SSSB
Survey Results
MARSAME Survey Package
SSSB-004
Wing Tank 9 Port

Revision 1

February 23, 2022

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Record of Revisions

Revision No.	Description of Revision	Date
0	Survey Results – MARSAME Survey Package SSSB-004	February 2, 2022
1	Survey Results – MARSAME Survey Package SSSB-004 – Deleted Figure 2-1. – Corrected units from "cpm/100 cm^2" to "dpm/100 cm^2" in Section 8.0. – Corrected critical value symbol in Section 8.0.	February 23, 2022

1.0 Objective

The objective of this survey data package is to justify the unrestricted release of the Surface Ship Support Barge (SSSB) Wing Tank 9 Port (9P) with no additional controls.

2.0 Background

Wing Tank 9P is part of the SSSB ballast system, located between Frames 47 and 50 of the vessel. Water for filling the ballast tanks was normally taken from a dockside supply of fresh water via the port or starboard salt water circulating system shore connection. Tank 9P is accessed by a single 48-inch-diameter hatch located on the aft, port weather deck. The No. 9 tanks are separated from the Wet Pit by the No. 8 tanks and are physically isolated from the contaminated drain collecting systems. Diagrams showing the location of Wing Tank 9P and its access point are provided on Figure 2-1 through Figure 2-3.

Wing Tank 9P is a permit-required confined space. The tank is approximately 40.5 feet deep by 12.5 feet wide with a series of vertical ladders and small platforms for entry into the tank. There are several baffles of various sizes and height/depth throughout the tank to minimize the movement of ballast water within the tank. In order to provide full access throughout the sections of the tank, small areas of the larger baffling were cut and removed.

The tank has a cutout or isolation valve with a reach rod for operation of the valve from the upper deck. The handwheel for operating the cutout valve is located on the port weather deck, aft of Frame 49.

The access ladder, tank bottom, and cutout valve are shown in Photograph 2-1. The internal support structure and baffling within the tank is shown in Photograph 2-2.

Figure 2-1
Location of Wing Tank 9P

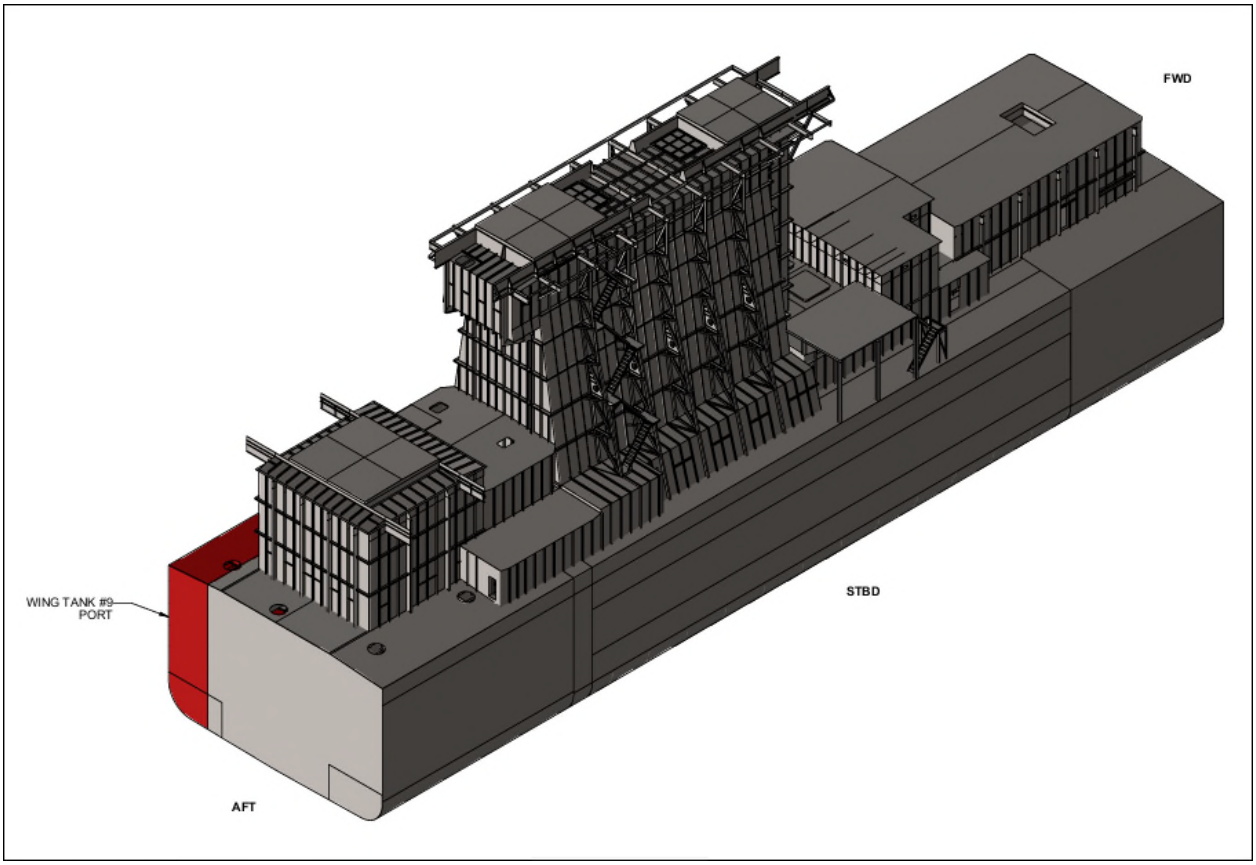


Figure 2-2
Location of Wing Tank 9P

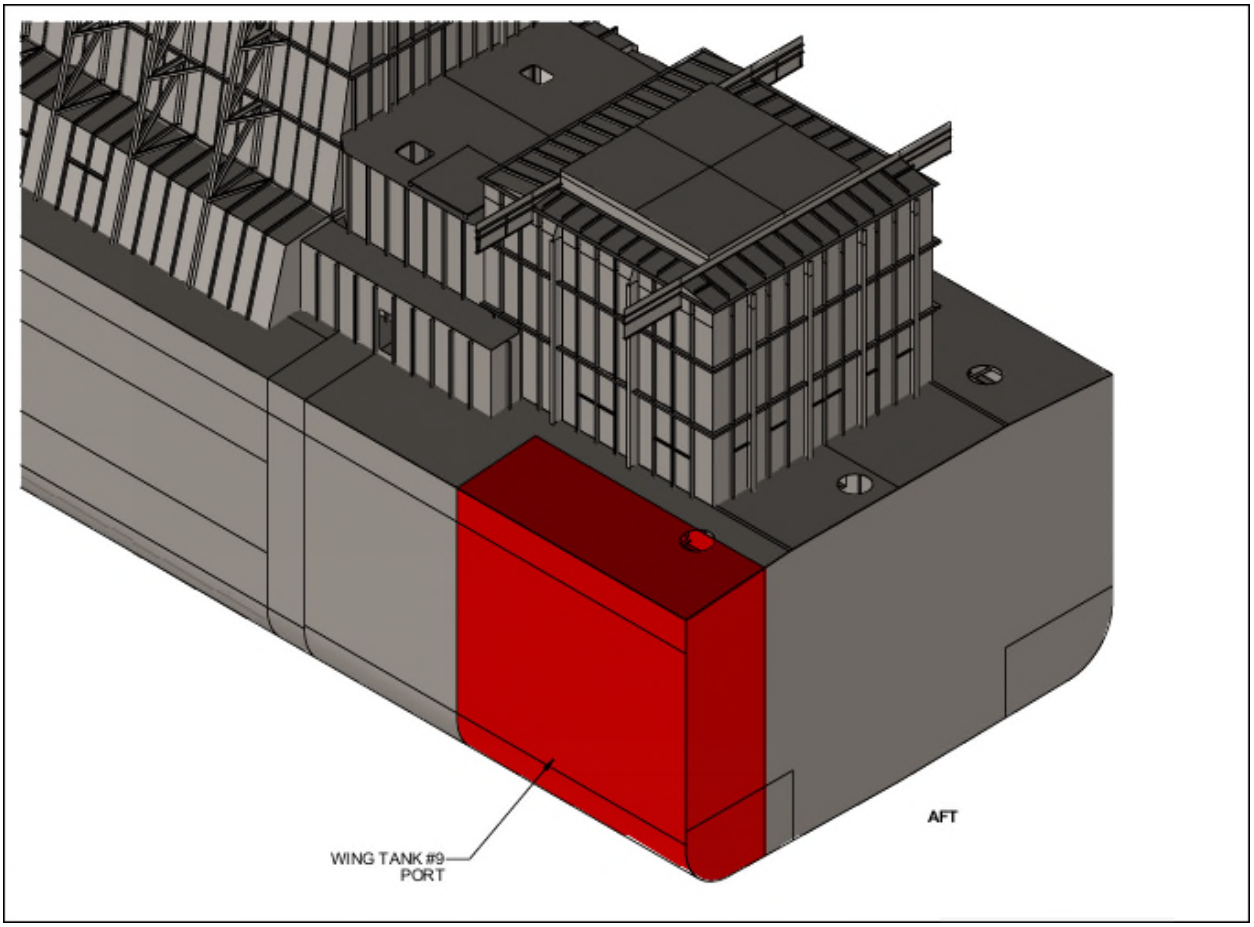
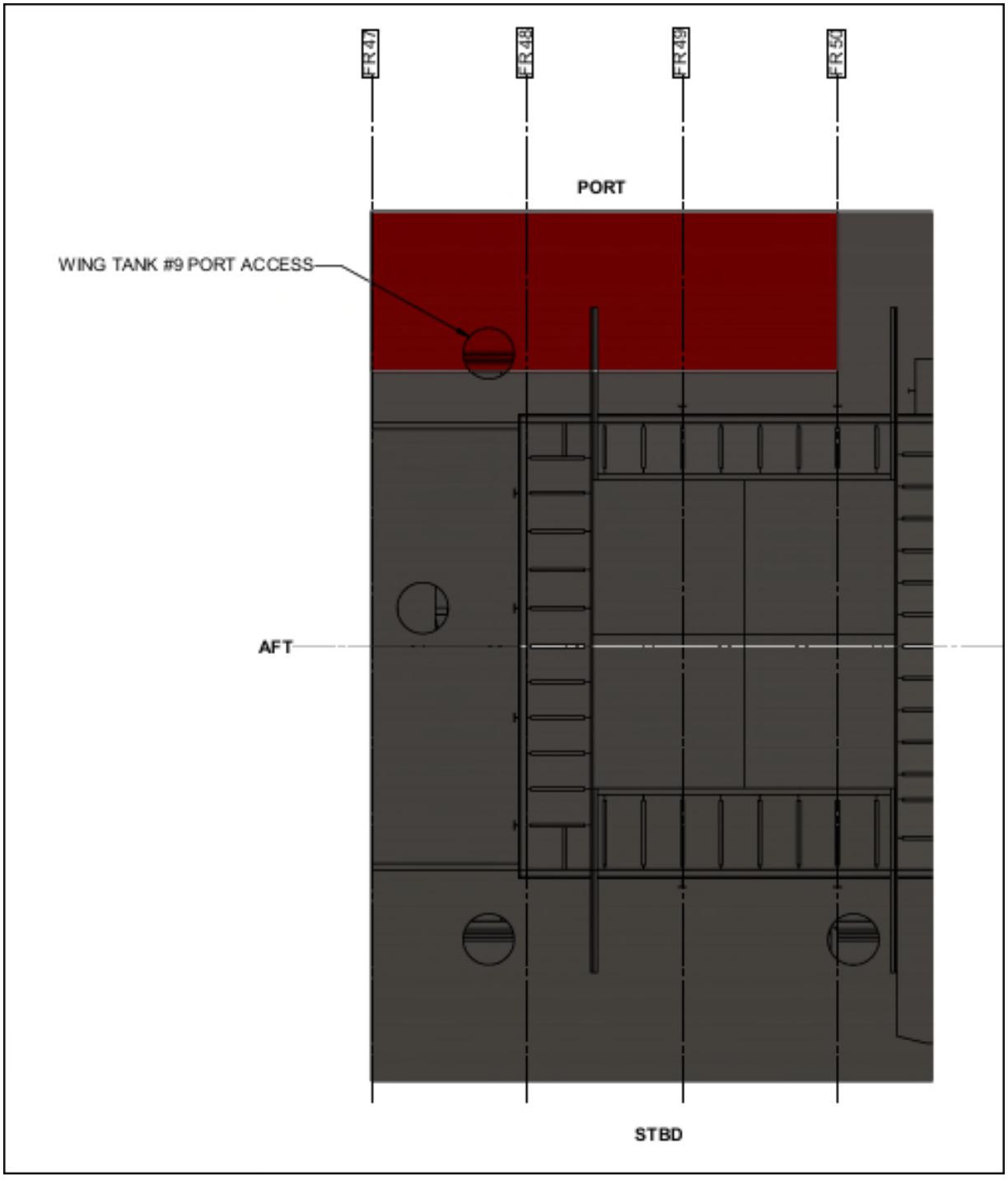
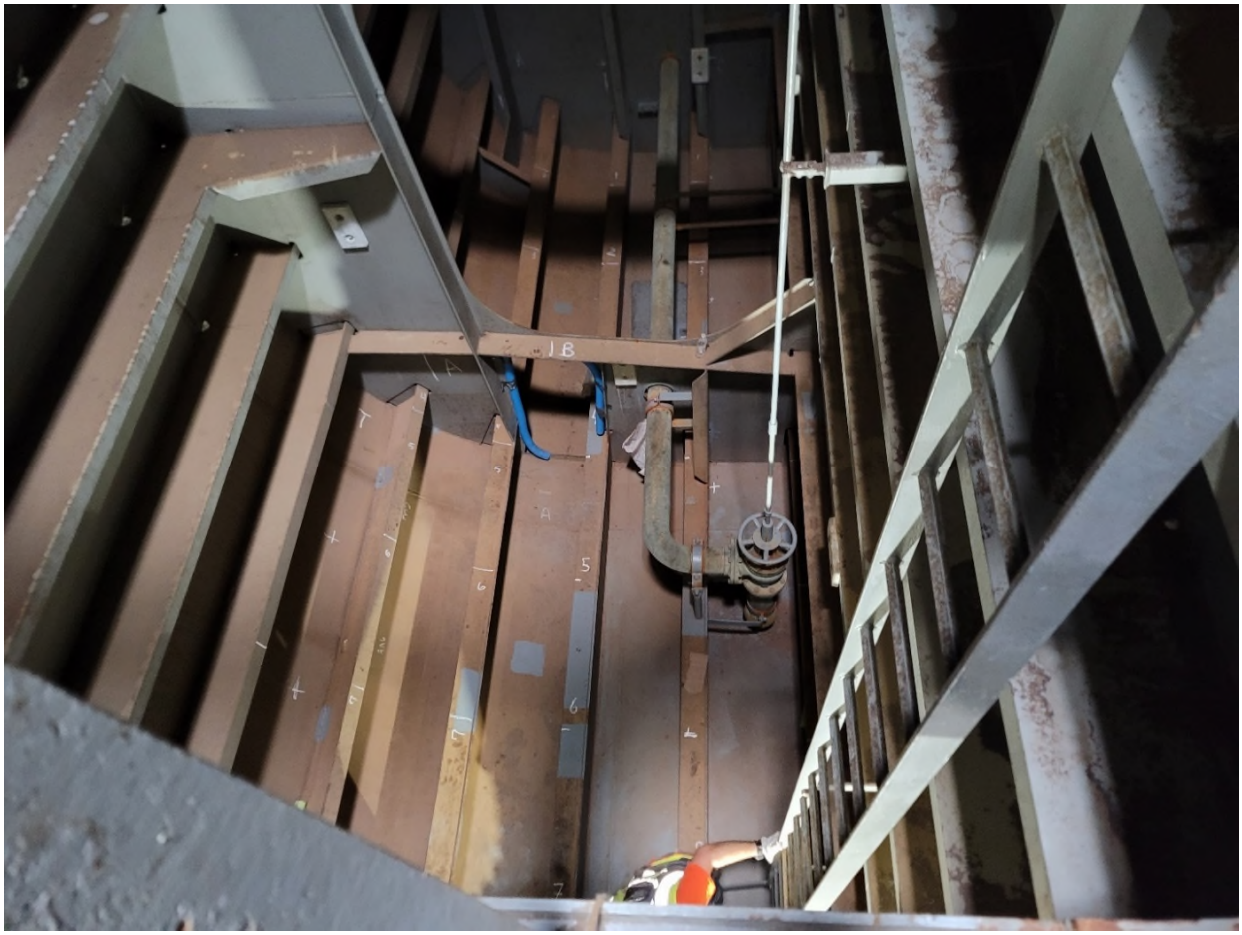


Figure 2-3
Wing Tank 9P Access



Photograph 2-1
Tank 9P Access Ladder, Cutout Valve, and Tank Bottom



Photograph 2-2
Tank 9P Internal Support Structure

3.0 Initial Assessment

3.1 Categorization

Based on prior assessments and the historical records, Tank 9P is considered an impacted area. This tank was decontaminated during vessel refurbishment in 1983/1984 and released by Naval Sea Systems Command (NAVSEA) for unrestricted use and has not been used to store radioactive liquids subsequent to refurbishment. According to the Facility System Status Report (FSSR) (NAVSEA, 2015), the status of Tank 9P was listed as “No radiological controls” and it stated that the tank was used to store ballast water. However, since this tank had previously come into direct contact with radioactive materials and had not been released to current regulatory standards, it is considered impacted.

3.2 Classification

Considering the tank was previously decontaminated and refurbished, the potential for residual radioactivity at detectable levels is low as defined in the SSSB project Materials Categorization, Survey, and Release Plan (MCSRP) (Aptim Federal Services, LLC [APTIM], 2021a). Tank 9P is classified as a Multi-Agency Radiation Survey and Assessment of Materials and Equipment (MARSAME) (U.S. Nuclear Regulatory Commission [NRC], 2009) Class 2 survey unit.

3.3 Disposition Options

The disposition option being considered for the Tank 9P materials and equipment (M&E) is release for unrestricted use.

4.0 Decision Inputs

The decision inputs for the surveys included the radiological contaminants of potential concern (RCOPC), the parameters of interest (total direct and removable activity and sample analyses), and the action or decision levels as specified within the following sections. This allowed the decision rules to be evaluated and the proper determinations made for the unrestricted release of the tank with no additional controls.

4.1 Null Hypothesis

The null hypothesis for the surveys was based on MARSAME Scenario A. Scenario “A” states that the contamination levels within the M&E survey unit are equal to or exceed the action levels (AL). If the activity levels on the M&E are determined to be equal to or exceed an AL, the null hypothesis is accepted and the M&E may not be free released. If all measurements are below the

ALs, then the null hypothesis is rejected and the M&E may be released with no radiological controls.

4.2 Radionuclides of Potential Concern

The RCOPCs were listed in Table 4-1 of the Decommissioning Work Plan (APTIM, 2021b) and have since been revised based on characterization surveys and sampling (APTIM, 2021c) as summarized in Table 4-1 below.

Table 4-1
Radionuclides of Potential Concern

Radionuclide	Radiation Emitted	Field Detectability
Tritium (H-3)	Low-energy beta	HTD
Cobalt-60 (Co-60)	Beta-Gamma	Yes
Nickel-63 (Ni-63)	Low-energy beta	HTD

The primary detectable RCOPCs is Co-60 which is an activation/corrosion product. In addition, the hard-to-detect (HTD) radionuclides of concern were evaluated using the results of removable contamination smears as analyzed in a liquid scintillation counter.

4.3 Action Levels

For the SSSB project, the ALs are based on no detectable activity per NRC I&E Notice 81-07 (NRC, 1981) expressed as:

- No detectable total surface beta activity during scans or static measurements with a minimum detectable concentration (MDC) not greater than 5,000 dpm/100 cm^2 as measured by a thin-window (0.8 milligrams per square centimeter [mg/cm^2]) gas flow proportional counter or detector of approximate equivalent sensitivity.
- Removable contamination less than 1,000 dpm/100 cm^2.
- No detectable Co-60 activity in paint samples with a minimum detectable activity (MDA) less than or equal to 3.0 picocuries per gram (pCi/g).

4.4 Decision Rules

The specific decision rules are as follows:

- If any surface beta activity is discernable above background during scans or static measurements with an MDC not greater than 5,000 dpm/100 cm^2 as measured by a thin-window (0.8 mg/cm^2) gas flow proportional counter or detector of approximate

equivalent sensitivity, the null hypothesis cannot be rejected and the M&E may not be released for unrestricted use.

- If any removable contamination is detected above 1,000 dpm/100 cm^2, the null hypothesis cannot be rejected and the M&E may not be released for unrestricted use.
- If Co-60 activity is detected in paint samples with an MDA less than or equal to 3.0 pCi/g, then the null hypothesis cannot be rejected and the M&E may not be released for unrestricted use.

If the decision rules are all rejected (i.e., all measurements and surface scans are below the applicable ALs), the M&E may be released for unrestricted use. If any decision rule is not rejected, the M&E will not be released for unrestricted use.

5.0 Survey Design

5.1 Survey Unit

Wing Tank 9P is an individual open tank with an area of approximately 990 square meters. As a result, the tank was considered a single Class 2 survey unit.

5.2 Survey Boundaries

The survey unit was limited to the interior surfaces of the tank and its contents. The vessel exterior is considered non-impacted and was not included in the survey.

5.3 Design

The survey included the following requirements in accordance with the MCSRP and MARSAME Survey Package SSSB-004 (APTIM, 2021d):

- At least 25% cumulative beta scan of accessible structural surfaces (tank interior walls, deck, baffles, and overhead).
- Minimum of 15 direct static measurements for beta activity taken on a systematic grid with a random starting point on the deck, walls, overheads, and internal walls.
- Smears for gross beta analysis at each direct static measurement location.
- Smears for H-3 and Ni-63 at each direct static measurement location.
- Volumetric paint samples for isotopic analysis at each direct static location.
- Additional measurements as required by the Radiological Control Supervisor (RCS) and approved by the Project Radiation Safety Officer (PRSO).

All measurement locations were marked and documented.

5.4 Survey Map

The tank shell was gridded using a one-square-meter grid starting at an established reference point. There were an estimated 480 square meters for the tank shell (floor, walls, and ceiling) excluding the internal structure such as the forward/aft stiffeners, bulkhead stiffeners, baffles and platform. A systematic grid with a random starting location was generated using a triangular grid to locate the 16 direct measurement and sampling locations. The tank structures, including the stiffeners, baffles and platforms, were inventoried, numbered, and 25% randomly selected for survey.

A copy of the Tank 9P survey map showing the one-square-meter grid overlay, grids scanned, and the systematic measurement/sample locations as well as the internal structures surveyed is included as Attachment 1.

6.0 Survey Results

The following sections summarize the data from the surveys performed within Tank 9P. A data tracking/cover sheet was used to provide survey instructions and to ensure the required survey data were collected. A copy of the MARSAME survey data tracking/cover sheet is provided as Attachment 2.

6.1 Background Assessment

Background measurements were collected prior to and during the performance of the surveys throughout the tank using a background plate covering the detector to measure the ambient background. The average background as measured within the tank was applied during all activity calculations.

Based on the background measurements, the detection sensitivities were validated to ensure they met the data quality objectives and the measured detection sensitivities are provided as part of the survey documentation.

6.2 Beta Surface Scans

Beta surface scans were performed using a Ludlum Model 2360 with Model 43-93 scintillation detector while listening to the instrument’s audible response to identify any elevated measurement areas using a scan speed not exceeding two detector widths per second. The scan data were recorded by documenting the maximum observed scan result for each square meter

surveyed. A total of 126 randomly selected grids out of 480 on the tank shell (i.e., floor, walls, and ceiling) were scanned for an approximately 26% scan coverage. Additionally, a minimum of 25% of the forward/aft stiffeners, bulkhead stiffeners, and the baffle and platform surfaces were randomly selected and scanned. A total of 10 out of 35 forward/aft stiffeners (28.6%), two of six bulkhead stiffeners (33.3%), one of four baffle sides (25%), and one of four platform surfaces (25%) were surveyed. This was performed to ensure the 25% scan requirement was met.

Each beta scan measurement was converted to surface activity using the average tank background and instrument efficiencies using the following equation:

$$Surface\ Activity = \frac{(R_S - R_B)}{\left(\varepsilon_i\ \varepsilon_S\ \frac{A}{100}\right)}$$

Where:
- R_S = Maximum observed count rate (counts per minute [cpm]) per grid or component
- R_B = Average ambient background count rate (cpm) in the tank
- ε_i = Instrument efficiency (2π)
- ε_S = Surface efficiency (25%)
- A = Detector surface area (cm^2)

All scan measurements were less than the MDAs, which ranged from approximately 3,363 to 4,553 dpm/100 cm^2, using a maximum scan speed of two detector widths per second which was less than the 5,000 dpm/100 cm^2 requirement.

The beta scan results are summarized in Attachment 3.

6.3 Direct Beta Measurements

Each measurement location consisted of a one-minute scalar count for total surface beta activity using the Ludlum Model 2360 with a Model 43-93 scintillation detector. A total of 16 systematic grid measurements for direct beta surface activity were performed. The approximate direct beta measurement locations were recorded as part of the survey documentation.

The direct measurements for total beta surface activity were recorded in cpm and converted to surface activity using the same equation provided in Section 6.2 above. All direct beta measurements were less than the critical value (see Section 7.4.1) based on the average measured

background. This indicated that all 16 measurements were indistinguishable from background with MDAs ranging from approximately 615 to 685 dpm/100 cm^2.

The direct beta measurements are summarized in Attachment 4.

6.4 Removable Beta Surface Activity

Smears for removable beta surface activity were collected at each of the 16 direct measurement locations and analyzed on-site. The removable beta surface activity results were recorded in cpm and converted to surface activity using the following equation:

$$Surface\ Activity = \frac{(R_S - R_B)}{\left(\varepsilon_i \frac{A}{100}\right)}$$

Where: R_S = Sample count rate (cpm)
R_B = Ambient background count rate (cpm)
ε_i = Instrument efficiency (4π)
A = Size of area smeared (~100 cm^2)

All smear results for removable beta surface activity were less than the MDAs, which ranged from approximately 99 to 102 dpm/100 cm^2.

The removable beta surface activity measurements are summarized in Attachment 5.

6.5 Removable Low-Energy Beta Surface Activity

Smears for removable low-energy beta (LEB) surface activity were collected at each of the 16 direct measurement location for both H-3 and Ni-63 and shipped for off-site laboratory analysis. All measurements were less than the AL of 1,000 dpm/100 cm^2. One H-3 smear was reported at 27.6 dpm/100 cm^2, which was above the laboratory's MDA but well below the AL of 1,000 dpm/100 cm^2.

The LEB smear results are summarized in Attachment 6 and copies of the off-site laboratory analytical reports are provided in Attachment 7.

6.6 Paint Samples

A paint sample was collected from a 12-inch by 12-inch area at each of the 16 direct measurement locations and shipped for off-site laboratory analysis for the RCOPCs as defined in the updated RCOPC list. All sample results were reported as less than the MDAs, specifically for

Co-60 with an MDA not exceeding 3.0 pCi/g. No detectable activity was identified in any of the paint samples, including Co-60, Ni-63, H-3, and C-14.

The volumetric isotopic results are summarized in Attachment 8 and a copy of the off-site laboratory analytical report is provided as Attachment 9.

6.7 Supplemental Data

No supplemental data were collected during the surveys because no elevated readings were identified during surface scans.

7.0 Quality Assurance

7.1 Daily Instrument Source Checks

Upon instrument receipt, each instrument was inspected and set up to establish baseline instrument response criteria and control charts in accordance with standard operating procedure. All instruments and detectors were subsequently inspected and source checked daily when in use to verify proper operation.

7.2 Decision Errors

- Type I: During scanning, the consequence of making a Type I decision error is clearing the M&E for re-use or recycle when the activity levels exceed the release criteria. A Type I decision error rate of 5% was selected for the scanning survey.

- Type II: The consequence of this decision error may include the need to perform an investigation to determine the reason for the elevated reading, or the added time and expense of decontamination and resurvey activities. For this reason, a Type II decision error rate of 5% was selected for the scanning.

7.3 Measurement Uncertainty

As specified in the MCSRP, all measurements include uncertainty and must be considered when the measurement results are used in the decision-making process. However, considering the ALs as established for the SSSB were no detectable activity for direct beta surface activity and no detectable activity greater than 1,000 dpm/100 cm^2 for removable beta, the measurement uncertainty was not determined or evaluated with the exception of the values as reported by the off-site laboratory and as summarized in Attachments 6 through 9.

7.4 Detection Capability

The measurement detection capability was assessed by two measurement values: the critical value and the MDC. The critical value is the minimum measured value for a specified probability that a positive (non-zero) amount of activity is actually present (i.e., distinguishable from background). The MDC, on the other hand, is the minimum detectable activity or concentration for a measurement that can be measured with confidence.

7.4.1 Fixed-Point Measurements

For static fixed-point measurements, the critical value is determined using Equation 1 in Table 7.5 of MARSAME:

$$S_c = Z_{1-\alpha}\sqrt{N_B \frac{t_S}{t_B}\left(1+\frac{t_S}{t_B}\right)}$$

Where:
- S_C = critical value, counts
- N_B = average background counts
- t_B = background count time (10 minutes)
- t_s = sample count time (1 minute)
- $Z_{1-\alpha}$ = Type 1 decision error (set as 1.645)

A net count for a fixed-point measurement that exceeds the S_c value will indicate the presence of residual radioactivity. The MDC can then be determined as follows:

$$MDC = \frac{S_c + \frac{Z_{1-\beta}^2}{2} + Z_{1-\beta}\sqrt{\frac{Z_{1-\beta}^2}{4} + S_c + N_B \frac{t_S}{t_B}\left(1+\frac{t_s}{t_B}\right)}}{t_S\, \varepsilon_i\, \varepsilon_S\, \frac{A}{100\ cm^2}}$$

Where:
- S_C = critical value, counts
- N_B = average background counts
- t_B = background count time
- t_s = sample count time
- $Z_{1-\beta}$ = Type 2 decision error (set as 1.645)
- ε_i = instrument 2π efficiency
- ε_s = surface efficiency
- A = detector area

Based on the instrumentation utilized (Ludlum Model 2360 with Model 43-93 scintillation probe) and the counting parameters that were established for the surveys, the maximum MDC for the fixed beta measurements was 685 dpm/100 cm^2. This was based on the established sample count time of one minute, ambient background count time of 10 minutes, average ambient background count rate of 97.6 cpm, instrument efficiency (2π) of 21.5%, surface efficiency of 25%, and a detector area of 100 cm^2.

7.4.2 Scan Sensitivity

The minimum detectable count rate (MDCR) was determined for the Ludlum Model 43-93 detector using Equation 6-9 in MARSSIM:

$$MDCR = d'\sqrt{b_i}\left(\frac{60}{i}\right)$$

Where: MDCR = minimum detectable count rate in cpm
b_i = average number of background counts in the observation interval
i = observation interval (0.5 seconds for a maximum scan speed of two detector widths per second)
d' = detectability index from Table 6.1 of NUREG-1507; a value of 1.38 was selected, which represents a true-positive detection rate of 95% and a false-positive detection rate of 60%.

The scan MDC was determined using Equation 6-10 in MARSSIM:

$$Scan\ MDC = \frac{MDCR}{\sqrt{p}\ \varepsilon_i\ \varepsilon_s\ \frac{probe\ area}{100\ cm^2}}$$

Where: MDCR = minimum detectable count rate (cpm)
p = efficiency of a less-than-ideal surveyor, range of 0.5 to 0.75 from NUREG-1507; a value of 0.5 was chosen as a conservative value
A = detector area (100 cm^2 for 43-93 detector)
ε_i = instrument 2π efficiency
ε_s = surface efficiency

Based on the instrumentation utilized (Ludlum Model 2360 with a 43-93 scintillation detector) and the counting parameters that were established for the survey(s), the maximum calculated beta scan sensitivity was 4,553 dpm/100 cm^2. This was based on an established scan speed not to exceed two detector widths per second (~5.4 inches/second), average ambient background count rate of 72.9 cpm, instrument efficiency (2π) of 16%, and a surface efficiency of 25%.

7.5 Duplicate / Replicate Measurements

Duplicate measurements and smear samples were collected at a minimum rate of 5% (i.e., one for every 20 measurements or samples). This included surface scans and measurements for total direct beta surface activity, removable LEB activity, and removable beta activity.

7.5.1 Beta Surface Scans

A total of 14 additional one-square-meter grids were scanned as presented in Attachment 3. Considering the total surface area of the tank is approximately 990 square meters (see Section 5.1) and an estimated scan coverage was 25% (~247 square meters), this constituted an approximate 5.6% survey for quality control (QC) for beta surface scans. The QC scan measurement results are provided as part of Attachment 3 and were consistent with the initial beta surface scan results.

7.5.2 Direct Beta Measurements

One additional direct beta measurement was collected for QC purposes, as presented in Attachment 4. This resulted in an approximate 6.3% QC for direct beta measurements (i.e., 1 for 16 total measurements). The QC measurement was less than MDC and consistent with the systematic measurements results.

7.5.3 Removable Beta Surface Activity

One additional smear for removable beta surface activity was collected for QC purposes, as presented in Attachment 5. This resulted in an approximate 6.3% QC for removable beta activity (i.e., one for 16 total smears). The QC measurement was less than the MDC and consistent with the systematic smear results.

7.5.4 Removable LEB Surface Activity

One additional smear each for removable LEB surface activity (H-3 and Ni-63) was collected for QC purposes, as presented in Attachment 6. This resulted in an approximate 6.3% QC for LEB surface activity (i.e., one for 16 smears each for H-3 and Ni-63). The QC measurement results were less than the MDAs and consistent with the systematic smear results.

In addition to the QC smears collected during the survey, the off-site laboratory performed a duplicate analysis on four of the smears, two each for H-3 and Ni-63. The laboratory duplicate results were all less than MDCs and consistent with the systematic smears.

7.5.5 Paint Samples

No duplicate paint samples were collected during the survey; however, the off-site laboratory performed a duplicate analysis on one of the samples. This constituted an approximate 6.3% QC (i.e., one for 16 total samples). The laboratory duplicate analysis results are presented in Attachment 8.

7.5.6 Independent Verification

During the MARSAME survey for Tank 9P, NRC personnel were on site with their independent verification contractor, Oak Ridge Institute for Science and Education (ORISE), to perform side-by-side surveys. Additionally, all 16 paint samples were either split with ORISE or the remaining samples returned by the off-site laboratory and forwarded to ORISE for independent analysis.

8.0 Data Evaluation

The survey and sampling data were determined to meet the minimum survey design requirements as stipulated in MARSAME Survey Package SSSB-004, Wing Tank 9P. All survey data were then evaluated against the applicable ALs and decision rules as specified in Section 4.4. These results are summarized as follows based on the survey results presented in Section 6.0:

- All beta surface scan results were less than the scan MDC with the MDC not to exceed 5,000 dpm/100 cm^2.
- All direct beta measurements were below the MDC and the critical value (Sc) with the MDC not to exceed 5,000 dpm/100 cm^2.
- All gross beta and LEB smear results were less than 1,000 dpm/100 cm^2.
- All paint sample results were less than MDAs with a Co-60 MDA less than 3.0 pCi/g.

9.0 Decision/Conclusion

Based upon the survey results and the data evaluation (i.e., all measurements were less than the specified ALs), the null hypothesis has been rejected and Tank 9P may be released for unrestricted release with no additional radiological controls.

10.0 References

Aptim Federal Services LLC (APTIM), 2021a, ***Materials Categorization, Survey, and Release Plan, Surface Ship Support Barge Dismantlement and Disposal***, Rev. 0, March (or most recent revision).

Aptim Federal Services LLC (APTIM), 2021b, ***Decommissioning Work Plan, Surface Ship Support Barge Dismantlement and Disposal,*** Rev. 1, April (or most recent revision).

Aptim Federal Services LLC (APTIM), 2021c, Surface Ship Support Barge Contract Number N00024-20-C-4139; Revised Radiological Constituents of Potential Concern (RCOPCs); Notification of Initiating Waste Shipment, APTIM-501513-0018, September 22, 2021.

Aptim Federal Services LLC (APTIM), 2021d, ***MARSAME Survey Package SSSB-004, Wing Tank 9P, Surface Ship Support Barge Dismantlement and Disposal,*** Rev. 1, November (or most recent revision).

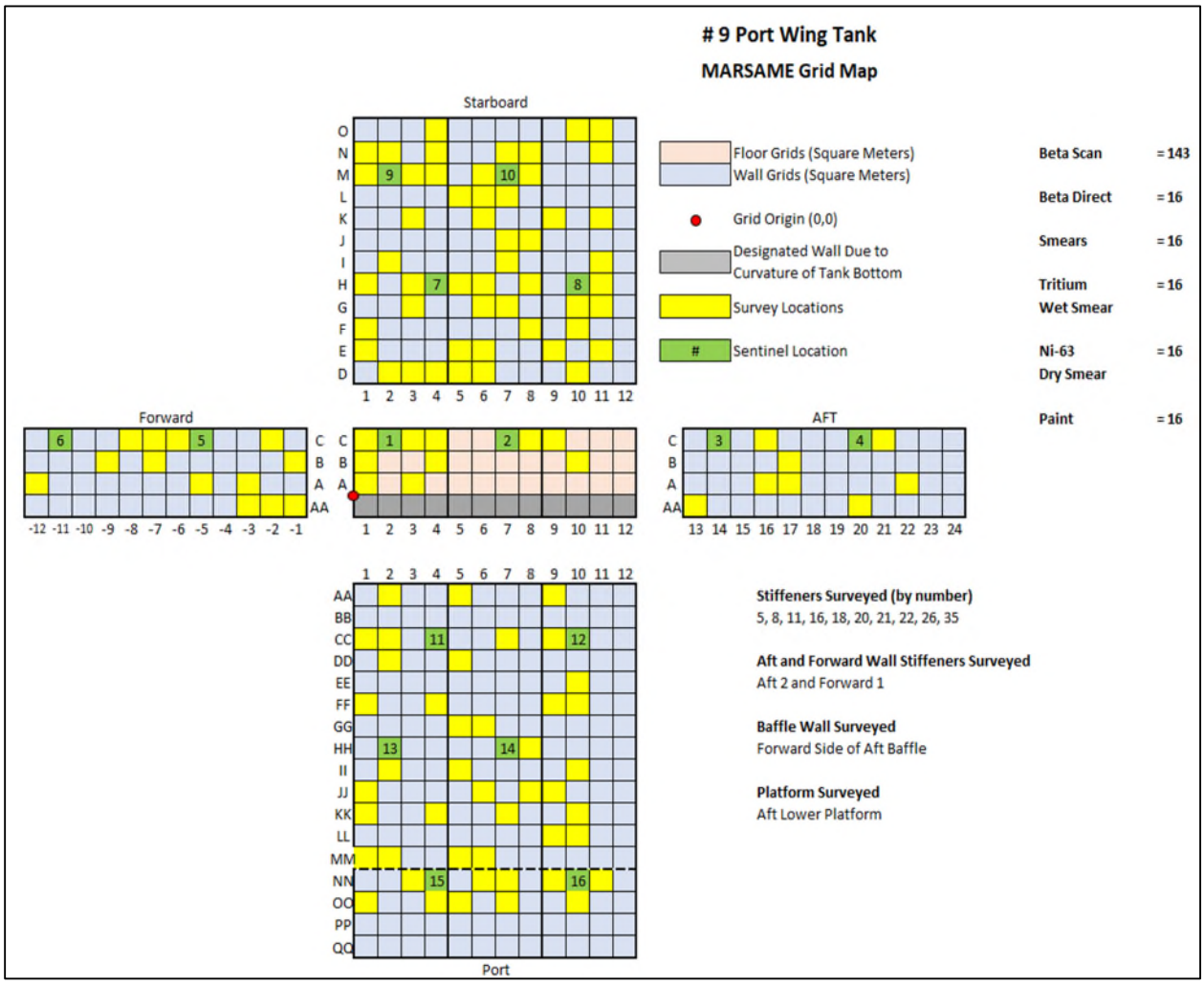
Naval Sea Systems Command (NAVSEA), 2015, ***Facility System Status Report (FSSR), Surface Ship Support Barge***, Rev. A-12, April 29.

U.S. Nuclear Regulatory Commission (NRC), 2009, ***Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual (MARSAME),*** NUREG-1575, Supp. 1; EPA-402-R-09-001; DOE/HS-0004; January.

U.S. Nuclear Regulatory Commission (NRC), 1981, ***Control of Radioactively Contaminated Material***, I&E Circular No. 81-07, May.

ATTACHMENT 1

SURVEY AND SAMPLE LOCATION MAP



NOTE: The number of grids for beta scan (143) includes the 16 grids identified as beta direct. However, the number as shown in the figure is incorrect. The actual number, including the 16 direct measurement locations, is 142.

ATTACHMENT 2

MARSAME DATA TRACKING SHEET

MARSAME SURVEY PACKAGE

SSSB-004
Wing Tank 9P

Survey Requirement	Completion (Signature and Date)
Wing Tank 9P	
25% cumulative beta scan of tank deck, walls, baffles, and overhead. Identify grids that were scan surveyed as applicable (minimum of 250 square meters of coverage).	D.L.S. HL 12-6-21
At least 15 direct beta static measurements (see attached map) taken on a systematic grid with a random starting point on the deck, walls, overheads, and internal walls/baffles.	D.L.S. HL 11-30-21
Gross beta smear per direct measurement location.	D.L.S. HL 11-30-21
H-3 and Ni-63 smears per direct measurement location.	D.L.S. HL 11-30-21
Volumetric paint samples for isotopic analysis at each direct static location	D.L.S. HL 11-30-21
One QC measurement for each 20 measurements performed.	D.L.S. HL 11-30-21

Reviewed By: Bryon Rogers BR

Approved By: HL

ATTACHMENT 3

BETA SCAN SURVEY RESULTS SUMMARY

Count Times (min)		Detector		Item	Qty	Surveyed	% Coverage
Sample	1	Width (cm)	6.9	Grids	480	126	26.3%
Bkgd	10	Area (cm2)	100	F/A Stiffiners	35	10	28.6%
Speed (w/sec)	2			Bulk Stiffiners	6	2	33.3%
				Baffle Sides	4	1	25.0%
				Platforms	4	1	25.0%

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface
	A-1	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Floor
	A-3	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Floor
	B-1	90	80.4	22.80%	25%	168.9	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Floor
	B-4	60	80.4	22.80%	25%	-357.5	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Floor
	B-10	120	80.0	21.50%	25%	744.8	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Floor
	C-1	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Floor
1	C-2										Floor
	C-3	90	80.4	22.80%	25%	168.9	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Floor
	C-4	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Floor
2	C-7										Floor
	C-8	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Floor
	C-9	100	80.0	21.50%	25%	372.7	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Floor
	AA-(-1)	60	80.4	22.80%	25%	-357.5	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Forward Wall
	AA-(-2)	60	80.4	22.80%	25%	-357.5	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Forward Wall
	AA-(-3)	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Forward Wall
	A-(-3)	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Forward Wall
	A-(-5)	80	80.5	18.60%	25%	-10.8	135.6	4,125.1	< MDA	ASY-20211130-SSSB-0634	Forward Wall
	A-(-12)	60	76.6	18.60%	25%	-357.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Forward Wall
	B-(-1)	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Forward Wall
	B-(-7)	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Forward Wall
	B-(-9)	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Forward Wall
	C-(-2)	60	80.4	22.80%	25%	-357.5	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Forward Wall
5	C-(-5)										Forward Wall
	C-(-6)	60	80.4	22.80%	25%	-357.5	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Forward Wall
	C-(-7)	70	80.4	22.80%	25%	-182.0	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Forward Wall

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface
	C-(-8)	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0496	Forward Wall
6	C-(-11)										Forward Wall
	AA-13	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Aft Wall
	AA-20	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Aft Wall
	A-16	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Aft Wall
	A-17	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Aft Wall
	A-22	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Aft Wall
	B-17	100	80.0	21.50%	25%	372.7	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Aft Wall
3	C-14										Aft Wall
	C-16	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Aft Wall
4	C-20										Aft Wall
	C-21	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Aft Wall
	D-2	70	80.4	22.80%	25%	-182.0	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	D-3	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	D-4	70	80.4	22.80%	25%	-182.0	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	D-5	70	80.0	21.50%	25%	-185.4	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	D-6	70	80.0	21.50%	25%	-185.4	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	D-10	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	E-1	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	E-5	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	E-6	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	E-9	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	E-11	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	F-1	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	F-8	70	80.0	21.50%	25%	-185.4	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	F-10	70	80.0	21.50%	25%	-185.4	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	G-3	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	G-6	70	80.0	21.50%	25%	-185.4	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	G-7	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	G-10	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	G-11	70	80.0	21.50%	25%	-185.4	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	H-1	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	H-3	70	80.4	22.80%	25%	-182.0	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface
7	H-4										Starboard Wall
	H-5	60	80.4	22.80%	25%	-357.5	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	H-6	100	80.4	22.80%	25%	344.3	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	H-8	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
8	H-10										Starboard Wall
	H-11	100	80.0	21.50%	25%	372.7	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	I-2	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	I-7	60	80.4	22.80%	25%	-357.5	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	I-11	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Starboard Wall
	J-7	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	J-8	90	80.4	22.80%	25%	168.9	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Starboard Wall
	K-3	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	K-6	70	76.6	18.60%	25%	-142.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	K-9	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	K-11	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	L-5	70	76.6	18.60%	25%	-142.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	L-6	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	L-7	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	M-1	70	76.6	18.60%	25%	-142.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
9	M-2										Starboard Wall
	M-3	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	M-4	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	M-6	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA		Starboard Wall
10	M-7										Starboard Wall
	M-8	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Starboard Wall
	N-1	60	76.6	18.60%	25%	-357.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	N-2	70	76.6	18.60%	25%	-142.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	N-4	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	N-7	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Starboard Wall
	N-8	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Starboard Wall
	N-11	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Starboard Wall
	O-4	70	76.6	18.60%	25%	-142.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	O-10	60	76.6	18.60%	25%	-357.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface
	O-11	70	76.6	18.60%	25%	-142.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Starboard Wall
	AA-2	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Port Wall
	AA-5	100	80.0	21.50%	25%	372.7	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Port Wall
	AA-9	90	80.0	21.50%	25%	186.7	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Port Wall
	CC-1	80	80.4	22.80%	25%	-6.6	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Port Wall
	CC-2	60	80.4	22.80%	25%	-357.5	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Port Wall
11	CC-4										Port Wall
	CC-7	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Port Wall
	CC-9	100	80.0	21.50%	25%	372.7	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Port Wall
12	CC-10										Port Wall
	DD-2	60	80.4	22.80%	25%	-357.5	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Port Wall
	DD-5	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Port Wall
	EE-10	80	80.0	21.50%	25%	0.6	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Port Wall
	FF-1	100	80.4	22.80%	25%	344.3	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Port Wall
	FF-4	90	80.4	22.80%	25%	168.9	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Port Wall
	FF-9	90	80.0	21.50%	25%	186.7	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Port Wall
	FF-10	90	80.0	21.50%	25%	186.7	135.2	3,556.8	< MDA	ASY-20211124-SSSB-0493	Port Wall
	GG-5	100	80.4	22.80%	25%	344.3	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Port Wall
	GG-6	70	80.4	22.80%	25%	-182.0	135.5	3,362.6	< MDA	ASY-20211124-SSSB-0492	Port Wall
13	HH-2										Port Wall
14	HH-7										Port Wall
	HH-8	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall
	II-2	60	76.6	18.60%	25%	-357.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Port Wall
	II-5	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall
	II-10	60	76.6	18.60%	25%	-357.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Port Wall
	JJ-1	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Port Wall
	JJ-6	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall
	JJ-8	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall
	JJ-9	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Port Wall
	KK-1	70	76.6	18.60%	25%	-142.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Port Wall
	KK-4	40	76.6	18.60%	25%	-787.7	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Port Wall
	KK-7	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall
	KK-10	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface
	LL-9	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall
	LL-10	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall
	MM-1	60	76.6	18.60%	25%	-357.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Port Wall
	MM-2	60	76.6	18.60%	25%	-357.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Port Wall
	MM-5	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall
	MM-6	80	82.3	21.50%	25%	-42.3	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Port Wall
	NN-3	100	76.6	18.60%	25%	502.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Ceiling
15	NN-4										Ceiling
	NN-6	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Ceiling
	NN-7	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Ceiling
	NN-9	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Ceiling
16	NN-10										Ceiling
	NN-11	90	76.6	18.60%	25%	287.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Ceiling
	OO-1	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Ceiling
	OO-4	100	76.6	18.60%	25%	502.6	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Ceiling
	OO-5	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Ceiling
	OO-7	100	82.3	21.50%	25%	329.8	137.1	3,607.8	< MDA	ASY-20211129-SSSB-0496	Ceiling
	OO-10	80	76.6	18.60%	25%	72.5	132.3	4,024.6	< MDA	ASY-20211129-SSSB-0495	Ceiling
F/A Stiff	5	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
	8	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
	11	90	76.2	21.50%	25%	256.1	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
	16	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
	18	80	76.2	21.50%	25%	70.1	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
	20	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
	21	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
	22	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
	26	90	76.2	21.50%	25%	256.1	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
	35	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	F/A Stiffener
Bulk Stiff	Aft 2	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	Bulkhead Stiffiner
	Fwd 1	90	76.2	21.50%	25%	256.1	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	Bulkhead Stiffiner

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface
Baffle	Fwd of Aft	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	Baffle
Platform	Aft Lower	100	76.2	21.50%	25%	442.2	132.0	3,472.8	< MDA	ASY-20211129-SSSB-0500a	Platform
QC											
	AA-1	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Port Wall
	A-1	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	B-1	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	C-1	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	C-3	90	72.9	16.04%	25%	426.5	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	C-4	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	B-4	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	A-3	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	C-8	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	C-9	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	B-10	110	72.9	16.04%	25%	925.3	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Floor
	AA-(-1)	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Forward Wall
	AA-(-2)	100	72.9	16.04%	25%	675.9	129.1	4,552.8	< MDA	ASY-20220112-SSSB-0687	Forward Wall
	Platform	80	80.5	18.60%	25%	-10.8	135.6	4,125.1	< MDA	ASY-20211130-SSSB-0634	Platform

ATTACHMENT 4

DIRECT BETA MEASUREMENT RESULTS SUMMARY

Count Times (min)		Detector	
Sample	1	Width (cm)	6.9
Bkgd	10	Area (cm2)	100

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	Lc Counts	Results	MDA dpm/100 cm2	Results	Survey
1	C-2	78	77.4	21.50%	25%	11.6	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
2	C-7	87	77.4	21.50%	25%	179.1	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
3	C-14	64	77.4	21.50%	25%	-248.8	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
4	C-20	68	77.4	21.50%	25%	-174.4	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
5	C-(-5)	67	77.4	21.50%	25%	-193.0	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
6	C-(-11)	66	97.6	21.50%	25%	-587.9	114.6	< Lc	684.6	< MDA	ASY-20211122-SSSB-0479
7	H-4	62	77.4	21.50%	25%	-286.0	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
8	H-10	57	77.4	21.50%	25%	-379.1	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
9	M-2	75	97.6	21.50%	25%	-420.5	114.6	< Lc	684.6	< MDA	ASY-20211122-SSSB-0479
10	M-7	63	97.6	21.50%	25%	-643.7	114.6	< Lc	684.6	< MDA	ASY-20211122-SSSB-0479
11	CC-4	79	77.4	21.50%	25%	30.2	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
12	CC-10	78	97.6	21.50%	25%	-364.7	114.6	< Lc	684.6	< MDA	ASY-20211122-SSSB-0479
13	HH-2	81	77.4	21.50%	25%	67.4	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
14	HH-7	60	77.4	21.50%	25%	-323.3	92.6	< Lc	615.1	< MDA	ASY-20211119-SSSB-0475
15	NN-10	105	97.6	21.50%	25%	137.7	114.6	< Lc	684.6	< MDA	ASY-20211122-SSSB-0479
16	NN-4	77	97.6	21.50%	25%	-383.3	114.6	< Lc	684.6	< MDA	ASY-20211122-SSSB-0479
QC											
15D	NN-4	86	97.6	21.50%	25%	-215.8	114.6	< Lc	684.6	< MDA	ASY-20211122-SSSB-0479

ATTACHMENT 5

REMOVABLE BETA SURVEY RESULTS SUMMARY

		Count Times (min)							
		Sample	1						
		Bkgd	10						
Loc	Grid	Sample cpm	Background cpm	Efficiency	Activity dpm/100 cm2	1σ Uncertainty dpm/100 cm2	MDA dpm/100 cm2	Results	Survey
1	C-2	16	23.9	19.7%	-40.1	21.8	99.4	< MDA	ASY-20211202-SSSB-0518
2	C-7	25	23.9	19.7%	5.6	26.6	99.4	< MDA	ASY-20211202-SSSB-0518
3	C-14	16	23.9	19.7%	-40.1	21.8	99.4	< MDA	ASY-20211202-SSSB-0518
4	C-20	26	32.1	21.8%	-28.0	24.8	102.1	< MDA	ASY-20211118-SSSB-0463
5	C-(-5)	21	32.1	21.8%	-50.9	22.6	102.1	< MDA	ASY-20211117-SSSB-0462
6	C-(-11)	25	32.1	21.8%	-32.6	24.4	102.1	< MDA	ASY-20211117-SSSB-0462
7	H-4	25	32.1	21.8%	-32.6	24.4	102.1	< MDA	ASY-20211117-SSSB-0462
8	H-10	29	32.1	21.8%	-14.2	26.0	102.1	< MDA	ASY-20211117-SSSB-0462
9	M-2	23	32.1	21.8%	-41.7	23.5	102.1	< MDA	ASY-20211117-SSSB-0462
10	M-7	25	32.1	21.8%	-32.6	24.4	102.1	< MDA	ASY-20211117-SSSB-0462
11	CC-4	26	32.1	21.8%	-28.0	24.8	102.1	< MDA	ASY-20211117-SSSB-0462
12	CC-10	22	32.1	21.8%	-46.3	23.0	102.1	< MDA	ASY-20211117-SSSB-0462
13	HH-2	20	32.1	21.8%	-55.5	22.1	102.1	< MDA	ASY-20211117-SSSB-0462
14	HH-7	18	32.1	21.8%	-64.7	21.1	102.1	< MDA	ASY-20211117-SSSB-0462
15	MM-10	20	32.1	21.8%	-55.5	22.1	102.1	< MDA	ASY-20211118-SSSB-0463
16	MM-4	15	32.1	21.8%	-78.4	19.6	102.1	< MDA	ASY-20211118-SSSB-0463
QC									
4D	C-20	24	32.1	21.8%	-37.2	23.9	102.1	< MDA	ASY-20211118-SSSB-0463

ATTACHMENT 6

REMOVABLE LEB SURVEY RESULTS SUMMARY

		Tritium H-3						Nickel-63 Ni-63							
Systematic	Loc	Result pCi/100cm2	2s Error pCi/100cm2	MDA pCi/100cm2	Result dpm/100 cm2	2s Error dpm/100 cm2	MDA dpm/100 cm2	Result pCi/100cm2	2s Error pCi/100cm2	MDA pCi/100cm2	Result dpm/100 cm2	2s Error dpm/100 cm2	MDA dpm/100 cm2	Report	Limit dpm/100 cm2
501513-9P-SM-01	1	*-0.55*	9.41	16.38	*-1.23*	20.89	36.36	*-0.47*	3.32	5.75	*-1.04*	7.37	12.77	EB-21-12013	1,000
501513-9P-SM-02	2	*-0.66*	5.61	9.79	*-1.47*	12.46	21.73	*-1.21*	1.69	2.98	*-2.68*	3.75	6.60	EB-21-12013	1,000
501513-9P-SM-03	3	*-2.64*	3.64	6.50	*-5.86*	8.08	14.43	*-1.01*	1.64	2.88	*-2.25*	3.64	6.39	EB-21-12013	1,000
501513-9P-SM-04	4	*2.02*	3.89	6.63	*4.48*	8.64	14.71	*-0.71*	1.67	2.91	*-1.58*	3.70	6.47	EB-21-12013	1,000
501513-9P-SM-05	5	*-0.42*	3.55	6.19	*-0.93*	7.88	13.75	*-0.72*	1.68	2.94	*-1.59*	3.73	6.52	EB-21-12013	1,000
501513-9P-SM-06	6	*-1.48*	3.54	6.25	*-3.29*	7.86	13.87	*-0.16*	1.69	2.93	*-0.35*	3.76	6.50	EB-21-12013	1,000
501513-9P-SM-07	7	*-1.64*	3.43	6.06	*-3.64*	7.61	13.45	*-0.76*	1.61	2.81	*-1.69*	3.57	6.25	EB-21-12013	1,000
501513-9P-SM-08	8	*0.48*	4.10	7.09	*1.07*	9.10	15.73	*-0.39*	1.64	2.85	*-0.86*	3.65	6.34	EB-21-12013	1,000
501513-9P-SM-09	9	*-1.40*	3.34	5.89	*-3.10*	7.42	13.08	*-0.08*	1.65	2.85	*-0.17*	3.66	6.32	EB-21-12013	1,000
501513-9P-SM-10	10	*-0.59*	3.32	5.79	*-1.31*	7.36	12.86	*-0.52*	1.59	2.76	*-1.16*	3.52	6.13	EB-21-12013	1,000
501513-9P-SM-11	11	**12.42**	3.74	5.73	**27.57**	8.30	12.72	*0.08*	1.66	2.85	*0.17*	3.68	6.33	EB-21-12013	1,000
501513-9P-SM-12	12	*-2.77*	3.26	5.85	*-6.15*	7.24	12.98	*-1.26*	1.65	2.91	*-2.80*	3.67	6.47	EB-21-12013	1,000
501513-9P-SM-13	13	*6.35*	6.70	11.22	*14.11*	14.86	24.90	*-0.62*	3.35	5.81	*-1.39*	7.45	12.91	EB-21-12014	1,000
501513-9P-SM-14	14	*0.00*	3.19	5.54	*0.00*	7.08	12.30	*0.56*	1.73	2.95	*1.23*	3.84	6.55	EB-21-12014	1,000
501513-9P-SM-15	15	*0.99*	3.25	5.58	*2.19*	7.22	12.40	*0.32*	1.71	2.94	*0.70*	3.80	6.52	EB-21-12014	1,000
501513-9P-SM-16	16	*0.62*	3.39	5.85	*1.38*	7.53	13.00	*0.47*	1.71	2.93	*1.05*	3.80	6.50	EB-21-12014	1,000
Average		*0.67*		7.27	*1.49*		16.14	*-0.41*		3.25	*-0.90*		7.22		
Std Dev		3.79			8.42			0.56			1.25				
Min		*-2.77*		5.54	*-6.15*		12.30	*-1.26*		2.76	*-2.80*		6.13		
Max		*12.42*		16.38	*27.57*		36.36	*0.56*		5.81	*1.23*		12.91		
QC Data															
501513-9P-SM-01	L-DUP	*-1.12*	9.52	16.61	*-2.50*	21.14	36.87	*0.62*	3.36	5.76	*1.38*	7.45	12.78	EB-21-12013	1,000
501513-9P-SM-05D	FD	*2.08*	3.46	5.87	*4.61*	7.67	13.03	*0.24*	1.70	2.92	*0.52*	3.78	6.49	EB-21-12014	1,000
501513-9P-SM-13	L-DUP	*0.80*	6.56	11.36	*1.79*	14.57	25.22	*-0.94*	3.36	5.83	*-2.09*	7.45	12.95	EB-21-12014	1,000

Italics Less than MDA/MDC
Bold Greater than or Equal to MDA/MDC

ATTACHMENT 7

LABORATORY ANALYTICAL REPORTS – REMOVABLE LOW-ENERGY BETA SMEARS

APTIM FEDERAL SERVICES LLC

PO: 208345
Project: 501513 SSSB Decommissioning

LEVEL II
REPORT OF ANALYSIS

WORK ORDER #21-12013-OR

January 4, 2022

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-49203

December 22, 2021

Guy Gallello, Jr.
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

CASE NARRATIVE
Work Order # 21-12013-OR

SAMPLE RECEIPT

This work order contains twelve smear samples received 12/02/2021. Samples were analyzed for Tritium and Nickel-63.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
501513-9P-SM-01	21-12013-04	501513-9P-SM-07	21-12013-10
501513-9P-SM-02	21-12013-05	501513-9P-SM-08	21-12013-11
501513-9P-SM-03	21-12013-06	501513-9P-SM-09	21-12013-12
501513-9P-SM-04	21-12013-07	501513-9P-SM-10	21-12013-13
501513-9P-SM-05	21-12013-08	501513-9P-SM-11	21-12013-14
501513-9P-SM-06	21-12013-09	501513-9P-SM-12	21-12013-15

ANALYTICAL METHODS

Tritium was performed using Method LANL ER-210 Modified. Nickel-63 was performed using Method ASTM 3500-Ni Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

TRITIUM

Smears were received from client equilibrated in deionized water. Equilibrates were placed in liquid scintillation vials and smears were subsequently rinsed with Tritium free water which was added to scintillation vials. Scintillation cocktail was added. Samples were counted by beta liquid scintillation.

ANALYTICAL RESULTS CONTINUED

TRITIUM CONTINUED

Samples demonstrated acceptable results for all Tritium analyses. The Tritium method blank demonstrated an acceptable result. Results for the Tritium replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Tritium laboratory control sample demonstrated an acceptable percent recovery.

NICKEL-63

A representative aliquot of each sample was placed into an appropriately sized beaker and leached in Nitric Acid. Stable elemental Nickel carrier was added to each sample supernatant prior to digestion. Samples were digested in concentrated Nitric acid. After digestion, each sample pH was adjusted, and Nickel-63 was precipitated selectively with Dimethylglyoxime. Precipitates were selectively separated, redissolved, and residual acid was effectively neutralized. Samples residuals were placed into scintillation vials, scintillation cocktail was added, and Nickel-63 activity was determined by beta liquid scintillation.

Samples demonstrated acceptable results for all Nickel-63 analyses. The Nickel-63 method blank demonstrated an acceptable result. Results for the Nickel-63 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Nickel-63 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.

M.R. McDougall
Laboratory Manager

Date: 12/22/2021

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12013
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SM

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12013-01	LCS	KNOWN	12/03/21 00:00	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	1.83E+02	6.59E+00			pCi/s
21-12013-01	LCS	SPIKE	12/03/21 00:00	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	1.77E+02	7.24E+00	1.23E+01	5.51E+00	pCi/s
21-12013-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-7.54E-01	3.18E+00	3.18E+00	5.56E+00	pCi/s
21-12013-03	DUP	501513-9P-SM-01	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-1.12E+00	9.52E+00	9.52E+00	1.66E+01	pCi/s
21-12013-04	DO	501513-9P-SM-01	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-5.54E-01	9.41E+00	9.41E+00	1.64E+01	pCi/s
21-12013-05	TRG	501513-9P-SM-02	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-6.63E-01	5.61E+00	5.61E+00	9.79E+00	pCi/s
21-12013-06	TRG	501513-9P-SM-03	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-2.64E+00	3.64E+00	3.64E+00	6.50E+00	pCi/s
21-12013-07	TRG	501513-9P-SM-04	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	2.02E+00	3.89E+00	3.89E+00	6.63E+00	pCi/s
21-12013-08	TRG	501513-9P-SM-05	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-4.19E-01	3.55E+00	3.55E+00	6.19E+00	pCi/s
21-12013-09	TRG	501513-9P-SM-06	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-1.48E+00	3.54E+00	3.54E+00	6.25E+00	pCi/s
21-12013-10	TRG	501513-9P-SM-07	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-1.64E+00	3.43E+00	3.43E+00	6.06E+00	pCi/s
21-12013-11	TRG	501513-9P-SM-08	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	4.80E-01	4.10E+00	4.10E+00	7.09E+00	pCi/s
21-12013-12	TRG	501513-9P-SM-09	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-1.40E+00	3.34E+00	3.34E+00	5.89E+00	pCi/s
21-12013-13	TRG	501513-9P-SM-10	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-5.89E-01	3.32E+00	3.32E+00	5.79E+00	pCi/s
21-12013-14	TRG	501513-9P-SM-11	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	1.24E+01	3.74E+00	3.80E+00	5.73E+00	pCi/s
21-12013-15	TRG	501513-9P-SM-12	11/18/21 15:52	12/2/2021	12/14/2021	21-12013	Tritium	LANL ER-210 Modified	-2.77E+00	3.26E+00	3.27E+00	5.85E+00	pCi/s
21-12013-01	LCS	KNOWN	12/03/21 00:00	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	2.44E+03	7.33E+01			pCi/s
21-12013-01	LCS	SPIKE	12/03/21 00:00	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	2.41E+03	1.55E+01	1.43E+02	2.83E+00	pCi/s
21-12013-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	5.97E-01	1.62E+00	1.62E+00	2.76E+00	pCi/s
21-12013-03	DUP	501513-9P-SM-01	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	6.24E-01	3.36E+00	3.36E+00	5.76E+00	pCi/s
21-12013-04	DO	501513-9P-SM-01	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-4.67E-01	3.32E+00	3.32E+00	5.75E+00	pCi/s
21-12013-05	TRG	501513-9P-SM-02	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-1.21E+00	1.69E+00	1.69E+00	2.98E+00	pCi/s
21-12013-06	TRG	501513-9P-SM-03	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-1.01E+00	1.64E+00	1.64E+00	2.88E+00	pCi/s
21-12013-07	TRG	501513-9P-SM-04	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-7.10E-01	1.67E+00	1.67E+00	2.91E+00	pCi/s
21-12013-08	TRG	501513-9P-SM-05	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-7.15E-01	1.68E+00	1.68E+00	2.94E+00	pCi/s
21-12013-09	TRG	501513-9P-SM-06	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-1.59E-01	1.69E+00	1.69E+00	2.93E+00	pCi/s
21-12013-10	TRG	501513-9P-SM-07	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-7.62E-01	1.61E+00	1.61E+00	2.81E+00	pCi/s
21-12013-11	TRG	501513-9P-SM-08	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-3.87E-01	1.64E+00	1.64E+00	2.85E+00	pCi/s
21-12013-12	TRG	501513-9P-SM-09	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-7.71E-02	1.65E+00	1.65E+00	2.85E+00	pCi/s
21-12013-13	TRG	501513-9P-SM-10	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-5.24E-01	1.59E+00	1.59E+00	2.76E+00	pCi/s
21-12013-14	TRG	501513-9P-SM-11	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	7.72E-02	1.66E+00	1.66E+00	2.85E+00	pCi/s
21-12013-15	TRG	501513-9P-SM-12	11/18/21 15:52	12/2/2021	12/8/2021	21-12013	Nickel-63	ASTM 3500-Ni Modified	-1.26E+00	1.65E+00	1.65E+00	2.91E+00	pCi/s

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

REC'D DEC 0 2 2021

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-027 Page 4 of 7

Project Number: 501513 **Shipment Date:** 12/1/2021

Project Name / Location: SSSB Mobile, AL

21-12013

Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested										Turn Around Time Requested
		Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						
ASY-AS-EM-0190	Environmental AS (6.357 E8 cc)	10/08/21	9:08	C	AS	1	Env							X										21-BD
ASY-AS-EM-0191	Environmental AS (6.349 E8 cc)	10/08/21	9:16	C	AS	1	Env							X										21-BD
ASY-AS-EM-0192	Environmental AS (6.357 E8 cc)	10/08/21	9:02	C	AS	1	Env							X										21-BD
ASY-AS-EM-0195	Environmental AS (4.354 E8 cc)	10/08/21	8:55	C	AS	1	Env							X										21-BD
ASY-AS-EM-0196	Environmental AS (6.692 E8 cc)	10/15/21	13:12	C	AS	1	Env							X										21-BD
ASY-AS-EM-0197	Environmental AS (6.435 E8 cc)	10/15/21	13:02	C	AS	1	Env							X										21-BD
ASY-AS-EM-0198	Environmental AS (6.708 E8 cc)	10/15/21	13:16	C	AS	1	Env							X										21-BD
ASY-AS-EM-0199	Environmental AS (6.700 E8 cc)	10/15/21	13:08	C	AS	1	Env							X										21-BD
ASY-AS-EM-0200	Environmental AS (6.708 E8 cc)	10/15/21	13:21	C	AS	1	Env							X										21-BD
ASY-AS-EM-0201	Environmental AS (5.697 E8 cc)	10/15/21	13:35	C	AS	1	Env							X										21-BD
ASY-AS-EM-0204	Environmental AS (6.392 E8 cc)	10/22/21	9:19	C	AS	1	Env							X										21-BD
ASY-AS-EM-0205	Environmental AS (5.904 E8 cc)	10/22/21	9:10	C	AS	1	Env							X										21-BD
ASY-AS-EM-0206	Environmental AS (6.396 E8 cc)	10/22/21	9:25	C	AS	1	Env							X										21-BD
ASY-AS-EM-0207	Environmental AS (6.392 E8 cc)	10/22/21	9:15	C	AS	1	Env							X										21-BD
ASY-AS-EM-0208	Environmental AS (6.396 E8 cc)	10/22/21	9:29	C	AS	1	Env							X										21-BD
ASY-AS-EM-0209	Environmental AS (4.907 E8 cc)	10/22/21	8:46	C	AS	1	Env							X										21-BD
ASY-AS-EM-0210	Environmental AS (5.395 E8 cc)	10/22/21	8:54	C	AS	1	Env							X										21-BD
501513-9P-SM-01	MARSAME Wipe; Tank 9P #1	11/18/21	1552	G	WP	1	Vial								X									21-BD

REC 98 12-3-21 @ 1330

REC'D DEC 0 2 2021

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-027 Page 5 of 7

Project Number: 501513 **Shipment Date:** 12/1/2021

Project Name / Location: SSSB Mobile, AL

21-12013

	Sample ID Number	Sample Description	Collection Information: Date	Time	G/C	Matrix	# of containers	Container type	Preservative: HCL	NaOH	HNO_3	H_2SO_4	Ice		Analyses Requested: Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						Turn Around Time Requested
4	501513-9P-SM-01	MARSAME Wipe; Tank 9P #1	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-01	MARSAME Paint Sample; Tank 9P #1	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
5	501513-9P-SM-02	MARSAME Wipe; Tank 9P #2	11/18/21	1552	G	WP	1	Vial								X									21-BD
5	501513-9P-SM-02	MARSAME Wipe; Tank 9P #2	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-02	MARSAME Paint Sample; Tank 9P #2	11/22/21	1423	C	CP	1	Bag								X	X	X	X						21-BD
6	501513-9P-SM-03	MARSAME Wipe; Tank 9P #3	11/18/21	1552	G	WP	1	Vial								X									21-BD
6	501513-9P-SM-03	MARSAME Wipe; Tank 9P #3	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-03	MARSAME Paint Sample; Tank 9P #3	11/22/21	1451	C	CP	1	Bag								X	X	X	X						21-BD
7	501513-9P-SM-04	MARSAME Wipe; Tank 9P #4	11/18/21	1552	G	WP	1	Vial								X									21-BD
7	501513-9P-SM-04	MARSAME Wipe; Tank 9P #4	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-04	MARSAME Paint Sample; Tank 9P #4	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
8	501513-9P-SM-05	MARSAME Wipe; Tank 9P #5	11/18/21	1552	G	WP	1	Vial								X									21-BD
8	501513-9P-SM-05	MARSAME Wipe; Tank 9P #5	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-05	MARSAME Paint Sample; Tank 9P #5	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
9	501513-9P-SM-06	MARSAME Wipe; Tank 9P #6	11/18/21	1552	G	WP	1	Vial								X									21-BD
9	501513-9P-SM-06	MARSAME Wipe; Tank 9P #6	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-06	MARSAME Paint Sample; Tank 9P #6	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
10	501513-9P-SM-07	MARSAME Wipe; Tank 9P #7	11/18/21	1552	G	WP	1	Vial								X									21-BD

REC'D DEC 02 2021

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COC Continuation Page

COC Ref. Document # 5010513-COC-027 Page 6 of 7

Project Number: 501513 **Shipment Date:** 12/1/2021

Project Name / Location: SSSB Mobile, AL

21-12013

	Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested										Turn Around Time Requested
			Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						
10	501513-9P-SM-07	MARSAME Wipe; Tank 9P #7	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-07	MARSAME Paint Sample; Tank 9P #7	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
11	501513-9P-SM-08	MARSAME Wipe; Tank 9P #8	11/18/21	1552	G	WP	1	Vial								X									21-BD
12	501513-9P-SM-08	MARSAME Wipe; Tank 9P #8	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-08	MARSAME Paint Sample; Tank 9P #8	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
13	501513-9P-SM-09	MARSAME Wipe; Tank 9P #9	11/18/21	1552	G	WP	1	Vial								X									21-BD
12	501513-9P-SM-09	MARSAME Wipe; Tank 9P #9	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-09	MARSAME Paint Sample; Tank 9P #9	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
13	501513-9P-SM-10	MARSAME Wipe; Tank 9P #10	11/18/21	1552	G	WP	1	Vial								X									21-BD
13	501513-9P-SM-10	MARSAME Wipe; Tank 9P #10	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-10	MARSAME Paint Sample; Tank 9P #10	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
14	501513-9P-SM-11	MARSAME Wipe; Tank 9P #11	11/18/21	1552	G	WP	1	Vial								X									21-BD
14	501513-9P-SM-11	MARSAME Wipe; Tank 9P #11	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-11	MARSAME Paint Sample; Tank 9P #11	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
15	501513-9P-SM-12	MARSAME Wipe; Tank 9P #12	11/18/21	1552	G	WP	1	Vial								X									21-BD
15	501513-9P-SM-12	MARSAME Wipe; Tank 9P #12	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-12	MARSAME Paint Sample; Tank 9P #12	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9P-SM-13	MARSAME Wipe; Tank 9P #13	11/18/21	1552	G	WP	1	Vial								X									21-BD

REC BB 12-2-21 @ 1330

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
APTIM Federal Services LLC	208345	Environmental	12/02/2021	21	21-12013
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
501513	SSSB Decommissioning	H	12/17/2021	12/27/2021	12/28/2021

Internal ID	Client ID	Sample Date	Matrix	Storage	H0003	Ni063																							Ttl
01	LCS	12/03/21	SM	S1.1	X	X																							2
02	BLANK	12/03/21	SM	S1.1	X	X																							2
03	DUP	12/03/21	SM	S1.1	X	X																							2
04	501513-9P-SM-01	11/18/21 15:52	SM	S1.1	X	X																							2
05	501513-9P-SM-02	11/18/21 15:52	SM	S1.1	X	X																							2
06	501513-9P-SM-03	11/18/21 15:52	SM	S1.1	X	X																							2
07	501513-9P-SM-04	11/18/21 15:52	SM	S1.1	X	X																							2
08	501513-9P-SM-05	11/18/21 15:52	SM	S1.1	X	X																							2
09	501513-9P-SM-06	11/18/21 15:52	SM	S1.1	X	X																							2
10	501513-9P-SM-07	11/18/21 15:52	SM	S1.1	X	X																							2
11	501513-9P-SM-08	11/18/21 15:52	SM	S1.1	X	X																							2
12	501513-9P-SM-09	11/18/21 15:52	SM	S1.1	X	X																							2
13	501513-9P-SM-10	11/18/21 15:52	SM	S1.1	X	X																							2
14	501513-9P-SM-11	11/18/21 15:52	SM	S1.1	X	X																							2
15	501513-9P-SM-12	11/18/21 15:52	SM	S1.1	X	X																							2
																													0
																													0
																													0
																													0
																													0
	Totals Per Analysis (non QA samples)				12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice		Report Data	
	Accounts Payable		Guy Gallello, Jr
	APTIM Federal Services LLC		APTIM
	4171 Essen Lane		16406 US Route 224 E, Annex
	Baton Rouge, LA 70809		Findlay, OH 45840
Voice		*Voice*	419-348-5828
Fax		*Fax*	
Contact	Guy Gallello, Jr		
Voice	419-348-5828		
Fax			

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 21-12013

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

AQUEOUS (NON-AQUEOUS)

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	Y	N	(N/A)

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: Randolph Spencer DATE: 12-3-21

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12013	H0003	1	pCi	s	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
H-3		96.83%	6.93%	100.00%	3.60%	1.83E+02	6.59E+00	1.77E+02	1.23E+01	H-5a	4.00E+03	3.60E+00	1.02E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
H-3	0.08	67.91	-5.54E-01	9.41E+00	-1.12E+00	9.52E+00

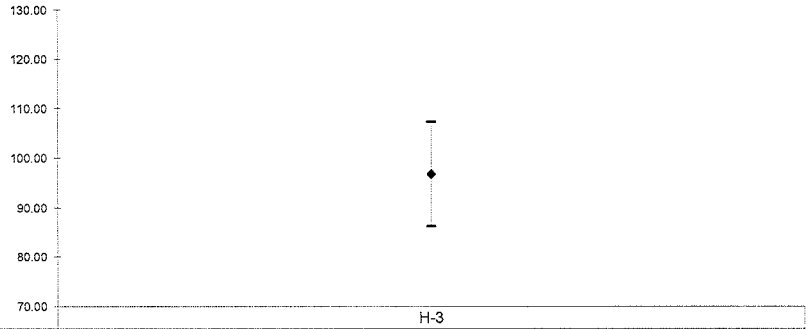
QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
0.97	OK				NA	OK

Version

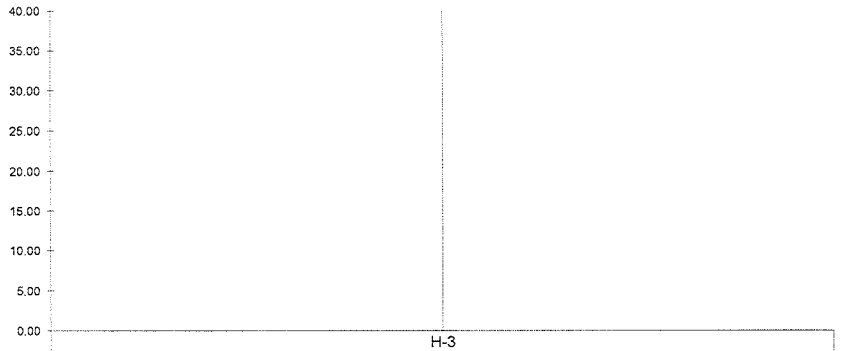
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12013	H0003	1	pCi	s	APTIM Federal Services LLC

LCS % Recovery



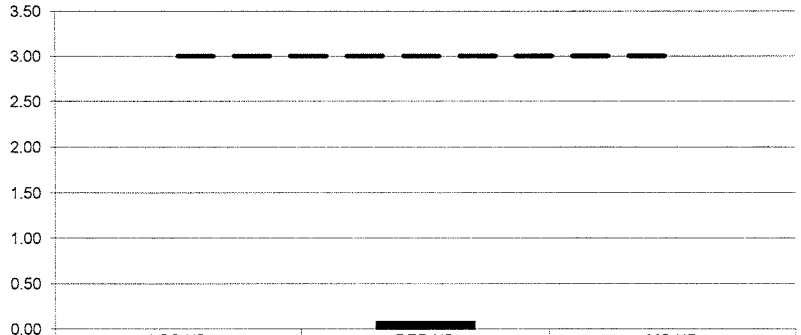
	H-3
Lower Error	86.30
Upper Error	107.36
%R	96.83
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	H-3
Lower Error	-314.99
Upper Error	450.80
RPD	67.91
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
H-3	0.00	0.08	0.00
UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12013	Ni063	1	pCi	s	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
NI-63		98.63%	5.91%	100.00%	3.00%	2.44E+03	7.33E+01	2.41E+03	1.43E+02	Ni-3	2.11E+04	3.00E+00	2.58E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

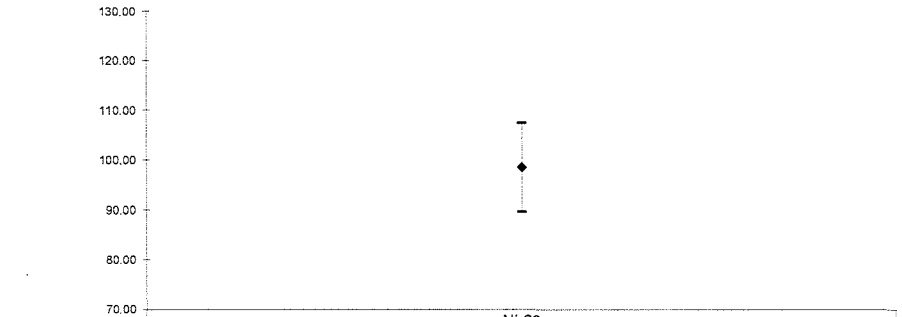
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
NI-63	0.45	1396.61	-4.67E-01	3.32E+00	6.24E-01	3.36E+00

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
0.99	OK				NA	OK

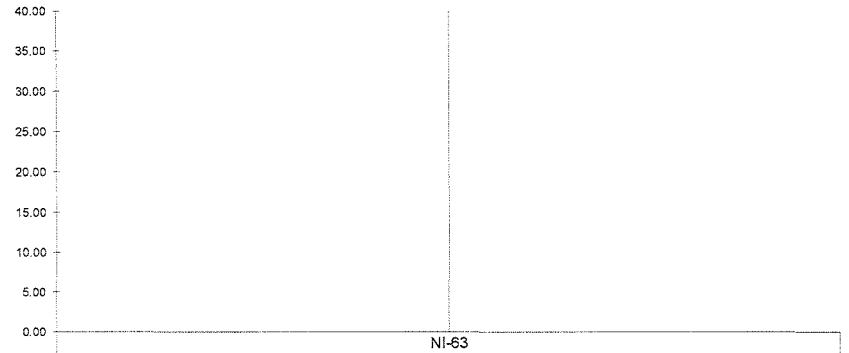
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12013	Ni063	1	pCi	s	APTIM Federal Services LLC

LCS % Recovery



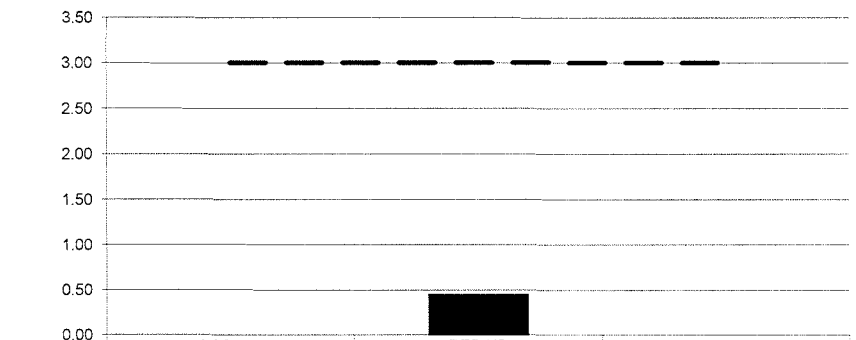
	NI-63
Lower Error	89.72
Upper Error	107.55
%R	98.63
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	NI-63
Lower Error	31247.44
Upper Error	-28454.22
RPD	1396.61
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
NI-63	0.00	0.45	0.00
UCL	3	3	3

No Matrix Spike

APTIM FEDERAL SERVICES LLC

PO: 208345
Project: 501513 SSSB Decommissioning

LEVEL II
REPORT OF ANALYSIS

WORK ORDER #21-12014-OR

January 12, 2022

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-49230

January 12, 2022

Guy Gallello, Jr.
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

CASE NARRATIVE
Work Order # 21-12014-OR

SAMPLE RECEIPT

This work order contains five smear samples received 12/02/2021. Samples were analyzed for Tritium and Nickel-63.

CLIENT ID	LAB ID
501513-9P-SM-13	21-12014-04
501513-9P-SM-14	21-12014-05
501513-9P-SM-15	21-12014-06
501513-9P-SM-16	21-12014-07
501513-9P-SM-05D	21-12014-08

ANALYTICAL METHODS

Tritium was performed using Method LANL ER-210 Modified. Nickel-63 was performed using Method ASTM 3500-Ni Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

TRITIUM

Smears were received from client equilibrated in deionized water. Equilibrates were placed in liquid scintillation vials and smears were subsequently rinsed with Tritium free water which was added to scintillation vials. Scintillation cocktail was added. Samples were counted by beta liquid scintillation.

ANALYTICAL RESULTS CONTINUED

TRITIUM CONTINUED

Samples demonstrated acceptable results for all Tritium analyses. The Tritium method blank demonstrated an acceptable result. Results for the Tritium replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Tritium laboratory control sample demonstrated an acceptable percent recovery.

NICKEL-63

Smears were equilibrated in deionized water. Equilibrates were placed into scintillation vials, scintillation cocktail was added, and Nickel-63 activity was determined by beta liquid scintillation.

Samples demonstrated acceptable results for all Nickel-63 analyses. The Nickel-63 method blank demonstrated an acceptable result. Results for the Nickel-63 replicate demonstrated a slightly high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Nickel-63 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.

M.R. McDougall
Laboratory Manager

Date: 1/12/2022

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12014
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SM

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12014-01	LCS	KNOWN	12/03/21 00:00	12/2/2021	12/15/2021	21-12014	Tritium	LANL ER-210 Modified	1.82E+02	6.56E+00			pCi/s
21-12014-01	LCS	SPIKE	12/03/21 00:00	12/2/2021	12/15/2021	21-12014	Tritium	LANL ER-210 Modified	1.69E+02	7.06E+00	1.18E+01	5.29E+00	pCi/s
21-12014-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/15/2021	21-12014	Tritium	LANL ER-210 Modified	1.72E+00	3.16E+00	3.16E+00	5.38E+00	pCi/s
21-12014-03	DUP	501513-9P-SM-13	11/18/21 15:52	12/2/2021	12/15/2021	21-12014	Tritium	LANL ER-210 Modified	8.04E-01	6.56E+00	6.56E+00	1.14E+01	pCi/s
21-12014-04	DO	501513-9P-SM-13	11/18/21 15:52	12/2/2021	12/15/2021	21-12014	Tritium	LANL ER-210 Modified	6.35E+00	6.70E+00	6.71E+00	1.12E+01	pCi/s
21-12014-05	TRG	501513-9P-SM-14	11/18/21 15:52	12/2/2021	12/15/2021	21-12014	Tritium	LANL ER-210 Modified	0.00E+00	3.19E+00	3.19E+00	5.54E+00	pCi/s
21-12014-06	TRG	501513-9P-SM-15	11/18/21 15:52	12/2/2021	12/15/2021	21-12014	Tritium	LANL ER-210 Modified	9.89E-01	3.25E+00	3.25E+00	5.58E+00	pCi/s
21-12014-07	TRG	501513-9P-SM-16	11/18/21 15:52	12/2/2021	12/15/2021	21-12014	Tritium	LANL ER-210 Modified	6.22E-01	3.39E+00	3.39E+00	5.85E+00	pCi/s
21-12014-08	TRG	501513-9P-SM-05D	11/18/21 15:52	12/2/2021	12/15/2021	21-12014	Tritium	LANL ER-210 Modified	2.08E+00	3.46E+00	3.46E+00	5.87E+00	pCi/s
21-12014-01	LCS	KNOWN	12/03/21 00:00	12/2/2021	12/8/2021	21-12014	Nickel-63	ASTM 3500-Ni Modified	1.61E+03	4.84E+01			pCi/s
21-12014-01	LCS	SPIKE	12/03/21 00:00	12/2/2021	12/8/2021	21-12014	Nickel-63	ASTM 3500-Ni Modified	1.67E+03	1.30E+01	9.90E+01	2.89E+00	pCi/s
21-12014-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/8/2021	21-12014	Nickel-63	ASTM 3500-Ni Modified	-1.56E-01	1.68E+00	1.68E+00	2.90E+00	pCi/s
21-12014-03	DUP	501513-9P-SM-13	11/18/21 15:52	12/2/2021	12/8/2021	21-12014	Nickel-63	ASTM 3500-Ni Modified	-9.40E-01	3.36E+00	3.36E+00	5.83E+00	pCi/s
21-12014-04	DO	501513-9P-SM-13	11/18/21 15:52	12/2/2021	12/8/2021	21-12014	Nickel-63	ASTM 3500-Ni Modified	-6.25E-01	3.35E+00	3.35E+00	5.81E+00	pCi/s
21-12014-05	TRG	501513-9P-SM-14	11/18/21 15:52	12/2/2021	12/8/2021	21-12014	Nickel-63	ASTM 3500-Ni Modified	5.55E-01	1.73E+00	1.73E+00	2.95E+00	pCi/s
21-12014-06	TRG	501513-9P-SM-15	11/18/21 15:52	12/2/2021	12/8/2021	21-12014	Nickel-63	ASTM 3500-Ni Modified	3.16E-01	1.71E+00	1.71E+00	2.94E+00	pCi/s
21-12014-07	TRG	501513-9P-SM-16	11/18/21 15:52	12/2/2021	12/8/2021	21-12014	Nickel-63	ASTM 3500-Ni Modified	4.72E-01	1.71E+00	1.71E+00	2.93E+00	pCi/s
21-12014-08	TRG	501513-9P-SM-05D	11/18/21 15:52	12/2/2021	12/8/2021	21-12014	Nickel-63	ASTM 3500-Ni Modified	2.36E-01	1.70E+00	1.70E+00	2.92E+00	pCi/s

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-027 Page 6 of 7

Project Number: 501513 **Shipment Date:** 12/1/2021

Project Name / Location: SSSB Mobile, AL

REC'D DEC 02 2021

21-12014

Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested										Turn Around Time Requested
		Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						
501513-9P-SM-07	MARSAME Wipe; Tank 9P #7	11/18/21	1552	G	WP	1	Vial									X								21-BD
501513-9P-PA-07	MARSAME Paint Sample; Tank 9P #7	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-08	MARSAME Wipe; Tank 9P #8	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-08	MARSAME Wipe; Tank 9P #8	11/18/21	1552	G	WP	1	Vial									X								21-BD
501513-9P-PA-08	MARSAME Paint Sample; Tank 9P #8	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-09	MARSAME Wipe; Tank 9P #9	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-09	MARSAME Wipe; Tank 9P #9	11/18/21	1552	G	WP	1	Vial									X								21-BD
501513-9P-PA-09	MARSAME Paint Sample; Tank 9P #9	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-10	MARSAME Wipe; Tank 9P #10	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-10	MARSAME Wipe; Tank 9P #10	11/18/21	1552	G	WP	1	Vial									X								21-BD
501513-9P-PA-10	MARSAME Paint Sample; Tank 9P #10	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-11	MARSAME Wipe; Tank 9P #11	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-11	MARSAME Wipe; Tank 9P #11	11/18/21	1552	G	WP	1	Vial									X								21-BD
501513-9P-PA-11	MARSAME Paint Sample; Tank 9P #11	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-12	MARSAME Wipe; Tank 9P #12	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-12	MARSAME Wipe; Tank 9P #12	11/18/21	1552	G	WP	1	Vial									X								21-BD
501513-9P-PA-12	MARSAME Paint Sample; Tank 9P #12	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-13	MARSAME Wipe; Tank 9P #13	11/18/21	1552	G	WP	1	Vial								X									21-BD

COC Continuation Page

APTIM

COC Ref. Document # 5010513-COC-027 Page 7 of 7

Project Number: 501513 **Shipment Date:** 12/1/2021

Project Name / Location: SSSB Mobile, AL

21-12014

REC'D DEC 02 2021

	Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested										Turn Around Time Requested
			Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						
4	501513-9P-SM-13	MARSAME Wipe; Tank 9P #13	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-13	MARSAME Paint Sample; Tank 9P #13	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
5	501513-9P-SM-14	MARSAME Wipe; Tank 9P #14	11/18/21	1552	G	WP	1	Vial								X									21-BD
5	501513-9P-SM-14	MARSAME Wipe; Tank 9P #14	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-14	MARSAME Paint Sample; Tank 9P #14	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
6	501513-9P-SM-15	MARSAME Wipe; Tank 9P #15	11/18/21	1552	G	WP	1	Vial								X									21-BD
6	501513-9P-SM-15	MARSAME Wipe; Tank 9P #15	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-15	MARSAME Paint Sample; Tank 9P #15	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
7	501513-9P-SM-16	MARSAME Wipe; Tank 9P #16	11/18/21	1552	G	WP	1	Vial								X									21-BD
7	501513-9P-SM-16	MARSAME Wipe; Tank 9P #16	11/18/21	1552	G	WP	1	Vial									X								21-BD
	501513-9P-PA-16	MARSAME Paint Sample; Tank 9P #16	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
8	501513-9P-SM-05D	MARSAME Wipe; Tank 9P #5 Dup	11/18/21	1552	G	WP	1	Vial								X									21-BD
8	501513-9P-SM-05D	MARSAME Wipe; Tank 9P #5 Dup	11/18/21	1552	G	WP	1	Vial									X								21-BD
							N																		
								A PB2 12/1/2021																	

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
APTIM Federal Services LLC	208345	Environmental	12/02/2021	21	21-12014
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
501513	SSSB Decommissioning	H	12/17/2021	12/27/2021	12/28/2021

Internal ID	Client ID	Sample Date	Matrix	Storage	H0003	Ni063																							Ttl
01	LCS	12/03/21	SM	S1.1	X	X																							2
02	BLANK	12/03/21	SM	S1.1	X	X																							2
03	DUP	12/03/21	SM	S1.1	X	X																							2
04	501513-9P-SM-13	11/18/21 15:52	SM	S1.1	X	X																							2
05	501513-9P-SM-14	11/18/21 15:52	SM	S1.1	X	X																							2
06	501513-9P-SM-15	11/18/21 15:52	SM	S1.1	X	X																							2
07	501513-9P-SM-16	11/18/21 15:52	SM	S1.1	X	X																							2
08	501513-9P-SM-05D	11/18/21 15:52	SM	S1.1	X	X																							2
																													0
																													0
																													0
																													0
																													0
																													0
																													0
																													0
																													0
																													0
																													0
																													0
Totals Per Analysis (non QA samples)					5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice	Accounts Payable APTIM Federal Services LLC 4171 Essen Lane Baton Rouge, LA 70809	**Report Data**	Guy Gallello, Jr APTIM 16406 US Route 224 E, Annex Findlay, OH 45840
Voice		Voice	419-348-5828
Fax		Fax	
Contact	Guy Gallello, Jr		
Voice	419-348-5828		
Fax			

Printed: 12/3/2021 9:11 AM

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 21-12014

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

AQUEOUS (NON-AQUEOUS)

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	Y	N	(N/A)

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: Randolph Spencer DATE: 12-3-21

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12014	H0003	1	pCi	s	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
H-3		92.77%	6.98%	100.00%	3.60%	1.82E+02	6.56E+00	1.69E+02	1.18E+01	H-5a	4.00E+03	3.60E+00	1.01E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

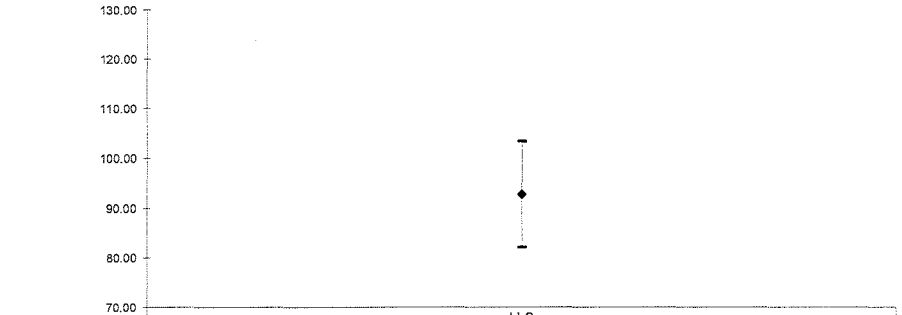
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
H-3	1.16	155.06	6.35E+00	6.71E+00	8.04E-01	6.56E+00

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
0.93	OK				NA	OK

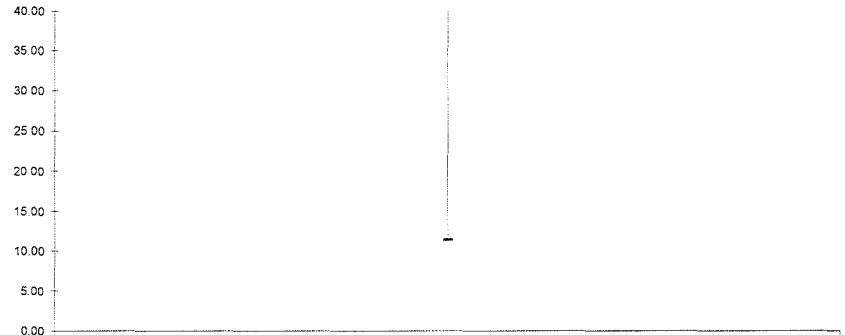
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12014	H0003	1	pCi	s	APTIM Federal Services LLC

LCS % Recovery



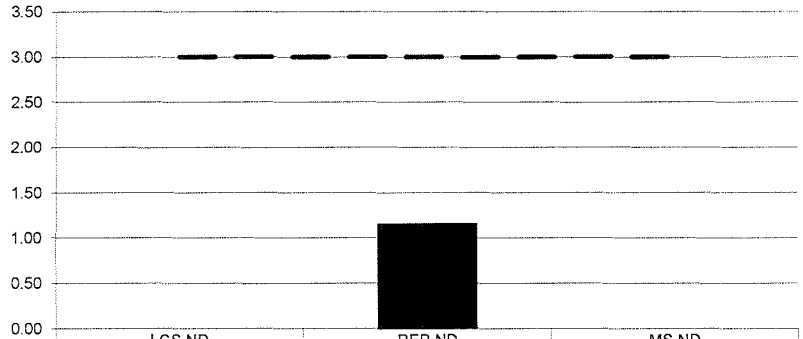
	H-3
Lower Error	82.18
Upper Error	103.35
%R	92.77
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	H-3
Lower Error	298.76
Upper Error	11.36
RPD	155.06
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
H-3	0.00	1.16	0.00
UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12014	Ni063	1	pCi	s	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
NI-63		103.41%	5.93%	100.00%	3.00%	1.61E+03	4.84E+01	1.67E+03	9.90E+01	Ni-3	2.11E+04	3.00E+00	1.70E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

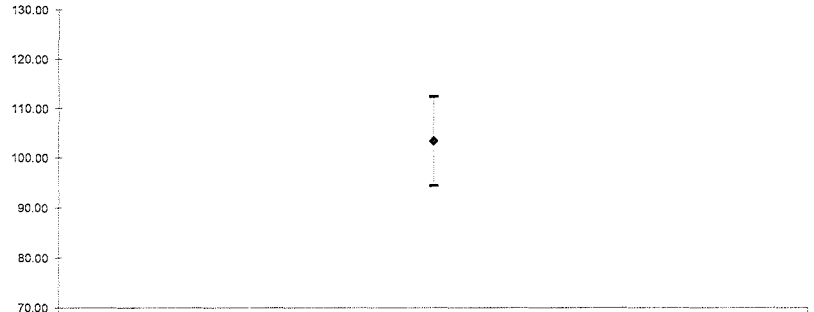
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
NI-63	0.13	40.30	-6.25E-01	3.35E+00	-9.40E-01	3.36E+00

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.03	OK				NA	OK

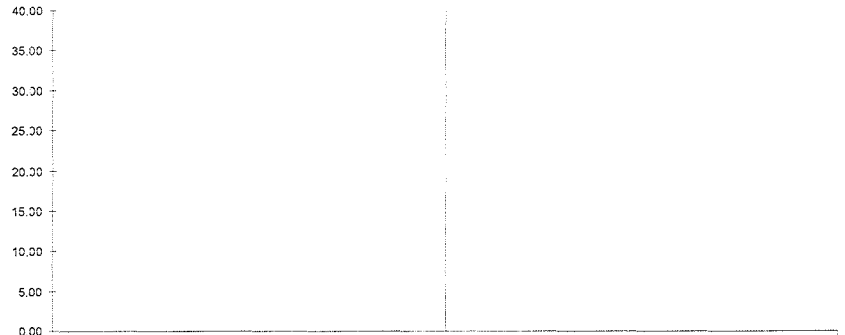
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12014	Ni063	1	pCi	s	APTIM Federal Services LLC

LCS % Recovery



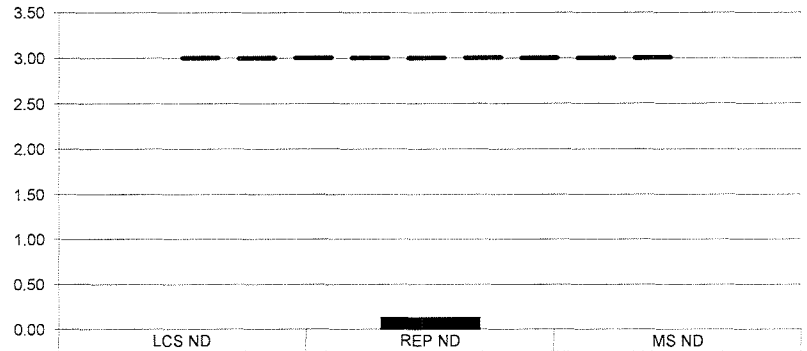
	NI-63
Lower Error	94.48
Upper Error	112.35
%R	103.41
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	NI-63
Lower Error	-46.08
Upper Error	126.67
RPD	40.30
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
NI-63	0.00	0.13	0.00
UCL	3	3	3

No Matrix Spike

ATTACHMENT 8

PAINT SAMPLE RESULTS SUMMARY

		Cobalt-60 Co-60			Nickel-63 Ni-63			Tritium H-3			Carbon-14 C-14			
Systematic	Loc	Result pCi/g	2s Error pCi/g	MDA pCi/g	Result pCi/g	2s Error pCi/g	MDA pCi/g	Result pCi/g	2s Error pCi/g	MDA pCi/g	Result pCi/g	2s Error pCi/g	MDA pCi/g	Report
501513-9P-PA-01	1	*-0.04*	0.13	0.18	*-0.74*	1.80	3.14	*3.53*	30.14	52.11	*-2.65*	3.49	6.14	EB-21-12015
501513-9P-PA-02	2	*0.04*	0.08	0.13	*-2.35*	2.09	3.72	*6.62*	28.38	48.85	*-1.28*	3.64	6.32	EB-21-12015
501513-9P-PA-03	3	*-0.02*	0.18	0.28	*-0.23*	1.71	2.96	*-24.24*	30.79	55.08	*-1.77*	3.63	6.33	EB-21-12015
501513-9P-PA-04	4	*0.02*	0.08	0.36	*0.00*	0.00	0.00	*-23.13*	27.22	48.80	*-2.61*	3.67	6.44	EB-21-12015
501513-9P-PA-05	5	*0.03*	0.13	0.22	*-1.04*	1.74	3.05	*-13.61*	32.57	57.45	*-0.64*	3.63	6.29	EB-21-12015
501513-9P-PA-06	6	*0.05*	0.15	0.26	*-1.50*	2.16	3.80	*-1.67*	28.37	49.37	*-1.96*	3.68	6.43	EB-21-12015
501513-9P-PA-07	7	*-0.02*	0.22	0.32	*0.60*	1.66	2.83	*-19.70*	29.71	52.89	*-3.43*	3.65	6.45	EB-21-12015
501513-9P-PA-08	8	*0.03*	0.18	0.32	*-1.43*	1.61	2.85	*-11.19*	31.31	55.10	*-1.57*	3.56	6.20	EB-21-12015
501513-9P-PA-09	9	*-0.02*	0.17	0.21	*-0.35*	1.54	2.67	*-23.83*	26.12	46.94	*-3.75*	3.63	6.44	EB-21-12015
501513-9P-PA-10	10	*0.00*	0.14	0.23	*-1.19*	1.61	2.83	*-13.85*	28.92	51.13	*-2.46*	3.70	6.48	EB-21-12015
501513-9P-PA-11	11	*0.10*	0.28	0.47	*-0.07*	1.51	2.61	*-1.89*	32.08	55.83	*-2.07*	3.59	6.27	EB-21-12015
501513-9P-PA-12	12	*0.17*	0.21	0.27	*-0.31*	1.68	2.91	*5.04*	28.75	49.59	*-3.55*	3.60	6.37	EB-21-12015
501513-9P-PA-13	13	*-0.04*	0.14	0.21	*-0.58*	1.59	2.77	*15.69*	27.28	46.36	*-3.28*	3.66	6.47	EB-21-12015
501513-9P-PA-14	14	*0.08*	0.14	0.22	*-0.08*	1.73	2.99	*-3.49*	29.53	51.51	*-0.79*	3.61	6.25	EB-21-12015
501513-9P-PA-15	15	*-0.27*	0.45	0.61	*-0.65*	1.77	3.07	*-11.09*	31.01	54.58	*-0.16*	3.62	6.24	EB-21-12015
501513-9P-PA-16	16	*-0.06*	0.22	0.32	*-5.70*	2.34	4.33	*3.83*	32.69	56.52	*-3.73*	3.61	6.39	EB-21-12015
Average		*0.00*		0.29	*-0.98*		2.91	*-7.06*		52.00	*-2.23*		6.34	
Std Dev		0.09			1.45			12.29			1.15			
Min		*-0.27*		0.13	*-5.70*		0.00	*-24.24*		46.36	*-3.75*		6.14	
Max		*0.17*		0.61	*0.60*		4.33	*15.69*		57.45	*-0.16*		6.48	
QC Data														
501513-9P-PA-01	L-DUP	*0.00*	0.12	0.20	*-4.16*	1.87	3.43	*-9.15*	30.80	54.07	*-0.45*	3.42	5.91	EB-21-12015

Italics Less than MDA/MDC
Bold Greater than or Equal to MDA/MDC

ATTACHMENT 9

LABORATORY ANALYTICAL REPORT – PAINT SAMPLES

APTIM FEDERAL SERVICES LLC

PO: 208345
Project: 501513 SSSB Decommissioning

LEVEL II
REPORT OF ANALYSIS

WORK ORDER #21-12015-OR
REVISED

January 21, 2022

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
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January 21, 2022

Guy Gallello, Jr.
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

CASE NARRATIVE - REVISED
Work Order # 21-12015-OR

SAMPLE RECEIPT

This work order contains sixteen solid samples received 12/02/2021. Samples were analyzed for Tritium, Carbon-14, Nickel-63, and by Gamma Spectroscopy.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
501513-9P-PA-01	21-12015-04	501513-9P-PA-09	21-12015-12
501513-9P-PA-02	21-12015-05	501513-9P-PA-10	21-12015-13
501513-9P-PA-03	21-12015-06	501513-9P-PA-11	21-12015-14
501513-9P-PA-04	21-12015-07	501513-9P-PA-12	21-12015-15
501513-9P-PA-05	21-12015-08	501513-9P-PA-13	21-12015-16
501513-9P-PA-06	21-12015-09	501513-9P-PA-14	21-12015-17
501513-9P-PA-07	21-12015-10	501513-9P-PA-15	21-12015-18
501513-9P-PA-08	21-12015-11	501513-9P-PA-16	21-12015-19

ANALYTICAL METHODS

Tritium was performed using Method LANL ER-210 Modified. Carbon-14 was performed using EPA Method 520.0 Modified. Nickel-63 was performed using Method ASTM 3500-Ni Modified. Gamma Spectroscopy was performed using EPA Method 901.1 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

TRITIUM

A representative aliquot of each sample was equilibrated with Tritium free water. Equilibrates were transferred to liquid scintillation vials and cocktail was added. Samples were counted by beta liquid scintillation.

ANALYTICAL RESULTS CONTINUED

TRITIUM CONTINUED

Samples demonstrated acceptable results for all Tritium analyses. The Tritium method blank demonstrated an acceptable result. Results for the Tritium duplicate demonstrated a high relative percent difference and normalized difference. Duplicate variations were caused by the heterogeneous sample nature. Results for the Tritium laboratory control sample demonstrated an acceptable percent recovery.

TRITIUM SUPPLEMENTAL

Due to the high relative percent difference and normalized difference for the duplicate sample, the sample was recounted. Results for the recount duplicate still demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique.

CARBON-14

A representative aliquot of each sample was placed into a 1-liter reaction vessel. A carbonate solution was added. Samples were oxidized using Potassium Permanganate. Carbon Dioxide was evolved, and Carbon-14 was captured into Harvey brand, Carb-Sorb cocktail. Carbon-14 beta emissions were determined by beta liquid scintillation using an energy selective region.

Samples demonstrated acceptable results for all Carbon-14 analyses. The Carbon-14 method blank demonstrated an acceptable result. Results for the Carbon-14 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Carbon-14 laboratory control sample demonstrated an acceptable percent recovery.

NICKEL-63

A representative aliquot of each sample was placed into an appropriately sized beaker and leached in Nitric acid. Stable elemental Nickel carrier was added to each sample. Samples were placed into scintillation vials, scintillation cocktail was added, and Nickel-63 activity was determined by beta liquid scintillation.

Samples demonstrated acceptable results for all Nickel-63 analyses. The Nickel-63 method blank demonstrated an acceptable result. Results for the Nickel-63 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Nickel-63 laboratory control sample demonstrated an acceptable percent recovery.

GAMMA SPECTROSCOPY

Samples for Gamma Spectroscopy analysis were prepared by transferring a known mass/aliquot of each pulverized and homogenized sample to a standard geometry container. Samples were counted on a High Purity Germanium (HPGe) gamma ray detector.

Samples demonstrated acceptable results for all gamma-emitting radionuclides as reported. The method blank demonstrated acceptable results for all radionuclides as reported. Results for the Actinium-228 and Bismuth-214 replicate demonstrated a high relative percent difference; however, normalized difference is

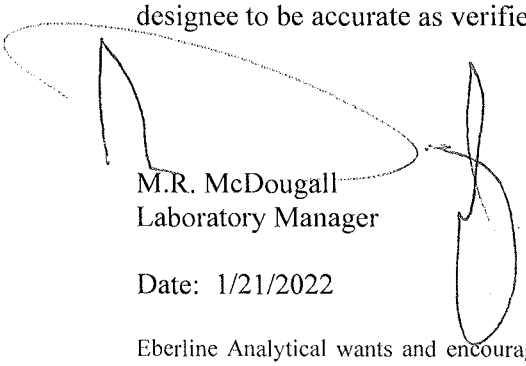
ANALYTICAL RESULTS CONTINUED

GAMMA SPECTROSCOPY CONTINUED

within acceptable limits for the analytical technique. Results for the Potassium-40 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Cobalt-60 and Cesium-137 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall
Laboratory Manager

Date: 1/21/2022

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-01	LCS	KNOWN	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Cobalt-60	EPA 901.1 Modified	2.66E+02	1.04E+01			pCi/g
21-12015-01	LCS	KNOWN	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Cesium-137	EPA 901.1 Modified	1.62E+02	6.66E+00			pCi/g
21-12015-01	LCS	SPIKE	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Cobalt-60	EPA 901.1 Modified	2.83E+02	1.64E+01	2.19E+01	2.44E+00	pCi/g
21-12015-01	LCS	SPIKE	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Cesium-137	EPA 901.1 Modified	1.75E+02	1.58E+01	1.82E+01	2.75E+00	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Actinium-228	EPA 901.1 Modified	2.49E-02	6.69E-02	6.69E-02	1.12E-01	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Silver-110m	EPA 901.1 Modified	-2.27E-03	1.01E-02	1.01E-02	2.78E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Americium-241	EPA 901.1 Modified	-2.51E-03	3.26E-02	3.26E-02	4.27E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Bismuth-214	EPA 901.1 Modified	5.96E-02	4.27E-02	4.28E-02	7.39E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Cobalt-58	EPA 901.1 Modified	1.83E-03	1.63E-02	1.63E-02	2.54E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Cobalt-60	EPA 901.1 Modified	2.61E-03	1.99E-02	1.99E-02	3.09E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Cesium-134	EPA 901.1 Modified	-5.12E-02	2.53E-02	2.54E-02	2.55E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Cesium-137	EPA 901.1 Modified	6.11E-03	1.97E-02	1.97E-02	3.19E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Europium-152	EPA 901.1 Modified	7.97E-03	7.08E-02	7.08E-02	6.15E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Europium-154	EPA 901.1 Modified	-2.62E-02	6.18E-02	6.18E-02	3.20E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Europium-155	EPA 901.1 Modified	-5.39E-03	3.68E-02	3.68E-02	4.76E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Potassium-40	EPA 901.1 Modified	5.37E-02	2.12E-01	2.12E-01	3.29E-01	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Manganese-54	EPA 901.1 Modified	1.23E-02	9.57E-03	9.59E-03	5.93E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Lead-210	EPA 901.1 Modified	3.60E-01	3.27E-01	3.27E-01	4.79E-01	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Lead-212	EPA 901.1 Modified	2.29E-02	3.14E-02	3.15E-02	4.51E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Lead-214	EPA 901.1 Modified	3.82E-03	4.05E-02	4.05E-02	5.40E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Radium-226	EPA 901.1 Modified	5.96E-02	4.27E-02	4.28E-02	7.39E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Radium-228	EPA 901.1 Modified	2.49E-02	6.69E-02	6.69E-02	1.12E-01	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Antimony-125	EPA 901.1 Modified	-1.72E-03	3.82E-02	3.82E-02	6.41E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Thorium-234	EPA 901.1 Modified	1.33E-01	3.57E-01	3.58E-01	4.72E-01	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Thallium-208	EPA 901.1 Modified	2.38E-03	5.22E-02	5.22E-02	7.90E-02	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Uranium-235	EPA 901.1 Modified	2.68E-02	1.03E-01	1.03E-01	1.40E-01	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/3/2021	21-12015	Zinc-65	EPA 901.1 Modified	2.29E-02	3.05E-02	3.05E-02	5.79E-02	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Actinium-228	EPA 901.1 Modified	1.63E-01	4.51E-01	4.51E-01	7.35E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Silver-110m	EPA 901.1 Modified	-1.29E-01	1.43E-01	1.43E-01	1.72E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Americium-241	EPA 901.1 Modified	5.03E-03	7.57E-02	7.57E-02	2.95E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Bismuth-214	EPA 901.1 Modified	5.43E-01	2.95E-01	2.97E-01	5.48E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-7.41E-03	1.13E-01	1.13E-01	1.75E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cobalt-60	EPA 901.1 Modified	-4.66E-03	1.21E-01	1.21E-01	1.99E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cesium-134	EPA 901.1 Modified	6.91E-03	8.85E-02	8.85E-02	1.91E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cesium-137	EPA 901.1 Modified	8.20E-02	1.38E-01	1.38E-01	2.12E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Europium-152	EPA 901.1 Modified	-3.80E-01	4.27E-01	4.28E-01	4.36E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Europium-154	EPA 901.1 Modified	3.06E-01	2.76E-01	2.77E-01	2.15E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Europium-155	EPA 901.1 Modified	2.56E-02	2.30E-01	2.30E-01	3.35E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Potassium-40	EPA 901.1 Modified	4.68E+00	2.03E+00	2.04E+00	2.87E+00	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Manganese-54	EPA 901.1 Modified	1.07E-03	1.04E-01	1.04E-01	1.70E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Lead-210	EPA 901.1 Modified	3.47E+00	1.88E+00	1.89E+00	3.01E+00	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Lead-212	EPA 901.1 Modified	2.31E-01	1.89E-01	1.89E-01	3.05E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Lead-214	EPA 901.1 Modified	3.43E-01	2.42E-01	2.42E-01	4.05E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Radium-226	EPA 901.1 Modified	5.43E-01	2.95E-01	2.97E-01	5.48E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Radium-228	EPA 901.1 Modified	1.63E-01	4.51E-01	4.51E-01	7.35E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Antimony-125	EPA 901.1 Modified	4.81E-03	3.18E-01	3.18E-01	4.45E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Thorium-234	EPA 901.1 Modified	4.99E+00	2.50E+00	2.51E+00	3.82E+00	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Thallium-208	EPA 901.1 Modified	4.20E-01	3.71E-01	3.72E-01	5.99E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Uranium-235	EPA 901.1 Modified	2.07E-01	6.05E-01	6.05E-01	9.19E-01	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Zinc-65	EPA 901.1 Modified	-5.73E-02	2.84E-01	2.84E-01	4.50E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG:	**21-12015 REVISED**
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Actinium-228	EPA 901.1 Modified	-3.57E-02	2.00E-01	2.00E-01	8.11E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Silver-110m	EPA 901.1 Modified	8.53E-03	1.11E-01	1.11E-01	1.57E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Americium-241	EPA 901.1 Modified	-5.85E-01	2.46E-01	2.48E-01	2.82E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Bismuth-214	EPA 901.1 Modified	1.41E-01	2.90E-01	2.90E-01	4.29E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-1.36E-01	1.36E-01	1.36E-01	1.80E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cobalt-60	EPA 901.1 Modified	-3.64E-02	1.34E-01	1.34E-01	1.75E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cesium-134	EPA 901.1 Modified	-4.82E-02	1.61E-01	1.61E-01	2.03E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cesium-137	EPA 901.1 Modified	-5.43E-02	1.34E-01	1.34E-01	1.71E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Europium-152	EPA 901.1 Modified	-2.89E-02	3.36E-01	3.36E-01	4.35E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Europium-154	EPA 901.1 Modified	1.66E-01	2.90E-01	2.91E-01	2.14E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Europium-155	EPA 901.1 Modified	-2.76E-01	2.44E-01	2.44E-01	3.21E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Potassium-40	EPA 901.1 Modified	5.89E+00	1.96E+00	1.98E+00	2.43E+00	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Manganese-54	EPA 901.1 Modified	4.71E-02	1.16E-01	1.16E-01	1.97E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Lead-210	EPA 901.1 Modified	3.22E+00	2.13E+00	2.13E+00	3.47E+00	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Lead-212	EPA 901.1 Modified	4.91E-01	2.85E-01	2.86E-01	4.62E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Lead-214	EPA 901.1 Modified	2.90E-01	2.85E-01	2.85E-01	4.72E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Radium-226	EPA 901.1 Modified	1.41E-01	2.90E-01	2.90E-01	4.29E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Radium-228	EPA 901.1 Modified	-3.57E-02	2.00E-01	2.00E-01	8.11E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Antimony-125	EPA 901.1 Modified	2.41E-01	3.09E-01	3.09E-01	4.78E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Thorium-234	EPA 901.1 Modified	6.54E+00	2.61E+00	2.64E+00	3.91E+00	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Thallium-208	EPA 901.1 Modified	3.03E-01	3.07E-01	3.07E-01	5.04E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Uranium-235	EPA 901.1 Modified	3.96E-01	6.20E-01	6.21E-01	9.59E-01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Zinc-65	EPA 901.1 Modified	1.48E-01	2.49E-01	2.49E-01	4.44E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Actinium-228	EPA 901.1 Modified	1.81E-01	2.99E-01	2.99E-01	5.10E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Silver-110m	EPA 901.1 Modified	-1.21E-01	9.09E-02	9.11E-02	1.11E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Americium-241	EPA 901.1 Modified	1.16E-01	1.37E-01	1.37E-01	1.95E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Bismuth-214	EPA 901.1 Modified	4.42E-01	1.81E-01	1.82E-01	3.38E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-5.04E-02	8.70E-02	8.70E-02	1.20E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Cobalt-60	EPA 901.1 Modified	3.59E-02	8.01E-02	8.02E-02	1.29E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Cesium-134	EPA 901.1 Modified	1.44E-02	5.56E-02	5.56E-02	1.27E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Cesium-137	EPA 901.1 Modified	4.13E-02	8.66E-02	8.66E-02	1.40E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Europium-152	EPA 901.1 Modified	-6.89E-02	3.02E-01	3.02E-01	2.97E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Europium-154	EPA 901.1 Modified	-2.63E-02	2.27E-01	2.27E-01	1.45E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Europium-155	EPA 901.1 Modified	-5.38E-02	1.72E-01	1.72E-01	2.16E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Potassium-40	EPA 901.1 Modified	3.47E+00	1.49E+00	1.50E+00	2.11E+00	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Manganese-54	EPA 901.1 Modified	8.35E-02	6.11E-02	6.12E-02	9.30E-02	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Niobium-94	EPA 901.1 Modified	1.02E-02	8.52E-02	8.52E-02	1.20E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Lead-210	EPA 901.1 Modified	2.66E+00	1.52E+00	1.53E+00	2.29E+00	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Lead-212	EPA 901.1 Modified	1.47E-01	1.46E-01	1.46E-01	2.08E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Lead-214	EPA 901.1 Modified	2.09E-01	2.23E-01	2.23E-01	3.71E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Radium-226	EPA 901.1 Modified	4.42E-01	1.81E-01	1.82E-01	3.38E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Radium-228	EPA 901.1 Modified	1.81E-01	2.99E-01	2.99E-01	5.10E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Antimony-125	EPA 901.1 Modified	2.25E-01	1.58E-01	1.58E-01	3.07E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Thorium-234	EPA 901.1 Modified	-3.16E-01	1.53E+00	1.53E+00	1.95E+00	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Thallium-208	EPA 901.1 Modified	3.24E-01	2.42E-01	2.42E-01	4.26E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Uranium-235	EPA 901.1 Modified	-1.53E-01	4.72E-01	4.72E-01	5.92E-01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/3/2021	21-12015	Zinc-65	EPA 901.1 Modified	-6.63E-02	1.68E-01	1.68E-01	2.47E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG:	**21-12015 REVISED**
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Actinium-228	EPA 901.1 Modified	3.47E-01	5.12E-01	5.12E-01	9.28E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Silver-110m	EPA 901.1 Modified	-2.63E-02	1.51E-01	1.51E-01	2.39E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Americium-241	EPA 901.1 Modified	-2.52E-02	2.12E-01	2.12E-01	2.76E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Bismuth-214	EPA 901.1 Modified	6.73E-01	3.77E-01	3.79E-01	7.09E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-9.47E-02	1.51E-01	1.51E-01	2.24E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Cobalt-60	EPA 901.1 Modified	-2.49E-02	1.76E-01	1.76E-01	2.80E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Cesium-134	EPA 901.1 Modified	-6.89E-04	6.28E-02	6.28E-02	2.29E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Cesium-137	EPA 901.1 Modified	-6.89E-02	1.63E-01	1.63E-01	2.48E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Europium-152	EPA 901.1 Modified	1.89E-01	4.18E-01	4.19E-01	4.04E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Europium-154	EPA 901.1 Modified	3.28E-01	4.32E-01	4.32E-01	2.13E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Europium-155	EPA 901.1 Modified	-1.54E-01	2.21E-01	2.21E-01	2.89E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Potassium-40	EPA 901.1 Modified	4.63E+00	2.43E+00	2.44E+00	3.50E+00	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Manganese-54	EPA 901.1 Modified	6.28E-02	1.58E-01	1.58E-01	2.72E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Niobium-94	EPA 901.1 Modified	1.61E-01	1.34E-01	1.34E-01	2.32E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Lead-210	EPA 901.1 Modified	2.57E+00	1.84E+00	1.85E+00	2.73E+00	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Lead-212	EPA 901.1 Modified	2.63E-01	2.27E-01	2.27E-01	3.73E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Lead-214	EPA 901.1 Modified	4.77E-01	2.60E-01	2.62E-01	4.95E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Radium-226	EPA 901.1 Modified	6.73E-01	3.77E-01	3.79E-01	7.09E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Radium-228	EPA 901.1 Modified	3.47E-01	5.12E-01	5.12E-01	9.28E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Antimony-125	EPA 901.1 Modified	-1.70E-01	3.51E-01	3.51E-01	5.20E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Thorium-234	EPA 901.1 Modified	3.09E+00	1.83E+00	1.84E+00	2.74E+00	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Thallium-208	EPA 901.1 Modified	5.40E-01	4.86E-01	4.87E-01	7.92E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Uranium-235	EPA 901.1 Modified	1.41E-01	5.37E-01	5.37E-01	8.46E-01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/3/2021	21-12015	Zinc-65	EPA 901.1 Modified	-8.50E-02	3.32E-01	3.32E-01	5.32E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Actinium-228	EPA 901.1 Modified	-4.64E-01	9.45E-01	9.45E-01	1.40E+00	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Silver-110m	EPA 901.1 Modified	-1.43E-01	2.30E-01	2.30E-01	3.34E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Americium-241	EPA 901.1 Modified	1.48E-01	3.13E-01	3.13E-01	4.54E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Bismuth-214	EPA 901.1 Modified	1.20E+00	5.94E-01	5.97E-01	9.42E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cobalt-58	EPA 901.1 Modified	4.36E-02	2.43E-01	2.43E-01	3.92E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cobalt-60	EPA 901.1 Modified	2.45E-02	8.19E-02	8.19E-02	3.57E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cesium-134	EPA 901.1 Modified	1.21E-02	1.00E-01	1.00E-01	4.13E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Cesium-137	EPA 901.1 Modified	5.79E-03	2.36E-01	2.36E-01	3.72E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Europium-152	EPA 901.1 Modified	-2.39E+00	1.05E+00	1.05E+00	7.82E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Europium-154	EPA 901.1 Modified	4.80E-01	5.63E-01	5.63E-01	3.89E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Europium-155	EPA 901.1 Modified	1.20E-01	3.64E-01	3.64E-01	5.25E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Potassium-40	EPA 901.1 Modified	6.89E+00	3.11E+00	3.13E+00	4.09E+00	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Manganese-54	EPA 901.1 Modified	1.45E-02	9.97E-02	9.97E-02	3.92E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Niobium-94	EPA 901.1 Modified	-1.43E-01	2.18E-01	2.18E-01	3.10E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Lead-210	EPA 901.1 Modified	4.53E+00	3.26E+00	3.27E+00	5.36E+00	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Lead-212	EPA 901.1 Modified	6.10E-01	4.70E-01	4.72E-01	7.66E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Lead-214	EPA 901.1 Modified	8.64E-01	7.40E-01	7.42E-01	1.22E+00	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Radium-226	EPA 901.1 Modified	1.20E+00	5.94E-01	5.97E-01	9.42E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Radium-228	EPA 901.1 Modified	-4.64E-01	9.45E-01	9.45E-01	1.40E+00	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Antimony-125	EPA 901.1 Modified	-9.37E-02	5.84E-01	5.84E-01	8.81E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Thorium-234	EPA 901.1 Modified	4.26E+00	2.81E+00	2.82E+00	4.18E+00	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Thallium-208	EPA 901.1 Modified	-8.67E-02	6.26E-01	6.26E-01	9.63E-01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Uranium-235	EPA 901.1 Modified	2.21E-01	9.35E-01	9.36E-01	1.42E+00	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/3/2021	21-12015	Zinc-65	EPA 901.1 Modified	-1.82E-03	5.09E-01	5.09E-01	8.06E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Actinium-228	EPA 901.1 Modified	4.93E-01	4.61E-01	4.61E-01	8.69E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Silver-110m	EPA 901.1 Modified	-8.08E-03	1.48E-01	1.48E-01	2.08E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Americium-241	EPA 901.1 Modified	-8.32E-01	3.12E-01	3.15E-01	3.42E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Bismuth-214	EPA 901.1 Modified	1.13E-01	3.91E-01	3.91E-01	5.50E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-7.46E-02	1.41E-01	1.42E-01	2.11E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-60	EPA 901.1 Modified	3.25E-02	1.29E-01	1.29E-01	2.19E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-134	EPA 901.1 Modified	-1.99E-01	2.09E-01	2.09E-01	2.47E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-137	EPA 901.1 Modified	1.19E-01	1.45E-01	1.45E-01	2.35E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-152	EPA 901.1 Modified	-1.18E-01	4.38E-01	4.38E-01	5.20E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-154	EPA 901.1 Modified	1.84E-01	3.25E-01	3.26E-01	2.84E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-155	EPA 901.1 Modified	2.36E-03	2.79E-01	2.79E-01	4.02E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Potassium-40	EPA 901.1 Modified	5.80E+00	2.06E+00	2.09E+00	2.53E+00	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Manganese-54	EPA 901.1 Modified	8.79E-03	1.55E-01	1.55E-01	2.51E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Niobium-94	EPA 901.1 Modified	-1.46E-01	1.37E-01	1.37E-01	1.85E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-210	EPA 901.1 Modified	2.41E+00	2.18E+00	2.18E+00	3.60E+00	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-212	EPA 901.1 Modified	5.47E-01	3.50E-01	3.51E-01	5.71E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-214	EPA 901.1 Modified	4.28E-01	2.72E-01	2.73E-01	4.60E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-226	EPA 901.1 Modified	1.13E-01	3.91E-01	3.91E-01	5.50E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-228	EPA 901.1 Modified	4.93E-01	4.61E-01	4.61E-01	8.69E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Antimony-125	EPA 901.1 Modified	1.58E-01	4.08E-01	4.08E-01	5.93E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thorium-234	EPA 901.1 Modified	9.68E+00	3.31E+00	3.35E+00	4.97E+00	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thallium-208	EPA 901.1 Modified	3.38E-01	4.61E-01	4.61E-01	7.10E-01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Uranium-235	EPA 901.1 Modified	5.91E-01	7.32E-01	7.32E-01	1.14E+00	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Zinc-65	EPA 901.1 Modified	-7.27E-02	2.62E-01	2.62E-01	4.17E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Actinium-228	EPA 901.1 Modified	4.74E-01	5.76E-01	5.76E-01	1.02E+00	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Silver-110m	EPA 901.1 Modified	-7.51E-02	1.68E-01	1.68E-01	2.26E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Americium-241	EPA 901.1 Modified	8.60E-02	2.67E-01	2.67E-01	3.59E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Bismuth-214	EPA 901.1 Modified	6.56E-01	3.31E-01	3.33E-01	6.12E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-5.02E-02	1.69E-01	1.69E-01	2.20E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-60	EPA 901.1 Modified	5.04E-02	1.52E-01	1.52E-01	2.59E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-134	EPA 901.1 Modified	-4.19E-01	2.30E-01	2.31E-01	2.26E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-137	EPA 901.1 Modified	1.09E-02	1.85E-01	1.85E-01	2.80E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-152	EPA 901.1 Modified	4.91E-01	5.57E-01	5.58E-01	5.60E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-154	EPA 901.1 Modified	-8.24E-02	3.70E-01	3.70E-01	2.82E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-155	EPA 901.1 Modified	2.03E-01	2.88E-01	2.88E-01	4.03E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Potassium-40	EPA 901.1 Modified	4.41E+00	2.51E+00	2.52E+00	3.75E+00	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Manganese-54	EPA 901.1 Modified	1.44E-01	1.22E-01	1.22E-01	5.58E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Niobium-94	EPA 901.1 Modified	4.54E-02	9.04E-02	9.04E-02	2.27E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-210	EPA 901.1 Modified	3.78E+00	2.80E+00	2.80E+00	4.16E+00	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-212	EPA 901.1 Modified	3.78E-01	3.41E-01	3.41E-01	5.63E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-214	EPA 901.1 Modified	6.43E-01	3.13E-01	3.15E-01	5.33E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-226	EPA 901.1 Modified	6.56E-01	3.31E-01	3.33E-01	6.12E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-228	EPA 901.1 Modified	4.74E-01	5.76E-01	5.76E-01	1.02E+00	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Antimony-125	EPA 901.1 Modified	-1.58E-01	3.09E-01	3.09E-01	4.82E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thorium-234	EPA 901.1 Modified	7.14E-01	2.84E+00	2.84E+00	3.78E+00	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thallium-208	EPA 901.1 Modified	2.10E-01	4.60E-01	4.60E-01	7.38E-01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Uranium-235	EPA 901.1 Modified	7.49E-02	9.32E-01	9.32E-01	1.23E+00	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Zinc-65	EPA 901.1 Modified	-2.21E-01	3.45E-01	3.46E-01	4.60E-01	pCi/g

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Eberline Analytical
Final Report of Analysis

Report To:	Work Order Details:	
Guy Gallello, Jr	*SDG:*	21-12015 REVISED
APTIM	*Purchase Order:*	208345
16406 US Route 224 E, Annex	*Analysis Category:*	ENVIRONMENTAL
Findlay, OH 45840	*Sample Matrix:*	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Actinium-228	EPA 901.1 Modified	5.37E-01	6.40E-01	6.41E-01	1.19E+00	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Silver-110m	EPA 901.1 Modified	1.45E-01	2.00E-01	2.00E-01	3.41E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Americium-241	EPA 901.1 Modified	2.61E-01	2.84E-01	2.84E-01	4.18E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Bismuth-214	EPA 901.1 Modified	3.25E-01	4.52E-01	4.52E-01	7.49E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-6.47E-02	2.44E-01	2.44E-01	3.57E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-60	EPA 901.1 Modified	-1.61E-02	2.23E-01	2.23E-01	3.16E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-134	EPA 901.1 Modified	4.87E-02	2.12E-01	2.12E-01	3.34E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-137	EPA 901.1 Modified	1.58E-01	2.10E-01	2.10E-01	3.59E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-152	EPA 901.1 Modified	-6.82E-01	8.43E-01	8.44E-01	6.98E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-154	EPA 901.1 Modified	6.94E-01	6.20E-01	6.21E-01	3.53E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-155	EPA 901.1 Modified	3.24E-01	3.34E-01	3.35E-01	4.90E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Potassium-40	EPA 901.1 Modified	9.24E+00	2.79E+00	2.83E+00	2.30E+00	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Manganese-54	EPA 901.1 Modified	-1.68E-02	2.27E-01	2.27E-01	3.56E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Niobium-94	EPA 901.1 Modified	-1.12E-02	1.98E-01	1.98E-01	3.14E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-210	EPA 901.1 Modified	3.53E+00	3.00E+00	3.00E+00	4.95E+00	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-212	EPA 901.1 Modified	6.57E-01	3.90E-01	3.92E-01	6.18E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-214	EPA 901.1 Modified	3.28E-01	4.04E-01	4.05E-01	6.59E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-226	EPA 901.1 Modified	3.25E-01	4.52E-01	4.52E-01	7.49E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-228	EPA 901.1 Modified	5.37E-01	6.40E-01	6.41E-01	1.19E+00	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Antimony-125	EPA 901.1 Modified	4.90E-02	5.60E-01	5.60E-01	8.62E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thorium-234	EPA 901.1 Modified	1.84E+00	2.62E+00	2.63E+00	3.81E+00	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thallium-208	EPA 901.1 Modified	7.35E-01	3.77E-01	3.79E-01	7.10E-01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Uranium-235	EPA 901.1 Modified	7.38E-02	8.66E-01	8.66E-01	1.31E+00	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Zinc-65	EPA 901.1 Modified	-7.15E-02	4.96E-01	4.96E-01	7.80E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	Work Order Details:	
Guy Gallello, Jr	SDG:	21-12015 REVISED
APTIM	Purchase Order:	208345
16406 US Route 224 E, Annex	Analysis Category:	ENVIRONMENTAL
Findlay, OH 45840	Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Actinium-228	EPA 901.1 Modified	-2.25E-01	7.24E-01	7.24E-01	1.14E+00	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Silver-110m	EPA 901.1 Modified	-2.58E-01	1.83E-01	1.84E-01	2.21E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Americium-241	EPA 901.1 Modified	-1.63E-01	2.60E-01	2.60E-01	3.37E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Bismuth-214	EPA 901.1 Modified	5.02E-01	3.50E-01	3.51E-01	6.50E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-4.64E-02	1.89E-01	1.89E-01	2.92E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-60	EPA 901.1 Modified	2.73E-02	1.84E-01	1.84E-01	3.21E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-134	EPA 901.1 Modified	2.84E-01	1.97E-01	1.98E-01	3.61E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-137	EPA 901.1 Modified	1.08E-01	1.44E-01	1.44E-01	2.68E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-152	EPA 901.1 Modified	2.00E-02	6.45E-01	6.45E-01	4.78E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-154	EPA 901.1 Modified	-9.68E-02	3.34E-01	3.34E-01	2.46E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-155	EPA 901.1 Modified	-3.48E-01	2.97E-01	2.97E-01	3.48E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Potassium-40	EPA 901.1 Modified	3.73E+00	2.67E+00	2.67E+00	4.10E+00	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Manganese-54	EPA 901.1 Modified	-1.43E-01	1.95E-01	1.95E-01	2.75E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Niobium-94	EPA 901.1 Modified	1.38E-01	1.76E-01	1.76E-01	2.73E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-210	EPA 901.1 Modified	1.99E+00	2.25E+00	2.25E+00	3.24E+00	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-212	EPA 901.1 Modified	1.86E-01	2.25E-01	2.25E-01	3.72E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-214	EPA 901.1 Modified	4.19E-01	3.33E-01	3.34E-01	5.74E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-226	EPA 901.1 Modified	5.02E-01	3.50E-01	3.51E-01	6.50E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-228	EPA 901.1 Modified	-2.25E-01	7.24E-01	7.24E-01	1.14E+00	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Antimony-125	EPA 901.1 Modified	1.18E-01	4.23E-01	4.23E-01	6.88E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thorium-234	EPA 901.1 Modified	2.36E+00	2.24E+00	2.24E+00	3.21E+00	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thallium-208	EPA 901.1 Modified	-3.42E-02	2.76E-01	2.76E-01	7.43E-01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Uranium-235	EPA 901.1 Modified	8.43E-01	6.79E-01	6.81E-01	1.13E+00	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Zinc-65	EPA 901.1 Modified	-6.21E-02	5.18E-01	5.18E-01	7.77E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Actinium-228	EPA 901.1 Modified	6.33E-01	5.63E-01	5.64E-01	1.04E+00	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Silver-110m	EPA 901.1 Modified	-5.41E-02	1.72E-01	1.72E-01	2.32E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Americium-241	EPA 901.1 Modified	6.70E-02	1.23E-01	1.23E-01	3.65E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Bismuth-214	EPA 901.1 Modified	4.56E-01	3.47E-01	3.48E-01	5.63E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-3.68E-02	1.76E-01	1.76E-01	2.70E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-60	EPA 901.1 Modified	-1.50E-02	1.65E-01	1.65E-01	2.07E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-134	EPA 901.1 Modified	-1.15E-01	1.21E-01	1.21E-01	2.47E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-137	EPA 901.1 Modified	2.65E-02	1.78E-01	1.78E-01	2.56E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-152	EPA 901.1 Modified	-4.25E-01	5.21E-01	5.22E-01	5.25E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-154	EPA 901.1 Modified	-5.67E-02	4.00E-01	4.00E-01	2.84E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-155	EPA 901.1 Modified	-5.03E-03	2.86E-01	2.86E-01	4.13E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Potassium-40	EPA 901.1 Modified	5.50E+00	2.39E+00	2.40E+00	3.31E+00	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Manganese-54	EPA 901.1 Modified	1.70E-01	1.47E-01	1.47E-01	2.35E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Niobium-94	EPA 901.1 Modified	-1.05E-02	5.21E-02	5.21E-02	2.35E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-210	EPA 901.1 Modified	2.39E+00	2.11E+00	2.12E+00	3.49E+00	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-212	EPA 901.1 Modified	4.95E-01	3.30E-01	3.31E-01	5.38E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-214	EPA 901.1 Modified	3.90E-01	3.12E-01	3.12E-01	5.18E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-226	EPA 901.1 Modified	4.56E-01	3.47E-01	3.48E-01	5.63E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-228	EPA 901.1 Modified	6.33E-01	5.63E-01	5.64E-01	1.04E+00	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Antimony-125	EPA 901.1 Modified	1.70E-01	4.22E-01	4.22E-01	6.18E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thorium-234	EPA 901.1 Modified	5.35E+00	2.96E+00	2.97E+00	4.60E+00	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thallium-208	EPA 901.1 Modified	5.31E-01	4.10E-01	4.11E-01	8.97E-01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Uranium-235	EPA 901.1 Modified	6.62E-01	7.75E-01	7.76E-01	1.22E+00	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Zinc-65	EPA 901.1 Modified	-4.11E-02	1.40E-01	1.40E-01	5.32E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	Work Order Details:	
Guy Gallello, Jr	*SDG:*	21-12015 REVISED
APTIM	*Purchase Order:*	208345
16406 US Route 224 E, Annex	*Analysis Category:*	ENVIRONMENTAL
Findlay, OH 45840	*Sample Matrix:*	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Actinium-228	EPA 901.1 Modified	5.99E-02	4.57E-01	4.57E-01	7.19E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Silver-110m	EPA 901.1 Modified	-2.27E-02	1.20E-01	1.20E-01	1.69E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Americium-241	EPA 901.1 Modified	8.49E-03	2.27E-01	2.27E-01	3.00E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Bismuth-214	EPA 901.1 Modified	5.35E-01	2.87E-01	2.88E-01	5.15E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-58	EPA 901.1 Modified	6.57E-02	1.23E-01	1.23E-01	2.11E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-60	EPA 901.1 Modified	3.89E-03	1.43E-01	1.43E-01	2.26E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-134	EPA 901.1 Modified	-2.82E-01	1.74E-01	1.75E-01	2.03E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-137	EPA 901.1 Modified	-8.07E-03	1.24E-01	1.24E-01	1.92E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-152	EPA 901.1 Modified	3.93E-02	4.93E-01	4.93E-01	4.38E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-154	EPA 901.1 Modified	-4.33E-02	3.60E-01	3.60E-01	2.16E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-155	EPA 901.1 Modified	2.20E-01	2.67E-01	2.67E-01	4.47E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Potassium-40	EPA 901.1 Modified	3.36E+00	2.16E+00	2.17E+00	3.34E+00	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Manganese-54	EPA 901.1 Modified	1.55E-02	1.22E-01	1.22E-01	1.92E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Niobium-94	EPA 901.1 Modified	2.77E-03	1.11E-01	1.11E-01	1.75E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-210	EPA 901.1 Modified	2.61E+00	2.46E+00	2.47E+00	4.07E+00	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-212	EPA 901.1 Modified	3.96E-01	2.34E-01	2.35E-01	3.75E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-214	EPA 901.1 Modified	1.89E-01	2.79E-01	2.80E-01	4.04E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-226	EPA 901.1 Modified	5.35E-01	2.87E-01	2.88E-01	5.15E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-228	EPA 901.1 Modified	5.99E-02	4.57E-01	4.57E-01	7.19E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Antimony-125	EPA 901.1 Modified	-8.70E-02	2.39E-01	2.39E-01	3.84E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thorium-234	EPA 901.1 Modified	1.53E+00	2.30E+00	2.31E+00	3.18E+00	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thallium-208	EPA 901.1 Modified	7.01E-01	3.38E-01	3.40E-01	4.82E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Uranium-235	EPA 901.1 Modified	3.86E-01	6.59E-01	6.59E-01	9.32E-01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Zinc-65	EPA 901.1 Modified	-9.67E-02	2.82E-01	2.82E-01	4.17E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:		Work Order Details:	
Guy Gallello, Jr		SDG:	21-12015 REVISED
APTIM		Purchase Order:	208345
16406 US Route 224 E, Annex		Analysis Category:	ENVIRONMENTAL
Findlay, OH 45840		Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Actinium-228	EPA 901.1 Modified	8.78E-01	8.93E-01	8.94E-01	1.61E+00	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Silver-110m	EPA 901.1 Modified	4.79E-03	2.56E-01	2.56E-01	4.03E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Americium-241	EPA 901.1 Modified	9.44E-01	6.37E-01	6.39E-01	9.52E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Bismuth-214	EPA 901.1 Modified	-6.31E-02	1.80E-01	1.80E-01	8.59E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-58	EPA 901.1 Modified	3.45E-01	2.56E-01	2.56E-01	4.73E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-60	EPA 901.1 Modified	9.57E-02	2.83E-01	2.83E-01	4.71E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-134	EPA 901.1 Modified	-1.67E-02	1.69E-01	1.69E-01	4.06E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-137	EPA 901.1 Modified	-7.32E-02	2.78E-01	2.78E-01	4.23E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-152	EPA 901.1 Modified	-5.90E-01	1.02E+00	1.02E+00	1.15E+00	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-154	EPA 901.1 Modified	-4.65E-01	7.34E-01	7.34E-01	5.67E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-155	EPA 901.1 Modified	-8.09E-02	6.62E-01	6.62E-01	9.39E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Potassium-40	EPA 901.1 Modified	7.18E+00	3.26E+00	3.28E+00	4.37E+00	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Manganese-54	EPA 901.1 Modified	-1.90E-01	2.88E-01	2.88E-01	4.13E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Niobium-94	EPA 901.1 Modified	-2.42E-02	2.38E-01	2.38E-01	3.75E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-210	EPA 901.1 Modified	2.36E+00	7.46E+00	7.47E+00	1.08E+01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-212	EPA 901.1 Modified	5.07E-01	3.40E-01	3.41E-01	9.60E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-214	EPA 901.1 Modified	2.87E-01	4.84E-01	4.84E-01	7.79E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-226	EPA 901.1 Modified	-6.31E-02	1.80E-01	1.80E-01	8.59E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-228	EPA 901.1 Modified	8.78E-01	8.93E-01	8.94E-01	1.61E+00	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Antimony-125	EPA 901.1 Modified	-2.71E-01	6.59E-01	6.60E-01	9.81E-01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thorium-234	EPA 901.1 Modified	-1.24E+00	5.96E+00	5.96E+00	8.42E+00	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thallium-208	EPA 901.1 Modified	7.33E-01	7.19E-01	7.20E-01	1.23E+00	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Uranium-235	EPA 901.1 Modified	3.00E-01	1.27E+00	1.27E+00	1.95E+00	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Zinc-65	EPA 901.1 Modified	-1.71E-01	5.83E-01	5.83E-01	8.46E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Actinium-228	EPA 901.1 Modified	-3.29E-01	8.11E-01	8.11E-01	1.25E+00	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Silver-110m	EPA 901.1 Modified	-4.99E-02	1.75E-01	1.75E-01	2.75E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Americium-241	EPA 901.1 Modified	-3.69E-01	2.85E-01	2.85E-01	3.44E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Bismuth-214	EPA 901.1 Modified	1.43E-01	3.89E-01	3.89E-01	6.53E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-3.44E-02	1.53E-01	1.53E-01	3.37E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cobalt-60	EPA 901.1 Modified	1.68E-01	2.09E-01	2.09E-01	2.74E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-134	EPA 901.1 Modified	-2.58E-01	2.14E-01	2.14E-01	2.87E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Cesium-137	EPA 901.1 Modified	-1.74E-03	1.89E-01	1.89E-01	3.09E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-152	EPA 901.1 Modified	-7.16E-01	6.78E-01	6.79E-01	5.06E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-154	EPA 901.1 Modified	-7.39E-02	1.20E-01	1.20E-01	2.58E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Europium-155	EPA 901.1 Modified	-4.56E-01	3.17E-01	3.18E-01	3.81E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Potassium-40	EPA 901.1 Modified	4.95E+00	2.45E+00	2.47E+00	3.21E+00	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Manganese-54	EPA 901.1 Modified	1.30E-01	1.86E-01	1.87E-01	3.38E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Niobium-94	EPA 901.1 Modified	2.92E-03	1.86E-01	1.86E-01	2.76E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-210	EPA 901.1 Modified	9.75E-01	2.46E+00	2.46E+00	3.43E+00	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-212	EPA 901.1 Modified	3.03E-01	2.51E-01	2.52E-01	4.22E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Lead-214	EPA 901.1 Modified	4.63E-01	3.38E-01	3.38E-01	5.93E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-226	EPA 901.1 Modified	1.43E-01	3.89E-01	3.89E-01	6.53E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Radium-228	EPA 901.1 Modified	-3.29E-01	8.11E-01	8.11E-01	1.25E+00	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Antimony-125	EPA 901.1 Modified	3.20E-01	4.76E-01	4.76E-01	8.06E-01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thorium-234	EPA 901.1 Modified	3.07E+00	2.34E+00	2.35E+00	3.45E+00	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Thallium-208	EPA 901.1 Modified	8.18E-01	5.15E-01	5.16E-01	1.39E+00	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Uranium-235	EPA 901.1 Modified	4.05E-01	7.46E-01	7.47E-01	1.20E+00	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/4/2021	21-12015	Zinc-65	EPA 901.1 Modified	-8.47E-02	1.59E-01	1.59E-01	6.34E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Actinium-228	EPA 901.1 Modified	-2.35E-01	4.72E-01	4.72E-01	6.78E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Silver-110m	EPA 901.1 Modified	-8.81E-02	1.60E-01	1.60E-01	2.06E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Americium-241	EPA 901.1 Modified	-8.35E-01	2.89E-01	2.92E-01	3.23E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Bismuth-214	EPA 901.1 Modified	4.07E-01	3.94E-01	3.94E-01	6.50E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cobalt-58	EPA 901.1 Modified	4.47E-02	1.28E-01	1.28E-01	2.20E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cobalt-60	EPA 901.1 Modified	-3.60E-02	1.35E-01	1.35E-01	2.12E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cesium-134	EPA 901.1 Modified	3.51E-02	8.13E-02	8.13E-02	2.22E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cesium-137	EPA 901.1 Modified	5.17E-02	1.54E-01	1.54E-01	2.28E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-152	EPA 901.1 Modified	-4.67E-02	4.42E-01	4.42E-01	4.90E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-154	EPA 901.1 Modified	3.84E-02	2.87E-01	2.87E-01	2.45E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-155	EPA 901.1 Modified	-2.68E-01	2.68E-01	2.68E-01	3.61E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Potassium-40	EPA 901.1 Modified	4.96E+00	2.12E+00	2.13E+00	2.95E+00	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Manganese-54	EPA 901.1 Modified	5.30E-02	1.29E-01	1.29E-01	2.21E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Niobium-94	EPA 901.1 Modified	-2.15E-02	1.22E-01	1.22E-01	1.91E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-210	EPA 901.1 Modified	1.44E+00	1.86E+00	1.86E+00	2.87E+00	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-212	EPA 901.1 Modified	5.70E-01	2.71E-01	2.72E-01	4.27E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-214	EPA 901.1 Modified	4.58E-01	2.55E-01	2.56E-01	4.43E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Radium-226	EPA 901.1 Modified	4.07E-01	3.94E-01	3.94E-01	6.50E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Radium-228	EPA 901.1 Modified	-2.35E-01	4.72E-01	4.72E-01	6.78E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Antimony-125	EPA 901.1 Modified	-6.87E-02	3.62E-01	3.62E-01	4.92E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Thorium-234	EPA 901.1 Modified	7.83E+00	2.16E+00	2.20E+00	3.65E+00	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Thallium-208	EPA 901.1 Modified	4.18E-01	3.98E-01	3.98E-01	6.42E-01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Uranium-235	EPA 901.1 Modified	5.76E-01	6.93E-01	6.93E-01	1.08E+00	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Zinc-65	EPA 901.1 Modified	-2.04E-01	3.12E-01	3.12E-01	4.50E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	
Guy Gallello, Jr	
APTIM	
16406 US Route 224 E, Annex	
Findlay, OH 45840	

Work Order Details:	
SDG:	21-12015 REVISED
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Actinium-228	EPA 901.1 Modified	2.30E-01	4.04E-01	4.04E-01	7.10E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Silver-110m	EPA 901.1 Modified	-3.33E-02	1.44E-01	1.44E-01	2.05E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Americium-241	EPA 901.1 Modified	-2.12E-01	2.50E-01	2.51E-01	2.90E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Bismuth-214	EPA 901.1 Modified	3.29E-01	3.00E-01	3.00E-01	5.09E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cobalt-58	EPA 901.1 Modified	1.01E-02	1.29E-01	1.29E-01	2.03E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cobalt-60	EPA 901.1 Modified	8.27E-02	1.44E-01	1.44E-01	2.22E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cesium-134	EPA 901.1 Modified	-1.99E-01	1.40E-01	1.40E-01	1.85E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cesium-137	EPA 901.1 Modified	4.22E-02	1.40E-01	1.40E-01	2.24E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-152	EPA 901.1 Modified	-4.30E-01	5.29E-01	5.29E-01	4.54E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-154	EPA 901.1 Modified	2.94E-01	3.07E-01	3.07E-01	2.44E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-155	EPA 901.1 Modified	-1.77E-02	2.66E-01	2.66E-01	3.48E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Potassium-40	EPA 901.1 Modified	4.88E+00	1.97E+00	1.99E+00	2.58E+00	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Manganese-54	EPA 901.1 Modified	-1.20E-01	1.49E-01	1.49E-01	1.79E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Niobium-94	EPA 901.1 Modified	5.42E-04	1.26E-01	1.26E-01	1.92E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-210	EPA 901.1 Modified	2.67E+00	2.37E+00	2.37E+00	3.45E+00	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-212	EPA 901.1 Modified	1.00E-01	2.71E-01	2.71E-01	3.47E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-214	EPA 901.1 Modified	3.88E-01	2.87E-01	2.88E-01	4.46E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Radium-226	EPA 901.1 Modified	3.29E-01	3.00E-01	3.00E-01	5.09E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Radium-228	EPA 901.1 Modified	2.30E-01	4.04E-01	4.04E-01	7.10E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Antimony-125	EPA 901.1 Modified	2.62E-02	2.44E-01	2.44E-01	4.20E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Thorium-234	EPA 901.1 Modified	3.82E+00	2.91E+00	2.92E+00	4.79E+00	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Thallium-208	EPA 901.1 Modified	2.86E-01	3.47E-01	3.47E-01	5.92E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Uranium-235	EPA 901.1 Modified	3.31E-01	7.04E-01	7.04E-01	9.72E-01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Zinc-65	EPA 901.1 Modified	-3.76E-01	3.63E-01	3.63E-01	4.40E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12015 REVISED
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Actinium-228	EPA 901.1 Modified	3.30E-01	1.47E+00	1.48E+00	2.44E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Silver-110m	EPA 901.1 Modified	7.48E-02	4.42E-01	4.42E-01	6.90E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Americium-241	EPA 901.1 Modified	4.23E-01	4.68E-01	4.68E-01	8.77E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Bismuth-214	EPA 901.1 Modified	2.33E-01	8.58E-01	8.59E-01	1.37E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-3.07E-01	4.79E-01	4.80E-01	6.89E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cobalt-60	EPA 901.1 Modified	-2.74E-01	4.47E-01	4.47E-01	6.14E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cesium-134	EPA 901.1 Modified	1.65E-01	4.20E-01	4.20E-01	6.80E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cesium-137	EPA 901.1 Modified	2.25E-01	4.58E-01	4.58E-01	7.60E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-152	EPA 901.1 Modified	-5.52E-01	1.26E+00	1.26E+00	1.52E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-154	EPA 901.1 Modified	-5.85E-01	8.27E-01	8.27E-01	7.55E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-155	EPA 901.1 Modified	-2.34E-01	6.77E-01	6.77E-01	9.53E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Potassium-40	EPA 901.1 Modified	1.15E+01	4.39E+00	4.43E+00	3.93E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Manganese-54	EPA 901.1 Modified	-2.69E-01	4.38E-01	4.38E-01	6.34E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Niobium-94	EPA 901.1 Modified	2.25E-01	3.19E-01	3.20E-01	5.85E-01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-210	EPA 901.1 Modified	-6.32E-02	3.04E+00	3.04E+00	1.13E+01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-212	EPA 901.1 Modified	9.64E-01	6.16E-01	6.18E-01	1.00E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-214	EPA 901.1 Modified	5.33E-02	7.94E-01	7.94E-01	1.23E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Radium-226	EPA 901.1 Modified	2.33E-01	8.58E-01	8.59E-01	1.37E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Radium-228	EPA 901.1 Modified	3.30E-01	1.47E+00	1.48E+00	2.44E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Antimony-125	EPA 901.1 Modified	-3.33E-01	1.08E+00	1.08E+00	1.62E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Thorium-234	EPA 901.1 Modified	1.81E+00	5.44E+00	5.44E+00	7.84E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Thallium-208	EPA 901.1 Modified	2.85E-01	1.21E+00	1.21E+00	1.94E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Uranium-235	EPA 901.1 Modified	9.17E-01	1.76E+00	1.76E+00	2.71E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Zinc-65	EPA 901.1 Modified	-4.37E-01	1.01E+00	1.01E+00	1.48E+00	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	Work Order Details:	
Guy Gallello, Jr	SDG:	21-12015 REVISED
APTIM	Purchase Order:	208345
16406 US Route 224 E, Annex	Analysis Category:	ENVIRONMENTAL
Findlay, OH 45840	Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Actinium-228	EPA 901.1 Modified	-1.76E-01	8.66E-01	8.66E-01	1.35E+00	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Silver-110m	EPA 901.1 Modified	4.00E-02	1.85E-01	1.85E-01	3.13E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Americium-241	EPA 901.1 Modified	-2.77E-01	2.81E-01	2.81E-01	3.50E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Bismuth-214	EPA 901.1 Modified	4.03E-02	4.11E-01	4.11E-01	6.66E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cobalt-58	EPA 901.1 Modified	-2.18E-01	2.40E-01	2.40E-01	3.28E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cobalt-60	EPA 901.1 Modified	-6.24E-02	2.20E-01	2.21E-01	3.23E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cesium-134	EPA 901.1 Modified	4.75E-03	2.11E-01	2.11E-01	3.39E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Cesium-137	EPA 901.1 Modified	5.12E-02	2.05E-01	2.05E-01	3.37E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-152	EPA 901.1 Modified	1.19E-01	5.38E-01	5.38E-01	5.41E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-154	EPA 901.1 Modified	-2.33E-01	5.35E-01	5.35E-01	2.77E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Europium-155	EPA 901.1 Modified	-4.25E-01	3.31E-01	3.32E-01	3.94E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Potassium-40	EPA 901.1 Modified	8.65E+00	3.70E+00	3.73E+00	5.02E+00	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Manganese-54	EPA 901.1 Modified	-4.25E-02	2.20E-01	2.20E-01	3.48E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Niobium-94	EPA 901.1 Modified	6.60E-02	1.99E-01	1.99E-01	3.25E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-210	EPA 901.1 Modified	7.57E-01	2.55E+00	2.55E+00	3.55E+00	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-212	EPA 901.1 Modified	3.86E-01	2.54E-01	2.55E-01	4.37E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Lead-214	EPA 901.1 Modified	2.95E-01	3.93E-01	3.93E-01	6.33E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Radium-226	EPA 901.1 Modified	4.03E-02	4.11E-01	4.11E-01	6.66E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Radium-228	EPA 901.1 Modified	-1.76E-01	8.66E-01	8.66E-01	1.35E+00	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Antimony-125	EPA 901.1 Modified	3.45E-01	4.56E-01	4.56E-01	7.91E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Thorium-234	EPA 901.1 Modified	5.15E+00	2.24E+00	2.25E+00	3.52E+00	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Thallium-208	EPA 901.1 Modified	4.17E-01	5.64E-01	5.64E-01	9.73E-01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Uranium-235	EPA 901.1 Modified	1.09E+00	7.66E-01	7.68E-01	1.30E+00	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/6/2021	21-12015	Zinc-65	EPA 901.1 Modified	1.18E-02	1.97E-01	1.97E-01	6.79E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	Work Order Details:	
Guy Gallello, Jr	SDG:	21-12015 REVISED
APTIM	Purchase Order:	208345
16406 US Route 224 E, Annex	Analysis Category:	ENVIRONMENTAL
Findlay, OH 45840	Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-01	LCS	KNOWN	12/03/21 00:00	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	1.43E+03	4.02E+01			pCi/g
21-12015-01	LCS	SPIKE	12/03/21 00:00	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	1.28E+03	2.85E+01	1.81E+02	1.71E+01	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	7.56E-01	5.80E+00	5.80E+00	9.94E+00	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-4.50E-01	3.42E+00	3.42E+00	5.91E+00	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-2.65E+00	3.49E+00	3.51E+00	6.14E+00	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-1.28E+00	3.64E+00	3.64E+00	6.32E+00	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-1.77E+00	3.63E+00	3.64E+00	6.33E+00	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-2.61E+00	3.67E+00	3.69E+00	6.44E+00	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-6.37E-01	3.63E+00	3.63E+00	6.29E+00	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-1.96E+00	3.68E+00	3.69E+00	6.43E+00	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-3.43E+00	3.65E+00	3.68E+00	6.45E+00	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-1.57E+00	3.56E+00	3.57E+00	6.20E+00	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-3.75E+00	3.63E+00	3.67E+00	6.44E+00	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-2.46E+00	3.70E+00	3.71E+00	6.48E+00	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-2.07E+00	3.59E+00	3.60E+00	6.27E+00	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-3.55E+00	3.60E+00	3.63E+00	6.37E+00	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-3.28E+00	3.66E+00	3.69E+00	6.47E+00	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-7.92E-01	3.61E+00	3.61E+00	6.25E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-1.58E-01	3.62E+00	3.62E+00	6.24E+00	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Carbon-14	EPA 520.0 Modified	-3.73E+00	3.61E+00	3.64E+00	6.39E+00	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG:	**21-12015 REVISED**
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-01	LCS	KNOWN	12/03/21 00:00	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	1.80E+02	6.49E+00			pCi/g
21-12015-01	LCS	SPIKE	12/03/21 00:00	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	1.77E+02	7.30E+00	1.23E+01	5.59E+00	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-1.53E+00	3.19E+00	3.19E+00	5.63E+00	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	1/19/2022	21-12015	Tritium	LANL ER-210 Modified	-9.15E+00	3.08E+01	3.08E+01	5.41E+01	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	3.53E+00	3.01E+01	3.01E+01	5.21E+01	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	6.62E+00	2.84E+01	2.84E+01	4.88E+01	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-2.42E+01	3.08E+01	3.08E+01	5.51E+01	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-2.31E+01	2.72E+01	2.72E+01	4.88E+01	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-1.36E+01	3.26E+01	3.26E+01	5.74E+01	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-1.67E+00	2.84E+01	2.84E+01	4.94E+01	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-1.97E+01	2.97E+01	2.97E+01	5.29E+01	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-1.12E+01	3.13E+01	3.13E+01	5.51E+01	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-2.38E+01	2.61E+01	2.62E+01	4.69E+01	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-1.38E+01	2.89E+01	2.89E+01	5.11E+01	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-1.89E+00	3.21E+01	3.21E+01	5.58E+01	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	5.04E+00	2.87E+01	2.87E+01	4.96E+01	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	1.57E+01	2.73E+01	2.73E+01	4.64E+01	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-3.49E+00	2.95E+01	2.95E+01	5.15E+01	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	-1.11E+01	3.10E+01	3.10E+01	5.46E+01	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/16/2021	21-12015	Tritium	LANL ER-210 Modified	3.83E+00	3.27E+01	3.27E+01	5.65E+01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG:	**21-12015 REVISED**
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12015-01	LCS	KNOWN	12/03/21 00:00	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	1.58E+03	4.73E+01			pCi/g
21-12015-01	LCS	SPIKE	12/03/21 00:00	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	1.57E+03	1.26E+01	9.32E+01	2.94E+00	pCi/g
21-12015-02	MBL	BLANK	12/03/21 00:00	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	0.00E+00	1.67E+00	1.67E+00	2.88E+00	pCi/g
21-12015-03	DUP	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-4.16E+00	1.87E+00	1.88E+00	3.43E+00	pCi/g
21-12015-04	DO	501513-9P-PA-01	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-7.43E-01	1.80E+00	1.80E+00	3.14E+00	pCi/g
21-12015-05	TRG	501513-9P-PA-02	11/22/21 14:23	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-2.35E+00	2.09E+00	2.10E+00	3.72E+00	pCi/g
21-12015-06	TRG	501513-9P-PA-03	11/22/21 14:51	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-2.34E-01	1.71E+00	1.71E+00	2.96E+00	pCi/g
21-12015-07	TRG	501513-9P-PA-04	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-1.68E+00	1.90E+00	1.90E+00	3.35E+00	pCi/g
21-12015-08	TRG	501513-9P-PA-05	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-1.04E+00	1.74E+00	1.74E+00	3.05E+00	pCi/g
21-12015-09	TRG	501513-9P-PA-06	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-1.50E+00	2.16E+00	2.17E+00	3.80E+00	pCi/g
21-12015-10	TRG	501513-9P-PA-07	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	5.97E-01	1.66E+00	1.66E+00	2.83E+00	pCi/g
21-12015-11	TRG	501513-9P-PA-08	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-1.43E+00	1.61E+00	1.62E+00	2.85E+00	pCi/g
21-12015-12	TRG	501513-9P-PA-09	11/23/21 14:15	12/2/2021	12/10/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-3.51E-01	1.54E+00	1.54E+00	2.67E+00	pCi/g
21-12015-13	TRG	501513-9P-PA-10	11/23/21 14:15	12/2/2021	12/11/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-1.19E+00	1.61E+00	1.61E+00	2.83E+00	pCi/g
21-12015-14	TRG	501513-9P-PA-11	11/23/21 14:15	12/2/2021	12/11/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-6.88E-02	1.51E+00	1.51E+00	2.61E+00	pCi/g
21-12015-15	TRG	501513-9P-PA-12	11/23/21 14:15	12/2/2021	12/11/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-3.06E-01	1.68E+00	1.68E+00	2.91E+00	pCi/g
21-12015-16	TRG	501513-9P-PA-13	11/23/21 14:15	12/2/2021	12/11/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-5.84E-01	1.59E+00	1.59E+00	2.77E+00	pCi/g
21-12015-17	TRG	501513-9P-PA-14	11/23/21 14:15	12/2/2021	12/11/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-7.85E-02	1.73E+00	1.73E+00	2.99E+00	pCi/g
21-12015-18	TRG	501513-9P-PA-15	11/23/21 14:15	12/2/2021	12/11/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-6.47E-01	1.77E+00	1.77E+00	3.07E+00	pCi/g
21-12015-19	TRG	501513-9P-PA-16	11/23/21 14:15	12/2/2021	12/11/2021	21-12015	Nickel-63	ASTM 3500-Ni Modified	-5.70E+00	2.34E+00	2.37E+00	4.33E+00	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-027 Page 5 of 7

Project Number: 501513 Shipment Date: 12/1/2021

Project Name / Location: SSSB Mobile, AL

21-12015

REC'D DEC 02 2021

Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested										Turn Around Time Requested
		Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						
501513-9P-SM-01	MARSAME Wipe; Tank 9P #1	11/18/21	1552	G	WP	1	Vial									X								21-BD
4 501513-9P-PA-01	MARSAME Paint Sample; Tank 9P #1	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-02	MARSAME Wipe; Tank 9P #2	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-02	MARSAME Wipe; Tank 9P #2	11/18/21	1552	G	WP	1	Vial									X								21-BD
5 501513-9P-PA-02	MARSAME Paint Sample; Tank 9P #2	11/22/21	1423	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-03	MARSAME Wipe; Tank 9P #3	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-03	MARSAME Wipe; Tank 9P #3	11/18/21	1552	G	WP	1	Vial									X								21-BD
6 501513-9P-PA-03	MARSAME Paint Sample; Tank 9P #3	11/22/21	1451	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-04	MARSAME Wipe; Tank 9P #4	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-04	MARSAME Wipe; Tank 9P #4	11/18/21	1552	G	WP	1	Vial									X								21-BD
7 501513-9P-PA-04	MARSAME Paint Sample; Tank 9P #4	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-05	MARSAME Wipe; Tank 9P #5	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-05	MARSAME Wipe; Tank 9P #5	11/18/21	1552	G	WP	1	Vial									X								21-BD
8 501513-9P-PA-05	MARSAME Paint Sample; Tank 9P #5	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-06	MARSAME Wipe; Tank 9P #6	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-06	MARSAME Wipe; Tank 9P #6	11/18/21	1552	G	WP	1	Vial									X								21-BD
9 501513-9P-PA-06	MARSAME Paint Sample; Tank 9P #6	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-07	MARSAME Wipe; Tank 9P #7	11/18/21	1552	G	WP	1	Vial								X									21-BD

Rec BB 12-2-21 @ 1330

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-027 Page 6 of 7

Project Number: 501513 **Shipment Date:** 12/1/2021

Project Name / Location: SSSB Mobile, AL

21-12015

REC'D DEC 02 2021

Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested										Turn Around Time Requested
		Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						
501513-9P-SM-07	MARSAME Wipe; Tank 9P #7	11/18/21	1552	G	WP	1	Vial									X								21-BD
10 501513-9P-PA-07	MARSAME Paint Sample; Tank 9P #7	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-08	MARSAME Wipe; Tank 9P #8	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-08	MARSAME Wipe; Tank 9P #8	11/18/21	1552	G	WP	1	Vial									X								21-BD
11 501513-9P-PA-08	MARSAME Paint Sample; Tank 9P #8	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-09	MARSAME Wipe; Tank 9P #9	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-09	MARSAME Wipe; Tank 9P #9	11/18/21	1552	G	WP	1	Vial									X								21-BD
12 501513-9P-PA-09	MARSAME Paint Sample; Tank 9P #9	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-10	MARSAME Wipe; Tank 9P #10	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-10	MARSAME Wipe; Tank 9P #10	11/18/21	1552	G	WP	1	Vial									X								21-BD
13 501513-9P-PA-10	MARSAME Paint Sample; Tank 9P #10	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-11	MARSAME Wipe; Tank 9P #11	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-11	MARSAME Wipe; Tank 9P #11	11/18/21	1552	G	WP	1	Vial									X								21-BD
14 501513-9P-PA-11	MARSAME Paint Sample; Tank 9P #11	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-12	MARSAME Wipe; Tank 9P #12	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-12	MARSAME Wipe; Tank 9P #12	11/18/21	1552	G	WP	1	Vial									X								21-BD
15 501513-9P-PA-12	MARSAME Paint Sample; Tank 9P #12	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-13	MARSAME Wipe; Tank 9P #13	11/18/21	1552	G	WP	1	Vial								X									21-BD

Rec KBS 12-2-21 @ 1330

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-027 Page 7 of 7

Project Number: 501513 **Shipment Date:** 12/1/2021

Project Name / Location: SSSB Mobile, AL

21-12015

REC'D DEC 02 2021

Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested										Turn Around Time Requested
		Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						
501513-9P-SM-13	MARSAME Wipe; Tank 9P #13	11/18/21	1552	G	WP	1	Vial									X								21-BD
16 501513-9P-PA-13	MARSAME Paint Sample; Tank 9P #13	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-14	MARSAME Wipe; Tank 9P #14	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-14	MARSAME Wipe; Tank 9P #14	11/18/21	1552	G	WP	1	Vial									X								21-BD
17 501513-9P-PA-14	MARSAME Paint Sample; Tank 9P #14	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-15	MARSAME Wipe; Tank 9P #15	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-15	MARSAME Wipe; Tank 9P #15	11/18/21	1552	G	WP	1	Vial									X								21-BD
18 501513-9P-PA-15	MARSAME Paint Sample; Tank 9P #15	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-16	MARSAME Wipe; Tank 9P #16	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-16	MARSAME Wipe; Tank 9P #16	11/18/21	1552	G	WP	1	Vial									X								21-BD
19 501513-9P-PA-16	MARSAME Paint Sample; Tank 9P #16	11/23/21	1415	C	CP	1	Bag								X	X	X	X						21-BD
501513-9P-SM-05D	MARSAME Wipe; Tank 9P #5 Dup	11/18/21	1552	G	WP	1	Vial								X									21-BD
501513-9P-SM-05D	MARSAME Wipe; Tank 9P #5 Dup	11/18/21	1552	G	WP	1	Vial									X								21-BD
						N																		
							A	PB2	12/1/2021															

yes Rec 12-2-21 @ 1330.

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
APTIM Federal Services LLC	208345	Environmental	12/02/2021	21	21-12015
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
501513	SSSB Decommissioning	H	12/17/2021	12/27/2021	12/28/2021

Internal ID	Client ID	Sample Date	Matrix	Storage	C0014	Gamma	H0003	Ni063																					Ttl
01	LCS	12/03/21	SO	I1.2	X	X	X	X																					4
02	BLANK	12/03/21	SO	I1.2	X	X	X	X																					4
03	DUP	12/03/21	SO	I1.2	X	X	X	X																					4
04	501513-9P-PA-01	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
05	501513-9P-PA-02	11/22/21 14:23	SO	I1.2	X	X	X	X																					4
06	501513-9P-PA-03	11/22/21 14:51	SO	I1.2	X	X	X	X																					4
07	501513-9P-PA-04	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
08	501513-9P-PA-05	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
09	501513-9P-PA-06	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
10	501513-9P-PA-07	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
11	501513-9P-PA-08	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
12	501513-9P-PA-09	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
13	501513-9P-PA-10	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
14	501513-9P-PA-11	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
15	501513-9P-PA-12	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
16	501513-9P-PA-13	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
17	501513-9P-PA-14	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
18	501513-9P-PA-15	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
19	501513-9P-PA-16	11/23/21 14:15	SO	I1.2	X	X	X	X																					4
																													0
		Totals Per Analysis (non QA samples)			16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice		Report Data	
	Accounts Payable		Guy Gallello, Jr
	APTIM Federal Services LLC		APTIM
	4171 Essen Lane		16406 US Route 224 E, Annex
	Baton Rouge, LA 70809		Findlay, OH 45840
Voice		*Voice*	419-348-5828
Fax		*Fax*	
Contact	Guy Gallello, Jr		
Voice	419-348-5828		
Fax			

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 21-12015

SAMPLE MATRIX/MATRICES: (CIRCLE ONE OR BOTH)

AQUEOUS (NON-AQUEOUS)

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	Y	N	(N/A)

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: Randolph Spencer DATE: 12-3-21

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12015	H0003	1	pCi	g	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
H-3		98.16%	6.95%	100.00%	3.60%	1.80E+02	6.49E+00	1.77E+02	1.23E+01	H-5a	4.00E+03	3.60E+00	1.00E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

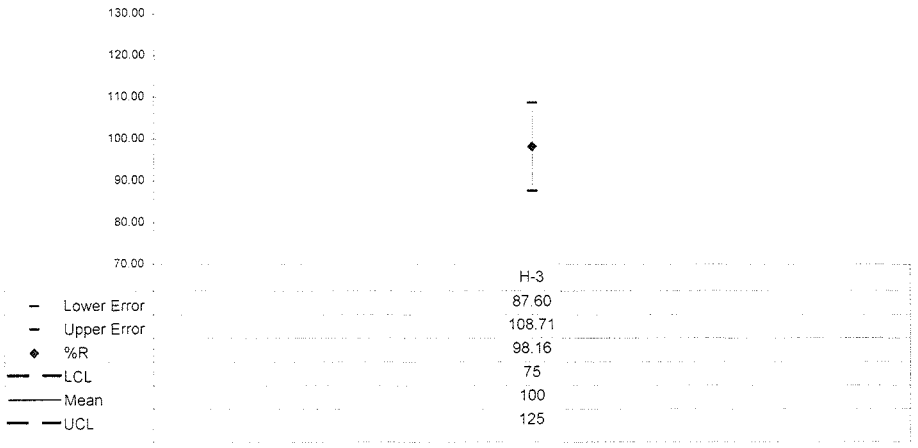
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
H-3	0.58	450.87	3.53E+00	3.01E+01	-9.15E+00	3.08E+01

QC Summary

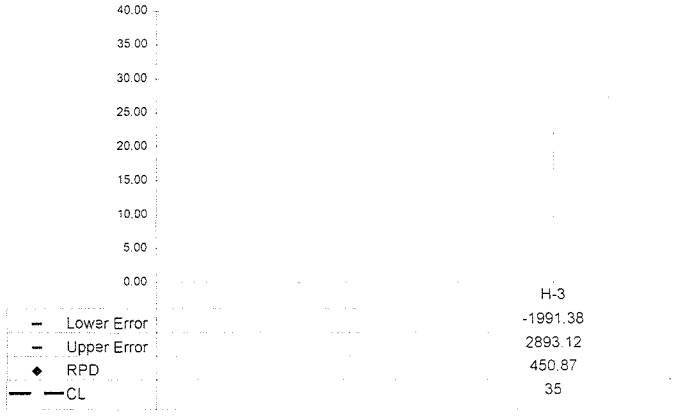
LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
0.98	OK				NA	OK

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12015	H0003	1	pCi	g	APTIM Federal Services LLC

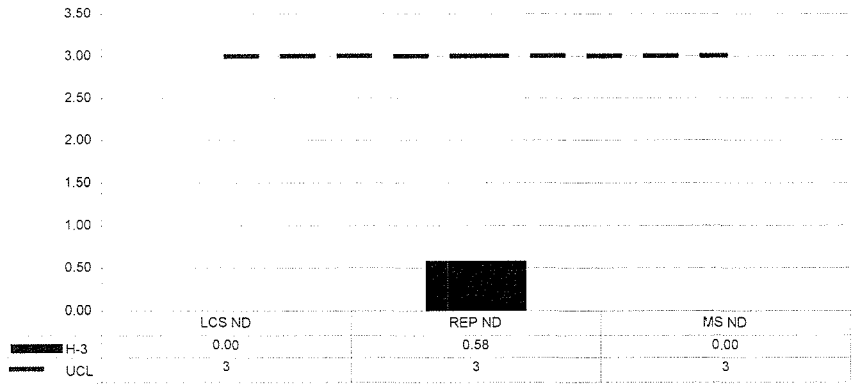
LCS % Recovery



Replicate Sample RPD



Normalized Difference



No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12015	C0014	1	pCi	g	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
C-14		89.53%	14.10%	100.00%	2.80%	1.43E+03	4.02E+01	1.28E+03	1.81E+02	C-3a	2.91E+03	2.80E+00	1.09E+00

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
C-14	0.88	141.91	-2.65E+00	3.51E+00	-4.50E-01	3.42E+00

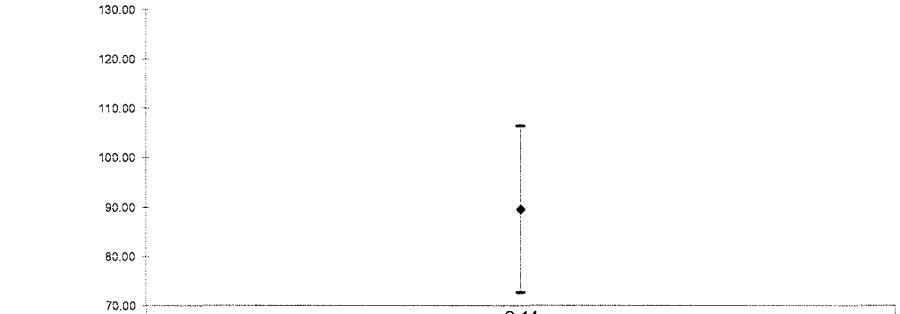
QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
0.90	OK				NA	OK

Version

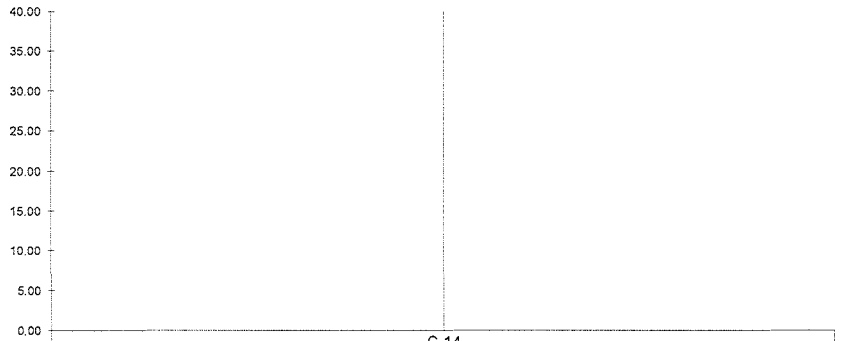
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12015	C0014	1	pCi	g	APTIM Federal Services LLC

LCS % Recovery



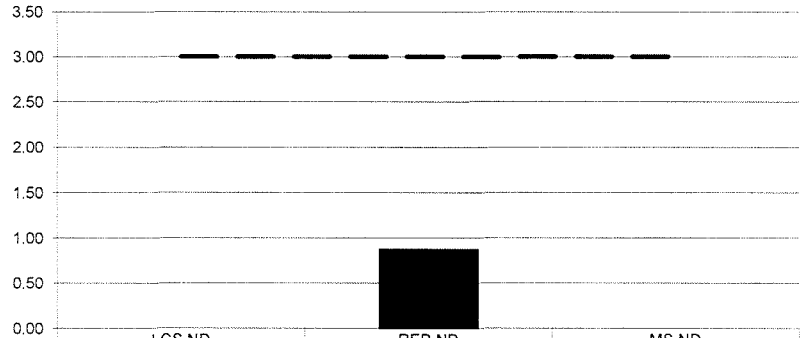
	C-14
Lower Error	72.63
Upper Error	106.43
%R	89.53
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	C-14
Lower Error	-17.00
Upper Error	300.81
RPD	141.91
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
C-14	0.00	0.88	0.00
UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12015	Ni063	1	pCi	g	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
NI-63		99.54%	5.93%	100.00%	3.00%	1.58E+03	4.73E+01	1.57E+03	9.32E+01	Ni-3	2.11E+04	3.00E+00	1.66E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
NI-63	2.57	139.35	-7.43E-01	1.80E+00	-4.16E+00	1.88E+00

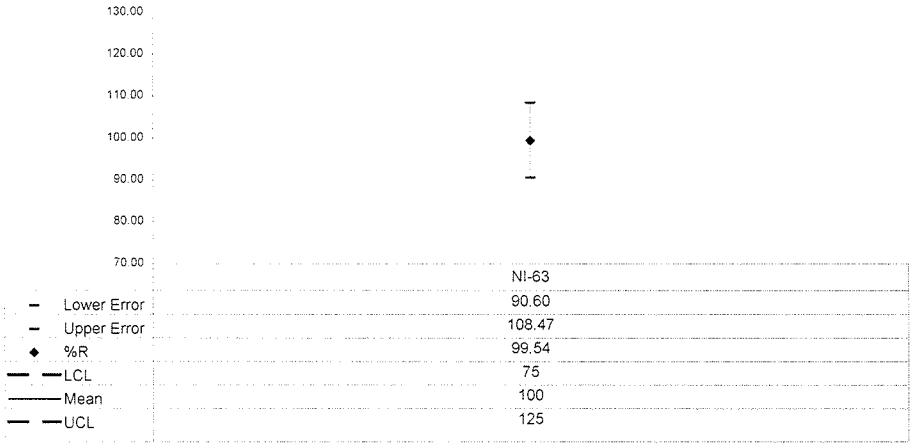
QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.00	OK				NA	OK

Version

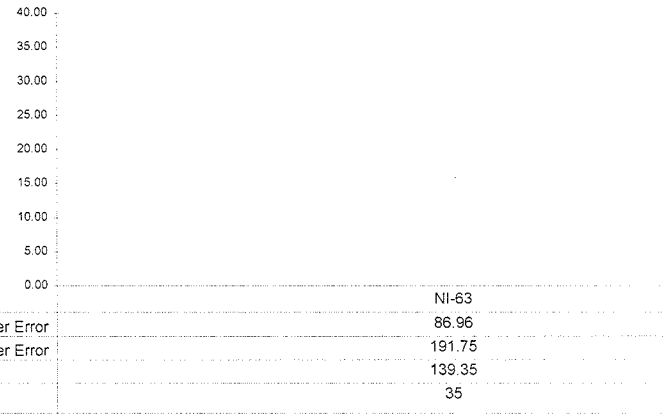
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12015	Ni063	1	pCi	g	APTIM Federal Services LLC

LCS % Recovery



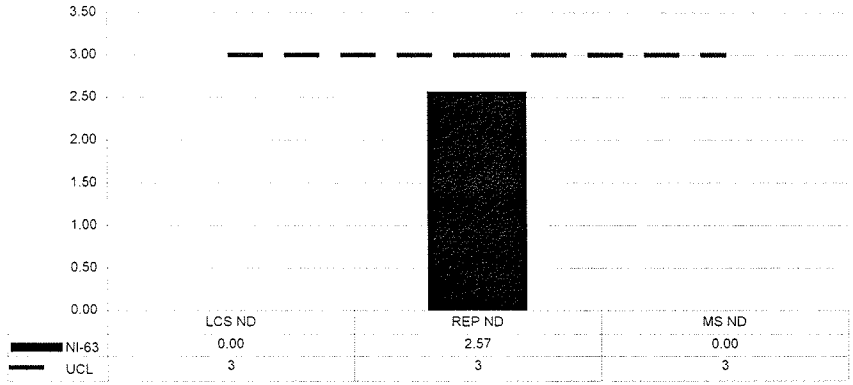
	NI-63
Lower Error	90.60
Upper Error	108.47
%R	99.54
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	NI-63
Lower Error	86.96
Upper Error	191.75
RPD	139.35
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
NI-63	0.00	2.57	0.00
UCL	3	3	3

No Matrix Spike

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12015	Gamma	1	pCi	g	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
CO-60		106.26%	7.74%	100.00%	3.90%	2.66E+02	1.04E+01	2.83E+02	2.19E+01	GAS-2001	2.66E+02	1.04E+01	3.68E+02
CS-137		107.74%	10.41%	100.00%	4.10%	1.62E+02	6.66E+00	1.75E+02	1.82E+01	GAS-2001	1.62E+02	6.66E+00	3.68E+02

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

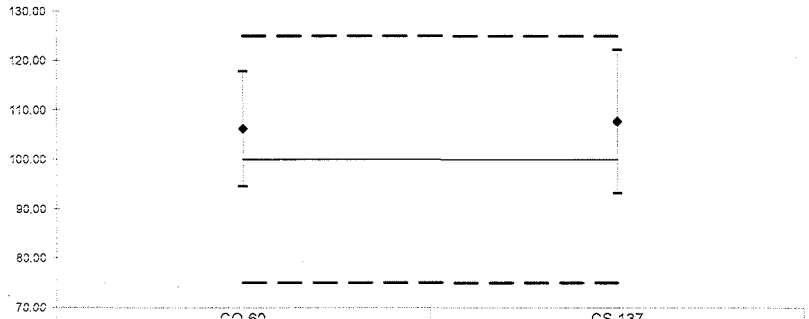
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
AC-228	0.79	312.20	-3.57E-02	2.00E-01	1.63E-01	4.51E-01
BI-214	1.90	117.52	1.41E-01	2.90E-01	5.43E-01	2.97E-01
K-40	0.83	22.85	5.89E+00	1.98E+00	4.68E+00	2.04E+00

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.06	OK		<CS-137	AC-228>	NA	
1.08	OK		<CO-60	BI-214>	NA	OK
				K-40>	NA	OK

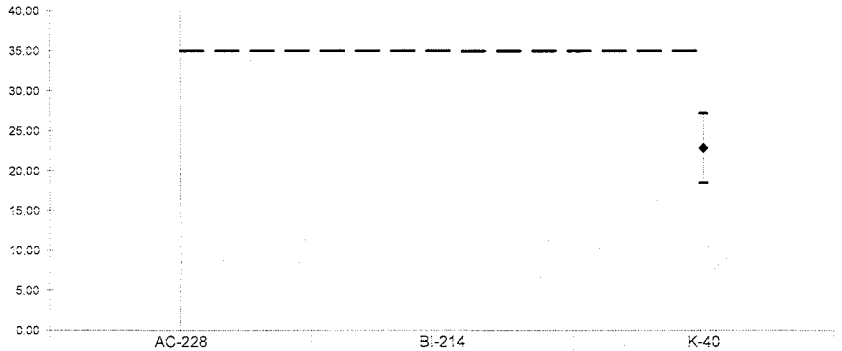
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12015	Gamma	1	pCi	g	APTIM Federal Services LLC

LCS % Recovery



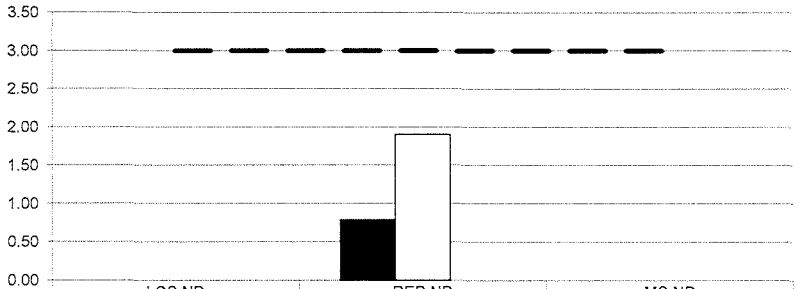
	CO-60	CS-137
Lower Error	94.62	93.24
Upper Error	117.91	122.25
%R	106.26	107.74
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	AC-228	Bi-214	K-40
Lower Error	1109.54	167.87	27.20
Upper Error	-485.15	67.16	18.51
RPD	312.20	117.52	22.85
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
CO-60	0.00	0.79	0.00
CS-137	0.00	1.90	0.00
	0.00	0.00	0.00
UCL	3	3	3

No Matrix Spike