488 - 189 Street	Name:		Date Received:	Aug 2, 2012
	Surrey, BC, Canada	Location:		Date Reported:	Aug 23, 2012
	V4N 4W7	LSD:		Report Number:	1756187
Attn:	Al LanFranco	P.O.:			
Sampled By:		Acct code:			
Company:					

Contact & Affiliation	Address	Delivery Commitments
Al LanFranco A. Lanfranco & Associates Inc.	#101, 9488 - 189 Street Surrey, British Columbia V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: lanfranco@telus.net	On [Lot Verification] send (COA) by Email - Multiple Reports On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Lot Approval and Final Test Report Approval] send (Invoice) by Post M On [Lot Creation] send (COR) by Email - Single Report
Mark Lanfranco A. Lanfranco & Associates Inc.	#101, 9488 - 189 Street Surrey, British Columbia V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: mark.lanfranco@alanfranco.com	On [Report Approval] send (COC, Test Report) by Email - Merge Reports

Notes To Clients:

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Analytical Report

Bill To:	A. Lanfranco & Associates	Project:		Lot ID:	**885609**
Report To:	A. Lanfranco & Associates	ID:	Hope Bay Doris Camp	Control Number:	A216646
	#101, 9488 - 189 Street	Name:		Date Received:	Aug 2, 2012
	Surrey, BC, Canada	Location:		Date Reported:	Aug 23, 2012
	V4N 4W7	LSD:		Report Number:	1756187
Attn:	Al LanFranco	P.O.:			
Sampled By:		Acct code:			
Company:					

			Reference Number	885609-1	885609-2	885609-3	
			Sample Date		Jul 17, 2012	Jul 18, 2012	
			Sample Time		NA	NA	
			Sample Location				
			Sample Description	Metals - Blank & Beaker M9 A.L.	Metals - Run 1 & Beaker MB3	Metals - Run 2 & Beaker MA11	
			Matrix	Stack Samples	Stack Samples	Stack Samples	
Analyte			**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Air Quality Metals							
Mercury		Strong Acid Extractable	ug	0.002	0.040	0.064	0.005

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Analytical Report

Bill To:	A. Lanfranco & Associates	Project:		Lot ID:	**885609**
Report To:	A. Lanfranco & Associates	ID:	Hope Bay Doris Camp	Control Number:	A216646
	#101, 9488 - 189 Street	Name:		Date Received:	Aug 2, 2012
	Surrey, BC, Canada	Location:		Date Reported:	Aug 23, 2012
	V4N 4W7	LSD:		Report Number:	1756187
Attn:	Al LanFranco	P.O.:			
Sampled By:		Acct code:			
Company:					

			Reference Number	885609-4	885609-5	885609-6	
			Sample Date	Jul 19, 2012			
			Sample Time	NA			
			Sample Location				
			Sample Description	Metals - Run 3 & Beaker MW	Lab Blank	Hg - Blank	
			Matrix	Stack Samples	Stack Samples	Stack Samples	
Analyte		**Units**		**Results**	**Results**	**Results**	Nominal Detection Limit
Air Quality Metals							
Mercury	Strong Acid Extractable	ug		0.022	<0.002		0.005
Volume	Sample	mL				1330	
Volume	aliquot volume	mL				25	
Volume	Final	mL				40.0	
Mercury	As Tested	ug/L				<0.05	0.05
Dilution Factor	As Tested					1.00	
Mercury	Total	ug/sample				<0.11	

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Analytical Report

Bill To:	A. Lanfranco & Associates	Project:		Lot ID:	**885609**
Report To:	A. Lanfranco & Associates	ID:	Hope Bay Doris Camp	Control Number:	A216646
	#101, 9488 - 189 Street	Name:		Date Received:	Aug 2, 2012
	Surrey, BC, Canada	Location:		Date Reported:	Aug 23, 2012
	V4N 4W7	LSD:		Report Number:	1756187
Attn:	Al LanFranco	P.O.:			
Sampled By:		Acct code:			
Company:					

		Reference Number	885609-7	885609-8	885609-9	
		Sample Date				
		Sample Time				
		Sample Location				
		Sample Description	Hg - Run 1 Stack Samples	Hg - Run 2 Stack Samples	Hg - Run 3 / Stack Samples	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Air Quality Metals						
Volume	Sample	mL	1770	1770	1750	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40.0	40.0	40.0	
Mercury	As Tested	ug/L	1.57	0.26	0.08	0.05
Dilution Factor	As Tested		1.00	1.00	1.00	
Mercury	Total	ug/sample	4.4	0.74	0.22	

Approved by:

Mathieu Simoneau
Operations Manager

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Methodology and Notes

Bill To:	A. Lanfranco & Associates	Project:			
Report To:	A. Lanfranco & Associates	ID:	Hope Bay Doris Camp	Lot ID:	**885609**
	#101, 9488 - 189 Street	Name:		Control Number:	A216646
	Surrey, BC, Canada	Location:		Date Received:	Aug 2, 2012
	V4N 4W7	LSD:		Date Reported:	Aug 23, 2012
Attn:	Al LanFranco	P.O.:		Report Number:	1756187
Sampled By:		Acct code:			
Company:					

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Mercury in Air (Surrey)	APHA	* Cold Vapour Atomic Absorption Spectrometric Method, 3112 B	21-Aug-12	Exova Surrey
Metals (Strong Acid Leachable) in air	APHA	* Cold Vapour Atomic Absorption Spectrometric Method, 3112 B	15-Aug-12	Exova Surrey

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater

Comments:

Please direct any inquiries regarding this report to our Client Services group.
Results relate only to samples as submitted.

APPENDIX 3

QA/QC RESULTS

METHOD 23/1-RM-3 DATA REPORT

Client:	A. Lanfranco & Assoc	**Sample Date:**	18-Jul-12
Client ID:	Hope Bay - BLANK	**Date Extracted:**	21-Aug-12
PRL ID:	PR121371	**Date Analysed:**	25-Aug-12
		Filter Wt.:	0.41 g

DIOXINS		DL	# of	I-TEQs		WHO-TEQs	
				(ND=0)	(ND=½DL)	(ND=0)	(ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDD	ND	2		ND	1	ND	1
Total TCDD	ND	2	0				
1,2,3,7,8-PeCDD	ND	4		ND	1	ND	2
Total PeCDD	ND	4	0				
1,2,3,4,7,8-HxCDD	ND	4		ND	0.2	ND	0.2
1,2,3,6,7,8-HxCDD	ND	4		ND	0.2	ND	0.2
1,2,3,7,8,9-HxCDD	ND	4		ND	0.2	ND	0.2
Total HxCDD	ND	4	0				
1,2,3,4,6,7,8-HpCDD	ND	4		ND	0.02	ND	0.02
Total HpCDD	ND	4	0				
OCDD	ND	15	0	ND	0.0075	ND	0.00075
		Total Dioxin TEQ		0.00	2.63	0.00	3.62

FURANS		DL	# of	I-TEQs		WHO-TEQs	
				(ND=0)	(ND=½DL)	(ND=0)	(ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDF	ND	2		ND	0.1	ND	0.1
Total TCDF	ND	2	0				
1,2,3,7,8-PeCDF	ND	4		ND	0.1	ND	0.1
2,3,4,7,8-PeCDF	ND	4		ND	1	ND	1
Total PeCDF	ND	4	0				
1,2,3,4,7,8-HxCDF	ND	4		ND	0.2	ND	0.2
1,2,3,6,7,8-HxCDF	ND	4		ND	0.2	ND	0.2
1,2,3,7,8,9-HxCDF	ND	4		ND	0.2	ND	0.2
2,3,4,6,7,8-HxCDF	ND	4		ND	0.2	ND	0.2
Total HxCDF	ND	4	0				
1,2,3,4,6,7,8-HpCDF	ND	4		ND	0.02	ND	0.02
1,2,3,4,7,8,9-HpCDF	ND	4		ND	0.02	ND	0.02
Total HpCDF	ND	4	0				
OCDF	ND	15	0	ND	0.0075	ND	0.00075
		Total Furan TEQ		0.00	2.05	0.00	2.04

Total PCDD/PCDF Toxic Equivalent (pg)	0.00	4.68	0.00	5.66

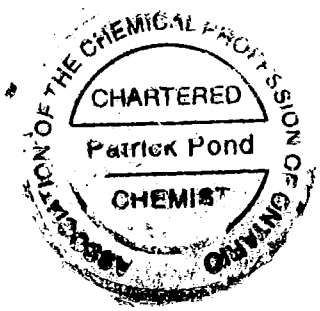
Surrogate Recoveries (%)

$^{37}Cl_4$ -2,3,7,8-TCDD	88
$^{13}C_{12}$ -2,3,4,7,8-PeCDF	100
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDD	75
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDF	72
$^{13}C_{12}$ -1,2,3,4,7,8,9-HpCDF	73

ND - none detected

Internal Standards (%)

$^{13}C_{12}$ -2,3,7,8-TCDD	101
$^{13}C_{12}$ -1,2,3,7,8-PeCDD	127
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDD	112
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDD	88
$^{13}C_{12}$ -OCDD	129
$^{13}C_{12}$ -2,3,7,8-TCDF	83
$^{13}C_{12}$ -1,2,3,7,8-PeCDF	100
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDF	116
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDF	90



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METHOD 23/1-RM-3 QC REPORT - BLANK

Client:	A. Lanfranco & Assoc	**Sample Date:**	n/a
Client ID:	Blank	**Date Extracted:**	21-Aug-12
PRL ID:	DF120497B	**Date Analysed:**	25-Aug-12

DIOXINS		DL	# of	I-TEQs (ND=0)	I-TEQs (ND=½DL)	WHO-TEQs (ND=0)	WHO-TEQs (ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDD	ND	2		ND	1	ND	1
Total TCDD	ND	2	0				
1,2,3,7,8-PeCDD	ND	4		ND	1	ND	2
Total PeCDD	ND	4	0				
1,2,3,4,7,8-HxCDD	ND	4		ND	0.2	ND	0.2
1,2,3,6,7,8-HxCDD	ND	4		ND	0.2	ND	0.2
1,2,3,7,8,9-HxCDD	ND	4		ND	0.2	ND	0.2
Total HxCDD	ND	4	0				
1,2,3,4,6,7,8-HpCDD	ND	4		ND	0.02	ND	0.02
Total HpCDD	ND	4	0				
OCDD	ND	15	0	ND	0.0075	ND	0.00075
		Total Dioxin TEQ		0.00	2.63	0.00	3.62

FURANS		DL	# of	I-TEQs (ND=0)	I-TEQs (ND=½DL)	WHO-TEQs (ND=0)	WHO-TEQs (ND=½DL)
Congeners	pg	pg	peaks	pg	pg	pg	pg
2,3,7,8-TCDF	ND	2		ND	0.1	ND	0.1
Total TCDF	ND	2	0				
1,2,3,7,8-PeCDF	ND	4		ND	0.1	ND	0.1
2,3,4,7,8-PeCDF	ND	4		ND	1	ND	1
Total PeCDF	ND	4	0				
1,2,3,4,7,8-HxCDF	ND	4		ND	0.2	ND	0.2
1,2,3,6,7,8-HxCDF	ND	4		ND	0.2	ND	0.2
1,2,3,7,8,9-HxCDF	ND	4		ND	0.2	ND	0.2
2,3,4,6,7,8-HxCDF	ND	4		ND	0.2	ND	0.2
Total HxCDF	ND	4	0				
1,2,3,4,6,7,8-HpCDF	ND	4		ND	0.02	ND	0.02
1,2,3,4,7,8,9-HpCDF	ND	4		ND	0.02	ND	0.02
Total HpCDF	ND	4	0				
OCDF	ND	15	0	ND	0.0075	ND	0.00075
		Total Furan TEQ		0.00	2.05	0.00	2.04

Total PCDD/PCDF Toxic Equivalent (pg)	0.00	4.68	0.00	5.66

Internal Standards (%)

$^{13}C_{12}$-2,3,7,8-TCDD	69
$^{13}C_{12}$-1,2,3,7,8-PeCDD	76
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	68
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	63
$^{13}C_{12}$-OCDD	79
$^{13}C_{12}$-2,3,7,8-TCDF	63
$^{13}C_{12}$-1,2,3,7,8-PeCDF	61
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	52
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	65

ND - none detected

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QC REPORT - SPIKE

Client:	A. Lanfranco & Assoc	**Contact:**	Al Lanfranco
Client ID:	MATRIX SPIKE	**Date Extracted:**	21-Aug-12
PRL ID:	DF120497S	**Date Analysed:**	25-Aug-12

DIOXINS			Acceptable Recovery		Pass/Fail	Int. Std Recoveries
	LOF	Recovery	Min	Max		
Congeners	pg	%	%	%		%
2,3,7,8-TCDD	200	97	80	120	Pass	79
1,2,3,7,8-PeCDD	1000	90	80	120	Pass	76
1,2,3,4,7,8-HxCDD	1000	91	80	120	Pass	-
1,2,3,6,7,8-HxCDD	1000	113	80	120	Pass	77
1,2,3,7,8,9-HxCDD	1000	108	80	120	Pass	-
1,2,3,4,6,7,8-HpCDD	1000	95	80	120	Pass	81
OCDD	2000	105	80	120	Pass	86

FURANS			Acceptable Recovery		Pass/Fail	Int. Std Recoveries
	LOF	Recovery	Min	Max		
Congeners	pg	%	%	%		%
2,3,7,8-TCDF	200	102	80	120	Pass	70
1,2,3,7,8-PeCDF	1000	105	80	120	Pass	69
2,3,4,7,8-PeCDF	1000	101	80	120	Pass	-
1,2,3,4,7,8-HxCDF	1000	87	80	120	Pass	-
1,2,3,6,7,8-HxCDF	1000	113	80	120	Pass	69
1,2,3,7,8,9-HxCDF	1000	92	80	120	Pass	-
2,3,4,6,7,8-HxCDF	1000	101	80	120	Pass	-
1,2,3,4,6,7,8-HpCDF	1000	106	80	120	Pass	72
1,2,3,4,7,8,9-HpCDF	1000	80	80	120	Pass	-
OCDF	2000	82	80	120	Pass	-

LOF - Level of Fortification

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Acronyms used in reporting dioxins and furans:

TCDD = Tetrachlorodibenzo-*p*-dioxin
PeCDD = Pentachlorodibenzo-*p*-dioxin
HxCDD = Hexachlorodibenzo-*p*-dioxin
HpCDD = Heptachlorodibenzo-*p*-dioxin
OCDD = Octachlorodibenzo-*p*-dioxin

TCDF = Tetrachlorodibenzofuran
PeCDF = Pentachlorodibenzofuran
HxCDF = Hexachlorodibenzofuran
HpCDF = Heptachlorodibenzofuran
OCDF = Octachlorodibenzofuran

Acceptable recoveries for surrogates

	EPA Method 23	
	Min (%)	Max (%)
$^{37}Cl_4$ -2,3,7,8-TCDD	70	130
$^{13}C_{12}$ -2,3,4,7,8-PeCDF	70	130
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDD	70	130
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDF	70	130
$^{13}C_{12}$ -1,2,3,4,7,8,9-HpCDF	70	130

Acceptable recoveries for Internal Standards

	EPA Method 23		Env. Can. 1-RM-3	
	Min (%)	Max (%)	Min (%)	Max (%)
$^{13}C_{12}$ -2,3,7,8-TCDD	40	130	40	130
$^{13}C_{12}$ -1,2,3,7,8-PeCDD	40	130	40	130
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDD	40	130	40	130
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDD	25	130	40	130
$^{13}C_{12}$ -OCDD	25	130	40	130
$^{13}C_{12}$ -2,3,7,8-TCDF	40	130	40	130
$^{13}C_{12}$ -1,2,3,7,8-PeCDF	40	130		
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDF	40	130		
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDF	25	130		

Exova
#104, 19575-55 A Ave.
Surrey, British Columbia
V3S 8P8, Canada

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E: Surrey@exova.com
W: www.exova.com

Exova

Quality Control

Bill To:	A. Lanfranco & Associates	Project:		Lot ID:	**885609**
Report To:	A. Lanfranco & Associates	ID:	Hope Bay Doris Camp	Control Number:	A216646
	#101, 9488 - 189 Street	Name:		Date Received:	Aug 2, 2012
	Surrey, BC, Canada	Location:		Date Reported:	Aug 23, 2012
	V4N 4W7	LSD:		Report Number:	1756187
Attn:	Al LanFranco	P.O.:			
Sampled By:		Acct code:			
Company:					

Air Quality Metals

Blanks	**Units**	**Measured**	**Lower Limit**	**Upper Limit**	**Passed QC**
Mercury	ug/L	0	-0.05	0.05	yes
Date Acquired:	August 22, 2012				

Calibration Check	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**	**Passed QC**
Mercury	ug/L	88.40	80	120	yes
Date Acquired:	August 15, 2012				

Certified Reference Material	**Units**	**Measured**	**Target**	**Lower Limit**	**Upper Limit**	**Passed QC**
Mercury	ug/sample	0.19	0.020	0.016	0.023	yes
Date Acquired:	August 22, 2012					

Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
Mercury	ug/L	0.26	0.28	30	0.05	yes
Date Acquired:	August 22, 2012					

Matrix Spike	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**	**Passed QC**
Mercury	ug/L	116	85	115	yes
Date Acquired:	August 22, 2012				

Exova

www.exova.com

LOT: 885609 COC

Control Number A216646

nvironmental Sample Information Sheet

lote: Proper completion of this form is required in order to proceed with analysis

See reverse for your nearest Exova location and proper sampling protocol

Billing Address:	Copy of Report:	**Copy of Report To:**	Copy of invoice:
Company:		Company:	Send invoice to this address for approval ☐
Address: A. LANFRANCO + ASSOC	QA/QC Report ☐	Address:	
Attention:	Report Result:	Attention:	Report Result:
Phone: Lanfranco @ telus.net	e-mail ☐	Phone:	e-mail ☐
Fax:	Results Online ☐	Fax:	Results Online ☐
Cell:	Fax ☐	Cell:	Fax ☐
e-mail: 604-881-2582	Mail ☐	e-mail:	Mail ☐

Information to be included on Report and Invoice

Project ID: Hope Bay Doris Camp
Project Name:
Project Location:
Legal Location:
PO#:
Proj. Acct. Code:
Agreement ID:

PRIORITY

Please contact laboratory prior to submitting any RUSH samples.

Upon filling out this section, client accepts that surcharges will be applied to this analysis.

If not all samples require RUSH, please indicate in special instructions.

Date Required: _____

Signature: _____

Sample Custody (Please Print)

Sampled by:

Company Signature

I authorize Exova to proceed with the work indicated on this form:

Date: RECEIVED Initial:

Received by: Aug 2 2016 Sample Temp.

Waybill #: Date

Company Time

Special Instructions / Comments

Please Report mg/l per sample

*Combine 2 Bottles for each Analysis!!

Please indicate which regulations you are required to meet: ☐ Health Canada Drinking Water Quality ☐ Alberta Tier 1 ☐ Other: _____

Sample Identification	Location	Depth IN CM M	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Enter tests above (✓ relevant samples below) Hg
Metals - BLANK	(Beaker M9 A.L. + 1 Bottle)					2	✓
Metals - RUN 1	(Beaker MB3 + 2 Bottles)				(July 17)	3	✓
Metals - RUN 2	(Beaker MA11 + 2 Bottles)				(July 18)	3	✓
Metals - RUN 3	(Beaker MQ + 2 Bottles)				(July 19)	3	✓
Hg - BLANK		1 Bottle				1	✓
Hg - RUN 1		2 Bottles				2	✓
Hg - RUN 2		2 Bottles				2	✓
Hg - RUN 3		2 Bottles				2	✓

ED 077-00

NOTE: All hazardous samples must be labeled according to WHMIS guidelines.

Page _____ of _____

APPENDIX 4

FIELD DATA SHEETS

and PROCESS DATA

OPACITY = 0-5% Initial Charge

.5467

PLANT NEWMONT - DORIS CAMP	PROBE TIP DIAMETER, IN. .0016299	IMPINGER VOLUMES	INITIAL (mL) / FINAL (mL) / TOTAL GAIN (mL)
	PROBE LENGTH, FT / Cp 0.8421		
RUN No DIOXIN 1	FILTER NUMBER	Imp. # 1	0 / 250 / 250
LOCATION INCINERATOR STACK		Imp. # 2	100 / 144 / 44
DATE July 19 2012	STATIC PRESSURE, IN. H_2O 0.04	Imp. # 3	0 / /
OPERATOR / John Burch	STACK DIAMETER 18.0	Imp. # 4	GEL / /
CONTROL UNIT / Y 0.9929 / .7310	STACK HEIGHT 50.0		
BAROMETRIC PRESSURE, IN. Hg 29.75	INITIAL LEAK TEST .010 @15"		
ASSUMED MOISTURE, Bw 12 %	FINAL LEAK TEST .010 @15"	Upstream Diameters	
		Downstream Diameters	

Point	Clock Time	Dry Gas Meter Ft^3		Pitot IN. H_2O ΔP	Orifice ΔH IN. H_2O	Dry Gas Temp. Inlet °F	Dry Gas Temp. Outlet °F	Pump Vac. IN. Hg Gauge	Temperature °F Box	Temperature °F Probe	Temperature °F Impinger Exit	Temperature °F Stack	Fyrites CO_2 Vol. %	Fyrites O_2 Vol. %	NOx
	LEAK	635.386	XAD												
	11:40	635.559	48	0.10	1.78	81	81	4	250	STACK	50	1826			
(1)	4.0	638.682	48	0.10	1.78	81	81	4	250	STACK		2826			1.8
	8.0	641.761	48	0.11	1.88	84	81	4	250			1916			
	12.0	644.783	50	0.10	1.72	85	81	4	228	242		1890			1.7
	16.0	647.808	50	0.10	1.72	86	81	4	226	240		1890			8.8
(2)	20.0	650.850	50	0.10	1.74	87	82	4	224	246		1873	12.0	8.0	
2	24.0	653.879	50	0.10	1.72	88	82	4	223	246		1896			1.8
	28.0	656.914	51	0.10	1.72	90	84	4	221	248		1904			
	32.0	659.69	51	0.08	1.42	92	86	4	221	248		1837			5.4
(3)	36.0	662.44	51	0.08	1.43	91	86	4	224	248		1823			
	40.0	665.03	51	0.07	1.25	92	86	4	225	247		1828			
	44.0	667.80	51	0.08	1.43	93	88	4	225	252		1830			6.8
	48.0	670.54	52	0.08	1.40	94	89	4	226	252		1856	[illegible]		
(4)	52.0	673.11	52	0.07	1.23	96	90	4	226	252		1891			8.7
	56.0	675.52	52	0.06	1.07	97	92	4	228	250		1844	11.5	8.5	
	60.0	677.94	52	0.06	1.08	98	93	4	228	250		1840		4.4	4.4
	64.0	680.56	52	0.07	1.27	99	93	4	230	254		1819			
(5)	68.0	683.29	53	0.06	1.08	100	94	4	230	252		1832			3.1
	72.0	685.42	53	0.06	1.08	101	95	4	230	252		1840			
	76.0	687.85	53	0.06	1.09	101	96	4	239	255		1830			9.1
	80.0	690.28	53	0.06	1.09	101	97	4	240	255		1842			
(6)	84.0	692.69	53	0.06	1.06	102	97	4	240	253		1887			6.8
	88.0	695.09	55	0.06	1.05	102	97	4	242	253		1911	13.0	7.0	
	92.0	697.49	55	0.06	1.06	102	97	4	232	250		1905	12.2	6.48	4.3
	96.0	699.72	55	0.06	1.08	103	98	4	238	246		1853			

S.H.

PLANT NEWMONT - DORIS CAMP	PROBE TIP DIAMETER, IN.	IMPINGER	INITIAL / FINAL / TOTAL GAIN
	PROBE LENGTH, FT / Cp	VOLUMES	(mL) / (mL) / (mL)
RUN No DIOXIN-1 (CONT)	FILTER NUMBER	Imp. # 1	
LOCATION INCINERATOR STACK		Imp. # 2	
DATE July 19 2012	STATIC PRESSURE, IN. H_2O	Imp. # 3	
OPERATOR JOHN BURCH	STACK DIAMETER	Imp. # 4	
CONTROL UNIT / Y	STACK HEIGHT		
BAROMETRIC PRESSURE, IN. Hg	INITIAL LEAK TEST		
ASSUMED MOISTURE, Bw	FINAL LEAK TEST	Upstream Diameters	
		Downstream Diameters	

Point	Clock Time	Dry Gas Meter Ft^3	XAD	Pitot IN. H_2O ΔP	Orifice ΔH IN. H_2O	Dry Gas Temp. Inlet °F	Dry Gas Temp. Outlet °F	Pump Vac. IN. Hg Gauge	Temperature °F Box	Temperature °F Probe	Temperature °F Impinger Exit	Temperature °F Stack	Fyrites CO_2 Vol. %	Fyrites O_2 Vol. %	Nova O_2
		699.92													
(1)	4.0	702.35	56	0.06	1.08	102	97	4	232	252	50	1847			4.0
	8.0	704.77	56	0.06	1.08	101	97	4	238	251		1858			
	12.0	707.37	56	0.07	1.25	101	97	4	236	251		1881			4.7
	16.0	709.99	56	0.07	1.26	102	97	5	236	254		1864	14.0	6.0	
(2)	20.0	712.61	56	0.07	1.26	102	97	5	236	255		1865			10.5
	24.0	715.21	56	0.07	1.24	102	97	5	232	252		1895			
	28.0	718.00	55	0.08	1.43	102	97	5	230	249		1873		[redacted]	9.7
	32.0	720.77	55	0.08	1.41	100	97	5	230	249		1903			
(3)	36.0	723.85	55	0.10	1.76	98	95	5	230	248		1913			
	40.0	726.76	55	0.10	1.79	97	94	6	226	248		1862	[redacted]		10.7
	44.0	729.87	54	0.09	1.57	96	94	6	226	244		1913	9.0	11.0	
	48.0	732.76	54	0.09	1.56	95	92	6	225	246		1929			4.5
(4)	52.0	735.64	54	0.09	1.55	95	93	6	228	248		1945			
	56.0	738.55	54	0.09	1.58	94	91	6	232	256		1894			10.0
	60.0	741.47	54	0.09	1.58	94	91	6	234	256		1886			
	64.0	744.35	54	0.09	1.54	95	91	6	233	256		1947			10.7
(5)	68.0	747.27	55	0.09	1.58	97	93	6	237	260		1898	10.0	10.0	
	72.0	750.21	55	0.09	1.60	98	94	6	240	258		1878	11.6	9.0	4.4
	76.0	753.12	55	0.09	1.56	98	94	6	240	258		1930			
	80.0	756.05	56	0.09	1.58	98	94	6	240	260		1897			4.5
(6)	84.0	758.78	56	0.08	1.38	98	94	6	237	256		1943			
	88.0	761.54	56	0.08	1.40	99	95	6	236	251		1908			10.5
	92.0	764.28	56	0.08	1.38	99	95	6	232	254		1940			
	96.0	767.046	56	0.08	1.40	100	96	6	231	250		1912			
	14:58	END OF TEST													
	LEAK	768.178													

SH

PLANT Newmont - Doris Camp	PROBE TIP DIAMETER, IN. 0.5467	IMPINGER VOLUMES	INITIAL (mL) / FINAL (mL) / TOTAL GAIN (mL)
	PROBE LENGTH, FT / Cp 0.8421		
RUN No Dioxin 2	FILTER NUMBER	Imp. # 1	0 / 250 / 250
LOCATION Incinerator		Imp. # 2	100 / 172 / 72
DATE July 18, 2012	STATIC PRESSURE, IN. H_2O 0.04	Imp. # 3	0 / /
OPERATOR John Burch	STACK DIAMETER 12.0	Imp. # 4	Gel / /
CONTROL UNIT / Y 0.9989 / 0.7318	STACK HEIGHT 50.0		
BAROMETRIC PRESSURE, IN. Hg 29.55	INITIAL LEAK TEST .010 @ 15"		
ASSUMED MOISTURE, Bw 11 %	FINAL LEAK TEST	Upstream Diameters	
		Downstream Diameters	

Point	Clock Time	Dry Gas Meter Ft^3	ΔH	Pitot IN. H_2O ΔP	Orifice ΔH IN. H_2O	Dry Gas Temp. Inlet °F	Dry Gas Temp. Outlet °F	Pump Vac. IN. Hg Gauge	Temperature °F Box	Temperature °F Probe	Temperature °F Impinger Exit	Temperature °F Stack	Fyrites CO_2 Vol. %	Fyrites O_2 Vol. %	NOVA O_2
	9:06 (c)	816.201 / 816.328													
①	4.0	817.05	49	0.08	1.42	71	71	3	230	250	50	1816			1.5
	8.0	822.01	49	0.10	1.69	72	70	3	232	250		1936			
	12.0	825.02	49	0.10	1.74	72	70	3	232	248		1863			1.1
	16.0	827.86	49	0.09	1.55	73	70	3	234	248		1895	10.0	10.0	
②	20.0	830.23	50	0.10	1.70	73	70	4	234	249		1922			7.7
	24.0	833.69	50	0.09	1.58	74	70	4	231	254		1849			
	28.0	836.55	50	0.09	1.57	74	70	4	231	255		1863			8.6
	32.0	839.42	50	0.09	1.57	74	70	4	230	255		1852	14.0	6.0	
③	36.0	842.38	50	0.09	1.57	74	70	4	228	256		1859			9.2
	40.0	845.30	50	0.10	1.75	75	71	5	226	256		1853		8.4	
	44.0	847.95	50	0.08	1.35	75	71	5	226	256		1945			4.0
	48.0	850.59	50	0.08	1.35	75	71	5	228	254		1958			
④	52.0	853.24	50	0.08	1.35	75	71	6	228	254		1943			3.5
	56.0	855.91	50	0.08	1.36	75	72	6	226	255		1918	14.0	6.0	
	60.0	858.23	50	0.06	1.04	75	72	6	224	256		1898			9.5
	64.0	860.57	50	0.06	1.04	76	72	6	224	255		1863			
⑤	68.0	863.08	51	0.07	1.20	76	72	6	222	255		1908			3.8
	72.0	865.43	51	0.06	1.04	74	72	6	222	259		1849	13.0	7.0	
	76.0	867.74	51	0.06	1.02	76	72	6	220	262		1922			6.0
	80.0	870.08	50	0.06	1.05	76	72	6	220	262		1860			
⑥	84.0	872.43	50	0.06	1.05	77	73	6	221	260		1853			8.5
	88.0	874.78	50	0.06	1.05	77	73	6	221	259		1857	11.0	9.0	
	92.0	877.13	50	0.06	1.05	77	73	6	218	259		1849	12.4	7.7	4.8
	96.0	879.45	52	0.06	1.03	77	74	6	218	258		1914			

S.H.

PLANT Newmont - Doris Camp	PROBE TIP DIAMETER, IN.	IMPINGER VOLUMES	INITIAL (mL) / FINAL (mL) / TOTAL GAIN (mL)
	PROBE LENGTH, FT / Cp		
RUN No Dioxin 2- Cont	FILTER NUMBER	Imp. # 1	
LOCATION Incinerator		Imp. # 2	
DATE July 18, 2012	STATIC PRESSURE, IN. H_2O	Imp. # 3	
OPERATOR	STACK DIAMETER	Imp. # 4	
CONTROL UNIT / Y	STACK HEIGHT		
BAROMETRIC PRESSURE, IN. Hg	INITIAL LEAK TEST		
ASSUMED MOISTURE, Bw	FINAL LEAK TEST	Upstream Diameters	
		Downstream Diameters	

Point	Clock Time	Dry Gas Meter Ft^3	XAD	Pitot IN. H_2O ΔP	Orifice ΔH IN. H_2O	Dry Gas Temp. Inlet °F	Dry Gas Temp. Outlet °F	Pump Vac. IN. Hg Gauge	Temperature °F Box	Temperature °F Probe	Temperature °F Impinger Exit	Temperature °F Stack	Fyrites CO_2 Vol. %	Fyrites O_2 Vol. %	NCWA O_2
		879.45													
(1)	4.0	882.14	52	0.08	1.32	78	74	7	218	263	50	1709			6.5
	8.0	884.85	52	0.08	1.32	78	74	7	218	265		1865	12.0	8.0	
	12.0	887.70	52	0.09	1.55	78	74	7	221	265		1905			9.0
	16.0	890.57	51	0.09	1.56	78	74	7	217	260		1889			
(2)	20.0	893.45	51	0.09	1.58	78	75	7	219	260		1860	16.0	4.0	
	24.0	896.31	51	0.09	1.56	78	75	8	216	261		1896			4.7
	28.0	899.16	51	0.09	1.55	77	75	8	216	261		1915			
	32.0	901.86	51	0.08	1.39	78	75	8	220	263		1898			11-8
(3)	36.0	904.55	50	0.08	1.38	78	75	8	222	257		1918	8.0	12.0	
	40.0	907.24	50	0.08	1.38	78	75	8	224	258		1920			11.0
	44.0	910.10	50	0.09	1.56	78	75	8	221	260		1895			
	48.0	912.80	50	0.08	1.40	77	74	8	221	260		1886			5.3
(4)	52.0	915.13	50	0.06	1.04	77	74	8	218	265		1896	10.0	10.0	
	56.0	917.47	50	0.06	1.05	77	74	8	218	265		1872			10.5
	60.0	919.80	50	0.06	1.04	77	74	8	218	266		1893	11.0	9.0	
	64.0	922.14	50	0.06	1.04	77	74	8	220	260		1879			
(5)	68.0	924.47	50	0.06	1.04	77	74	8	220	258		1902			10.0
	72.0	926.98	50	0.07	1.21	76	74	8	220	256		1903	10.0	10.0	
	76.0	929.50	50	0.07	1.21	76	74	8	221	256		1885	11.17	8.8	10.2
	80.0	931.83	51	0.06	1.04	76	74	8	228	258		1894			
(6)	84.0	934.17	51	0.06	1.04	76	74	8	225	256		1880			2.8
	88.0	936.50	51	0.06	1.04	76	74	8	224	260		1886			
	92.0	938.84	51	0.06	1.04	76	74	8	228	260		1880			
	96.0	941.155	51	0.06	1.02	76	74	8	226	258		1932			6.8
	12:22	END OF TEST													
		941.988													

S4

PLANT NEWMONT - DORIS CAMP	PROBE TIP DIAMETER, IN. 0.5467 3X	IMPINGER	INITIAL / FINAL / TOTAL GAIN
	PROBE LENGTH, FT / Cp 0.8421	VOLUMES	(mL) / (mL) / (mL)
RUN No DIOXIN 3	FILTER NUMBER	Imp. # 1	0 / 250 /
LOCATION INCINERATOR		Imp. # 2	100 / 172 /
DATE JULY 19 /12	STATIC PRESSURE, IN. H_2O 6.04	Imp. # 3	0 / /
OPERATOR JOHN BURCH	STACK DIAMETER 18.0	Imp. # 4	/ /
CONTROL UNIT / Y 0.9989 / 0.7318	STACK HEIGHT 50.0		/ /
			/ /
BAROMETRIC PRESSURE, IN. Hg 29.70	INITIAL LEAK TEST .010 @ 15"		
ASSUMED MOISTURE, Bw 11%	FINAL LEAK TEST .010 @ 15"	Upstream Diameters	
		Downstream Diameters	

Point	Clock Time	Dry Gas Meter Ft^3		Pitot IN. H_2O ΔP	Orifice ΔH IN. H_2O	Dry Gas Temp. Inlet °F	Dry Gas Temp. Outlet °F	Pump Vac. IN. Hg Gauge	Temperature °F Box	Temperature °F Probe	Temperature °F Impinger Exit	Temperature °F Stack	Fyrites CO_2 Vol. %	Fyrites O_2 Vol. %	NEWM O_2
	07.48	985.110	X-AD												
		985.534	55	~~0.09~~	~~1.52~~	~~70~~	~~70~~	3	230	252	50	1944			2.5
(1)	4.0	988.32	48	0.09	1.52	70	69	3	232	256		1920	16.0	4.0	
	8.0	991.11	47	0.09	1.57	71	69	3	232	256		1846			4.3
	12.0	993.55	48	0.09	1.57	71	69	3	234	256		1910			4.6
	16.0	996.74	46	0.09	1.52	72	68	3	230	252		1930			4.8
(2)	20.0	999.55	46	0.09	1.53	72	68	3	230	252		1900	14.0	6.0	6.2
	24.0	1002.35	46	0.09	1.53	72	69	3	228	250		1910			5.0
	28.0	4.99	46	0.08	1.36	73	69	4	228	250		1908			5.5
	32.0	7.66	46	0.08	1.39	74	69	4	226	248		1859	12.0	8.0	8.2
(3)	36.0	10.29	47	0.08	1.35	74	70	4	221	248		1939			3.3
	40.0	12.97	47	0.08	1.39	74	70	4	221	246		1858	9.0	11.0	10.0
	44.0	15.78	47	0.09	1.53	74	70	4	221	244		1915			9.1
	48.0	18.63	48	0.09	1.58	75	70	4	248	246		1842			9.8
(4)	52.0	21.27	48	0.08	1.35	75	71	4	248	252		1930			7.3
	56.0	23.94	48	0.08	1.38	75	71	4	249	256		1887			3.2
	60.0	26.59	48	0.08	1.36	76	71	4	252	256		1915	12.0	8.0	8.8
	64.0	29.25	48	0.08	1.37	76	71	4	252	258		1909			2.6
(5)	68.0	31.76	47	0.07	1.22	76	72	4	254	258		1868			8.3
	72.0	34.25	47	0.07	1.20	76	72	4	254	255		1908			9.2
	76.0	36.75	47	0.07	1.21	76	72	4	250	255		1889			4.7
	80.0	39.24	47	0.07	1.20	76	72	4	252	256		1898			3.3
(6)	84.0	41.76	47	0.07	1.22	76	72	4	256	256		1858			10.1
	88.0	44.23	47	0.07	1.18	76	72	4	248	258		1950	16.0	4.0	3.6
	92.0	46.53	47	0.06	1.02	76	72	4	240	260		1921	13.17	6.8	10.2
	96.0	48.85	47	0.06	1.04	76	72	4	236	260		1867			4.6

JH,

PLANT	NEWMONT - DORIS CAMP	PROBE TIP DIAMETER, IN.	IMPINGER	INITIAL	FINAL / TOTAL GAIN
		PROBE LENGTH, FT / Cp	VOLUMES	(mL)	(mL) / (mL)
RUN No	DIOXIN 3 CONT.	FILTER NUMBER	Imp. # 1	0	
LOCATION	INCINERATOR		Imp. # 2	100	
DATE	July 19 /12	STATIC PRESSURE, IN. H_2O	Imp. # 3	0	
OPERATOR	JOHN BURCH	STACK DIAMETER	Imp. # 4		
CONTROL UNIT / Y		STACK HEIGHT			
BAROMETRIC PRESSURE, IN. Hg		INITIAL LEAK TEST			
ASSUMED MOISTURE, Bw		FINAL LEAK TEST	Upstream Diameters		
			Downstream Diameters		

Point	Clock Time	Dry Gas Meter Ft^3	XAD	Pitot IN. H_2O ΔP	Orifice ΔH IN. H_2O	Dry Gas Temp. Inlet °F	Dry Gas Temp. Outlet °F	Pump Vac. IN. Hg Gauge	Temperature °F Box	Temperature °F Probe	Temperature °F Impinger Exit	Temperature °F Stack	Fyrites CO_2 Vol. %	Fyrites O_2 Vol. %
		48.85												
(1)	4.0	51.35	45	0.07	1.21	74	72	4	254	261	50	1882		
	8.0	53.99	45	0.08	1.35	76	73	4	255	261		1948		
	12.0	56.67	45	0.08	1.38	77	73	4	255	261		1885		
	16.0	59.32	45	0.08	1.36	77	73	4	248	259		1929	12.0	8.0
(2)	20.0	61.97	45	0.08	1.36	77	73	4	248	256		1930		
	24.0	64.65	45	0.08	1.38	77	73	4	244	257		1892		
	28.0	67.32	46	0.08	1.38	77	73	4	243	257		1899		
	32.0	69.81	46	0.07	1.19	77	73	4	240	257		1922		
(3)	36.0	72.31	48	0.07	1.20	77	73	4	240	258		1901	11.0	9.0
	40.0	74.81	48	0.07	1.20	77	73	4	236	254		1898		
	44.0	77.31	48	0.07	1.21	77	73	4	236	254		1889		
	48.0	79.95	48	0.08	1.34	77	73	4	243	257		1958		
(4)	52.0	82.62	48	0.08	1.37	77	73	4	242	257		1912		
	56.0	85.11	48	0.07	1.20	77	73	4	240	254		1902	14.0	6.0
	60.0	87.60	48	0.07	1.20	78	74	4	240	257		1929		
	64.0	90.10	48	0.07	1.20	78	74	4	240	262		1895		
(5)	68.0	92.61	47	0.07	1.20	78	74	4	238	260		1881		
	72.0	95.08	47	0.07	1.18	78	74	4	236	260		1952	13.0	7.0
	76.0	97.59	47	0.07	1.21	78	74	4	232	264		1888	12.5	7.5
	80.0	100.06	47	0.07	1.18	78	74	4	230	264		1966		
(6)	84.0	102.56	47	0.07	1.20	78	74	4	230	263		1909		
	88.0	104.86	48	0.06	1.02	77	74	4	226	261		1925		
	92.0	107.18	48	0.06	1.03	77	74	4	226	265		1896		
	96.0	1109.486	48	0.06	1.03	77	74	4	226	265		1921		
	11:04	END OF TEST												
	LEAK	1109.932												

NAM

	CO_2	O_2
1	9.5	
2	10.0	8.0
3	11.0	9.0
4	14.0	6.0
5	13.0	7.0
	12.5	7.5
6		

S-4.

PLANT Newmont - Hope Bay Doris Camp	PROBE TIP DIAMETER, IN. Uni 3' B / 0.5763	IMPINGER VOLUMES	INITIAL (mL) / FINAL (mL) / TOTAL GAIN (mL)
RUN No 1 P/M Metals	PROBE LENGTH, FT / Cp 3' 0.8421	Imp. # 1	100 / 176 / 78
LOCATION Doris Camp Incinerator	FILTER NUMBER	Imp. # 2	100 / 122 / 22
DATE July 17, 2012	STATIC PRESSURE, IN. H_2O 0.04	Imp. # 3	- / 3 / 3
OPERATOR LA	STACK DIAMETER 18"	Imp. # 4	100 / 102 / 2
CONTROL UNIT / Y 310 621C 0.9989 Ko = 0.7318	STACK HEIGHT		100 / 101 / 1
BAROMETRIC PRESSURE, IN. Hg 29.75	INITIAL LEAK TEST 0.004 @ 15"		Gel / /
ASSUMED MOISTURE, Bw 10%	FINAL LEAK TEST 0.002 @ 15"	Upstream Diameters	
		Downstream Diameters	

5 min / Point	Clock Time	Dry Gas Meter Ft^3		Pitot IN. H_2O ΔP	Orifice ΔH IN. H_2O	Dry Gas Temp. Inlet °F	Dry Gas Temp. Outlet °F	Pump Vac. IN. Hg Gauge	Temperature °F Box	Temperature °F Probe	Temperature °F Impinger Exit	Temperature °F Stack	Fyrites CO_2 Vol. %	Fyrites O_2 Vol. %	Nova O_2
	15:10	768.331													
1		772.70		0.10	2.25	96	95	3	252	250	53	1911			
2		777.07		0.10	2.25	96	94		251	252		1904	12.0	9.0	9.2
3		780.95		0.08	1.81	97	94	2	253	254	53	1913			
4		785.06		0.09	2.03	96	93		252	253		1904	11.0	10.5	10.8
5		788.69		0.07	1.55	94	90	2	254	252	52	1932			
6		792.05		0.06	1.34	93	89		255	251		1914	15.5	4.8	5.0
1		796.09		0.09	1.95	90	87	2	253	250	52	1966			
2		800.10		0.09	1.95	89	86		254	251		1946	11.0	10.0	10.1
3		803.90		0.08	1.76	89	85	2	255	252	53	1913			
4		807.92		0.09	1.96	89	85		253	250		1933	11.0	10.0	10.1
5		811.70		0.08	1.73	88	84	2	252	251	53	1950			
6	16:12	815.26		0.07	1.53	88	83		254	253		1917	11.0	9.5	9.5

S.H.

PLANT Newmont Hope Bay	PROBE TIP DIAMETER, IN. 0.5763	IMPINGER VOLUMES	INITIAL (mL) / FINAL (mL) / TOTAL GAIN (mL)
RUN No 2 P/M Metals	PROBE LENGTH, FT / Cp 3' 0.8421		
LOCATION Doris Camp Incinerator	FILTER NUMBER	Imp. # 1	100 / 166 / 66
DATE July 18, 2012	STATIC PRESSURE, IN. H_2O 0.04	Imp. # 2	100 / 120 / 20
OPERATOR LA	STACK DIAMETER 18"	Imp. # 3	— / — / 0
CONTROL UNIT / Y 31D 621C 0.9989	STACK HEIGHT	Imp. # 4	100 / 100 / 0
K_2 = 0.7316			100 / 100 / 0
BAROMETRIC PRESSURE, IN. Hg 29.55	INITIAL LEAK TEST 0.004@15"		Gel /
ASSUMED MOISTURE, Bw 10%	FINAL LEAK TEST 0.005@15"	Upstream Diameters	
		Downstream Diameters	

Point	Clock Time	Dry Gas Meter Ft^3		Pitot IN. H_2O ΔP	Orifice ΔH IN. H_2O	Dry Gas Temp. Inlet °F	Dry Gas Temp. Outlet °F	Pump Vac. IN. Hg Gauge	Temperature °F Box	Temperature °F Probe	Temperature °F Impinger Exit	Temperature °F Stack	Fyrites CO_2 Vol. %	Fyrites O_2 Vol. %	Nova O2
1		946.14		0.090	1.97	78	77	2	252	253	52	1897			
2		949.90		0.080	1.75	80	77		256	251		1911	11.0	10.0	10.1
3		953.54		0.075	1.63	81	77	2	254	252	52	1936			
4		957.07		0.070	1.53	81	77		255	253		1908	16.0	5.0	4.8
5		960.54		0.070	1.51	80	76	2	253	254	51	1940			
6		963.80		0.060	1.31	80	76		252	257		1941	11.0	10.0	10.1
1		967.70		0.085	1.87	81	76	2	254	255	51	1888	10.5	10.5	10.4
2		971.48		0.080	1.74	82	77		252	254		1919			
3		975.00		0.070	1.53	82	77	2	253	252	52	1908	11.0	12.0	10.2
4		978.52		0.072	1.53	83	78		253	254		1904			
5		981.88		0.065	1.40	83	79	2	252	251	52	1947	16.0	5.0	5.1
6	13:47	984.88		0.050	1.10	84	79		231	250		1904			

S.H.

PLANT	Newmont Hope Bay	PROBE TIP DIAMETER, IN.	0.5763
		PROBE LENGTH, FT / Cp 31	0.8421
RUN No	3 P/M Metals	FILTER NUMBER	
LOCATION	Doris Camp Incinerator		
DATE	July 19, 2012	STATIC PRESSURE, IN. H_2O	0.04
OPERATOR	LA	STACK DIAMETER	18"
CONTROL UNIT / Y	310 621C 0.9989	STACK HEIGHT	
	K_D = 0.7310		
BAROMETRIC PRESSURE, IN. Hg	29.70	INITIAL LEAK TEST	0.002@15"
ASSUMED MOISTURE, Bw	10%	FINAL LEAK TEST	

IMPINGER VOLUMES	INITIAL (mL)	FINAL (mL)	TOTAL GAIN (mL)
Imp. # 1	100	176	
Imp. # 2	100	120	
Imp. # 3	–	3	
Imp. # 4	100	102	
	100	101	
	Gel		

Upstream Diameters

Downstream Diameters

Point	Clock Time	Dry Gas Meter Ft^3		Pitot IN. H_2O ΔP	Orifice ΔH IN. H_2O	Dry Gas Temp. Inlet °F	Dry Gas Temp. Outlet °F	Pump Vac. IN. Hg Gauge	Temperature °F Box	Temperature °F Probe	Temperature °F Impinger Exit	Temperature °F Stack	Fyrites CO_2 Vol. %	Fyrites O_2 Vol. %	Nova O_2
1	11:15	110.118		0.10	2.17	77	74	3	252	255	53	1940	14.0	6.0	6.2
2		118.37		0.095	2.06	79	75		253	257		1912			
3		122.13		0.080	1.74	80	75	3	253	256	52	1904	11.0	10.0	10.3
4		125.74		0.075	1.59	80	75		254	255		1964	16.0	5.0	4.9
5		129.26		0.070	1.52	80	75	3	255	255	51	1918	11.0	10.0	10.2
6		132.79		0.070	1.53	80	75		255	253		1898			
1		136.78		0.090	1.96	80	75	3	253	254	52	1909	11.0	10.0	10.3
2		140.62		0.085	1.81	81	76		252	255		1968	16.0	5.0	4.8
3		144.24		0.075	1.61	81	76	3	254	252	51	1942	14.0	6.0	6.1
4		147.76		0.070	1.52	81	76		253	254		1923			
5		151.29		0.070	1.53	81	76	3	252	255	50	1902	11.0	10.5	10.4
6	12:17	154.68		0.065	1.41	81	76		251	256		1916			

NEWMONT
NORTH AMERICA

CY-100-CA-D

Operator's Worksheet

Name of Operator (Print clearly): HARRY Date: July 17/19

Operator's Signature: Harry

FIRST BATCH OF THE DAY

Batch Preparation / Weighing

# of BAGS	Paper & Cardboard (lbs.)	# of BAGS	Kitchen Waste (lbs.)	# of BAGS	STP (lbs.)
6	45	12	245	4	65

☑ Total Amount of Waste added 355 (lbs.) Time: 9:50.

☑ Set burner timer to 12 hrs and **Press Start button**. Time: 10:00

☑ Confirm all **3** burner blowers are working. (check for vibration)

☑ **Secondary chamber burner** fired (Climb up and Check for green light on burner). Time: 10:10

☑ **2 Primary chamber burners** fired (check for green light on burners). Time: 11:12.

☑ **Flame port blower** fired.

☑ Black smoke noticed (Yes / No) NO. (**check every 5 minutes** for half an hour)

☐ Rake every hour for first burn of the day. Note below in comment section.

Take reading of Temperature of primary and secondary Chambers every **HALF HOUR** after primary was fired.

Time	Primary chamber temperature	Secondary chamber temperature	Comments / RAKING?
11:30	530	1185	
12:00	619	1159	
12:30	600	1150	
1:00	596	1120	
1:30	610	1119	

☑ Primary chamber temperature was set to 0 C at 5:00.

Any Other Observations:

_____

_____

NEWMONT
NORTH AMERICA

CY-100-CA-D

Operator's Worksheet

Name of Operator (Print clearly): HARJOT BRAR Date: July 16/19

Operator's Signature:

FIRST BATCH OF THE DAY

Batch Preparation / Weighing

# of BAGS	Paper & Cardboard (lbs.)	# of BAGS	Kitchen Waste (lbs.)	# of BAGS	STP (lbs.)
8	63	14	253	5	79

- ☑ Total Amount of Waste added 395 (lbs.) Time: 7:00.
- ☑ Set burner timer to 12 hrs and **Press Start button**. Time: 7:05.
- ☐ Confirm all **3** burner blowers are working. (check for vibration)
- ☐ **Secondary chamber burner** fired (Climb up and Check for green light on burner). Time: 7:35.
- ☑ **2 Primary chamber burners** fired (check for green light on burners). Time: 8:45.
- ☑ **Flame port blower** fired.
- ☐ Black smoke noticed (Yes / No) No. (**check every 5 minutes** for half an hour)
- ☐ Rake every hour for first burn of the day. Note below in comment section.

Take reading of Temperature of primary and secondary Chambers every **HALF HOUR** after primary was fired.

Time	Primary chamber temperature	Secondary chamber temperature	Comments / RAKING?
9:15	600	1190	
9:45	595	1190	
10:15	507	1158	
10:45	601	1115	
11:45	6012	1137	
12:15	596	1084	
1:50	600	1119	Raked

- ☐ Primary chamber temperature was set to 0 C at 3:00.

Any Other Observations:

_____

_____

NEWMONT
NORTH AMERICA

CY-100-CA-D

Operator's Worksheet

Name of Operator (Print clearly): Harjot Brar Date: July 19/19

Operator's Signature: H Brar

FIRST BATCH OF THE DAY

Batch Preparation / Weighing

# of BAGS	Paper & Cardboard (lbs.)	# of BAGS	Kitchen Waste (lbs.)	# of BAGS	STP (lbs.)
26	48	13	947	5	62

☑ Total Amount of Waste added 357 (lbs.) Time: 5:55

☑ Set burner timer to 12 hrs and **Press Start button**. Time: 5:57

☑ Confirm all **3** burner blowers are working. (check for vibration)

☑ **Secondary chamber burner** fired (Climb up and Check for green light on burner). Time: 6:07.

☐ **2 Primary chamber burners** fired (check for green light on burners). Time: 7:07.

☑ **Flame port blower** fired.

☐ Black smoke noticed (Yes / No) No. (**check every 5 minutes** for half an hour)

☐ Rake every hour for first burn of the day. Note below in comment section.

Take reading of Temperature of primary and secondary Chambers every **HALF HOUR** after primary was fired.

Time	Primary chamber temperature	Secondary chamber temperature	Comments / RAKING?
8:00	580	1185	
8:30	613	1133	
9:00	614	1127	
9:30	590	1109	
10:00	609	1105	
10:30	567	1092	
11:30	600	1115	

☐ Primary chamber temperature was set to 0 C at _____.

Any Other Observations:

_____

_____

APPENDIX 5

CALIBRATION DATA

A. LANFRANCO and ASSOCIATES INC.

S - TYPE PITOT CALIBRATION FORM

Date: June 27 2012
Technician: CL
Pitot I.D.: A.L. C - 39
Nozzle I.D.: None

Approx. Wind Vel.	Pitot Vel. Pressure		S-Type Pitot Vel. Press.		Pitot Coefficient
Ft/sec.	Δ Pref.	Cref. SQRT(Δ Pref.)	Δ Ps	SQRT(Δ Ps)	Cp
10.00	0.050	0.22137	0.070	0.26458	0.83670
20.00	0.230	0.47479	0.320	0.56569	0.83931
30.00	0.350	0.58569	0.480	0.69282	0.84537
40.00	0.820	0.89648	1.120	1.05830	0.84710

AVERAGE Cp = 0.8421

Calibration Equation: $Cp = C_{ref.} * SQRT (\Delta P_{ref.}/\Delta Ps)$ $C_{ref.} = 0.99$

Where:
$\Delta P_{ref.}$ = velocity pressure measured by reference pitot

$C_{ref.}$ = coefficient of reference pitot

Δ Ps = velocity pressure measured by S - type pitot

Cp = coefficient of S - type pitot

AUTHORIZATION

Calibration Section

EPA Method 5

Meter Box Calibration

English Meter Box Units, English K' Factor

Model #: **N31**

Serial #: **31D 621C**

Date: 06-Jan-12

Barometric Pressure: 30.23 (in. Hg)

Theoretical Critical Vacuum: 14.26 (in. Hg)

!!!!!!!!!

IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

!!!!!!!!!

DRY GAS METER READINGS									CRITICAL ORIFICE READINGS					
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature Initial (deg F)	Ambient Temperature Final (deg F)	Ambient Temperature Average (deg F)
0.28	15.00	652.800	657.596	4.796	72.0	71.0	73.0	73.0	40	0.2408	21.0	64.0	63.0	63.5
0.74	16.00	642.000	649.572	7.572	74.0	72.0	73.0	72.0	48	0.3560	18.0	64.0	65.0	64.5
1.14	15.00	630.403	639.518	9.115	72.0	69.0	74.0	71.0	55	0.4606	16.0	63.0	63.0	63.0
1.90	13.00	616.600	626.470	9.870	65.0	61.0	71.0	66.0	63	0.5956	13.5	64.0	63.0	63.5

********** **RESULTS** **********

DRY GAS METER		ORIFICE			DRY GAS METER		ORIFICE			
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	CALIBRATION FACTOR Y Value (number)	CALIBRATION FACTOR Y Variation (number)	CALIBRATION FACTOR dH@ Value (in H2O)	CALIBRATION FACTOR dH@ Value (mm H2O)	CALIBRATION FACTOR dH@ Variation (in H2O)	Ko (value)
4.808	136.2	4.772	135.2	4.685	0.993	-0.006	1.560	39.63	-0.177	0.774
7.593	215.0	7.519	212.9	7.395	0.990	-0.009	1.890	48.01	0.153	0.705
9.170	259.7	9.133	258.6	8.957	0.996	-0.003	1.741	44.22	0.004	0.732
10.057	284.8	10.230	289.7	10.043	1.017	0.018	1.759	44.67	0.021	0.713
				Average Y----------->	**0.9989**		**Average dH@------>**	**1.74**	**44.1**	**Average Ko----->**	**0.731**

TEMPERATURE CALIBRATION

Calibration Standard --------> Omega Model CL23A S/N:T-218768

Reference Temperature Set-Point (deg F)	Temperature Device Reading (deg F)	Results Variation (degF)	Results Percent of Absolute
32	33	1	0.20%
100	101	1	0.18%
500	500	0	0.00%
800	799	-1	-0.08%
1000	1000	0	0.00%

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.
For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H20 that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +-0.2.
For Temperature Devicee, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

SIGNED: Shawn Herrington for

Date: Jan. 6/12

Calibration Certificate

Date: Feb.3, 2012
Technician: M. Lanfranco
Signature:
Instrument Calibrated: NOVA (New)

Nox

Gas	Instrument Reading	Certified Value	% Calibration Error
Zero	2	0	n/a
1 Gas			
2 Gas			
3 Gas			
4 Gas	415	417	-0.4
5 Gas			
Low Nox			
High Nox			

Performance Specification: +/- 5% of Certified Gas Value

O2

Gas	Instrument Reading	Certified Value	% Calibration Error
Zero	0.1	0.0	n/a
O2/CO2	10.9	10.88	0.2
Ambient	20.9	20.9	0.0

Performance Specification: +/- 0.5% O2 AD

CO

Gas	Instrument Reading	Certified Value	% Calibration Error
Zero	2	0	n/a
1 Gas			
2 Gas			
3 Gas	448	468	-4.3
4 Gas			
5 Gas			

Performance Specification: +/- 5% of Certified Gas Value

A. LANFRANCO and ASSOCIATES INC.

ENVIRONMENTAL CONSULTANTS

UNI PROBE NOZZLE DIAMETER CALIBRATION FORM

Technician: L. Agassiz
Date: January 5, 2012
Signature:

Nozzle I.D.	d1	d2	d3	difference	average	average area
3 FT # A	0.5620	0.5630	0.5640	0.0020	0.5630	0.0017288
3 FT # B	0.5780	0.5750	0.5760	0.0030	0.5763	0.0018117
3 FT # C	0.5720	0.5740	0.5730	0.0020	0.5730	0.0017908
3 FT # D	0.5170	0.5180	0.5160	0.0020	0.5170	0.0014578
3 FT # E	0.3070	0.3080	0.3050	0.0030	0.3067	0.0005129
3 FT # F	0.4870	0.4850	0.4860	0.0020	0.4860	0.0012882
3 FT # X	0.5470	0.5460	0.5470	0.0010	0.5467	0.0016299
3 FT # Y	0.6600	0.6610	0.6620	0.0020	0.6610	0.0023830
3 FT # Z	0.6530	0.6520	0.6530	0.0010	0.6527	0.0023233

Where:

(a) D1, D2, D3 = three different nozzle diameters; each diameter must be measured to within (0.025mm) 0.001 in.

(b) Difference = maximum difference between any two diameters; must be less than or equal to (0.1mm) 0.004 in.

(c) Average = average of D1, D2 and D3