

FINAL STATUS SURVEY REPORT
Alan J. Blotcky Reactor Facility
License No. R-57

AJBREF-MCP-FS-01
Revision 0
January 25, 2016

Prepared by

NorthStar Federal Services, Inc.
1992 Saint Street
Richland, WA 99354

Prepared for

U. S. Department of Veterans Affairs
Nebraska-Western Iowa Health Care System
Contract No. VA701-C-15-0005

NorthStar Project No. 1554005

FINAL STATUS SURVEY REPORT
Alan J. Blotcky Reactor Facility
License No. R-57
AJBRF-MCP-FS-01
Revision 0
January 25, 2016

Prepared by:

Frank Brown
Project RSO/Safety Officer

Reviewed by:

Erik Vogeley
Enercon Federal Services Project Manager

Approved by:

Nelson Langub
North Star Project Manager

Reviewed for VA:

Chris Higgins
VA Oversight Contractor

VA Acceptance:

Thomas Moran
VA Project Manager

SUMMARY OF CHANGES

Revisions to this plan will be tracked when revisions are issued. Changed sections will be identified by special demarcation in the margin. A summary description of each revision will be noted in the following table.

Revision No.	Date	Description of Change
0	January 25, 2016	Initial issue

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS.....	iii
1.0 EXECUTIVE SUMMARY	1
2.0 INTRODUCTION.....	2
2.1 Purpose and Objective	2
2.2 Project Background.....	2
2.3 Decommissioning Activities	2
3.0 FINAL STATUS SURVEY METHODOLOGY	4
3.1 Release Criteria.....	4
3.2 Classification and Sample Size	4
3.2.1 Sample and Location Identification.....	5
3.3 Types and Methods of Surveys	5
3.3.1 Scan Surveys.....	5
3.3.2 Two-Stage Scanning Method	5
3.3.3 Beta-gamma Surface Scans	6
3.3.4 Direct Measurements	6
3.3.5 Exposure Rate.....	6
3.3.6 Removable Activity	6
3.3.7 LSC Analysis.....	6
3.3.8 Volumetric Samples.....	6
3.4 Survey Instrumentation	6
3.4.1 Instrument Calibration	7
3.4.2 Pre-Operational Checks	7
3.4.3 Instrument Efficiency	8
3.4.4 Minimum Detectable Concentration.....	8
4.0 FINAL STATUS SURVEY RESULTS.....	11
4.1 Survey Unit 001 – Reactor Pit	11
4.2 Survey Unit 002 – Vault and the Floor of Room 526	11
4.3 Survey Unit 003 – Rooms 535, 535A, 537, 540, and 540A Floors	12
4.4 Survey Unit 004 – Facility Walls.....	12
4.5 Survey Unit 005 – Facility Ceiling.....	12
4.6 Survey Unit-006 – Miscellaneous Drains and Penetrations.....	13
5.0 CONCLUSIONS	14
6.0 REFERENCES.....	15

LIST OF TABLES

Table 3-1: NRC License Termination Screening Levels for Surfaces.....	4
Table 3-2: Survey Unit Classifications	5
Table 3-3 Minimum Scan Coverage	6
Table 3-4: Instrument Selection.....	7
Table 3-5: Weighted Average Maximum Energy	8
Table 4-1: Surface Contamination Results 001	11
Table 4-2: Concrete Analysis Detectable Results Summary 001	11
Table 4-3: Surface Contamination Results 002	12
Table 4-4: Surface Contamination Results 003	12
Table 4-5: Surface Contamination Results 004	12
Table 4-6: Surface Contamination Results 005	13
Table 4-7: Surface Contamination Results 006	13

LIST OF APPENDICES

APPENDIX A - Calibration Records
APPENDIX B - Radiological Survey Forms
APPENDIX C - Laboratory Data Packages

LIST OF ACRONYMS AND ABBREVIATIONS

AJBRF	Alan J. Blotcky Reactor Facility
cm ²	square centimeters
cpm	counts per minute
D&D	Decontamination and Decommissioning
DCGL	Derived Concentration Guideline Level
DP	Decommissioning Plan
dpm	disintegrations per minute
E _i	instrument efficiency
E _s	surface efficiency
E _t	total instrument efficiency
FSS	Final Status Survey
keV	kiloelectronvolts
kW	kilowatts
LSC	Liquid Scintillation Counter
LLRW	low-level radioactive waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDC	Minimum Detectable Concentration
MDC _{scan}	Minimum Detectable Concentration for Scanning
MDCR	Minimum Detectable Count Rate
mrem	millirem
NorthStar	NorthStar Federal Services, Inc.
NRC	U.S. Nuclear Regulatory Commission
pCi/g	picocuries per gram
SOF	Sum of the Fractions
TEDE	Total Effective Dose Estimate
TRIGA	Training, Research, Isotopes, General Atomics
VAMC	Veterans Affairs Medical Center

1.0 EXECUTIVE SUMMARY

The Alan J. Blotcky Reactor Facility (AJBRF) is located in the Omaha Veterans Affairs Medical Center (VAMC) in the city of Omaha, Nebraska. The Omaha VAMC is located in a commercial area within the city limits, and the reactor facility is housed in the southwest corner basement of Building One. The reactor facility contained a low-power Mark I Training, Research, Isotopes, General Atomics (TRIGA) nuclear reactor, which was operated as a source for neutron activation analysis of biological samples and for hot atom chemistry research. Additionally, from 1989 to 2001, the reactor was used for training Fort Calhoun Station nuclear power reactor operators.

The AJBRF initial Operating License No. R-57 was issued on June 26, 1959. The most notable license amendment, Amendment 9, was issued on April 12, 1991, to allow for operation of the reactor at steady-state power levels up to a maximum of 20 kilowatts (kW) thermal and for the installation of a microprocessor-based neutron monitoring system. The most recent license renewal was issued as Amendment 12 [Reference 1] approving the *Alan J. Blotcky Reactor Facility Decommissioning Plan* [Reference 2].

The facility ceased operation of the reactor on November 5, 2001. The fuel elements were subsequently removed and shipped to the U.S. Geological Survey TRIGA reactor in Denver, Colorado in June 2002.

The facility underwent decommissioning activities from July 2015 through November 2015 followed by Final Status Surveys (FSS) using calibrated instruments to measure total (static) beta activity and to perform radiological scan measurements. Smears were also collected for tritium and beta at every measurement location plus several items based on professional judgment. A total of 173 measurement locations and twelve (12) concrete sampling locations were used to assess the final radiological status of the facility.

All total beta measurements were less than the release criteria for the most restrictive isotope (Cobalt 60 at 7,100 disintegrations per minute per 100 square centimeters [DPM/100 cm²]) and all scan measurements were less than the investigation levels. The maximum result surveyed on a building surface was 1,284 DPM/100 cm² on the floor in Room 526.

Nine concrete samples had detectable radionuclides at very low levels with the most elevated result being for Europium-152 at 3.66 picocuries per gram (pCi/g) which is approximately 53 percent of the screening level criteria (6.9 pCi/g).

Based on the results described in Section 4.0 of this FSS report, the AJBRF meets the requirements for unrestricted release specified in *10 Code of Federal Regulations 20, Subpart E, Radiological Criteria for License Termination* [Reference 3], by meeting the requirements of the NRC approved *AJBRF-FSSP-01 Final Status Survey Plan* [Reference 4] and the DP [Reference 2].

2.0 INTRODUCTION

2.1 Purpose and Objective

This report describes the purpose, scope, and technical approach used during the FSS of the AJBRF.

The purpose of the FSS activities is to demonstrate that the radiological conditions at the facility satisfy the release criteria and the U.S. Nuclear Regulatory Commission (NRC) license may be terminated. For the purpose of this demonstration, each survey unit is independently evaluated. The objective of the survey is to demonstrate at a 95 percent minimum level of confidence that the radiological release conditions have been met.

2.2 Project Background

The AJBRF is located in the Omaha VAMC in the city of Omaha, Nebraska. The Omaha VAMC is located in a commercial area within the city limits, and the reactor facility is housed in the southwest corner basement of Building One. The reactor facility contained a low-power Mark I TRIGA nuclear reactor, which was operated as a source for neutron activation analysis of biological samples and for hot atom chemistry research. Additionally, from 1989 to 2001, the reactor was used for training Fort Calhoun Station nuclear power reactor operators.

The AJBRF initial Operating License No. R-57 was issued on June 26, 1959. The most notable license amendment, Amendment 9, was issued on April 12, 1991, to allow for operation of the reactor at steady-state power levels up to a maximum of 20 kW thermal and for the installation of a microprocessor-based neutron monitoring system. The most recent license renewal was issued as Amendment 11 on August 5, 2002, authorizing operation for an additional 20 years (VA, 2002a).

The facility ceased operation of the reactor on November 5, 2001. The reactor core, defueled in June 2002, was located in a reactor tank that was 21 feet deep and 6.5 feet in diameter, located below grade in Room 526. The tank contained approximately 5,000 gallons of demineralized water. The fuel elements were removed and shipped to the U.S. Geological Survey TRIGA reactor in Denver, Colorado in June 2002. There was no history of major accidents or spills.

2.3 Decommissioning Activities

During 2015, the facility underwent full decontamination and decommissioning (D&D) activities to support the termination of NRC License No. R-57. D&D activities were conducted by NorthStar Federal Services, Inc. (NorthStar) in accordance with the NRC-approved DP [Reference 2]. The NorthStar team began project planning in May 2015 with the development of all plans and procedures needed to perform the decommissioning activities. Following owner review and approval of the plans and procedures, the team mobilized personnel to prepare the site for D&D activities. Radiological D&D activities began in early July 2015 and were conducted through November 2015.

The D&D activities consisted of disposing or free releasing miscellaneous equipment from the facility; removing the control rods, dummy fuel rods, drives, bridge, and reactor assembly from the reactor tank; draining the tank water; and removing the activated sections of reactor tank steel liner and gunite. The filtration system, cooling compressor, and associated piping were removed and disposed of as low-level radioactive waste (LLRW). After all items were removed from the pool, the water was analyzed with the results less 10 CFR 20 [Reference 3] Appendix B Table 2 Column 3 concentration levels for releases to sewers. The water was released to the sanitary sewer.

Following removal of reactor internals and pool water, a 12 inch long by 3 inch diameter concrete core drill was advanced through twelve (12) locations in the sidewalls and the reactor pit floor to collect samples for analysis to investigate the depth of activation in the reactor pit. The core drill was advanced horizontally through the gunite, steel, and concrete at the core mid plane and at one location vertically downward at the axial centerline of the reactor tank. Additional cores were advanced at elevations up to six feet above the reactor pit floor. Surface radiological measurements at the 6 foot elevation were background. Each core

was then segmented by layer, i.e., gunite, steel, and concrete. The gunite layer ranged from approximately 2 to 4 inches thick, the steel liner was from $\frac{1}{4}$ to $\frac{1}{2}$ inch thick, and the concrete was approximately 9 inches thick. Samples were sent to an off-site radioanalytical laboratory for analysis of the Radionuclides of Concern (ROCs) listed in Table 3–1 below, including analysis of the hard-to-detect radionuclides Tritium, Carbon-14, Iron-55, and Nickel-63.

The analysis of the cores revealed that the lower six-foot of the reactor pit required remediation. The activated gunite lining was removed from the reactor tank walls and disposed of as LLRW. An oxyacetylene torch was used to cut away the steel liner located in the floor and lower 6 feet of the reactor pit including portions of the steel liner where sample results indicated concentrations less than the release criteria. All the steel was sized and packaged as LLRW. Each of the core samples was collected in accordance with the FSS Plan [Reference 4] in order to utilize relevant portions of the sample data for FSS.

Following the removal of all radiologically impacted materials, the FSS was conducted in the facility using the methodology described in the following section.

3.0 FINAL STATUS SURVEY METHODOLOGY

The FSS provided data and information to demonstrate that the facility complies with the NRC annual dose limit criteria of 25-millirem (mrem) per year Total Effective Dose Estimate (TEDE) the radiological criteria listed in the NRC approved DP [Reference 2].

The FSS was designed in accordance with the NRC's *NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM) [Reference 5], and the NRC-approved FSS Plan [Reference 4], in order to demonstrate that the facility complies with the radiological release criteria stated in Section 3 of the FSS Plan [Reference 4]. The FSS Plan [Reference 4] described the process for survey preparation, survey design, data collection, data evaluation, and documentation of survey results.

3.1 Release Criteria

The NRC-approved screening criteria for the ROC are listed in Table 3-1 for building surfaces. The approved DP [Reference 2] provides a list of ROC for use during implementation of the FSS Plan [Reference 4]. Table 3-1 lists those ROC along with the approved release criteria originating in *NUREG-1757 Consolidated Decommissioning Guidance* [Reference 6], Appendix B. The release criteria listed below serve as Derived Concentration Guideline Level (DCGL) input parameters for the FSS calculations.

Table 3-1: NRC License Termination Screening Levels for Surfaces

Radionuclide	Building Surfaces Release Criteria*	Volumetric Release Criteria
H-3	1.2E+08 DPM/100 cm ²	110 pCi/g
C-14	3.7E+06 DPM/100 cm ²	12 pCi/g
Fe-55	4.5E+06 DPM/100 cm ²	10,000 pCi/g
Co-60	7.1E+03 DPM/100 cm ²	3.8 pCi/g
Ni-63	1.8E+06 DPM/100 cm ²	2,100 pCi/g
Cs-137	2.8E+04 DPM/100 cm ²	11 pCi/g
Eu-152	None	6.9 pCi/g
Eu-154	None	8 pCi/g

3.2 Classification and Sample Size

Area classification in accordance with MARSSIM [Reference 5] protocols ensures that the number of measurements and the scan coverage are commensurate with the potential for residual contamination to exceed the approved release criteria. The classification of an area is based on characterization measurements and historical use of the area. Areas that have no reasonable potential for residual contamination because there was no known impact from site operations are classified as non-impacted areas. Non-impacted areas are not required to be surveyed beyond what is completed as a part of site characterization to confirm the area's non-impacted classification.

Areas that may contain residual radioactivity from licensed activities are considered impacted areas. Based on the levels of residual radioactivity present, impacted areas are further divided into Class 1, Class 2, or Class 3 designations. Class 1 areas have the greatest potential for residual activity, while Class 3 areas have the least potential for residual contamination. Each classification will typically be bounded by areas classified one step lower to provide a buffer zone around the higher class. Exceptions occur when an area is surrounded by a significant physical barrier that would make transport of residual activity unlikely from one area to the adjacent area. In such cases, each area will be classified solely on its own merit using the most reliable information available.

Table 3-2 lists the survey units and classification for the areas of the facility included in the FSS Plan [Reference 4].

Table 3-2: Survey Unit Classifications

Survey Area		Classification	Survey Unit
Reactor tank wall	Portions not removed	1	001
Reactor tank pit	Exposed concrete	1	001
Reactor water cooling system vault	Floors and walls	1	002
Rooms B526, B535, B535A, B537, B540, and B540A	Floors	1	002
	Walls <2 meters	2	003
	Walls >2 meters and ceilings	3	005
Rooms B533A and B533AA	Floors and walls <2 meters	2	004
	Walls >2 meters and ceilings	3	005
Rooms B522 and B522A	Floors only	3	005
Hall outside Room B526	Floors only	2	004
Stairs on south side of Room B526	Floors only	2	004
Outside areas	All	Non-impacted	N/A

Survey unit 006 was added following D&D activities to document surveys of miscellaneous drains and penetrations. All survey locations within survey unit 006 were biased survey locations.

3.2.1 Sample and Location Identification

Measurement and sampling locations were plotted using *Visual Sample Plan* and numbered sequentially using a two digit number, e.g., 01, 02, 03, and 04.

3.3 Types and Methods of Surveys

Survey measurements and sample collection were performed by personnel trained and qualified in accordance with the FSS Plan [Reference 4]. FSS measurements included surface scans, direct surface measurements, removable radionuclide measurements (beta and tritium), and gamma spectroscopy of volumetric material samples. Off-site laboratory facilities were used for gamma spectroscopy.

3.3.1 Scan Surveys

Scanning was performed in order to locate small areas of residual activity above the investigation level. Structures receive scan surveys, direct measurements and, when necessary, volumetric sampling. The percent of scan measurement coverage was based on the survey unit classification and was provided in Table 3-4 of the approved FSS Plan [Reference 4].

3.3.2 Two-Stage Scanning Method

The two-stage scanning method was one where a surveyor begins the scan at a pre-determined speed, e.g. 10-cm per second, until they detect an elevated count rate. At such time, they return to a location immediately before the elevated detection and repeat the scan at a slower rate to determine the maximum count rate in the area. When the count rate returned to expected levels, the scan speed was returned to normal. This method relies on the ability of the surveyor to reliably detect elevated count rates. The 'Surveyor Efficiency' (ρ) is detailed in *NUREG-1507, Minimum Detectable Concentrations With Typical Radiation Survey Instruments for Various Field Conditions* [Reference 7]. A variable accounting for this efficiency (a value from 0.5 to 0.75) is included in the formulae used in the MARSSIM [Reference 5]. Lower values for ρ increase the Minimum Detectable Concentration for Scanning (MDC_{scan}) indicating a smaller probability of detecting elevated count rates. The MDC_{scan} equations used throughout this project assumed a value for ρ of 0.5. All scans performed in support of the FSS used the two-stage scan method to assure residual radioactive material is sufficiently quantified.

3.3.3 Beta-gamma Surface Scans

Surface scans for beta-gamma activity on structures and selected systems were performed at a scan rate capable of meeting a pre-determined MDC_{scan} applicable to the survey unit classification. Surface scans had a probe to surface distance as close as practical, and did not exceed 1-cm ($\sim\frac{1}{2}$ inch). The MDC_{scan} for all areas was no greater than 50 percent of the applicable DCGL. Minimum scan coverage is detailed in Table 3-3 by classification.

Table 3-3 Minimum Scan Coverage

Classification	Required Minimum Scan Coverage
Class 1	100% of accessible areas
Class 2	$\geq 10\%$ of accessible areas
Class 3	Judgmental, but generally a 1-m ² area around each data location

3.3.4 Direct Measurements

Direct measurements were performed to detect surface activity levels. Direct measurements were conducted by placing the detector on or very near the surface to be measured and acquiring data over a pre-determined count time. A six (6) second count time was used for direct surface measurements and provided detection levels well below the release criteria. Direct measurements could have been collected anywhere within the grid block, but were generally collected in the center.

3.3.5 Exposure Rate

Gamma exposure rate measurements were taken at each floor location approximately 1-m from the surface.

3.3.6 Removable Activity

Removable contamination surveys, while not required as part of the MARSSIM [Reference 5], were collected to assess the removable activity fraction for selected structural and system surfaces. Wipe samples comprised 100-cm² of surface area. Wipe samples were analyzed on-site utilizing a wipe sample counter.

3.3.7 LSC Analysis

All direct measurement survey locations had a removable activity wipe sample collected for tritium and C-14 analysis on-site using a liquid scintillation counter (LSC). Each 100 cm² wipe sample was collected on dry wipe media, placed into a counting vial with 5 mL of Ultima Gold™ scintillation cocktail, and counted for 6 seconds.

3.3.8 Volumetric Samples

Volumetric samples were analyzed at a qualified off-site laboratory by appropriate analytical methods for the radionuclides of concern applicable to the subject area. Sample results where only one radionuclide had a result greater than the Minimum Detectable Concentration (MDC) were evaluated by direct comparison of the result against the appropriate release criteria. Samples with multiple radionuclides greater than MDC were evaluated using the sum of the fractions (SOF) calculation where the SOF value must be less than 1.

Sample preparation was performed by the off-site laboratory. Separate containers were used for each sample and each sample was tracked through the analysis process using a chain-of-custody record.

3.4 Survey Instrumentation

Instruments were selected that provided an adequate response to ROC and were capable of having an MDC less than 50 percent of the applicable release criteria for the survey. MDC was calculated for each model using formulae contained in MARSSIM [Reference 5] and shown in Section 5.2.3. MARSSIM [Reference 5] contains the most current guidance on recommended methods of calculating survey instrument MDC. The background rate and detector efficiency used in the MDC are averages calculated from the daily

operational check of each instrument. Table 3–4 shows the instrument types selected and summarizes the typical observed background counts in counts per minute (cpm), typical observed detector efficiency, and a typical observed MDC in DPM/100 cm² for each instrument model. Other objectives in selecting instruments included special features such as digital displays to provide a more accurate reading than conventional analog displays.

Table 3-4: Instrument Selection

Instrument Model	Typical Background	Typical Total Efficiency (%)	Count Time (min)	Probe Area (cm²)	Typical MDC (DPM/100 cm²)
Ludlum Model 2360 Scaler/Ratemeter with 43-93 Zinc Sulfide Scintillator detector (beta/gamma)	120 CPM	5.5	0.1	100	3575
Ludlum Model 3 or 12 Ratemeter with 44-9 Geiger Mueller Detector (beta/gamma)	50 CPM	15.1	N/A	15.5	3246
Ludlum Model 2221 Scaler/Ratemeter with 43-37 Large Area Gas Proportional Detector (beta/gamma)	2042 CPM	7.4	0.1	584	1581
Ludlum Model 19 MicroR Gamma Scintillator	10-15 microR/hr	N/A	N/A	N/A	N/A
Ludlum Model 3030E Removable Activity Counter with 43-10-1 Zinc Sulfide Scintillator detector (alpha)	~1 DPM/sample	39.0	0.5	N/A	14
Ludlum Model 3030E Removable Activity Counter with 43-10-1 Zinc Sulfide Scintillator detector (beta)	~188 DPM/sample	38.8	0.5	N/A	158

3.4.1 Instrument Calibration

All field instrumentation was calibrated by MJW Technical Services located in Olean, New York prior to initiation of the FSS. NorthStar maintains original instrument calibration data and certificates for the calibration sources at the calibration laboratory and provided copies to file on-site. Appendix B provides the calibration records for the instruments used.

3.4.2 Pre-Operational Checks

All background readings for counting instruments were conducted daily during instrument use. Any instrument that used a battery had a daily battery check performed before instrument operation. An initial source response to an appropriate on-site check source, as determined by a comparison to calibration information, was obtained prior to the instrument being placed in service for the project.

Each day an instrument was used, the instrument received an operational check that consisted of a background reading and a count of a known check source with the detector in contact with the source in its

holder to provide a consistent source to detector distance. This information was recorded on a Daily Source Check Log form. All FSS was completed while the instruments were within their 1 year calibration, thus no recalibrations were required.

3.4.3 Instrument Efficiency

The efficiency of the detection capabilities for each applicable instrument was calculated using the following formula:

$$\text{Instrument Efficiency (E}_i\text{)} = \frac{(C_s - C_b)}{S}$$

Where:

C_s = measured source count in cpm

C_b = measured background count in cpm

S = 2 pi source activity value in dpm

$$\text{Total Instrument Efficiency (E}_t\text{)} = E_i * E_s$$

Where:

E_i = instrument efficiency

E_s = surface efficiency (0.5 for beta emitters >400 keV β_{\max})

The total instrument efficiency (E_t) is a product of the instrument efficiency (E_i) and the surface efficiency (E_s) and is used to convert the raw instrument counts into the standardized unit of dpm. The surface efficiency utilized follows the recommendations in *ISO 7503-1, Evaluation of Surface Contamination, 1988* [Reference 8], which makes recommendations for default surface efficiencies. A surface efficiency of 0.5 is recommended for beta emitters with maximum energies greater than 400 kiloelectronvolts (keV) as per NUREG-1507 [Reference 7]; therefore, the surface efficiency used for the FSS was 0.5 based on a weighted maximum beta energy of 1496.87 keV. Table 3-5 shows the weighted maximum energy based on characterization data in the *AJ Blotcky Reactor Facility Characterization Report* [Reference 9].

Table 3-5: Weighted Average Maximum Energy

Nuclide	Result (pCi/g)	Maximum Nuclide Energy (keV)	Fraction	Weighted Maximum β Energy (keV)
Co-57	1.02	699.53	0.029482	20.62
Co-60	26.10	1491.38	0.754401	1125.10
Cs-137	0.54	1175.63	0.015522	18.25
Eu-152	5.33	1752.52	0.154060	270.00
Zn-65	1.61	1351.90	0.046536	62.91
Total	34.60		1.00	1496.87

3.4.4 Minimum Detectable Concentration

The instrument and detector combination selected for the wall and floor scans had an MDC well below the release criteria specified in Section 3.1, as shown in Table 3-4. The MDC is the concentration of radioactivity that an instrument can be expected to detect at a 95 percent confidence level. For instruments performing direct and/or scan measurements, the MDC goal was 10 to 50 percent of the applicable release criteria. The MDC goals were met for the FSS instruments, and information used to calculate the MDC for instrumentation used during the FSS was documented on the radiation survey form.

For static (direct) surface measurements, with conventional detectors, the MDC was calculated using the formula:

$$\text{MDC (DPM/100 cm}^2\text{)} = \left[\frac{3 + 3.29\sqrt{(R_b)(T_s)(1 + T_s/T_b)}}{(T_s)(E_t)} \right]$$

Where:

R_b = background count rate (cpm)

T_b = background count time (min)

T_s = sample count time (min)

E_t = total instrument efficiency (MARSSIM [Reference 5] Section 6.6.1)

The MDC_{scan} for beta-gamma measurements was calculated by determining the minimum detectable count rate (MDCR). The MDCR was determined by first determining the minimum detectable net source counts using Formula 6-8 in the MARSSIM [Reference 5] as below.

$$\text{Minimum number of detectable source counts: } s_i = d' \sqrt{b_i}$$

Where:

d' = value from MARSSIM [Reference 5] Table 6.5 for applicable true and false positive rates (1.38 for a true positive proportion of 0.95 and a false positive proportion of 0.60)

b_i = number of background counts in a given time interval

The MDCR is calculated from Formula 6-9 in the MARSSIM [Reference 5]:

$$\text{Minimum detectable count rate: } \text{MDCR} = s_i * \frac{60}{i}$$

Where:

i = Observed time interval (seconds) = the inverse of the detector scan speed in detectors-widths per second

Finally, applying the detection efficiency correction resulted in an MDC_{scan} in standardized units (dpm/100-cm²) from this formula:

$$\text{Scan MDC: } \text{MDC}_{\text{scan}} = \frac{\text{MDCR}}{\sqrt{\rho} * E_i * E_s * \frac{\text{probearea}}{100\text{cm}^2}}$$

Where:

E_i = instrument efficiency

E_s = surface efficiency

probearea = total area of the detector face in cm²

ρ = surveyor efficiency (value from a range between 0.5 and 0.75)

Note: The value for ρ was developed in Draft NUREG/CR-6364 and NUREG-1507 [Reference 7]. It is a percentage estimate of the likelihood a surveyor will reliably detect an elevated count rate.

The MDCs for beta-gamma radiation for the instruments are recorded on the Radiological Survey forms in Appendix B. Scan speeds were equal to one detector-width per second, and the surveyor efficiency was assumed to be 0.5. Background count times were six seconds, direct measurement count times were six seconds, and swipe sample count times were one minute.

4.0 FINAL STATUS SURVEY RESULTS

The following sections describe the FSS survey techniques employed in each survey unit and are organized by survey area, i.e., room or reactor pit. The data collected in the FSS are summarized in each section, with each radiological survey record provided in Appendix B. Data results were calculated with instrument background subtraction only. Material specific background, i.e., naturally occurring radioactive materials in brick and concrete, was not subtracted from the gross results.

4.1 Survey Unit 001 – Reactor Pit

The reactor pit was surveyed as one Class 1 survey unit. The lower portion of the tank liner and gunite was impacted by the neutron flux of the reactor. These impacted portions were removed and disposed as LLRW.

Core samples collected during the remediation indicated the presence of low levels radioactivity within some portions of the reactor pit gunite, steel liner, and/or concrete. The relative shift for the survey unit was therefore conservatively assumed to be 1, which requires a minimum of 24 valid static survey results to meet MARSSIM [Reference 5] requirements. The survey consisted of 33 static locations on the floor and walls of the pit chosen using a triangular grid with a random start location. Some residual radioactive materials remain in volumetric concentrations. Table 4-1 provides a summary of the surface contamination results.

Table 4-1: Surface Contamination Results 001

No. of Measurements	LSC Wipe (DPM/100 cm ²)			Loose Beta (DPM/100 cm ²)			Total Beta (DPM/100 cm ²)		
	Mean	Max	Std Dev	Mean	Max	Std Dev	Mean	Max	Std Dev
33	38	166	41	12	76	26	217	1101	524

Volumetric samples of the concrete behind the gunite and steel liner at twelve (12) locations in the floor and walls up to an elevation of 6 feet from the bottom were analyzed for the ROCs listed in Table 3-1, including the hard to detect radionuclides Tritium, Iron-55, Nickel-63, and Carbon-14, by a qualified off-site laboratory. The four radionuclides listed in Table 4-2 were detected above the MDC. All results in the concrete were below the release criteria.

Table 4-2 presents a summary of the detectable radionuclide concentrations in the concrete. The complete laboratory reports are included as Appendix C.

Table 4-2: Concrete Analysis Detectable Results Summary 001

Radionuclide	Number >MDC	Mean (pCi/g)	Max (pCi/g)	Std Dev (pCi/g)	Release Criteria (pCi/g)
Co-57	2	0.20	0.34	0.15	150.0
Co-60	6	0.11	0.18	0.04	3.8
Eu-152	9	2.20	3.66	0.75	6.9
Eu-154	2	0.17	0.19	0.02	8.0

4.2 Survey Unit 002 – Vault and the Floor of Room 526

Survey Unit 002 was considered to have some potential for radioactivity to exceed release criteria though none was found during characterization activities. The area was thus conservatively defined as a Class 1 survey unit and the relative shift for the survey unit was conservatively assumed to be 1, which requires a minimum of 24 valid static survey results to meet MARSSIM [Reference 5] requirements. Thirty-one (31) locations were identified and surveyed for tritium, total beta, and removable beta, with the data results

summarized in Table 4-3 below. Three data results (two tritium and one total beta direct measurement) were greater than the calculated MDC but were less than 10 percent of their respective screening criteria.

Table 4-3: Surface Contamination Results 002

No. of Measurements	LSC Wipe (DPM/100 cm ²)			Loose Beta (DPM/100 cm ²)			Total Beta (DPM/100 cm ²)		
	Mean	Max	Std Dev	Mean	Max	Std Dev	Mean	Max	Std Dev
31	27	87	28	6	40	24	462	1284	454

4.3 Survey Unit 003 – Rooms 535, 535A, 537, 540, and 540A Floors

Portions of Survey Unit 003 were used to store packaged waste prior to shipment. Consequently this area was defined as a Class 1 survey unit. Characterization data and routine surveys performed during D&D activities did not indicate the presence of any radioactive contamination, therefore the relative shift of the area was set at 3 which requires a minimum of 11 valid static survey results to meet MARSSIM [Reference 5] requirements. Fifteen (15) static survey locations were identified using a triangular grid and a random start location. The area was surveyed for tritium, total beta, and removable beta with the data results summarized in Table 4-4 below.

Table 4-4: Surface Contamination Results 003

No. of Measurements	LSC Wipe (DPM/100 cm ²)			Loose Beta (DPM/100 cm ²)			Total Beta (DPM/100 cm ²)		
	Mean	Max	Std Dev	Mean	Max	Std Dev	Mean	Max	Std Dev
15	31	96	30	8	28	13	294	917	438

4.4 Survey Unit 004 – Facility Walls

Walls within the facility were designated as Class 2. Characterization data and routine surveys during D&D support this designation as a conservative classification. The relative shift for the unit was defined as 3 which requires 11 valid static survey results to meet MARSSIM [Reference 5] requirements. Thirty-seven (37) static survey locations were identified using a triangular grid and a random start location. The area was surveyed for tritium, total beta, and removable beta with the data results summarized in Table 4-5 below.

Table 4-5: Surface Contamination Results 004

No. of Measurements	LSC Wipe (DPM/100 cm ²)			Loose Beta (DPM/100 cm ²)			Total Beta (DPM/100 cm ²)		
	Mean	Max	Std Dev	Mean	Max	Std Dev	Mean	Max	Std Dev
37	29	181	40	4	38	32	307	1101	465

4.5 Survey Unit 005 – Facility Ceiling

This unit was designated a Class 3 area. Operational history along with the general lack of radioactive contamination throughout the facility of supports this designation. The relative shift for the unit was defined as 3 which requires 11 valid static survey results to meet MARSSIM [Reference 5] requirements. Thirty (30) locations were identified using a simple random pattern. The area was surveyed for tritium, total beta, and removable beta, with the data results summarized in Table 4-6 below.

Table 4-6: Surface Contamination Results 005

No. of Measurements	LSC Wipe (DPM/100 cm ²)			Loose Beta (DPM/100 cm ²)			Total Beta (DPM/100 cm ²)		
	Mean	Max	Std Dev	Mean	Max	Std Dev	Mean	Max	Std Dev
30	32	161	39	7	22	9	208	917	344

4.6 Survey Unit-006 – Miscellaneous Drains and Penetrations

This survey unit was added following D&D activities to document surveys of various storage pits/holes/penetrations that were located throughout the facility, including several floor drains and two ventilation exhaust ports. While this survey unit was conservatively considered to be a Class 1 survey unit, all survey locations were biased locations so no grid pattern was applied nor was a relative shift determined. Table 4-7 summarizes the results. No elevated activity was detected.

Table 4-7: Surface Contamination Results 006

No. of Measurements	LSC Wipe (DPM/100 cm ²)			Loose Beta (DPM/100 cm ²)			Total Beta (DPM/100 cm ²)		
	Mean	Max	Std Dev	Mean	Max	Std Dev	Mean	Max	Std Dev
30	32	161	39	7	22	9	208	917	344

5.0 CONCLUSIONS

Based on the results described in Section 4.0 of this FSS report, the facility meets the requirements for unrestricted release specified in the FSS Plan [Reference 4] and the DP [Reference 2].

All total beta measurements were less than the MDC. The maximum result for total beta activity was located on the floor in Room 526 with a result of 1,284 DPM/100 cm². The average beta activity for each survey unit was less than 500 DPM/100 cm².

The average level of residual radioactive materials on building surfaces is 11 percent of the screening criteria, which would theoretically result in a dose to the average member of the critical group, i.e. a member of the general public, of 2.3 mrem TEDE per year. The average SOF for the remaining reactor pit concrete is 0.26 which would theoretically result in a dose to a member of the general public, of 6.5 mrem TEDE per year.

6.0 REFERENCES

1. Operating License R-57, Amendment 12, U.S. Nuclear Regulatory Commission (ML14318A872), January 8, 2015
2. Alan J. Blotcky Reactor Facility Decommissioning Plan (Final Revised), May 2014, AECOM (ML14150A406)
3. 10 CFR 20 Standards for Protection Against Radiation.
4. AJBRF-FSSP-01 Final Status Survey Plan, AJ Blotcky Facility Decommissioning Project, October 5, 2015, Enercon Services, Inc.
5. NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), Revision 1 (August 2002).
6. NUREG-1757, Consolidated Decommissioning Guidance, September 2006.
7. NUREG-1507, Minimum Detectable Concentrations With Typical Radiation Survey Instruments for Various Field Conditions, December 1997.
8. ISO 7503-1, Evaluation of Surface Contamination, 1988
9. AJ Blotcky Reactor Facility Characterization Report, July 2011, AECOM

**APPENDIX A
CALIBRATION RECORDS**



Certificate of Calibration

2015-6116-4

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 19 SN: 175946	
		Detector Manufacturer: Ludlum Measurements	
Customer PO# EFS035 Work Order: 2015-6116		Det. Model: Internal Scintillator SN: n/a	
Calibration Method: Electronic(*) and Source		Procedure: MCP-14	
Instrument Received: <input checked="" type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)			
<input checked="" type="checkbox"/> Geotropism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input type="checkbox"/> Reset			
<input type="checkbox"/> Audio <input type="checkbox"/> Window Status <input type="checkbox"/> FS Response <input checked="" type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 70 F Humidity: 61% Pressure: 28.4 in Hg Altitude: 1450 ft			

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
25*	5 uR/hr	5 uR/hr	5 uR/hr	4.25-5.75	25*	20 uR/hr	19.8 uR/hr	19.8 uR/hr	18-22
50*	20 uR/hr	20 uR/hr	20 uR/hr	17-23	50*	40 uR/hr	39 uR/hr	39 uR/hr	36-44
250*	50 uR/hr	50 uR/hr	50 uR/hr	42.5-57.5	250	200 uR/hr	200 uR/hr	200 uR/hr	180-220
500	200 uR/hr	200 uR/hr	200 uR/hr	170-230	500	400 uR/hr	400 uR/hr	400 uR/hr	360-440
5000	1000 uR/hr	990 uR/hr	990 uR/hr	850-1150	5000	4000 uR/hr	4000 uR/hr	4000 uR/hr	3600-4400
500*	400 uR/hr =	65000 cpm	65000 cpm	For Reference					

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Cs137	7773CM	Cell I Gamma Irradiator	1.575 Ci				
Am241	UB992	Y	2345138.854 dpm				

Instrument Status

Voltage: 630 V Disc/Sens: 31 mV

Statement of Certification

MJW Technical Services, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 and ANSI N323. The instrument listed above was inspected prior to shipment and it met all the manufacturer's published operating specifications. (MJW Technical Services is not responsible for damage incurred during shipment or use of this instrument).

Calibration Technician: (AL)	QA Technician:	Date: 7-6-15
Calibration Date: 07/02/2015	Calibration Due: 07/02/2016	



Certificate of Calibration

2015-6115-6

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name:	Enercon Services, Inc.	Manufacturer:	Ludlum Measurements
Address:	1501 Armore Blvd Suite 200 Pittsburgh, PA 15221	Model:	12 SN: 78697
Customer PO#	EFS035	Detector Manufacturer:	Ludlum Measurements
Work Order:	2015-6115	Det. Model:	44-9 SN: PR170316
Calibration Method: Electronic(*) and Source		Procedure:	SOP-06
Instrument Received: <input checked="" type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)			
<input checked="" type="checkbox"/> Geotropism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input checked="" type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input checked="" type="checkbox"/> Reset			
<input checked="" type="checkbox"/> Audio <input type="checkbox"/> Window Status <input checked="" type="checkbox"/> FS Response <input checked="" type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 71.1 F		Humidity: 60.2%	Pressure: 28.6 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	100 cpm	100 cpm	100 cpm	85-115	X 1*	400 cpm	415 cpm	415 cpm	360-440
X 10*	1 kcpm	0.95 kcpm	0.95 kcpm	0.85-1.15	X 10*	4 kcpm	4.1 kcpm	4.1 kcpm	3.6-4.4
X 100*	10 kcpm	9.5 kcpm	9.5 kcpm	8.5-11.5	X 100*	40 kcpm	41 kcpm	41 kcpm	36-44
X 1K*	100 kcpm	95 kcpm	95 kcpm	85-115	X 1K*	400 kcpm	410 kcpm	410 kcpm	360-440
X 10	1 mR/hr =	3 kcpm	3 kcpm	For Reference	X 100	10 mR/hr =	33 kcpm	33 kcpm	For Reference
X 1K	100 mR/hr =	245 kcpm	245 kcpm	For Reference					

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Cs137	7773CM	Cell 1 Gamma Irradiator	1.575 Ci				
Cs137	C7-806	B 2pi	49684.833 dpm	14960	30.1 %	3.32	0.25 inch

Instrument Status

Voltage: 900 V Disc/Sens: 35 mV

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 and ANSI N323. The instrument listed above was inspected prior to shipment and it met all the manufacturer's published operating specifications. (MJW Technical Services is not responsible for damage incurred during shipment or use of this instrument).

Calibration Technician: (GR)	QA Technician:	Date:
Calibration Date: 07/06/2015	Calibration Due: 07/06/2016	



Certificate of Calibration

2015-6116-1

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name:	Enercon Services, Inc.	Manufacturer:	Ludlum Measurements
Address:	1501 Armore Blvd Suite 200 Pittsburgh, PA 15221	Model:	3030E SN: 268970
Customer PO#	EFS035 Work Order: 2015-6116	Detector Manufacturer:	Ludlum Measurements
Calibration Method:	Electronic(*)	Det. Model:	43-10-1 SN: PR285086
		Procedure:	SOP-06

Instrument Received: ☒ Within Tolerance ☐ Out of Tolerance ☐ Repairs Required ☐ Other (See Comments)

☐ Geotropism ☐ Meter Zero ☒ Mech. Ck ☐ HV Readout ☒ Battery Check ☐ Reset

☒ Audio ☐ Window Status ☐ FS Response ☐ Linearity ☐ Alarm Set

Temperature: 71.5 F Humidity: 58% Pressure: 28.3 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
Alpha*	40 cpm	40 cpm	40 cpm	36-44	Alpha*	400 cpm	399 cpm	399 cpm	360-440
Alpha*	4000 cpm	3992 cpm	3992 cpm	3600-4400	Alpha*	40000 cpm	39929 cpm	39929 cpm	36000-44000
Alpha*	400000 cpm	399293 cpm	399293 cpm	360000-440000	Beta-Gamma*	40 cpm	40 cpm	40 cpm	36-44
Beta-Gamma*	400 cpm	400 cpm	400 cpm	360-440	Beta-Gamma*	4000 cpm	3992 cpm	3992 cpm	3600-4400
Beta-Gamma*	40000 cpm	39956 cpm	39956 cpm	36000-44000	Beta-Gamma*	400000 cpm	399550 cpm	399550 cpm	360000-440000

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Pu239	C7-636	a 4pi	111568.417 dpm	43516	39.0 %	2.56	0 inch
Sr90	C7-638	B 2pi	109079.943 dpm	77501	71.0 %	1.41	0 inch
Tc99	C7-642	B 2pi	68837.799 dpm	26679	38.8 %	2.58	0 inch
C14	C7-804	B 2pi	30943.339 dpm	4877	15.8 %	6.33	0 inch

Instrument Status

Voltage: 850 V

Windows Status

Alpha Thres: 115 mV Beta Thres: 3.8 mV Beta Window: 48 mV

Comments

Alpha crosstalk in the Beta channel is <10%
Beta crosstalk in the Alpha channel is <1%
Battery Voltage = 13V

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 and ANSI N323. The instrument listed above was inspected prior to shipment and it met all the manufacturer's published operating specifications. (MJW Technical Services is not responsible for damage incurred during shipment or use of this instrument).

Calibration Technician: (AL)		QA Technician:		Date: 7-6-15
Calibration Date:	07/02/2015	Calibration Due:	07/02/2016	



Certificate of Calibration

2015-6116-3

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name:	Enercon Services, Inc.	Manufacturer:	Ludlum Measurements
Address:	1501 Armore Blvd Suite 200 Pittsburgh, PA 15221	Model:	2360 SN: 267528
Customer PO#	EFS035 Work Order: 2015-6116	Detector Manufacturer:	Ludlum Measurements
Calibration Method:	Electronic(*)	Det. Model:	43-93 SN: PR286547
		Procedure:	SOP-06

Instrument Received: ☒ Within Tolerance ☐ Out of Tolerance ☐ Repairs Required ☐ Other (See Comments)

☒ Geotropism ☒ Meter Zero ☒ Mech. Ck ☒ HV Readout ☒ Battery Check ☒ Reset

☒ Audio ☐ Window Status ☐ FS Response ☐ Linearity ☐ Alarm Set

Temperature: 71.5 F Humidity: 58% Pressure: 28.3 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	200 cpm	200 cpm	200 cpm	170-230	X 1*	800 cpm	800 cpm	800 cpm	720-880
X 10*	2 kcpm	2 kcpm	2 kcpm	1.7-2.3	X 10*	8 kcpm	8 kcpm	8 kcpm	7.2-8.8
X 100*	20 kcpm	19.5 kcpm	19.5 kcpm	17-23	X 100*	80 kcpm	80 kcpm	80 kcpm	72-88
X 1K*	200 kcpm	200 kcpm	200 kcpm	170-230	X 1K*	800 kcpm	800 kcpm	800 kcpm	720-880
Digital Scaler*	80 cpm	80 cpm	80 cpm	72-88	Digital Scaler*	800 cpm	800 cpm	800 cpm	720-880
Digital Scaler*	8 kcpm	7.995 kcpm	7.995 kcpm	7.2-8.8	Digital Scaler*	80 kcpm	79.923 kcpm	79.923 kcpm	72-88
Digital Scaler*	800 kcpm	800.356 kcpm	800.356 kcpm	720-880					

Electronic Instruments

Pulser: 500-2 sn# 220106

MultiMeter: GDM-8245 sn# CF870447

High Voltage Divider Box: T1016 sn# PR285867

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Pu239	C7-636	a 4pi	111568.417 dpm	11939	10.7 %	9.35	0.25 inch
Th230	C7-643	a 4pi	99311.215 dpm	8817	8.9 %	11.24	0.25 inch
Sr90	C7-638	B 2pi	109079.943 dpm	25396	23.3 %	4.29	0.25 inch
Tc99	C7-642	B 2pi	68837.799 dpm	7527	10.9 %	9.17	0.25 inch

Instrument Status

Voltage: 650 V Ref. V 1: 500 V Ins. V 1: 500 V Ref. V 2: 1500 V Ins. V 2: 1515 V

Windows Status

Alpha Thres: 119 mV Beta Thres: 3.5 mV Beta Window: 30 mV

Detector Status

Oper. V: 650 V

Comments

Alpha crosstalk in the Beta channel is <10%
Beta crosstalk in the Alpha channel is <1%
Detector Uniformity within 15%

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 and ANSI N323. The Instrument listed above was inspected prior to shipment and it met all the manufacturer's published operating specifications. (MJW Technical Services is not responsible for damage incurred during shipment or use of this instrument).

Calibration Technician: (AL)	QA Technician:	Date: 7-6-15
Calibration Date: 07/02/2015	Calibration Due: 07/02/2016	



ENERCON

Excellence—Every project. Every day.

Alan J. Blotcky Reactor Facility
Final Status Survey Report

APPENDIX B
RADIOLOGICAL SURVEY FORMS

RADIOLOGICAL SURVEY FORM

FORM

Purpose of Survey: FSS Survey Unit 1						Survey Date: 11/9/2015		Survey Serial Number: SSN- 0001					
Technician: Frank Brown						Reviewed by: Chris Higgins							
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min)	Eff %	Probe/Wipe Area		MDA/MDC	
Removable Alpha	268970	7/2/2016	43-10-1	PR285086	0	DPM	0.5	0.5	39.0%	100	cm ²	14	DPM/100cm ²
Removable Beta	268970	7/2/2016	43-10-1	PR285086	188	DPM	0.5	0.5	38.8%	100	cm ²	158	DPM/100cm ²
Total Alpha	n/a	n/a	n/a	n/a	n/a	CPM	n/a	n/a	n/a	n/a	cm ²	#VALUE!	DPM/100cm ²
Total Beta	267528	7/2/2016	43-93	PR286547	120	CPM	0.1	0.1	5.45%	100	cm ²	3455	DPM/100cm ²
By Scan	172056	10/29/2016	43-37	PR147970	2042	CPM	1	Observation Interval (sec)	7.4%	584	cm ²	1581	MDC _{15min} DPM/100cm ²
Gross Gamma	n/a	n/a	n/a	n/a	n/a	CPM	n/a	Observation Interval (sec)	N/A	N/A	N/A	#VALUE!	MDC _{15min} CPM
By Dose Rate	175946	7/2/2016	n/a	n/a	15	µR/hr	N/A	N/A	N/A	N/A	N/A	N/A	*Frisker uses observation interval in seconds

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		By Scan		Gross Gamma CPM	By Dose Rate (µR/hr)
		Gross DPM	Net Result (DPM/100cm ²)	Gross DPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
1	See Map	0	<MDA	188	<MDA	n/a	n/a	170	<MDA	2700	<MDA	n/a	n/a
2	See Map	1	<MDA	188	<MDA	n/a	n/a	160	<MDA	2700	<MDA	n/a	n/a
3	See Map	0	<MDA	184	<MDA	n/a	n/a	170	<MDA	2700	<MDA	n/a	n/a
4	See Map	0	<MDA	176	<MDA	n/a	n/a	140	<MDA	2700	<MDA	n/a	n/a
5	See Map	0	<MDA	235	<MDA	n/a	n/a	170	<MDA	2700	<MDA	n/a	n/a
6	See Map	0	<MDA	194	<MDA	n/a	n/a	180	<MDA	2700	<MDA	n/a	n/a
7	See Map	0	<MDA	184	<MDA	n/a	n/a	120	<MDA	2600	<MDA	n/a	n/a
8	See Map	0	<MDA	216	<MDA	n/a	n/a	140	<MDA	2600	<MDA	n/a	n/a
9	See Map	0	<MDA	154	<MDA	n/a	n/a	110	<MDA	2600	<MDA	n/a	n/a
10	See Map	0	<MDA	194	<MDA	n/a	n/a	80	<MDA	2600	<MDA	n/a	n/a
11	See Map	0	<MDA	154	<MDA	n/a	n/a	120	<MDA	2600	<MDA	n/a	n/a
12	See Map	0	<MDA	236	<MDA	n/a	n/a	120	<MDA	2600	<MDA	n/a	n/a
13	See Map	0	<MDA	256	<MDA	n/a	n/a	130	<MDA	2600	<MDA	n/a	n/a
14	See Map	0	<MDA	184	<MDA	n/a	n/a	100	<MDA	2600	<MDA	n/a	n/a
15	See Map	1	<MDA	226	<MDA	n/a	n/a	100	<MDA	2600	<MDA	n/a	n/a
16	See Map	0	<MDA	228	<MDA	n/a	n/a	90	<MDA	2600	<MDA	n/a	n/a
17	See Map	0	<MDA	222	<MDA	n/a	n/a	100	<MDA	2600	<MDA	n/a	n/a
18	See Map	0	<MDA	194	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
19	See Map	0	<MDA	236	<MDA	n/a	n/a	100	<MDA	2400	<MDA	n/a	n/a
20	See Map	0	<MDA	226	<MDA	n/a	n/a	110	<MDA	2400	<MDA	n/a	n/a
21	See Map	0	<MDA	184	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
22	See Map	0	<MDA	174	<MDA	n/a	n/a	100	<MDA	2400	<MDA	n/a	n/a
23	See Map	0	<MDA	206	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
24	See Map	0	<MDA	196	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
25	See Map	1	<MDA	184	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a

Survey Comments:

RADIOLOGICAL SURVEY FORM

FORM (2)

Purpose of Survey: FSS Survey Unit 001							Survey Date: 11/8/2015		Survey Serial Number: SSN- 0001				
Technician: Frank Brown							Reviewed by: Chris Higgins						
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area		MDA/MDC	
Removable Alpha	268970	7/2/2016	43-10-1	PR285086	0	DPM	0.5	0.5	39.0%	100	cm ²	14 DPM/100cm ²	
Removable Beta	268970	7/2/2016	43-10-1	PR285086	190	DPM	0.5	0.5	38.8%	100	cm ²	159 DPM/100cm ²	
Total Alpha	n/a	n/a	n/a	n/a	n/a	CPM	n/a	n/a	n/a	n/a	cm ²	#VALUE! DPM/100cm ²	
Total Beta	267528	7/2/2016	43-93	PR285547	120	CPM	0.1	0.1	5.45%	100	cm ²	3455 DPM/100cm ²	
βy Scan	172056	10/29/2016	43-37	PR147970	2042	CPM	1	Observation Interval (sec)	7.4%	584	cm ²	1581 MDC _{100cm} DPM/100cm ²	
Gross Gamma	n/a	n/a	n/a	n/a	n/a	CPM	1	Observation Interval (sec)	N/A	N/A	N/A	#VALUE! MDC _{100cm} CPM	
βy Dose Rate	175946	7/2/2016	n/a	n/a	20	μR/hr	N/A	N/A	N/A	N/A	N/A	*Frisker uses observation interval in seconds	

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		βy Scan		Gross Gamma CPM	βy Dose Rate (μR/hr)
		Gross DPM	Net Result (DPM/100cm ²)	Gross DPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
26	See Map	0	<MDA	266	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	n/a
27	See Map	0	<MDA	184	<MDA	n/a	n/a	160	<MDA	2400	<MDA	n/a	n/a
28	See Map	0	<MDA	194	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	n/a
29	See Map	0	<MDA	206	<MDA	n/a	n/a	140	<MDA	2700	<MDA	n/a	20
30	See Map	0	<MDA	236	<MDA	n/a	n/a	170	<MDA	2700	<MDA	n/a	20
31	See Map	0	<MDA	188	<MDA	n/a	n/a	180	<MDA	2700	<MDA	n/a	20
32	See Map	0	<MDA	194	<MDA	n/a	n/a	120	<MDA	2700	<MDA	n/a	20
33	See Map	0	<MDA	194	<MDA	n/a	n/a	130	<MDA	2700	<MDA	n/a	20
34			n/a		n/a		n/a	n/a	n/a		n/a		
35			n/a		n/a		n/a	n/a	n/a		n/a		
36			n/a		n/a		n/a	n/a	n/a		n/a		
37			n/a		n/a		n/a	n/a	n/a		n/a		
38			n/a		n/a		n/a	n/a	n/a		n/a		
39			n/a		n/a		n/a	n/a	n/a		n/a		
40			n/a		n/a		n/a	n/a	n/a		n/a		
41			n/a		n/a		n/a	n/a	n/a		n/a		
42			n/a		n/a		n/a	n/a	n/a		n/a		
43			n/a		n/a		n/a	n/a	n/a		n/a		
44			n/a		n/a		n/a	n/a	n/a		n/a		
45			n/a		n/a		n/a	n/a	n/a		n/a		
46			n/a		n/a		n/a	n/a	n/a		n/a		
47			n/a		n/a		n/a	n/a	n/a		n/a		
48			n/a		n/a		n/a	n/a	n/a		n/a		
49			n/a		n/a		n/a	n/a	n/a		n/a		
50			n/a		n/a		n/a	n/a	n/a		n/a		
Survey Comments:													

RADIOLOGICAL SURVEY FORM

FORM

Purpose of Survey: FSS Survey Unit 2						Survey Date: 11/11/2015		Survey Serial Number: SSN- 0002				
Technician: Frank Brown						Reviewed by: Chris Higgins						
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area		MDA/MDC
Removable Alpha	268970	7/2/2016	43-10-1	PR285086	0	DPM	0.5	0.5	39.0%	100	cm ²	14 DPM/100cm ²
Removable Beta	268970	7/2/2016	43-10-1	PR285086	188	DPM	0.5	0.5	38.8%	100	cm ²	158 DPM/100cm ²
Total Alpha	n/a	n/a	n/a	n/a	n/a	CPM	n/a	n/a	n/a	n/a	cm ²	#VALUE! DPM/100cm ²
Total Beta	267528	7/2/2016	43-93	PR28547	130	CPM	0.1	0.1	5.45%	100	cm ²	3575 DPM/100cm ²
By Scan	172056	10/29/2016	43-37	PR147970	2042	CPM	1	Observation Interval (sec)	7.4%	584	cm ²	1581 MDC _{15min} DPM/100cm ²
Gross Gamma	n/a	n/a	n/a	n/a	n/a	CPM	n/a	Observation Interval (sec)	N/A	N/A	N/A	#VALUE! MDC _{15min} CPM
By Dose Rate	175946	7/2/2016	n/a	n/a	15	µR/hr	N/A	N/A	N/A	N/A	N/A	*Frisker uses observation interval in seconds

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		By Scan		Gross Gamma CPM	By Dose Rate (µR/hr)
		Gross DPM	Net Result (DPM/100cm ²)	Gross DPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
1	See Map	1	<MDA	190	<MDA	n/a	n/a	160	<MDA	2200	<MDA	n/a	15
2	See Map	0	<MDA	174	<MDA	n/a	n/a	150	<MDA	2200	<MDA	n/a	15
3	See Map	0	<MDA	194	<MDA	n/a	n/a	150	<MDA	2200	<MDA	n/a	n/a
4	See Map	0	<MDA	206	<MDA	n/a	n/a	170	<MDA	2200	<MDA	n/a	n/a
5	See Map	0	<MDA	134	<MDA	n/a	n/a	170	<MDA	2200	<MDA	n/a	n/a
6	See Map	0	<MDA	144	<MDA	n/a	n/a	180	<MDA	2200	<MDA	n/a	n/a
7	See Map	0	<MDA	216	<MDA	n/a	n/a	150	<MDA	2200	<MDA	n/a	n/a
8	See Map	0	<MDA	228	<MDA	n/a	n/a	200	<MDA	2200	<MDA	n/a	15
9	See Map	0	<MDA	226	<MDA	n/a	n/a	190	<MDA	2200	<MDA	n/a	15
10	See Map	0	<MDA	184	<MDA	n/a	n/a	180	<MDA	2200	<MDA	n/a	15
11	See Map	0	<MDA	222	<MDA	n/a	n/a	150	<MDA	2200	<MDA	n/a	15
12	See Map	0	<MDA	164	<MDA	n/a	n/a	170	<MDA	2200	<MDA	n/a	15
13	See Map	0	<MDA	188	<MDA	n/a	n/a	190	<MDA	2200	<MDA	n/a	15
14	See Map	0	<MDA	194	<MDA	n/a	n/a	110	<MDA	2200	<MDA	n/a	15
15	See Map	0	<MDA	184	<MDA	n/a	n/a	170	<MDA	2200	<MDA	n/a	15
16	See Map	0	<MDA	214	<MDA	n/a	n/a	160	<MDA	2200	<MDA	n/a	15
17	See Map	0	<MDA	206	<MDA	n/a	n/a	160	<MDA	2200	<MDA	n/a	15
18	See Map	0	<MDA	198	<MDA	n/a	n/a	110	<MDA	2200	<MDA	n/a	15
19	See Map	0	<MDA	222	<MDA	n/a	n/a	150	<MDA	2200	<MDA	n/a	15
20	See Map	0	<MDA	202	<MDA	n/a	n/a	100	<MDA	2200	<MDA	n/a	15
21	See Map	1	<MDA	194	<MDA	n/a	n/a	130	<MDA	2200	<MDA	n/a	15
22	See Map	1	<MDA	198	<MDA	n/a	n/a	140	<MDA	2200	<MDA	n/a	15
23	See Map	0	<MDA	176	<MDA	n/a	n/a	160	<MDA	2200	<MDA	n/a	15
24	See Map	0	<MDA	198	<MDA	n/a	n/a	190	<MDA	2200	<MDA	n/a	15
25	See Map	0	<MDA	200	<MDA	n/a	n/a	110	<MDA	2200	<MDA	n/a	15
Survey Comments:													

RADIOLOGICAL SURVEY FORM

FORM (2)

Purpose of Survey: FSS Survey Unit 002						Survey Date: 11/8/2015		Survey Serial Number: SSN- 0002				
Technician: Frank Brown						Reviewed by:						
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area		MDA/MDC
Removable Alpha	268970	7/2/2016	43-10-1	PR285086	0	DPM	0.5	0.5	39.0%	100	cm ²	14 DPM/100cm ²
Removable Beta	268970	7/2/2016	43-10-1	PR285086	188	DPM	0.5	0.5	38.8%	100	cm ²	158 DPM/100cm ²
Total Alpha	n/a	n/a	n/a	n/a	n/a	CPM	n/a	n/a	n/a	n/a	cm ²	#VALUE! DPM/100cm ²
Total Beta	267528	7/2/2016	43-93	PR285547	130	CPM	0.1	0.1	5.45%	100	cm ²	3575 DPM/100cm ²
By Scan	172056	10/29/2016	43-37	PR147970	2042	CPM	1	Observation Interval (sec)	7.4%	584	cm ²	1581 MDC _{15m} DPM/100cm ²
Gross Gamma	n/a	n/a	n/a	n/a	n/a	CPM	n/a	Observation Interval (sec)	N/A	N/A	N/A	#VALUE! MDC _{15m} CPM
By Dose Rate	175946	7/2/2016	n/a	n/a	15	µR/hr	N/A	N/A	N/A	N/A	N/A	*Frisker uses observation interval in seconds

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		By Scan		Gross Gamma CPM	By Dose Rate (µR/hr)
		Gross DPM	Net Result (DPM/100cm ²)	Gross DPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
26	See Map	0	<MDA	228	<MDA	n/a	n/a	160	<MDA	2200	<MDA	n/a	15
27	See Map	0	<MDA	216	<MDA	n/a	n/a	170	<MDA	2200	<MDA	n/a	15
28	See Map	0	<MDA	184	<MDA	n/a	n/a	150	<MDA	2200	<MDA	n/a	15
29	See Map	0	<MDA	144	<MDA	n/a	n/a	130	<MDA	2200	<MDA	n/a	15
30	See Map	0	<MDA	195	<MDA	n/a	n/a	150	<MDA	2200	<MDA	n/a	15
31	See Map	0	<MDA	200	<MDA	n/a	n/a	150	<MDA	2200	<MDA	n/a	15
32			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
33			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
34			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
35			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
36			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
37			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
38			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
39			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
40			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
41			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
42			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
43			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
44			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
45			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
46			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
47			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
48			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
49			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
50			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	

Survey Comments:

RADIOLOGICAL SURVEY FORM

FORM

Purpose of Survey: FSS Survey Unit 3						Survey Date: 11/11/2015		Survey Serial Number: SSN- 0003				
Technician: Frank Brown						Reviewed by: Chris Higgins						
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area		MDA/MDC
Removable Alpha	268970	7/2/2016	43-10-1	PR285086	0	DPM	0.5	0.5	39.0%	100	cm ²	14 DPM/100cm ²
Removable Beta	268970	7/2/2016	43-10-1	PR285086	188	DPM	0.5	0.5	38.8%	100	cm ²	158 DPM/100cm ²
Total Alpha	n/a	n/a	n/a	n/a	n/a	CPM	n/a	n/a	n/a	n/a	cm ²	#VALUE! DPM/100cm ²
Total Beta	267528	7/2/2016	43-93	PR147970	130	CPM	0.1	0.1	5.45%	100	cm ²	3575 DPM/100cm ²
By Scan	172056	10/29/2016	43-37	PR147970	2042	CPM	1	Observation Interval (sec)	7.4%	584	cm ²	1581 MDC _{scan} DPM/100cm ²
Gross Gamma	n/a	n/a	n/a	n/a	n/a	CPM	n/a	Observation Interval (sec)	N/A	N/A	N/A	#VALUE! MDC _{scan} CPM
By Dose Rate	175946	7/2/2016	n/a	n/a	15	µR/hr	N/A	N/A	N/A	N/A	N/A	*Frisker uses observation interval in seconds

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		By Scan		Gross Gamma CPM	By Dose Rate (µR/hr)
		Gross DPM	Net Result (DPM/100cm ²)	Gross DPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
1	See Map	1	<MDA	196	<MDA	n/a	n/a	150	<MDA	2400	<MDA	n/a	15
2	See Map	0	<MDA	198	<MDA	n/a	n/a	180	<MDA	2400	<MDA	n/a	15
3	See Map	0	<MDA	188	<MDA	n/a	n/a	180	<MDA	2400	<MDA	n/a	15
4	See Map	0	<MDA	200	<MDA	n/a	n/a	130	<MDA	2400	<MDA	n/a	15
5	See Map	0	<MDA	188	<MDA	n/a	n/a	100	<MDA	2400	<MDA	n/a	15
6	See Map	0	<MDA	204	<MDA	n/a	n/a	140	<MDA	2400	<MDA	n/a	15
7	See Map	0	<MDA	210	<MDA	n/a	n/a	140	<MDA	2400	<MDA	n/a	15
8	See Map	0	<MDA	206	<MDA	n/a	n/a	140	<MDA	2400	<MDA	n/a	15
9	See Map	0	<MDA	192	<MDA	n/a	n/a	150	<MDA	2400	<MDA	n/a	15
10	See Map	0	<MDA	164	<MDA	n/a	n/a	180	<MDA	2400	<MDA	n/a	15
11	See Map	0	<MDA	216	<MDA	n/a	n/a	160	<MDA	2400	<MDA	n/a	15
12	See Map	0	<MDA	208	<MDA	n/a	n/a	110	<MDA	2400	<MDA	n/a	15
13	See Map	0	<MDA	178	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	15
14	See Map	0	<MDA	200	<MDA	n/a	n/a	130	<MDA	2400	<MDA	n/a	15
15	See Map	0	<MDA	196	<MDA	n/a	n/a	130	<MDA	2400	<MDA	n/a	15
16		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
17		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
19		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
20		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
21		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
22		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
23		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
24		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
25		n/a	#VALUE!	n/a	#VALUE!	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Survey Comments: n

RADIOLOGICAL SURVEY FORM

FORM

Purpose of Survey: FSS Survey Unit 4						Survey Date: 11/11/2015		Survey Serial Number: SSN- 0004				
Technician: Frank Brown						Reviewed by: Chris Higgins						
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area		MDA/MDC
Removable Alpha	268970	7/2/2016	43-10-1	PR285086	0	DPM	0.5	0.5	39.0%	100	cm ²	14 DPM/100cm ²
Removable Beta	268970	7/2/2016	43-10-1	PR285086	188	DPM	0.5	0.5	38.8%	100	cm ²	158 DPM/100cm ²
Total Alpha	n/a	n/a	n/a	n/a	n/a	CPM	n/a	n/a	n/a	n/a	cm ²	#VALUE! DPM/100cm ²
Total Beta	267528	7/2/2016	43-93	PR285547	130	CPM	0.1	0.1	5.45%	100	cm ²	3575 DPM/100cm ²
β Scan	172056	10/29/2016	43-37	PR147970	2042	CPM	1	Observation Interval (sec)	7.4%	584	cm ²	1581 MDC _{sec} DPM/100cm ²
Gross Gamma	n/a	n/a	n/a	n/a	n/a	CPM	n/a	Observation Interval (sec)	N/A	N/A	N/A	#VALUE! MDC _{sec} CPM
β Dose Rate	175946	7/2/2016	n/a	n/a	15	μR/hr	N/A	N/A	N/A	N/A	N/A	*Frisker uses observation interval in seconds

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		β Scan		Gross Gamma CPM	β Dose Rate (μR/hr)
		Gross DPM	Net Result (DPM/100cm ²)	Gross DPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
1	See Map	0	<MDA	216	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
2	See Map	0	<MDA	226	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
3	See Map	0	<MDA	205	<MDA	n/a	n/a	110	<MDA	2400	<MDA	n/a	n/a
4	See Map	0	<MDA	164	<MDA	n/a	n/a	140	<MDA	2400	<MDA	n/a	15
5	See Map	0	<MDA	194	<MDA	n/a	n/a	130	<MDA	2400	<MDA	n/a	15
6	See Map	0	<MDA	216	<MDA	n/a	n/a	140	<MDA	2400	<MDA	n/a	15
7	See Map	0	<MDA	194	<MDA	n/a	n/a	110	<MDA	2400	<MDA	n/a	n/a
8	See Map	0	<MDA	20	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
9	See Map	0	<MDA	174	<MDA	n/a	n/a	100	<MDA	2400	<MDA	n/a	n/a
10	See Map	0	<MDA	188	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
11	See Map	0	<MDA	216	<MDA	n/a	n/a	110	<MDA	2400	<MDA	n/a	n/a
12	See Map	0	<MDA	208	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
13	See Map	1	<MDA	212	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	n/a
14	See Map	0	<MDA	198	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	n/a
15	See Map	0	<MDA	178	<MDA	n/a	n/a	180	<MDA	2400	<MDA	n/a	n/a
16	See Map	0	<MDA	196	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	n/a
17	See Map	0	<MDA	210	<MDA	n/a	n/a	180	<MDA	2400	<MDA	n/a	n/a
18	See Map	0	<MDA	188	<MDA	n/a	n/a	190	<MDA	2400	<MDA	n/a	n/a
19	See Map	1	<MDA	204	<MDA	n/a	n/a	180	<MDA	2400	<MDA	n/a	n/a
20	See Map	0	<MDA	200	<MDA	n/a	n/a	180	<MDA	2400	<MDA	n/a	n/a
21	See Map	0	<MDA	170	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	n/a
22	See Map	0	<MDA	212	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	n/a
23	See Map	0	<MDA	198	<MDA	n/a	n/a	160	<MDA	2400	<MDA	n/a	n/a
24	See Map	0	<MDA	210	<MDA	n/a	n/a	160	<MDA	2400	<MDA	n/a	n/a
25	See Map	0	<MDA	180	<MDA	n/a	n/a	160	<MDA	2400	<MDA	n/a	n/a

Survey Comments:

RADIOLOGICAL SURVEY FORM

FORM (2)

Purpose of Survey: FSS Survey Unit 004						Survey Date: 11/9/2015		Survey Serial Number: SSN- 0004					
Technician: Frank Brown						Reviewed by: Chris Higgins							
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area		MDA/MDC	
Removable Alpha	268970	7/2/2016	43-10-1	PR285096	0	DPM	0.5	0.5	39.0%	100	cm ²	14	DPM/100cm ²
Removable Beta	268970	7/2/2016	43-10-1	PR285096	189	DPM	0.5	0.5	38.8%	100	cm ²	158	DPM/100cm ²
Total Alpha	n/a	n/a	n/a	n/a	n/a	CPM	n/a	n/a	n/a	n/a	cm ²	#VALUE!	DPM/100cm ²
Total Beta	267528	7/2/2016	43-93	PR286547	130	CPM	0.1	0.1	5.45%	100	cm ²	3575	DPM/100cm ²
By Scan	172056	10/29/2016	43-37	PR147970	2042	CPM	1	Observation Interval (sec)	7.4%	584	cm ²	1581	MDC _{100cm} DPM/100cm ²
Gross Gamma	n/a	n/a	n/a	n/a	n/a	CPM	1	Observation Interval (sec)	N/A	N/A	N/A	#VALUE!	MDC _{100cm} CPM
By Dose Rate	175946	7/2/2016	n/a	n/a	15	µR/hr	N/A	N/A	N/A	N/A	N/A	N/A	*Frisker uses observation interval in seconds

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		By Scan		Gross Gamma CPM	By Dose Rate (µR/hr)
		Gross DPM	Net Result (DPM/100cm ²)	Gross DPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
26	See Map	0	<MDA	174	<MDA	n/a	n/a	150	<MDA	2400	<MDA	n/a	n/a
27	See Map	0	<MDA	226	<MDA	n/a	n/a	150	<MDA	2400	<MDA	n/a	n/a
28	See Map	0	<MDA	186	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	n/a
29	See Map	0	<MDA	184	<MDA	n/a	n/a	150	<MDA	2400	<MDA	n/a	n/a
30	See Map	0	<MDA	198	<MDA	n/a	n/a	170	<MDA	2400	<MDA	n/a	n/a
31	See Map	0	<MDA	196	<MDA	n/a	n/a	160	<MDA	2400	<MDA	n/a	n/a
32	See Map	0	<MDA	208	<MDA	n/a	n/a	130	<MDA	2400	<MDA	n/a	n/a
33	See Map	0	<MDA	210	<MDA	n/a	n/a	130	<MDA	2400	<MDA	n/a	n/a
34	See Map	0	<MDA	184	<MDA	n/a	n/a	120	<MDA	2400	<MDA	n/a	n/a
35	See Map	0	<MDA	196	<MDA	n/a	n/a	160	<MDA	2400	<MDA	n/a	n/a
36	See Map	0	<MDA	188	<MDA	n/a	n/a	150	<MDA	2400	<MDA	n/a	15
37	See Map	0	<MDA	186	<MDA	n/a	n/a	110	<MDA	2400	<MDA	n/a	15
38			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
39			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
40			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
41			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
42			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
43			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
44			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
45			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
46			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
47			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
48			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
49			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
50			n/a		n/a		n/a	n/a	n/a	n/a	n/a	n/a	
Survey Comments:													

RADIOLOGICAL SURVEY FORM

FORM

Purpose of Survey: FSS Survey Unit 5							Survey Date: 11/11/2015		Survey Serial Number: SSN- 0005				
Technician: Frank Brown							Reviewed by: Chris Higgins						
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area		MDA/MDC	
Removable Alpha	268970	7/2/2016	43-10-1	PR285085	0	DPM	0.5	0.5	39.0%	100	cm ²	14 DPM/100cm ²	
Removable Beta	268970	7/2/2016	43-10-1	PR285086	188	DPM	0.5	0.5	38.8%	100	cm ²	158 DPM/100cm ²	
Total Alpha	n/a	n/a	n/a	n/a	n/a	CPM	n/a	n/a	n/a	n/a	cm ²	#VALUE! DPM/100cm ²	
Total Beta	267528	7/2/2016	43-93	PR285547	130	CPM	0.1	0.1	5.45%	100	cm ²	3575 DPM/100cm ²	
βy Scan	172056	10/29/2016	43-37	PR147970	2042	CPM	1	Observation Interval (sec)	7.4%	584	cm ²	1581 MDC ₁₀₀ DPM/100cm ²	
Gross Gamma	n/a	n/a	n/a	n/a	n/a	CPM	n/a	Observation Interval (sec)	N/A	N/A	N/A	#VALUE! MDC ₁₀₀ CPM	
βy Dose Rate	175946	7/2/2016	n/a	n/a	15	μR/hr	N/A	N/A	N/A	N/A	N/A	*Frisker uses observation interval in seconds	

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		βy Scan		Gross Gamma CPM	βy Dose Rate (μR/hr)
		Gross DPM	Net Result (DPM/100cm ²)	Gross DPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
1	See Map	0	<MDA	186	<MDA	n/a	n/a	120	<MDA	130	<MDA	n/a	n/a
2	See Map	0	<MDA	188	<MDA	n/a	n/a	130	<MDA	140	<MDA	n/a	n/a
3	See Map	0	<MDA	194	<MDA	n/a	n/a	130	<MDA	140	<MDA	n/a	n/a
4	See Map	0	<MDA	204	<MDA	n/a	n/a	120	<MDA	140	<MDA	n/a	n/a
5	See Map	1	<MDA	208	<MDA	n/a	n/a	120	<MDA	130	<MDA	n/a	n/a
6	See Map	0	<MDA	192	<MDA	n/a	n/a	130	<MDA	130	<MDA	n/a	n/a
7	See Map	0	<MDA	190	<MDA	n/a	n/a	130	<MDA	130	<MDA	n/a	n/a
8	See Map	0	<MDA	178	<MDA	n/a	n/a	150	<MDA	130	<MDA	n/a	n/a
9	See Map	1	<MDA	206	<MDA	n/a	n/a	130	<MDA	130	<MDA	n/a	n/a
10	See Map	0	<MDA	210	<MDA	n/a	n/a	140	<MDA	130	<MDA	n/a	n/a
11	See Map	0	<MDA	202	<MDA	n/a	n/a	150	<MDA	150	<MDA	n/a	n/a
12	See Map	0	<MDA	174	<MDA	n/a	n/a	150	<MDA	140	<MDA	n/a	n/a
13	See Map	0	<MDA	196	<MDA	n/a	n/a	130	<MDA	130	<MDA	n/a	n/a
14	See Map	0	<MDA	198	<MDA	n/a	n/a	120	<MDA	130	<MDA	n/a	n/a
15	See Map	0	<MDA	202	<MDA	n/a	n/a	120	<MDA	130	<MDA	n/a	n/a
16	See Map	0	<MDA	200	<MDA	n/a	n/a	110	<MDA	130	<MDA	n/a	n/a
17	See Map	0	<MDA	188	<MDA	n/a	n/a	180	<MDA	130	<MDA	n/a	n/a
18	See Map	0	<MDA	198	<MDA	n/a	n/a	120	<MDA	130	<MDA	n/a	n/a
19	See Map	0	<MDA	204	<MDA	n/a	n/a	130	<MDA	130	<MDA	n/a	n/a
20	See Map	0	<MDA	200	<MDA	n/a	n/a	170	<MDA	140	<MDA	n/a	n/a
21	See Map	0	<MDA	200	<MDA	n/a	n/a	170	<MDA	140	<MDA	n/a	n/a
22	See Map	0	<MDA	202	<MDA	n/a	n/a	150	<MDA	140	<MDA	n/a	n/a
23	See Map	0	<MDA	174	<MDA	n/a	n/a	160	<MDA	140	<MDA	n/a	n/a
24	See Map	1	<MDA	194	<MDA	n/a	n/a	170	<MDA	140	<MDA	n/a	n/a
25	See Map	0	<MDA	196	<MDA	n/a	n/a	160	<MDA	130	<MDA	n/a	n/a

Survey Comments:

RADIOLOGICAL SURVEY FORM

FORM (2)

Purpose of Survey: FSS Survey Unit 005						Survey Date: 11/11/2015		Survey Serial Number: SSN- 0005					
Technician: Frank Brown						Reviewed by: Chris Higgins							
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area		MDA/MDC	
Removable Alpha	268970	7/2/2016	43-10-1	PR285086	0	DPM	0.5	0.5	39.0%	100	cm ²	14	DPM/100cm ²
Removable Beta	268970	7/2/2016	43-10-1	PR285086	188	DPM	0.5	0.5	38.8%	100	cm ²	158	DPM/100cm ²
Total Alpha	n/a	n/a	n/a	n/a	n/a	CPM	n/a	n/a	n/a	n/a	cm ²	#VALUE!	DPM/100cm ²
Total Beta	267528	7/2/2016	43-93	PR28547	130	CPM	0.1	0.1	5.45%	100	cm ²	3575	DPM/100cm ²
βy Scan	172056	10/29/2016	43-37	PR147970	2042	CPM	1	Observation Interval (sec)	7.4%	584	cm ²	1581	MDC _{50,000} DPM/100cm ²
Gross Gamma	n/a	n/a	n/a	n/a	n/a	CPM	1	Observation Interval (sec)	N/A	N/A	N/A	#VALUE!	MDC _{50,000} CPM
βy Dose Rate	175946	7/2/2016	n/a	n/a	15	μR/hr	N/A	N/A	N/A	N/A	N/A	N/A	*Frisker uses observation interval in seconds

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		βy Scan		Gross Gamma CPM	βy Dose Rate (μR/hr)
		Gross DPM	Net Result (DPM/100cm ²)	Gross DPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
26	See Map	0	<MDA	186	<MDA	n/a	n/a	170	<MDA	130	<MDA	n/a	n/a
27	See Map	0	<MDA	184	<MDA	n/a	n/a	140	<MDA	140	<MDA	n/a	n/a
28	See Map	0	<MDA	204	<MDA	n/a	n/a	150	<MDA	150	<MDA	n/a	n/a
29	See Map	0	<MDA	202	<MDA	n/a	n/a	140	<MDA	130	<MDA	n/a	n/a
30	See Map	0	<MDA	198	<MDA	n/a	n/a	150	<MDA	140	<MDA	n/a	n/a
31			n/a		n/a		n/a		n/a		n/a		
32			n/a		n/a		n/a		n/a		n/a		
33			n/a		n/a		n/a		n/a		n/a		
34			n/a		n/a		n/a		n/a		n/a		
35			n/a		n/a		n/a		n/a		n/a		
36			n/a		n/a		n/a		n/a		n/a		
37			n/a		n/a		n/a		n/a		n/a		
38			n/a		n/a		n/a		n/a		n/a		
39			n/a		n/a		n/a		n/a		n/a		
40			n/a		n/a		n/a		n/a		n/a		
41			n/a		n/a		n/a		n/a		n/a		
42			n/a		n/a		n/a		n/a		n/a		
43			n/a		n/a		n/a		n/a		n/a		
44			n/a		n/a		n/a		n/a		n/a		
45			n/a		n/a		n/a		n/a		n/a		
46			n/a		n/a		n/a		n/a		n/a		
47			n/a		n/a		n/a		n/a		n/a		
48			n/a		n/a		n/a		n/a		n/a		
49			n/a		n/a		n/a		n/a		n/a		
50			n/a		n/a		n/a		n/a		n/a		

Survey Comments:

RADIOLOGICAL SURVEY FORM

FORM

Purpose of Survey: FSS Misc Penetrations					Survey Number: SSN-0006		Survey Date: 11/9/2015				
Technician: Frank Brown					Reviewed by: Chris Higgins						
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area	MDA/MDC
2929/3030 Alpha	268970	7/2/2016	43-10-1	PR285086	0	DPM	0.5	0.5	39.0%	100 cm ²	15 dpm/100cm ²
2929/3030 Beta	268970	7/2/2016	43-10-1	PR285086	188	DPM	0.5	0.5	38.8%	100 cm ²	158 dpm/100cm ²
Alpha Scaler						CPM				cm ²	dpm/100cm ²
Beta Frisk (Scan MDC)	78897	7/6/2016	44-9	PR170316	50	CPM		0.033	15.1%	15.5 cm ²	3246 dpm/100cm ² *
Gamma Scan Inst						CPM			N/A	N/A	MDC _{scan} CPM
Dose Rate Inst						µR/hr	N/A	N/A	N/A	N/A	* MDC _{scan} calculated when "Beta Frisk (Scan MDC)" is selected

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		Gross Gamma CPM	βy Dose Rate (µR/hr)
		Gross DPM / 100cm ²	Net Result (DPM/100cm ²)	Gross DPM / 100cm ²	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
1	Rm 540a Wall Hole 1	0	<MDA	190	<MDA	n/a	n/a	50	<MDA	n/a	n/a
2	Rm 540a Wall Hole 9	0	<MDA	174	<MDA	n/a	n/a	50	<MDA	n/a	n/a
3	Rm 540a Wall Hole 18	0	<MDA	198	<MDA	n/a	n/a	50	<MDA	n/a	n/a
4	Rm 540a Wall Hole 27	0	<MDA	200	<MDA	n/a	n/a	50	<MDA	n/a	n/a
5	Rm 540a Wall Hole 36	0	<MDA	164	<MDA	n/a	n/a	50	<MDA	n/a	n/a
6	Rm 540a Wall Hole 45	0	<MDA	154	<MDA	n/a	n/a	50	<MDA	n/a	n/a
7	Rm 540a Wall Hole 54	0	<MDA	188	<MDA	n/a	n/a	50	<MDA	n/a	n/a
8	Rm 540a Wall Hole 63	0	<MDA	186	<MDA	n/a	n/a	50	<MDA	n/a	n/a
9	Rm 540a Floor Hole 1	0	<MDA	202	<MDA	n/a	n/a	50	<MDA	n/a	n/a
10	Rm 540a Floor Hole 2	0	<MDA	196	<MDA	n/a	n/a	50	<MDA	n/a	n/a
11	Rm 540a Floor Hole 3	0	<MDA	174	<MDA	n/a	n/a	50	<MDA	n/a	n/a
12	Rm 540a Floor Hole 4	0	<MDA	194	<MDA	n/a	n/a	50	<MDA	n/a	n/a
13	Rm 540a Floor Hole 5	0	<MDA	194	<MDA	n/a	n/a	50	<MDA	n/a	n/a
14	Rm 540a Floor Hole 6	1	<MDA	204	<MDA	n/a	n/a	50	<MDA	n/a	n/a
15	Rm 540a Floor Hole 7	0	<MDA	176	<MDA	n/a	n/a	50	<MDA	n/a	n/a
16	Rm 540a Floor Hole 8	0	<MDA	200	<MDA	n/a	n/a	50	<MDA	n/a	n/a
17	Rm 540a Floor Hole 9	0	<MDA	198	<MDA	n/a	n/a	50	<MDA	n/a	n/a
18	Rm 540a Floor Hole 10	0	<MDA	192	<MDA	n/a	n/a	50	<MDA	n/a	n/a
19	Rm 540a Floor Drain	0	<MDA	188	<MDA	n/a	n/a	50	<MDA	n/a	n/a
20	Rm 526 Floor Hole 1	0	<MDA	190	<MDA	n/a	n/a	50	<MDA	n/a	n/a
21	Rm 526 Floor Hole 2	0	<MDA	164	<MDA	n/a	n/a	50	<MDA	n/a	n/a
22	Rm 526 Floor Hole 3	0	<MDA	180	<MDA	n/a	n/a	50	<MDA	n/a	n/a
23	Rm 535 Vent	0	<MDA	200	<MDA	n/a	n/a	50	<MDA	n/a	n/a
24	Rm 540 Vent	0	<MDA	198	<MDA	n/a	n/a	50	<MDA	n/a	n/a
25	Rm 535A Floor Drain	0	<MDA	188	<MDA	n/a	n/a	50	<MDA	n/a	n/a

Survey Comments:

RADIOLOGICAL SURVEY FORM

FORM (2)

Purpose of Survey: FSS Misc Penetrations						Survey Number: SSN-0006		Survey Date: 11/9/2015			
Technician: Frank Brown						Reviewed by: Chris Higgins					
Instrument	Serial Number	Calibration Due	Probe	Probe S/N	BKG Reading	Units	BKG Count Time (min)	Sample Count Time (min) *	Eff %	Probe/Wipe Area	MDA/MDC
2929/3030 Alpha	268970	7/2/2016	43-10-1	PR285086	0	DPM	0.5	0.5	39.0%	100 cm ²	15 dpm/100cm ²
2929/3030 Beta	268970	7/2/2016	43-10-1	PR285086	188	DPM	0.5	0.5	38.8%	100 cm ²	158 dpm/100cm ²
Alpha Scaler						CPM				cm ²	dpm/100cm ²
Beta Frisk (Scan MDC)	78697	7/6/2016	44-9	PR170316	50	CPM		0.033	15.1%	15.5 cm ²	3246 dpm/100cm ² *
Gamma Scan Inst						CPM			N/A	N/A	MDC _{scan} CPM
Dose Rate Inst						µR/hr	N/A	N/A	N/A	N/A	* MDC _{scan} calculated when "Beta Frisk (Scan MDC)" is selected

Location #	Description	Removable Alpha		Removable Beta		Total Alpha		Total Beta		Gross Gamma CPM	By Dose Rate (µR/hr)
		Gross DPM / 100cm ²	Net Result (DPM/100cm ²)	Gross DPM / 100cm ²	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)	Gross CPM	Net Result (DPM/100cm ²)		
26	Rm 533A Vacuum Tube 1	0	<MDA	206	<MDA	n/a	n/a	50	<MDA	n/a	n/a
27	Rm 533A Vacuum Tube 2	0	<MDA	176	<MDA	n/a	n/a	50	<MDA	n/a	n/a
28		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
29		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
30		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
31		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
32		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
33		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
34		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
35		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
36		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
37		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
38		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
39		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
40		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
41		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
42		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
43		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
44		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
45		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
46		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
47		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
48		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
49		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
50		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Survey Comments:											

Protocol #: 5 Name: H3/C14 Omaha VA 11-Nov-2015 07:15
 Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 % Sigma=0.00
 Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 % Sigma=0.00
 Region C: LL-UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 % Sigma=0.00
 Time = 0.10 QIP = 1515/AEC ES Terminated = Count
 Conventional DPM
 Nuclide 1 = 121910 Nuclide 2 = 122000

S#	TIME	CPMA	CPMB	DPM1	DPM2	SLS	ESL	FLAG
ATB-0001-1	0.10	10.00	20.00	33.83	24.08	121.98	335.	
2	0.10	20.00	40.00	71.77	48.23	47.010	319.	
3	0.10	10.00	50.00	13.20	62.40	115.29	381.	
4	0.10	10.00	20.00	29.04	23.78	50.790	385.	
5	0.10	10.00	20.00	30.37	23.88	25.680	359.	
6	0.10	0.00	10.00	0.00	13.80	105.93	375.	
7	0.10	10.00	40.00	18.95	49.63	40.471	374.	
8	0.10	0.00	10.00	0.00	12.38	110.75	360.	
9	0.10	21.18	28.32	29.01	33.26	20.544	339.	
10	0.10	20.00	20.00	62.00	21.78	99.510	427.	
11	0.10	10.00	10.00	39.62	10.93	26.483	339.	
12	0.10	30.00	10.00	119.63	7.05	20.464	368.	
13	0.10	0.00	0.00	0.00	0.00	0.000	416.	
14	0.10	20.00	10.00	71.41	9.06	21.400	399.	
15	0.10	10.00	20.00	27.98	23.71	32.100	400.	
16	0.10	10.00	10.00	33.90	10.94	22.470	391.	
17	0.10	10.00	10.00	34.19	10.94	113.96	482.	
18	0.10	30.00	10.00	103.35	7.72	13.241	404.	
19	0.10	0.00	0.00	0.00	0.00	0.000	416.	
20	0.10	0.00	0.00	26.71	0.00	4.815	327.	
21	0.10	20.00	10.00	75.50	9.03	55.640	373.	
22	0.10	10.00	0.00	37.57	0.00	12.840	407.	
23	0.10	30.00	10.00	119.78	7.06	18.451	367.	
24	0.10	0.00	0.00	0.00	0.00	0.000	424.	
25	0.10	10.00	10.00	33.72	10.93	117.17	393.	
26	0.10	20.00	40.00	53.48	47.73	75.970	413.	
27	0.10	20.09	49.91	47.01	52.60	52.500	438.	
28	0.10	20.00	20.00	96.16	19.08	57.780	435.	
29	0.10	10.00	10.00	33.26	10.93	34.507	396.	
30	0.10	28.27	4.73	91.13	1.40	12.840	413.	
31	0.10	20.00	10.00	75.98	9.04	27.285	386.	
32	0.10	50.00	30.00	166.15	29.97	47.347	423.	
33	0.10	0.00	20.00	0.00	25.37	122.78	429.	

ATB-0002-1	34	0.10	20.00	10.00	32.35	8.76	14.930	350.
235	0.10	0.00	0.00	0.00	0.00	0.000	398.	
336	0.10	0.00	10.00	0.00	12.80	109.16	378.	
437	0.10	10.00	10.00	47.66	10.93	31.296	290.	
538	0.10	10.00	30.00	23.36	36.66	117.36	332.	
639	0.10	0.00	0.00	0.00	0.00	0.000	408.	
740	0.10	15.11	23.89	47.27	27.45	34.907	417.	
841	0.10	10.00	20.00	31.05	23.92	69.015	362.	
942	0.10	0.00	10.00	0.00	12.76	46.545	407.	
1043	0.10	10.00	30.00	21.97	30.35	32.100	416.	
1144	0.10	0.00	30.00	0.00	38.62	129.32	373.	
1245	0.10	0.00	0.00	0.00	0.00	0.000	386.	
1346	0.10	20.00	0.00	68.65	0.00	4.815	358.	
1447	0.10	10.00	30.00	23.34	36.57	28.087	391.	
1548	0.10	20.00	10.00	78.32	0.00	19.260	366.	

S# TIME CPMA CPMB DPM1 DPM2 SLS ESL FLAG

AJB-0002-10	0.10	10.00	20.00	30.00	23.85	88.610	374.
1750	0.10	20.00	20.00	27.25	21.98	45.743	344.
1851	0.10	0.00	0.00	0.00	0.00	0.000	431.
1952	0.10	0.00	10.00	0.00	17.67	101.17	438.
2053	0.10	0.00	10.00	0.00	12.57	52.74	441.
2154	0.10	14.36	15.14	42.80	16.51	24.400	452.
2255	0.10	10.00	10.00	33.30	10.73	41.730	457.
2356	0.10	0.00	10.00	0.00	13.16	115.56	320.
2457	0.10	0.00	20.00	0.00	25.21	60.790	460.
2558	0.10	8.76	1.24	30.49	0.01	19.260	431.
2659	0.10	10.00	20.00	40.72	23.40	83.955	366.
2760	0.10	10.00	30.00	19.21	36.05	42.934	466.
2861	0.10	20.00	10.00	27.12	1.00	71.400	495.
2962	0.10	20.00	30.00	64.11	34.75	21.507	381.
3063	0.10	20.00	10.00	57.60	9.18	88.375	508.
3164	0.10	10.00	10.00	26.84	10.88	92.287	506.
AJB-003-0165	0.10	0.00	20.00	0.00	25.22	36.300	458.
266	0.10	10.00	10.00	31.46	10.90	21.667	421.
367	0.10	20.00	30.00	84.39	32.57	30.495	478.
468	0.10	20.00	0.00	67.61	0.00	16.050	455.
569	0.10	10.00	20.00	26.83	23.62	88.410	417.
670	0.10	0.00	10.00	0.00	12.57	716.68	477.
771	0.10	10.00	10.00	20.41	40.88	71.000	436.
872	0.10	30.00	10.00	95.94	7.55	28.037	461.
973	0.10	20.00	30.00	60.73	34.67	77.682	462.
1074	0.10	10.00	0.00	35.12	0.00	16.050	436.
1175	0.10	20.00	10.00	61.20	9.13	23.540	472.
1276	0.10	10.00	20.00	25.61	23.56	32.635	439.
1377	0.10	0.00	50.00	0.00	63.21	63.738	445.
1478	0.10	10.00	10.00	35.25	10.75	18.453	376.
1579	0.10	10.00	20.00	24.74	11.48	64.200	458.
AJB-004-0180	0.10	10.00	30.00	19.37	35.97	90.381	483.
281	0.10	30.00	10.00	82.25	7.64	18.056	557.
382	0.10	40.00	0.00	114.85	0.00	16.050	557.
483	0.10	0.00	0.00	0.00	0.00	0.000	483.
584	0.10	20.00	10.00	59.12	9.18	54.035	492.
685	0.10	20.00	40.00	45.72	46.76	63.397	502.
786	0.10	10.00	10.00	25.11	10.87	27.342	550.
887	0.10	60.00	0.00	181.37	0.00	9.383	521.
988	0.10	10.00	10.00	25.02	10.67	97.905	557.
1089	0.10	10.00	20.00	21.12	29.36	95.265	332.
1190	0.10	10.00	10.00	25.16	10.37	12.655	548.
1291	0.10	0.00	20.00	0.00	25.03	87.478	520.
1392	0.10	20.00	0.00	58.81	0.00	16.853	540.
1493	0.10	20.00	0.00	58.06	0.00	6.430	549.
1594	0.10	20.00	10.00	53.67	9.26	63.130	557.
1695	0.10	0.00	30.00	0.00	27.51	68.480	437.
1796	0.10	20.00	0.00	57.83	0.00	6.870	557.
1897	0.10	0.00	10.00	0.00	12.54	94.090	494.
1998	0.10	10.00	10.00	23.46	10.86	51.310	540.
2099	0.10	20.00	0.00	58.07	0.00	8.095	549.
2100	0.10	20.00	10.00	54.95	9.77	14.445	539.
22101	0.10	20.00	0.00	69.31	0.00	9.630	534.
23102	0.10	0.00	0.00	0.00	0.00	0.000	531.
24103	0.10	10.00	0.00	20.90	0.00	3.625	552.
25104	0.10	30.00	10.00	67.24	7.54	54.971	557.

SH	TIME	CPMA	CPMB	CPM1	CPM2	SIC	PSH	PIRG
26105	0.10	0.00	30.00	0.00	27.45	134.81	563.	
27106	0.10	20.00	30.00	47.48	34.24	24.809	525.	
28107	0.10	30.00	10.00	84.79	7.58	61.360	536.	
29108	0.10	10.00	0.00	28.78	0.00	11.235	555.	
20109	0.10	30.00	0.00	116.53	0.00	12.840	540.	

ASB-004-31	110	0.10	0.00	20.00	0.00	24.79	123.34	546.
32111		0.10	20.00	0.00	58.02	0.00	6.420	550.
33112		0.10	10.00	10.00	25.23	10.87	61.797	546.
34113		0.10	0.00	10.00	0.00	12.49	56.175	551.
35114		0.10	30.00	60.00	63.00	70.08	40.838	556.
36115		0.10	0.00	10.00	0.00	12.49	128.40	557.
37116		0.10	10.00	10.00	24.79	10.87	30.250	558.

156-0005-01	117	0.10	10.00	20.00	21.05	23.36	111.20	555.
	2118	0.10	10.00	0.00	29.22	0.00	4.815	544.
	3119	0.10	20.00	20.00	47.80	21.74	97.103	553.
	4120	0.10	60.00	30.00	161.41	27.25	67.410	554.
	5121	0.10	20.00	0.00	58.02	0.00	8.025	549.
	6122	0.10	0.00	10.00	0.00	12.49	127.103	551.
	7123	0.10	30.00	10.00	82.74	7.65	32.315	553.
	8124	0.10	20.00	20.00	49.60	21.75	52.162	553.
	9125	0.10	20.00	10.00	53.44	9.26	19.266	559.
	10126	0.10	10.00	40.00	13.43	40.35	21.260	547.
	11127	0.10	10.00	0.00	25.22	0.00	4.815	547.
	12128	0.10	30.00	10.00	82.61	7.63	26.384	554.
	13129	0.10	40.00	30.00	103.76	30.79	27.056	554.
	14130	0.10	10.00	10.00	24.76	10.87	138.43	562.
	15131	0.10	10.00	10.00	25.00	10.87	131.51	552.
	16132	0.10	0.00	10.00	0.00	12.49	65.505	559.
	17133	0.10	40.00	10.00	110.38	6.04	28.569	561.
	18134	0.10	20.00	40.00	41.87	46.72	101.12	559.
	19135	0.10	20.00	20.00	49.48	21.75	42.131	560.
	20136	0.10	0.00	0.00	0.00	0.00	0.000	560.
	21137	0.10	0.00	0.00	0.00	0.00	0.000	559.
	22138	0.10	10.00	0.00	20.57	0.00	6.420	561.
	23139	0.10	0.00	0.00	0.00	0.00	0.000	554.
	24140	0.10	10.10	8.80	34.91	6.50	15.218	556.
	25141	0.10	0.00	30.00	0.00	32.42	207.58	554.
	26142	0.10	20.00	20.00	49.53	21.75	20.063	559.
	27143	0.10	0.00	10.00	0.00	12.49	28.890	556.
	28144	0.10	30.00	20.00	79.04	20.12	10.297	551.
	29145	0.10	10.00	10.00	25.22	10.87	97.903	547.
	30146	0.10	20.00	40.00	42.12	46.72	82.825	554.

ASB-0006-01	147	0.10	0.00	10.00	0.00	12.49	218.28	549.
	2148	0.10	10.00	10.00	24.78	10.87	15.248	559.
	3149	0.10	20.00	30.00	47.05	34.23	60.027	558.
	4150	0.10	0.00	0.00	0.00	0.00	0.000	448.
	5151	0.10	0.00	10.00	0.00	12.49	33.205	556.
	6152	0.10	10.00	20.00	21.18	23.36	67.915	551.
	7153	0.10	20.00	0.00	56.16	0.00	8.025	574.
	8154	0.10	10.00	0.00	23.16	0.00	11.235	569.
	9155	0.10	20.00	30.00	45.28	34.23	30.571	568.
	10156	0.10	10.00	30.00	17.94	35.84	21.170	560.
	11157	0.10	30.00	10.00	80.68	7.63	45.736	572.
	12158	0.10	0.00	10.00	0.00	12.48	271.25	564.
	13159	0.10	10.00	0.00	31.00	0.00	10.260	505.
	14160	0.10	20.00	10.00	57.61	9.18	68.480	508.

SR	TIME	CPMA	CPMB	DPM1	DPM2	SE% USHL FLAG
15161	0.10	10.00	10.00	18.82	10.86	85.860 467.
16162	0.10	20.00	30.00	46.35	34.23	82.265 521.
17163	0.10	0.00	20.00	0.00	24.02	40.838 564.
18164	0.10	20.00	40.00	42.66	43.73	96.497 546.
19165	0.10	20.00	0.00	56.02	0.00	12.058 565.
20166	0.10	40.00	20.00	106.29	18.53	49.255 563.
21167	0.10	10.00	20.00	21.35	23.40	173.34 489.
22168	0.10	30.00	0.00	90.35	0.00	14.280 561.
23169	0.10	10.00	10.00	28.01	10.86	25.272 480.
24170	0.10	20.00	20.00	49.11	21.75	20.063 565.

KJG 000	25 1/1	0.10	20.00	10.00	30.00	0.00	100.00	100.00	
BLANK	26 1/1	0.10	20.00	10.00	60.35	0.14	23.540	480.	
Bkgd	27 1/1	0.10	58849.1	5080.95	107227.	0.00	10.727	1010	1
Bkgd	174	0.10	10098.7	105608.	0.00	125890.	103.10	1003	1

part

Protocol # 5 Name: H3/C14 Omaha V8 12 Nov 2015 09:26
 Region A: LL=UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 % Sigma=0.00
 Region B: LL=UL=12.0-156. Lcr= 0 Bkg= 0.00 % Sigma=0.00
 Region C: LL=UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 % Sigma=0.00
 Time = 0.10 QIP = LSIE/AEC E5 terminator = Count
 Conventional DPM
 Nuclide 1 = 121910 Nuclide 2 = 122060

	SN	TIME	CPMA	CPMS	DPM1	DPM2	SJS	LSIE	FLAG
438-206-26	1	0.10	20.00	20.00	49.60	21.74	94.244	557.	
	2	0.10	10.00	20.00	21.13	23.36	103.93	552.	
BIANK	3	0.10	0.00	20.00	0.00	25.83	142.04	569.	
BKgd	4	0.10	56816.1	5283.25	106579.	0.00	20.345	1016.	E
BKgd	5	0.10	15141.2	104727.	0.00	124629.	163.39	1006.	E

APPENDIX C
LABORATORY DATA PACKAGES



Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

November 16, 2015

Mr. Todd Brautigam
Enercon Services, Inc.
1501 Ardmore Blvd, Suite 200
Pittsburgh, PA 15221

RE: Project: AJ Blotcky
Pace Project No.: 30161079

Dear Mr. Brautigam:

Enclosed are the analytical results for sample(s) received by the laboratory on October 05, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jacquelyn Collins
jacquelyn.collins@pacelabs.com
Project Manager

Enclosures

cc: Mr. Frank Brown, Enercon Services, Inc.



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



CERTIFICATIONS

Project: AJ Blotcky

Pace Project No.: 30161079

Pennsylvania Certification IDs

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235

Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

SAMPLE SUMMARY

Project: AJ Blotcky
Pace Project No.: 30161079

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30161079001	VS-0001-1	Solid	09/24/15 14:20	10/05/15 09:15
30161079002	VS-0001-2	Solid	09/24/15 14:20	10/05/15 09:15
30161079003	VS-0001-3	Solid	09/24/15 14:20	10/05/15 09:15
30161079004	VS-0001-4	Solid	09/24/15 14:20	10/05/15 09:15
30161079005	VS-0001-5	Solid	09/24/15 14:20	10/05/15 09:15
30161079006	VS-0002-1	Solid	09/25/15 09:30	10/05/15 09:15
30161079007	VS-0002-2	Solid	09/25/15 09:30	10/05/15 09:15
30161079008	VS-0002-3	Solid	09/25/15 09:30	10/05/15 09:15
30161079009	VS-0003-1	Solid	09/25/15 10:15	10/05/15 09:15
30161079010	VS-0003-2	Solid	09/25/15 10:15	10/05/15 09:15
30161079011	VS-0003-3	Solid	09/25/15 10:15	10/05/15 09:15
30161079012	VS-0004-1	Solid	09/28/15 09:10	10/05/15 09:15
30161079013	VS-0004-2	Solid	09/28/15 09:10	10/05/15 09:15
30161079014	VS-0004-3	Solid	09/28/15 09:10	10/05/15 09:15
30161079015	VS-0004-4	Solid	09/28/15 09:10	10/05/15 09:15
30161079016	VS-0004-5	Solid	09/28/15 09:10	10/05/15 09:15
30161079017	VS-0005-1	Solid	09/28/15 10:40	10/05/15 09:15
30161079018	VS-0005-2	Solid	09/28/15 10:40	10/05/15 09:15
30161079019	VS-0005-3	Solid	09/28/15 10:40	10/05/15 09:15
30161079020	VS-0006-1	Solid	09/28/15 13:10	10/05/15 09:15
30161079021	VS-0006-2	Solid	09/28/15 13:10	10/05/15 09:15
30161079022	VS-0006-3	Solid	09/28/15 13:10	10/05/15 09:15
30161079023	VS-0006-4	Solid	09/28/15 13:10	10/05/15 09:15
30161079024	VS-0007-1	Solid	09/28/15 15:00	10/05/15 09:15
30161079025	VS-0007-2	Solid	09/28/15 15:00	10/05/15 09:15
30161079026	VS-0007-3	Solid	09/28/15 15:00	10/05/15 09:15
30161079027	VS-0008-1	Solid	09/29/15 09:30	10/05/15 09:15
30161079028	VS-0008-2	Solid	09/29/15 09:30	10/05/15 09:15
30161079029	VS-0008-3	Solid	09/29/15 09:30	10/05/15 09:15

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

SAMPLE ANALYTE COUNT

Project: AJ Blotcky
Pace Project No.: 30161079

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30161079001	VS-0001-1	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1
30161079002	VS-0001-2	EPA 901.1	MAH	5
30161079003	VS-0001-3	EPA 901.1	MAH	5
30161079004	VS-0001-4	EPA 901.1	MAH	5
30161079005	VS-0001-5	EPA 901.1	MAH	5
30161079006	VS-0002-1	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1
30161079007	VS-0002-2	EPA 901.1	MAH	5
30161079008	VS-0002-3	EPA 901.1	MAH	5
30161079009	VS-0003-1	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1
30161079010	VS-0003-2	EPA 901.1	MAH	5
30161079011	VS-0003-3	EPA 901.1	MAH	5
30161079012	VS-0004-1	EPA 901.1	MAH	5
30161079013	VS-0004-2	EPA 901.1	MAH	5
30161079014	VS-0004-3	EPA 901.1	MAH	5
30161079015	VS-0004-4	EPA 901.1	MAH	5
30161079016	VS-0004-5	EPA 901.1	MAH	5
30161079017	VS-0005-1	EPA 901.1	MAH	5
30161079018	VS-0005-2	EPA 901.1	MAH	5
30161079019	VS-0005-3	EPA 901.1	MAH	5
30161079020	VS-0006-1	EPA 901.1	MAH	5
30161079021	VS-0006-2	EPA 901.1	MAH	5
30161079022	VS-0006-3	EPA 901.1	MAH	5
30161079023	VS-0006-4	EPA 901.1	MAH	5
30161079024	VS-0007-1	EPA 901.1	MAH	5
30161079025	VS-0007-2	EPA 901.1	MAH	5

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

SAMPLE ANALYTE COUNT

Project: AJ Blotcky
Pace Project No.: 30161079

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30161079026	VS-0007-3	EPA 901.1	MAH	5
30161079027	VS-0008-1	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1
30161079028	VS-0008-2	EPA 901.1	MAH	5
30161079029	VS-0008-3	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

PROJECT NARRATIVE

Project: AJ Blotcky
Pace Project No.: 30161079

Date: November 16, 2015

Samples received identified as "steel" samples by the client could not be processed to match the exact calibration geometry for gamma spectroscopy analysis. Each steel sample received was placed in the bottom of a 4-ounce can. None of the steel samples were of sufficient size as to fill the entire volume of the cans used. Reported gamma-spec results for the steel samples should be construed as over-estimated based on differences between the sample configuration and the calibration source used for analysis. Reported results for these samples are likely over-estimated by approximately 25%.

The LCS recovery associated with the Fe-55 analysis of samples 30161079001, 30161079006, 30161079009, and 30161079027 was low and outside of Pace's default acceptance criteria for LCS recovery. The recovery was 68%. Both the LCSD and MS recoveries were acceptable. Data is being reported as possibly biased low.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

PROJECT NARRATIVE

Project: AJ Blotcky
Pace Project No.: 30161079

Method: EPA 901.1
Description: 901.1 Gamma Spec
Client: Enercon Services, Inc.
Date: November 16, 2015

General Information:

29 samples were analyzed for EPA 901.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

PROJECT NARRATIVE

Project: AJ Blotcky
Pace Project No.: 30161079

Method: RP580
Description: 906.0 Tritium
Client: Enercon Services, Inc.
Date: November 16, 2015

General Information:

5 samples were analyzed for RP580. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

PROJECT NARRATIVE

Project: AJ Blotcky
Pace Project No.: 30161079

Method: ASTM D4922-97
Description: D4922-97 Iron-55 ASTM
Client: Enercon Services, Inc.
Date: November 16, 2015

General Information:

5 samples were analyzed for ASTM D4922-97. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/26373

N2: The lab does not hold TNI accreditation for this parameter.

- BLANK (Lab ID: 964504)
- Iron-55

QC Batch: RADC/26673

N2: The lab does not hold TNI accreditation for this parameter.

- BLANK (Lab ID: 976700)
- Iron-55

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

PROJECT NARRATIVE

Project: AJ Blotcky
Pace Project No.: 30161079

Method: RP300
Description: PGH-R-013 Nickel 59/63
Client: Enercon Services, Inc.
Date: November 16, 2015

General Information:

5 samples were analyzed for RP300. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/26374

N2: The lab does not hold TNI accreditation for this parameter.

- BLANK (Lab ID: 964505)
- Nickel-63

QC Batch: RADC/26629

N2: The lab does not hold TNI accreditation for this parameter.

- BLANK (Lab ID: 974324)
- Nickel-63

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

PROJECT NARRATIVE

Project: AJ Blotcky
Pace Project No.: 30161079

Method: PGH-R-034
Description: PGH-R-034 Carbon 14
Client: Enercon Services, Inc.
Date: November 16, 2015

General Information:

5 samples were analyzed for PGH-R-034. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/26368

N2: The lab does not hold TNI accreditation for this parameter.

- BLANK (Lab ID: 964056)
- Carbon-14

QC Batch: RADC/26697

N2: The lab does not hold TNI accreditation for this parameter.

- BLANK (Lab ID: 977712)
- Carbon-14

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

Sample: VS-0001-1 Lab ID: 30161079001 Collected: 09/24/15 14:20 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Comments: • Sample collection dates and times were not present on the sample.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.018 (0.116) C:NA T:NA	pCi/g	10/14/15 15:34	10045-97-3	
Cobalt-57	EPA 901.1	0.422 ± 0.150 (0.775) C:NA T:NA	pCi/g	10/14/15 15:34	13981-50-5	
Cobalt-60	EPA 901.1	0.234 ± 0.085 (0.094) C:NA T:NA	pCi/g	10/14/15 15:34	10198-40-0	
Europium-152	EPA 901.1	8.673 ± 1.606 (0.813) C:NA T:NA	pCi/g	10/14/15 15:34	14683-23-9	
Europium-154	EPA 901.1	0.030 ± 0.053 (0.234) C:NA T:NA	pCi/g	10/14/15 15:34	15585-10-1	
Tritium	RP580	0.111 ± 0.435 (0.765) C:NA T:NA	pCi/g	10/08/15 20:22	10028-17-8	
Iron-55	ASTM D4922-97	-0.033 ± 1.407 (2.486) C:NA T:83%	pCi/g	10/19/15 06:26	14681-59-5	
Nickel-63	RP300	1.206 ± 0.972 (2.604) C:82% T:NA	pCi/g	10/18/15 23:36	13981-37-8	
Carbon-14	PGH-R-034	0.000 ± 0.169 (0.322) C:NA T:NA	pCi/g	10/19/15 21:38	14762-75-5	

Sample: VS-0001-2 Lab ID: 30161079002 Collected: 09/24/15 14:20 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Comments: • Sample collection dates and times were not present on the sample.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.010 ± 0.044 (0.047) C:NA T:NA	pCi/g	10/14/15 17:13	10045-97-3	
Cobalt-57	EPA 901.1	0.067 ± 0.039 (0.228) C:NA T:NA	pCi/g	10/14/15 17:13	13981-50-5	
Cobalt-60	EPA 901.1	0.135 ± 0.040 (0.045) C:NA T:NA	pCi/g	10/14/15 17:13	10198-40-0	
Europium-152	EPA 901.1	3.240 ± 0.618 (0.356) C:NA T:NA	pCi/g	10/14/15 17:13	14683-23-9	
Europium-154	EPA 901.1	0.124 ± 0.083 (0.062) C:NA T:NA	pCi/g	10/14/15 17:13	15585-10-1	

Sample: VS-0001-3 Lab ID: 30161079003 Collected: 09/24/15 14:20 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Comments: • Sample collection dates and times were not present on the sample.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.014 (0.061) C:NA T:NA	pCi/g	10/13/15 16:31	10045-97-3	
Cobalt-57	EPA 901.1	0.000 ± 0.011 (0.032) C:NA T:NA	pCi/g	10/13/15 16:31	13981-50-5	
Cobalt-60	EPA 901.1	2.129 ± 0.248 (0.024) C:NA T:NA	pCi/g	10/13/15 16:31	10198-40-0	
Europium-152	EPA 901.1	0.202 ± 0.209 (0.086) C:NA T:NA	pCi/g	10/13/15 16:31	14683-23-9	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30161079

Sample: VS-0001-3 Lab ID: 30161079003 Collected: 09/24/15 14:20 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Comments: • Sample collection dates and times were not present on the sample.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Europium-154	EPA 901.1	0.023 ± 0.041 (0.050) C:NA T:NA	pCi/g	10/13/15 16:31	15585-10-1	

Sample: VS-0001-4 Lab ID: 30161079004 Collected: 09/24/15 14:20 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Comments: • Sample collection dates and times were not present on the sample.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.017 (0.081) C:NA T:NA	pCi/g	10/15/15 15:50	10045-97-3	
Cobalt-57	EPA 901.1	0.340 ± 0.281 (0.325) C:NA T:NA	pCi/g	10/15/15 15:50	13981-50-5	
Cobalt-60	EPA 901.1	0.040 ± 0.037 (0.096) C:NA T:NA	pCi/g	10/15/15 15:50	10198-40-0	
Europium-152	EPA 901.1	2.215 ± 0.509 (0.396) C:NA T:NA	pCi/g	10/15/15 15:50	14683-23-9	
Europium-154	EPA 901.1	0.010 ± 0.096 (0.114) C:NA T:NA	pCi/g	10/15/15 15:50	15585-10-1	

Sample: VS-0001-5 Lab ID: 30161079005 Collected: 09/24/15 14:20 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.058 ± 0.063 (0.069) C:NA T:NA	pCi/g	10/14/15 16:24	10045-97-3	
Cobalt-57	EPA 901.1	0.374 ± 0.090 (0.542) C:NA T:NA	pCi/g	10/14/15 16:24	13981-50-5	
Cobalt-60	EPA 901.1	0.076 ± 0.054 (0.060) C:NA T:NA	pCi/g	10/14/15 16:24	10198-40-0	
Europium-152	EPA 901.1	1.975 ± 0.833 (0.633) C:NA T:NA	pCi/g	10/14/15 16:24	14683-23-9	
Europium-154	EPA 901.1	0.078 ± 0.104 (0.196) C:NA T:NA	pCi/g	10/14/15 16:24	15585-10-1	

Sample: VS-0002-1 Lab ID: 30161079006 Collected: 09/25/15 09:30 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.081 ± 0.138 (0.152) C:NA T:NA	pCi/g	10/15/15 15:32	10045-97-3	
Cobalt-57	EPA 901.1	3.998 ± 0.562 (0.985) C:NA T:NA	pCi/g	10/15/15 15:32	13981-50-5	
Cobalt-60	EPA 901.1	0.438 ± 0.121 (0.055) C:NA T:NA	pCi/g	10/15/15 15:32	10198-40-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

Sample: VS-0002-1 Lab ID: 30161079006 Collected: 09/25/15 09:30 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Europium-152	EPA 901.1	14.609 ± 2.014 (1.160) C:NA T:NA	pCi/g	10/15/15 15:32	14683-23-9	
Europium-154	EPA 901.1	0.447 ± 0.270 (0.285) C:NA T:NA	pCi/g	10/15/15 15:32	15585-10-1	
Tritium	RP580	2.41 ± 0.759 (0.932) C:NA T:NA	pCi/g	10/08/15 20:53	10028-17-8	
Iron-55	ASTM D4922-97	0.026 ± 1.306 (2.293) C:NA T:83%	pCi/g	10/19/15 07:07	14681-59-5	
Nickel-63	RP300	1.346 ± 1.115 (3.503) C:59% T:NA	pCi/g	10/19/15 00:17	13981-37-8	
Carbon-14	PGH-R-034	0.315 ± 0.218 (0.323) C:NA T:NA	pCi/g	10/19/15 23:12	14762-75-5	

Sample: VS-0002-2 Lab ID: 30161079007 Collected: 09/25/15 09:30 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.017 (0.073) C:NA T:NA	pCi/g	10/13/15 17:37	10045-97-3	
Cobalt-57	EPA 901.1	0.008 ± 0.033 (0.038) C:NA T:NA	pCi/g	10/13/15 17:37	13981-50-5	
Cobalt-60	EPA 901.1	3.919 ± 0.529 (0.086) C:NA T:NA	pCi/g	10/13/15 17:37	10198-40-0	
Europium-152	EPA 901.1	0.000 ± 0.048 (0.124) C:NA T:NA	pCi/g	10/13/15 17:37	14683-23-9	
Europium-154	EPA 901.1	-0.003 ± 0.070 (0.083) C:NA T:NA	pCi/g	10/13/15 17:37	15585-10-1	

Sample: VS-0002-3 Lab ID: 30161079008 Collected: 09/25/15 09:30 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.023 ± 0.047 (0.050) C:NA T:NA	pCi/g	10/15/15 10:29	10045-97-3	
Cobalt-57	EPA 901.1	0.032 ± 0.076 (0.132) C:NA T:NA	pCi/g	10/15/15 10:29	13981-50-5	
Cobalt-60	EPA 901.1	0.077 ± 0.067 (0.090) C:NA T:NA	pCi/g	10/15/15 10:29	10198-40-0	
Europium-152	EPA 901.1	2.498 ± 0.406 (0.451) C:NA T:NA	pCi/g	10/15/15 10:29	14683-23-9	
Europium-154	EPA 901.1	0.055 ± 0.081 (0.110) C:NA T:NA	pCi/g	10/15/15 10:29	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30161079

Sample: VS-0003-1 Lab ID: 30161079009 Collected: 09/25/15 10:15 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.020 (0.053) C:NA T:NA	pCi/g	10/14/15 17:12	10045-97-3	
Cobalt-57	EPA 901.1	0.067 ± 0.078 (0.127) C:NA T:NA	pCi/g	10/14/15 17:12	13981-50-5	
Cobalt-60	EPA 901.1	0.316 ± 0.068 (0.040) C:NA T:NA	pCi/g	10/14/15 17:12	10198-40-0	
Europium-152	EPA 901.1	7.202 ± 1.130 (0.398) C:NA T:NA	pCi/g	10/14/15 17:12	14683-23-9	
Europium-154	EPA 901.1	0.187 ± 0.099 (0.105) C:NA T:NA	pCi/g	10/14/15 17:12	15585-10-1	
Tritium	RP580	1.31 ± 0.574 (0.809) C:NA T:NA	pCi/g	10/08/15 21:24	10028-17-8	
Iron-55	ASTM D4922-97	0.332 ± 1.385 (2.413) C:NA T:83%	pCi/g	10/19/15 07:48	14681-59-5	
Nickel-63	RP300	0.683 ± 0.935 (2.566) C:81% T:NA	pCi/g	10/19/15 00:58	13981-37-8	
Carbon-14	PGH-R-034	0.221 ± 0.198 (0.312) C:NA T:NA	pCi/g	10/19/15 23:43	14762-75-5	

Sample: VS-0003-2 Lab ID: 30161079010 Collected: 09/25/15 10:15 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.017 (0.070) C:NA T:NA	pCi/g	10/13/15 17:37	10045-97-3	
Cobalt-57	EPA 901.1	0.013 ± 0.019 (0.311) C:NA T:NA	pCi/g	10/13/15 17:37	13981-50-5	
Cobalt-60	EPA 901.1	2.949 ± 0.339 (0.041) C:NA T:NA	pCi/g	10/13/15 17:37	10198-40-0	
Europium-152	EPA 901.1	0.673 ± 0.549 (0.529) C:NA T:NA	pCi/g	10/13/15 17:37	14683-23-9	
Europium-154	EPA 901.1	0.100 ± 0.127 (0.069) C:NA T:NA	pCi/g	10/13/15 17:37	15585-10-1	

Sample: VS-0003-3 Lab ID: 30161079011 Collected: 09/25/15 10:15 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.043 (0.091) C:NA T:NA	pCi/g	10/15/15 10:30	10045-97-3	
Cobalt-57	EPA 901.1	0.455 ± 0.080 (0.460) C:NA T:NA	pCi/g	10/15/15 10:30	13981-50-5	
Cobalt-60	EPA 901.1	0.111 ± 0.052 (0.092) C:NA T:NA	pCi/g	10/15/15 10:30	10198-40-0	
Europium-152	EPA 901.1	2.222 ± 0.573 (0.202) C:NA T:NA	pCi/g	10/15/15 10:30	14683-23-9	
Europium-154	EPA 901.1	0.134 ± 0.150 (0.136) C:NA T:NA	pCi/g	10/15/15 10:30	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

Sample: VS-0004-1 Lab ID: 30161079012 Collected: 09/28/15 09:10 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.027 (0.118) C:NA T:NA	pCi/g	10/15/15 11:03	10045-97-3	
Cobalt-57	EPA 901.1	0.113 ± 0.131 (0.718) C:NA T:NA	pCi/g	10/15/15 11:03	13981-50-5	
Cobalt-60	EPA 901.1	0.196 ± 0.077 (0.087) C:NA T:NA	pCi/g	10/15/15 11:03	10198-40-0	
Europium-152	EPA 901.1	7.148 ± 1.356 (0.604) C:NA T:NA	pCi/g	10/15/15 11:03	14683-23-9	
Europium-154	EPA 901.1	-0.179 ± 0.219 (0.250) C:NA T:NA	pCi/g	10/15/15 11:03	15585-10-1	

Sample: VS-0004-2 Lab ID: 30161079013 Collected: 09/28/15 09:10 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.013 (0.089) C:NA T:NA	pCi/g	10/15/15 16:33	10045-97-3	
Cobalt-57	EPA 901.1	0.242 ± 0.099 (0.420) C:NA T:NA	pCi/g	10/15/15 16:33	13981-50-5	
Cobalt-60	EPA 901.1	0.123 ± 0.062 (0.070) C:NA T:NA	pCi/g	10/15/15 16:33	10198-40-0	
Europium-152	EPA 901.1	3.112 ± 0.728 (0.391) C:NA T:NA	pCi/g	10/15/15 16:33	14683-23-9	
Europium-154	EPA 901.1	0.029 ± 0.036 (0.179) C:NA T:NA	pCi/g	10/15/15 16:33	15585-10-1	

Sample: VS-0004-3 Lab ID: 30161079014 Collected: 09/28/15 09:10 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.029 (0.080) C:NA T:NA	pCi/g	10/13/15 18:45	10045-97-3	
Cobalt-57	EPA 901.1	-0.001 ± 0.038 (0.047) C:NA T:NA	pCi/g	10/13/15 18:45	13981-50-5	
Cobalt-60	EPA 901.1	1.836 ± 0.268 (0.074) C:NA T:NA	pCi/g	10/13/15 18:45	10198-40-0	
Europium-152	EPA 901.1	0.000 ± 0.056 (0.145) C:NA T:NA	pCi/g	10/13/15 18:45	14683-23-9	
Europium-154	EPA 901.1	0.029 ± 0.068 (0.081) C:NA T:NA	pCi/g	10/13/15 18:45	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

Sample: VS-0004-4 **Lab ID: 30161079015** Collected: 09/28/15 09:10 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.021 (0.050) C:NA T:NA	pCi/g	10/13/15 19:24	10045-97-3	
Cobalt-57	EPA 901.1	0.000 ± 0.012 (0.028) C:NA T:NA	pCi/g	10/13/15 19:24	13981-50-5	
Cobalt-60	EPA 901.1	1.780 ± 0.205 (0.038) C:NA T:NA	pCi/g	10/13/15 19:24	10198-40-0	
Europium-152	EPA 901.1	0.002 ± 0.068 (0.079) C:NA T:NA	pCi/g	10/13/15 19:24	14683-23-9	
Europium-154	EPA 901.1	0.089 ± 0.077 (0.054) C:NA T:NA	pCi/g	10/13/15 19:24	15585-10-1	

Sample: VS-0004-5 **Lab ID: 30161079016** Collected: 09/28/15 09:10 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.043 ± 0.051 (0.056) C:NA T:NA	pCi/g	10/15/15 11:04	10045-97-3	
Cobalt-57	EPA 901.1	0.375 ± 0.072 (0.493) C:NA T:NA	pCi/g	10/15/15 11:04	13981-50-5	
Cobalt-60	EPA 901.1	0.082 ± 0.079 (0.078) C:NA T:NA	pCi/g	10/15/15 11:04	10198-40-0	
Europium-152	EPA 901.1	2.103 ± 0.510 (0.355) C:NA T:NA	pCi/g	10/15/15 11:04	14683-23-9	
Europium-154	EPA 901.1	0.146 ± 0.127 (0.081) C:NA T:NA	pCi/g	10/15/15 11:04	15585-10-1	

Sample: VS-0005-1 **Lab ID: 30161079017** Collected: 09/28/15 10:40 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.046 (0.108) C:NA T:NA	pCi/g	10/15/15 11:35	10045-97-3	
Cobalt-57	EPA 901.1	0.167 ± 0.142 (0.715) C:NA T:NA	pCi/g	10/15/15 11:35	13981-50-5	
Cobalt-60	EPA 901.1	0.419 ± 0.089 (0.064) C:NA T:NA	pCi/g	10/15/15 11:35	10198-40-0	
Europium-152	EPA 901.1	9.704 ± 1.675 (0.641) C:NA T:NA	pCi/g	10/15/15 11:35	14683-23-9	
Europium-154	EPA 901.1	-0.176 ± 0.220 (0.252) C:NA T:NA	pCi/g	10/15/15 11:35	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30161079

Sample: VS-0005-2 **Lab ID: 30161079018** Collected: 09/28/15 10:40 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.036 (0.108) C:NA T:NA	pCi/g	10/13/15 18:46	10045-97-3	
Cobalt-57	EPA 901.1	0.038 ± 0.034 (0.040) C:NA T:NA	pCi/g	10/13/15 18:46	13981-50-5	
Cobalt-60	EPA 901.1	4.456 ± 0.500 (0.044) C:NA T:NA	pCi/g	10/13/15 18:46	10198-40-0	
Europium-152	EPA 901.1	0.109 ± 0.098 (0.116) C:NA T:NA	pCi/g	10/13/15 18:46	14683-23-9	
Europium-154	EPA 901.1	0.019 ± 0.075 (0.091) C:NA T:NA	pCi/g	10/13/15 18:46	15585-10-1	

Sample: VS-0005-3 **Lab ID: 30161079019** Collected: 09/28/15 10:40 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.017 ± 0.083 (0.095) C:NA T:NA	pCi/g	10/15/15 11:36	10045-97-3	
Cobalt-57	EPA 901.1	0.000 ± 0.099 (0.166) C:NA T:NA	pCi/g	10/15/15 11:36	13981-50-5	
Cobalt-60	EPA 901.1	0.135 ± 0.060 (0.109) C:NA T:NA	pCi/g	10/15/15 11:36	10198-40-0	
Europium-152	EPA 901.1	2.651 ± 0.421 (0.629) C:NA T:NA	pCi/g	10/15/15 11:36	14683-23-9	
Europium-154	EPA 901.1	0.186 ± 0.175 (0.165) C:NA T:NA	pCi/g	10/15/15 11:36	15585-10-1	

Sample: VS-0006-1 **Lab ID: 30161079020** Collected: 09/28/15 13:10 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.003 ± 0.093 (0.097) C:NA T:NA	pCi/g	10/15/15 12:07	10045-97-3	
Cobalt-57	EPA 901.1	0.536 ± 0.149 (0.634) C:NA T:NA	pCi/g	10/15/15 12:07	13981-50-5	
Cobalt-60	EPA 901.1	0.302 ± 0.073 (0.069) C:NA T:NA	pCi/g	10/15/15 12:07	10198-40-0	
Europium-152	EPA 901.1	9.918 ± 1.579 (0.567) C:NA T:NA	pCi/g	10/15/15 12:07	14683-23-9	
Europium-154	EPA 901.1	0.197 ± 0.118 (0.252) C:NA T:NA	pCi/g	10/15/15 12:07	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

Sample: VS-0006-2 Lab ID: 30161079021 Collected: 09/28/15 13:10 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.031 ± 0.072 (0.081) C:NA T:NA	pCi/g	10/15/15 16:14	10045-97-3	
Cobalt-57	EPA 901.1	0.976 ± 0.125 (0.429) C:NA T:NA	pCi/g	10/15/15 16:14	13981-50-5	
Cobalt-60	EPA 901.1	0.181 ± 0.058 (0.052) C:NA T:NA	pCi/g	10/15/15 16:14	10198-40-0	
Europium-152	EPA 901.1	4.721 ± 0.960 (0.502) C:NA T:NA	pCi/g	10/15/15 16:14	14683-23-9	
Europium-154	EPA 901.1	0.153 ± 0.144 (0.119) C:NA T:NA	pCi/g	10/15/15 16:14	15585-10-1	

Sample: VS-0006-3 Lab ID: 30161079022 Collected: 09/28/15 13:10 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.042 ± 0.077 (0.080) C:NA T:NA	pCi/g	10/14/15 07:59	10045-97-3	
Cobalt-57	EPA 901.1	0.038 ± 0.038 (0.051) C:NA T:NA	pCi/g	10/14/15 07:59	13981-50-5	
Cobalt-60	EPA 901.1	2.431 ± 0.351 (0.101) C:NA T:NA	pCi/g	10/14/15 07:59	10198-40-0	
Europium-152	EPA 901.1	0.027 ± 0.126 (0.150) C:NA T:NA	pCi/g	10/14/15 07:59	14683-23-9	
Europium-154	EPA 901.1	0.164 ± 0.167 (0.103) C:NA T:NA	pCi/g	10/14/15 07:59	15585-10-1	

Sample: VS-0006-4 Lab ID: 30161079023 Collected: 09/28/15 13:10 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.029 ± 0.061 (0.063) C:NA T:NA	pCi/g	10/15/15 12:38	10045-97-3	
Cobalt-57	EPA 901.1	0.384 ± 0.070 (0.468) C:NA T:NA	pCi/g	10/15/15 12:38	13981-50-5	
Cobalt-60	EPA 901.1	0.070 ± 0.049 (0.057) C:NA T:NA	pCi/g	10/15/15 12:38	10198-40-0	
Europium-152	EPA 901.1	1.854 ± 0.427 (0.293) C:NA T:NA	pCi/g	10/15/15 12:38	14683-23-9	
Europium-154	EPA 901.1	-0.049 ± 0.112 (0.131) C:NA T:NA	pCi/g	10/15/15 12:38	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

Sample: VS-0007-1 Lab ID: 30161079024 Collected: 09/28/15 15:00 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.016 ± 0.119 (0.124) C:NA T:NA	pCi/g	10/15/15 14:44	10045-97-3	
Cobalt-57	EPA 901.1	0.504 ± 0.198 (0.793) C:NA T:NA	pCi/g	10/15/15 14:44	13981-50-5	
Cobalt-60	EPA 901.1	0.494 ± 0.099 (0.067) C:NA T:NA	pCi/g	10/15/15 14:44	10198-40-0	
Europium-152	EPA 901.1	13.477 ± 2.194 (0.837) C:NA T:NA	pCi/g	10/15/15 14:44	14683-23-9	
Europium-154	EPA 901.1	-0.229 ± 0.269 (0.307) C:NA T:NA	pCi/g	10/15/15 14:44	15585-10-1	

Sample: VS-0007-2 Lab ID: 30161079025 Collected: 09/28/15 15:00 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.048 ± 0.121 (0.135) C:NA T:NA	pCi/g	10/14/15 08:00	10045-97-3	
Cobalt-57	EPA 901.1	0.009 ± 0.046 (0.057) C:NA T:NA	pCi/g	10/14/15 08:00	13981-50-5	
Cobalt-60	EPA 901.1	6.025 ± 0.688 (0.042) C:NA T:NA	pCi/g	10/14/15 08:00	10198-40-0	
Europium-152	EPA 901.1	0.065 ± 0.130 (0.159) C:NA T:NA	pCi/g	10/14/15 08:00	14683-23-9	
Europium-154	EPA 901.1	-0.041 ± 0.102 (0.126) C:NA T:NA	pCi/g	10/14/15 08:00	15585-10-1	

Sample: VS-0007-3 Lab ID: 30161079026 Collected: 09/28/15 15:00 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.018 (0.092) C:NA T:NA	pCi/g	10/15/15 13:10	10045-97-3	
Cobalt-57	EPA 901.1	0.142 ± 0.082 (0.520) C:NA T:NA	pCi/g	10/15/15 13:10	13981-50-5	
Cobalt-60	EPA 901.1	0.183 ± 0.065 (0.052) C:NA T:NA	pCi/g	10/15/15 13:10	10198-40-0	
Europium-152	EPA 901.1	3.655 ± 0.695 (0.384) C:NA T:NA	pCi/g	10/15/15 13:10	14683-23-9	
Europium-154	EPA 901.1	-0.105 ± 0.135 (0.155) C:NA T:NA	pCi/g	10/15/15 13:10	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30161079

Sample: VS-0008-1 Lab ID: 30161079027 Collected: 09/29/15 09:30 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.006 (0.034) C:NA T:NA	pCi/g	10/15/15 16:59	10045-97-3	
Cobalt-57	EPA 901.1	0.000 ± 0.014 (0.023) C:NA T:NA	pCi/g	10/15/15 16:59	13981-50-5	
Cobalt-60	EPA 901.1	0.059 ± 0.047 (0.036) C:NA T:NA	pCi/g	10/15/15 16:59	10198-40-0	
Europium-152	EPA 901.1	0.411 ± 0.211 (0.206) C:NA T:NA	pCi/g	10/15/15 16:59	14683-23-9	
Europium-154	EPA 901.1	0.008 ± 0.029 (0.035) C:NA T:NA	pCi/g	10/15/15 16:59	15585-10-1	
Tritium	RP580	0.113 ± 0.443 (0.778) C:NA T:NA	pCi/g	10/08/15 21:55	10028-17-8	
Iron-55	ASTM D4922-97	-0.473 ± 1.318 (2.374) C:NA T:83%	pCi/g	10/19/15 08:29	14681-59-5	
Nickel-63	RP300	-0.325 ± 0.913 (2.750) C:75% T:NA	pCi/g	10/19/15 01:39	13981-37-8	
Carbon-14	PGH-R-034	0.130 ± 0.190 (0.323) C:NA T:NA	pCi/g	10/20/15 00:15	14762-75-5	

Sample: VS-0008-2 Lab ID: 30161079028 Collected: 09/29/15 09:30 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.038 ± 0.032 (0.031) C:NA T:NA	pCi/g	10/14/15 08:34	10045-97-3	
Cobalt-57	EPA 901.1	-0.015 ± 0.036 (0.044) C:NA T:NA	pCi/g	10/14/15 08:34	13981-50-5	
Cobalt-60	EPA 901.1	0.089 ± 0.058 (0.056) C:NA T:NA	pCi/g	10/14/15 08:34	10198-40-0	
Europium-152	EPA 901.1	0.076 ± 0.092 (0.134) C:NA T:NA	pCi/g	10/14/15 08:34	14683-23-9	
Europium-154	EPA 901.1	0.008 ± 0.057 (0.071) C:NA T:NA	pCi/g	10/14/15 08:34	15585-10-1	

Sample: VS-0008-3 Lab ID: 30161079029 Collected: 09/29/15 09:30 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.008 (0.064) C:NA T:NA	pCi/g	10/15/15 15:17	10045-97-3	
Cobalt-57	EPA 901.1	0.024 ± 0.034 (0.055) C:NA T:NA	pCi/g	10/15/15 15:17	13981-50-5	
Cobalt-60	EPA 901.1	0.011 ± 0.055 (0.059) C:NA T:NA	pCi/g	10/15/15 15:17	10198-40-0	
Europium-152	EPA 901.1	0.646 ± 0.433 (0.383) C:NA T:NA	pCi/g	10/15/15 15:17	14683-23-9	
Europium-154	EPA 901.1	0.076 ± 0.072 (0.118) C:NA T:NA	pCi/g	10/15/15 15:17	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30161079

Sample: VS-0008-3 **Lab ID: 30161079029** Collected: 09/29/15 09:30 Received: 10/05/15 09:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Tritium	RP580	0.641 ± 0.463 (0.722) C:NA T:NA	uCi/g	11/06/15 19:07	10028-17-8	
Iron-55	ASTM D4922-97	0.416 ± 1.516 (2.627) C:NA T:86%	pCi/g	11/05/15 21:40	14681-59-5	
Nickel-63	RP300	-0.098 ± 1.137 (3.219) C:87% T:NA	pCi/g	11/05/15 14:57	13981-37-8	
Carbon-14	PGH-R-034	-0.187 ± 0.281 (0.595) C:NA T:NA	uCi/g	11/12/15 21:32	14762-75-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

QC Batch:	RADC/26315	Analysis Method:	EPA 901.1
QC Batch Method:	EPA 901.1	Analysis Description:	901.1 Gamma Spec
Associated Lab Samples:	30161079002, 30161079027		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

QC Batch:	RADC/26629	Analysis Method:	RP300
QC Batch Method:	RP300	Analysis Description:	PGH-R-013 Nickel 59/63
Associated Lab Samples:	30161079029		

METHOD BLANK:	974324	Matrix:	Solid
Associated Lab Samples:	30161079029		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Nickel-63	-0.203 ± 1.231 (3.806) C:74% T:NA	pCi/g	11/05/15 14:27	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

QC Batch:	RADC/26374	Analysis Method:	RP300
QC Batch Method:	RP300	Analysis Description:	PGH-R-013 Nickel 59/63
Associated Lab Samples:	30161079001, 30161079006, 30161079009, 30161079027		

METHOD BLANK:	964505	Matrix:	Solid
---------------	--------	---------	-------

Associated Lab Samples: 30161079001, 30161079006, 30161079009, 30161079027

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Nickel-63	0.561 ± 1.053 (3.349) C:65% T:NA	pCi/g	10/18/15 22:55	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

QC Batch:	RADC/26368	Analysis Method:	PGH-R-034
QC Batch Method:	PGH-R-034	Analysis Description:	PGH-R-034 Carbon 14
Associated Lab Samples:	30161079001, 30161079006, 30161079009, 30161079027		

METHOD BLANK:	964056	Matrix:	Solid
---------------	--------	---------	-------

Associated Lab Samples: 30161079001, 30161079006, 30161079009, 30161079027

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Carbon-14	-0.056 ± 0.160 (0.322) C:NA T:NA	pCi/g	10/20/15 01:18	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30161079

QC Batch:	RADC/26413	Analysis Method:	EPA 901.1
QC Batch Method:	EPA 901.1	Analysis Description:	901.1 Gamma Spec
Associated Lab Samples:	30161079005, 30161079006, 30161079008, 30161079011, 30161079012, 30161079016, 30161079017, 30161079019, 30161079020, 30161079023, 30161079024, 30161079026, 30161079029		

METHOD BLANK: 967289

Matrix: Solid

Associated Lab Samples: 30161079005, 30161079006, 30161079008, 30161079011, 30161079012, 30161079016, 30161079017, 30161079019, 30161079020, 30161079023, 30161079024, 30161079026, 30161079029

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Cesium-137	0.015 ± 0.048 (0.057) C:NA T:NA	pCi/g	10/14/15 16:06	
Cobalt-57	0.017 ± 0.037 (0.045) C:NA T:NA	pCi/g	10/14/15 16:06	
Cobalt-60	0.000 ± 0.011 (0.136) C:NA T:NA	pCi/g	10/14/15 16:06	
Europium-152	0.000 ± 0.080 (0.186) C:NA T:NA	pCi/g	10/14/15 16:06	
Europium-154	0.044 ± 0.036 (0.114) C:NA T:NA	pCi/g	10/14/15 16:06	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

QC Batch:	RADC/26373	Analysis Method:	ASTM D4922-97
QC Batch Method:	ASTM D4922-97	Analysis Description:	D4922-97 Iron-55
Associated Lab Samples:	30161079001, 30161079006, 30161079009, 30161079027		

METHOD BLANK:	964504	Matrix:	Solid
Associated Lab Samples:	30161079001, 30161079006, 30161079009, 30161079027		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Iron-55	-0.413 ± 1.263 (2.252) C:NA T:89%	pCi/g	10/19/15 05:45	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

QC Batch:	RADC/26403	Analysis Method:	EPA 901.1
QC Batch Method:	EPA 901.1	Analysis Description:	901.1 Gamma Spec
Associated Lab Samples:	30161079001, 30161079003, 30161079004, 30161079007, 30161079009, 30161079010, 30161079013, 30161079014, 30161079015, 30161079018, 30161079021, 30161079022, 30161079025, 30161079028		

METHOD BLANK:	966702	Matrix:	Solid
Associated Lab Samples:	30161079001, 30161079003, 30161079004, 30161079007, 30161079009, 30161079010, 30161079013, 30161079014, 30161079015, 30161079018, 30161079021, 30161079022, 30161079025, 30161079028		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Cesium-137	0.000 ± 0.004 (0.043) C:NA T:NA	pCi/g	10/13/15 16:14	
Cobalt-57	-0.011 ± 0.025 (0.029) C:NA T:NA	pCi/g	10/13/15 16:14	
Cobalt-60	0.013 ± 0.038 (0.040) C:NA T:NA	pCi/g	10/13/15 16:14	
Europium-152	0.000 ± 0.016 (0.083) C:NA T:NA	pCi/g	10/13/15 16:14	
Europium-154	-0.012 ± 0.048 (0.058) C:NA T:NA	pCi/g	10/13/15 16:14	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30161079

QC Batch: RADC/26697

Analysis Method: PGH-R-034

QC Batch Method: PGH-R-034

Analysis Description: PGH-R-034 Carbon 14

Associated Lab Samples: 30161079029

METHOD BLANK: 977712

Matrix: Solid

Associated Lab Samples: 30161079029

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Carbon-14	0.053 ± 0.328 (0.609) C:NA T:NA	uCi/g	11/12/15 18:48	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30161079

QC Batch: RADC/26710

Analysis Method: RP580

QC Batch Method: RP580

Analysis Description: 906.0 Tritium

Associated Lab Samples: 30161079029

METHOD BLANK: 978420

Matrix: Solid

Associated Lab Samples: 30161079029

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Tritium	-0.0361 ± 0.187 (0.344) C:NA T:NA	uCi/g	11/06/15 18:36	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

QC Batch:	RADC/26319	Analysis Method:	RP580
QC Batch Method:	RP580	Analysis Description:	906.0 Tritium
Associated Lab Samples: 30161079001, 30161079006, 30161079009, 30161079027			

METHOD BLANK:	963162	Matrix:	Solid
Associated Lab Samples: 30161079001, 30161079006, 30161079009, 30161079027			

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Tritium	-0.0192 ± 0.208 (0.377) C:NA T:NA	pCi/g	10/08/15 19:51	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30161079

QC Batch:	RADC/26673	Analysis Method:	ASTM D4922-97
QC Batch Method:	ASTM D4922-97	Analysis Description:	D4922-97 Iron-55
Associated Lab Samples:	30161079029		

METHOD BLANK:	976700	Matrix:	Solid
Associated Lab Samples:	30161079029		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Iron-55	1.165 ± 1.641 (2.754) C:NA T:86%	pCi/g	11/05/15 21:09	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALIFIERS

Project: AJ Blotcky
Pace Project No.: 30161079

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

WORKORDER QUALIFIERS

WO: 30161079

- [1] Samples received identified as "steel" samples by the client could not be processed to match the exact calibration geometry for gamma spectroscopy analysis. Each steel sample received was placed in the bottom of a 4-ounce can. None of the steel samples were of sufficient size as to fill the entire volume of the cans used. Reported gamma-spec results for the steel samples should be construed as over-estimated based on differences between the sample configuration and the calibration source used for analysis. Reported results for these samples are likely over-estimated by approximately 25%.
- [2] The LCS recovery associated with the Fe-55 analysis of samples 30161079001, 30161079006, 30161079009, and 30161079027 was low and outside of Pace's default acceptance criteria for LCS recovery. The recovery was 68%. Both the LCSD and MS recoveries were acceptable. Data is being reported as possibly biased low.

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc. - Pittsburgh Chain of Custody/Analytical Request Record


Page 1 of 3

AJ Blotoky	2015-EFS035-001	EF5035	Todd Brautigam
Project Name	COC #	Project #	Sampler (Print/Sign)

Client P.O.	EF5035
Charge #	EF5035

Requested by (Print/Sign)	Date/Time	Received by (Print/Sign)	Date/Time
Requested by (Print/Sign)	Date/Time	Received by (Print/Sign)	Date/Time
Requested by (Print/Sign)	Date/Time	Received by (Print/Sign)	Date/Time

Lab Use Only
Project # 30161079

 <p>Shipping Address: Pace Analytical Services, Inc.-Pittsburgh 1638 Roseytown Road, Suites 2, 3 & 4 Greensburg, PA 15601 724-850-5600 724-850-5601 (fax)</p>	<p>container type (see legend)</p> <p># of containers</p> <p>analyze solids</p> <p>grab sample</p> <p>composite sample</p>	<p>pH / Sp Cond (circle)</p> <p>Iron, total</p> <p>Aluminum, total</p> <p>Manganese, total</p> <p>TSS / TDS (circle)</p> <p>Total Nitrate Total PO4 Total SO4 (circle)</p> <p>Leachable Nitrate Leachable Cl (circle)</p> <p>Leachable Nitrate Leachable PO4 (circle)</p> <p>ICP (Full Elemental Scan)</p> <p>H-3</p> <p>C-14</p> <p>Fe-55</p> <p>Co-57</p> <p>Co-60</p> <p>Ni-63</p> <p>Cs-137</p> <p>Eu-152</p> <p>Eu-154</p> <p>other (as listed)</p>
---	--	--

<p>Container Legend</p> <p>L = bottle, 1L poly</p> <p>S = bottle, 500mL poly</p> <p>Z = bottle, 250mL poly</p> <p>1 = bottle, 100mL poly</p> <p>B = Bag, lg poly (12"x12")</p> <p>b = bag, sm poly (6"x6")</p> <p>F = Filter, 52mm</p> <p>f = filter, 26mm</p> <p>G = jar, 1L Glass</p> <p>g = jar, 500mL glass</p>	<p>10CFR61 List</p> <p>gamma spec</p> <p>H-3 C-14</p> <p>Fe-55 Ni-63</p> <p>Sr-90 Tc-99</p> <p>I-129 Pu-241</p> <p>Am-isotopic</p> <p>Cm-isotopic</p> <p>Pu-isotopic</p>
--	---

5 Sample Information																					
SAMPLE IDENTIFICATION	DATE	TIME	DESCRIPTION																		
VS-0001-1	9/24/2015	2:20:00 PM	Gunita	B	1																
VS-0001-2	9/24/2015	2:20:00 PM	Gunita	B	1																
VS-0001-3	9/24/2015	2:20:00 PM	Steel	B	1																
VS-0001-4	9/24/2015	2:20:00 PM	Concrete	B	1																
VS-0001-5	9/24/2015	2:20:00 PM	Concrete	B	1																
VS-0002-1	9/25/2015	9:30:00 AM	Gunita	B	1																
VS-0002-2	9/25/2015	9:30:00 AM	Steel	B	1																
VS-0002-3	9/25/2015	9:30:00 AM	Concrete	B	1																
VS-0003-1	9/25/2015	10:15:00 AM	Gunita	B	1																
VS-0003-2	9/25/2015	10:15:00 AM	Steel	B	1																

Lab Use Only
Lab Sample ID
001
002
003
004
005
006
007
008
009
010

7 Special Instructions
7 business day TAT
Please notify prior to disposal

8 QA and Record Retention	Yes	No
10CFR50/NQA-1 request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10CFR Part 21 request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Site Remediation request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Utah disposal request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

9 Sample Disposition
<input type="checkbox"/> Return to Client
<input checked="" type="checkbox"/> Disposal by Pace
<input type="checkbox"/> Archive per agreement

10 Results to:	Todd Brautigam (tbrautigam@enercon.com)
Copy to:	Frank Brown (forown@enercon.com)
	Chris Higgins (christopher.higgins@eecom.com)
Invoice to:	Frank Brown
	1501 Ardmore Blvd.
	Suite 200
	Pittsburgh, PA 15221

11 Lab Use Only
Sample Condition

12 Required Detection Limits
See attached for required MDAs

13
Report due date
Fields 6 and 11 to be completed ONLY by laboratory personnel. All other fields are REQUIRED to be completed by client. All requests beyond the scope of this Chain of Custody/Analytical Request Record MUST be indicated in field 7-Special Instructions. Client representative/agent and PACE agent signatures indicate acceptance of terms and conditions of this record and the mutually agreed upon report due date as indicated above.

Pace Analytical Agent Acceptance

 Client Agent Acceptance
 Date 10-1-2015

Pace Analytical Services, Inc. - Pittsburgh Chain of Custody/Analytical Request Record


Page 2 of 3

AJ Blotcky	2015-EFS035-001	EFS035	Todd Brautigam
Project Name	COC #	Project #	Sampler (Print/Sign)

Client P.O.	EFS035
Charge #	EFS035

Relinquished by (Print/Sign)	Date/Time	Received by (Print/Sign)	Date/Time
Relinquished by (Print/Sign)	Date/Time	Received by (Print/Sign)	Date/Time
Relinquished by (Print/Sign)	Date/Time	Received by (Print/Sign)	Date/Time

Lab Use Only
30161079
Project #

 <p>Shipping Address: Pace Analytical Services, Inc.-Pittsburgh 1638 Roseytown Road, Suites 2, 3 & 4 Greensburg, PA 15601 724-850-5600 724-850-5601 (fax)</p>	container type (see legend)	# of containers	analyze solids	grab sample	composite sample
	<p>pH / Sp. Cond (circle) Iron, total Aluminum, total Manganese, total TSS / TDS (circle) Total NQX Total PO4 Total SO4 (circle) Leachable Nitrate PO4 (circle) Leachable Nitrate PO4 (circle) ICP (Full Elemental Scan) H-3 C-14 Fe-55 Co-57 Co-60 Ni-63 Cs-137 Eu-152 Eu-154</p>				

Container Legend L = bottle, 1L poly S = bottle, 500mL poly Z = bottle, 250mL poly 1 = bottle, 100mL poly B = Bag, 1g poly (12"x12") b = bag, 5m poly (6"x6") F = Filter, 52mm f = filter, 28mm G = jar, 1L Glass g = jar, 500mL glass	10CFR61 List gamma spec H-3 C-14 Fe-55 Ni-63 Sr-90 Tc-99 I-129 Pu-241 Am-isotopic Cm-isotopic Pu-isotopic
---	--

5 Sample Information																		
SAMPLE IDENTIFICATION	DATE	TIME	DESCRIPTION															
VS-0003-3	9/25/2015	10:15:00 AM	Concrete	B	1													
VS-0004-1	9/28/2015	9:10:00 AM	Gunita	B	1													
VS-0004-2	9/28/2015	9:10:00 AM	Gunita	B	1													
VS-0004-3	9/28/2015	9:10:00 AM	Steel	B	1													
VS-0004-4	9/28/2015	9:10:00 AM	Steel	B	1													
VS-0004-5	9/28/2015	9:10:00 AM	Concrete	B	1													
VS-0005-1	9/28/2015	10:40:00 AM	Gunita	B	1													
VS-0005-2	9/28/2015	10:40:00 AM	Steel	B	1													
VS-0005-3	9/28/2015	10:40:00 AM	Concrete	B	1													
VS-0006-1	9/28/2015	1:10:00 PM	Gunita	B	1													

Lab Use Only
Lab Sample ID
01
02
03
04
05
06
07
08
09
10

7 Special Instructions 7 business day TAT Please notify prior to disposal

9 QA and Record Retention 10CFR50/NQA-1 request? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 10CFR Part 21 request? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Site Remediation request? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Utah disposal request? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--

9 Sample Disposition <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Pace <input type="checkbox"/> Archive per agreement

10 Results to: Todd Brautigam (tbrautigam@energcon.com) Copy to: Frank Brown (fbrown@energcon.com) Chris Higgins (christopher.higgins@energcon.com) Invoice to: Frank Brown 1501 Ardmore Blvd. Suite 200 Pittsburgh, PA 15221

11 Lab Use Only Sample Condition

12 Required Detection Limits See attached for required MDAs
--

13 Report due date 10/12/2015 Fields 6 and 11 to be completed ONLY by laboratory personnel. All other fields are REQUIRED to be completed by client. All requests beyond the scope of this Chain of Custody/Analytical Request Record MUST be indicated in field 7-Special Instructions. Client representative/agent and PACE agent signatures indicate acceptance of terms and conditions of this record and the mutually agreed upon report due date as indicated above.
--

Pace Analytical Agent Acceptance	Date
Acceptance signature and date on page 1	
Client Agent Acceptance	Date

14 Westinghouse Procurement Restrictions: These are the procurement restrictions as of DATE: The Westinghouse Requisitioner is responsible for verifying that the restrictions listed below are current and correct. The restrictions can be verified at: http://worldwide.westinghouseanuclear.com/QLS/private/B.asp or by taking the path of Our Organization->Quality->Qualified Supplier's List through the Westinghouse Intranet. The following restrictions apply to Pace Analytical Services, Inc.: 1) Westinghouse shall perform an annual audit/commercial grade survey of this supplier. 2) Sub-Tier suppliers providing safety-related items or services shall be qualified by Commercial dedication through Supplier commercial dedication program or the services must be procured from suppliers on the Westinghouse Qualified Supplier List, as specified in the Westinghouse Purchase Order Signature of the Requestor:	R052-0 07Aug2009
---	------------------

Page 3 of 3

2	
Client: P.O.	EFS035
Charge #	EFS035

4: Lab-Use Only
~
30161079
Project #

Container Legend	10CFR51 List
L = bottle, 1L poly	gamma spec
S = bottle, 500mL poly	H-3 C-14
2 = bottle, 250mL poly	Fe-55 Ni-63
1 = bottle, 100mL poly	Sr-90 Tc-99
B = Bag, 1g poly (12"x12")	I-129 Pu-241
b = bag, sm poly (6"x6")	Am-isotopic
F = Filter, 52mm	Cm-isotopic
f = filter, 26mm	Pu-isotopic
G = jar, 1L Glass	
g = jar, 500mL glass	

5	Lab Use Only
	Lab Section ID
021	
022	
023	
024	
025	
026	
027	
028	
029	

QA and Records Retention	Yes	No	Sample Disposition
10CFR50/QA-1 request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Return to Client
10CFR Part 21 request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Dispose by Face
Site Remediation request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Archive per agreement
Utah disposal request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

10 Results to: Todd Bräutigam (tbrautigam@aneron.com)

Copy to: Frank Brown (fbrown@aneron.com)
Chris Higgins (christopher.higgins@aecom.com)

Invoice to: Frank Brown
1501 Ardmore Blvd.
Suite 200
Pittsburgh, PA 15221

12 Required Detection Limits	
See attached for required MDAs	

14 Westinghouse Procurement Restrictions: These are the procurement restrictions as of DATE: _____
The Westinghouse Requisitioner is responsible for verifying that the restrictions listed below are current and correct. The restrictions can be verified at: <http://worldwide.westinghouse-nuclear.com/QSL/private/B.asp> or by taking the path of Our Organization->Quality->Qualified Supplier's List through the Westinghouse Intranet. The following restrictions apply to Pace Analytical Services, Inc.: 1) Westinghouse shall perform an annual audit/commercial grade survey of this supplier. 2) Sub-Tier suppliers providing safety-related items or services shall be qualified by Commercial dedication through Supplier commercial dedication program or the services must be procured from suppliers on the Westinghouse Qualified Supplier List, as specified in the Westinghouse Purchase Order.

Signature of the Requestor: _____ R052-0 07Aug2009



Sample Condition Upon Receipt

MSV

Client Name: Enercon

Project # 30161079

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 78143304035

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue Is Frozen: Yes No

Packing Material: Bubble Wrap _____ Bubble Bags _____ None ☒ Other _____

Thermometer Used NA Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C Correction Factor: _____ °C Final Temp: _____ °C

Date and Initials of person
examining contents: LEW 10/5/15

Temp should be above freezing to 8°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4. <u>no signature</u>
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10. <u>LEW 10/5/15</u>
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. <u>no times on samples VS-0001-1 and</u>
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>VS-0001-2 and VS-0001-3 and</u>
-Includes date/time/ID/Analysis Matrix: <u>SV</u>		13. <u>VS-0001-4 were in ziplocks</u>
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. <u>together. Put each sample in</u>
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15. <u>its own bag.</u>
exceptions: VOA, coliform, TOC, O&G, Phenols	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed <u>LEW</u> Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review:

Date: 10/6/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)


Pace Analytical Services, Inc. - Pittsburgh Chain of Custody/Analytical Request Record

Page 3 of 3

A.J. Blotky		2015-EFS035-001	EFS035	Todd Brauligam
Project Name		COC #	Project #	Sampler / Print/Sign
3 Frank Brown				13m Martin 11-2-15 10:05
Relinquished by (Print/Sign)		Date/Time	Received by (Print/Sign)	Date/Time
Relinquished by (Print/Sign)		Date/Time	Received by (Print/Sign)	Date/Time
Relinquished by (Print/Sign)		Date/Time	Received by (Print/Sign)	Date/Time

Client P.O.	EFS035
Charge #	EFS035

Lab Use Only
30161079
Project #

 <p>Shipping Address: Pace Analytical Services, Inc.-Pittsburgh 1638 Rosaytown Road, Suites 2, 3 & 4 Greensburg, PA 15601 724-850-5600 724-850-5601 (fax)</p>		container type (see legend) # of containers analyze solids grab sample composite sample	pH / Sp. Cond (circle) Iron, total Aluminum, total Magnesium, total TSS / TDS (circle) Total Hg/Total Pb/Total Cd Leachable Pb/Leachable Cd/Leachable Cu Leachable Ni/Leachable Cr/Leachable Zn Leachable SO4 ICP (Full Elemental Scan) H-3 C-14 Fe-55 Co-57 Co-60 Ni-63 Cs-137 Eu-152 Eu-154	other (as listed)
---	--	---	---	-------------------

Container Legend L = bottle, 1L poly 5 = bottle, 500mL poly 2 = bottle, 250mL poly 1 = bottle, 100mL poly B = Bag, lg poly (12"x12") b = bag, sm poly (6"x6") F = Filter, 52mm f = filter, 26mm g = jar, 1L Glass G = jar, 500mL glass	10CFR61 List gamma spec H-3 C-14 Fe-55 Ni-63 Sr-90 Tc-99 I-129 Pu-241 Am-isotopic Cm-isotopic Pu-isotopic
---	--

5 Sample Information															
SAMPLE IDENTIFICATION	DATE	TIME	DESCRIPTION												
VS-0006-2	9/28/2015	1:10:00 PM	Gunite	B	1								X	X	X
VS-0006-3	9/28/2015	1:10:00 PM	Steel	B	1								X	X	X
VS-0006-4	9/28/2015	1:10:00 PM	Concrete	B	1								X	X	X
VS-0007-1	9/28/2015	3:00:00 PM	Gunite	B	1								X	X	X
VS-0007-2	9/28/2015	3:00:00 PM	Steel	B	1								X	X	X
VS-0007-3	9/28/2015	3:00:00 PM	Concrete	B	1								X	X	X
VS-0008-1	9/29/2015	9:30:00 AM	Gunite	B	1							X	X	X	X
VS-0008-2	9/29/2015	9:30:00 AM	Steel	B	1							X	X	X	X
VS-0008-3	9/29/2015	9:30:00 AM	Concrete	B	1							X	X	X	X
N/A	N/A	N/A	N/A												

7 Special Instructions
7 business day TAT
Please notify prior to disposal

9 QA and Record Retention	Yes	No
10CFR50/NQA-1 request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10CFR Part 21 request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Site Remediation request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Utah disposal request?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

9 Sample Disposition
<input type="checkbox"/> Return to Client
<input checked="" type="checkbox"/> Disposal by Pace
<input type="checkbox"/> Archive per agreement

10 Results to:	Todd Brauligam (tbrauligam@enercon.com)
Copy to:	Frank Brown (fbrown@enercon.com) Chris Higgins (christopher.higgins@aecom.com)
Invoice to:	Frank Brown 1501 Ardmore Blvd. Suite 200 Pittsburgh, PA 15221

11 Lab Use Only
Sample Conditions

12 Required Detection Limits
See attached for required MDA

13
10/12/2015
Report due date

Fields 8 and 11 to be completed ONLY by laboratory personnel. All other fields are REQUIRED to be completed by client. All requests beyond the scope of this Chain of Custody/Analytical Request Record MUST be indicated in field 7-Special Instructions. Client representative/agent and PACE agent signatures indicate acceptance of terms and conditions of this record and the mutually agreed upon report due date as indicated above.

Pace Analytical Agent Acceptance	Date
Acceptance signature and date on page 1	
Client Agent Acceptance	Date

14 Westinghouse Procurement Restrictions: These are the procurement restrictions as of DATE:
The Westinghouse Requisitioner is responsible for verifying that the restrictions listed below are current and correct. The restrictions can be verified at: http://worldwide.westinghouse-nuclear.com/QSL/private/B.asp or by taking the path of Our Organization->Quality->Qualified Supplier's List through the Westinghouse Intranet. The following restrictions apply to Pace Analytical Services, Inc.: 1) Westinghouse shall perform an annual audit/commercial grade survey of this supplier. 2) Sub-Tier suppliers providing safety-related items or services shall be qualified by Commercial dedication through Supplier commercial dedication program or the services must be procured from suppliers on the Westinghouse Qualified Supplier List, as specified in the Westinghouse Purchase Order.
Signature of the Requestor:



Sample Condition Upon Receipt

Client Name: ENERCON

Project # 30161079

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z F10 F74 03 9161 7984

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue Is Frozen: Yes No

Packing Material: Bubble Wrap _____ Bubble Bags _____ None ☒ Other _____

Thermometer Used N/A Type of Ice: Wet Blue ☒ None ☐ Samples on Ice, cooling process has begun

Cooler Temp.: Observed Temp.: N/A °C Correction Factor: _____ °C Final Temp: _____ °C

Date and initials of person

examining contents: BLM 11-2-5

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>SL</u>		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed <u>BLM</u> Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 11/3/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Project Number:

Client Name:

30161079
Enercon

[illegible]

November 16, 2015

Mr. Todd Brautigam
Enercon Services, Inc.
1501 Ardmore Blvd, Suite 200
Pittsburgh, PA 15221

RE: Project: AJ Blotcky
Pace Project No.: 30163346

Dear Mr. Brautigam:

Enclosed are the analytical results for sample(s) received by the laboratory on October 28, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Report reissued 11/16/15 to reflect the units as pCi/g. All results correct pCi/g.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jacquelyn Collins
jacquelyn.collins@pacelabs.com
Project Manager

Enclosures

cc: Mr. Frank Brown, Enercon Services, Inc.



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

CERTIFICATIONS

Project: AJ Blotcky
Pace Project No.: 30163346

Pennsylvania Certification IDs

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235

Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

SAMPLE SUMMARY

Project: AJ Blotcky
Pace Project No.: 30163346

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30163346001	VS-0009-1	Solid	10/22/15 08:00	10/28/15 10:15
30163346002	VS-0009-2	Solid	10/22/15 08:00	10/28/15 10:15
30163346003	VS-0009-3	Solid	10/22/15 08:00	10/28/15 10:15
30163346004	VS-0010-1	Solid	10/22/15 09:00	10/28/15 10:15
30163346005	VS-0010-2	Solid	10/22/15 09:00	10/28/15 10:15
30163346006	VS-0010-3	Solid	10/22/15 09:00	10/28/15 10:15
30163346007	VS-0011-1	Solid	10/22/15 10:00	10/28/15 10:15
30163346008	VS-0011-2	Solid	10/22/15 10:00	10/28/15 10:15
30163346009	VS-0011-3	Solid	10/22/15 10:00	10/28/15 10:15

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

SAMPLE ANALYTE COUNT

Project: AJ Blotcky
Pace Project No.: 30163346

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30163346001	VS-0009-1	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1
30163346002	VS-0009-2	EPA 901.1	MAH	5
30163346003	VS-0009-3	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1
30163346004	VS-0010-1	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1
30163346005	VS-0010-2	EPA 901.1	MAH	5
30163346006	VS-0010-3	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1
30163346007	VS-0011-1	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1
30163346008	VS-0011-2	EPA 901.1	MAH	5
30163346009	VS-0011-3	EPA 901.1	MAH	5
		RP580	WRR	1
		ASTM D4922-97	JAL	1
		RP300	JAL	1
		PGH-R-034	TTF	1

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30163346

Sample: VS-0009-1 Lab ID: 30163346001 Collected: 10/22/15 08:00 Received: 10/28/15 10:15 Matrix: Solid

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.020 (0.091) C:NA T:NA	pCi/g	11/04/15 15:56	10045-97-3	
Cobalt-57	EPA 901.1	0.000 ± 0.029 (0.604) C:NA T:NA	pCi/g	11/04/15 15:56	13981-50-5	
Cobalt-60	EPA 901.1	0.000 ± 0.038 (0.087) C:NA T:NA	pCi/g	11/04/15 15:56	10198-40-0	
Europium-152	EPA 901.1	0.064 ± 0.055 (0.663) C:NA T:NA	pCi/g	11/04/15 15:56	14683-23-9	
Europium-154	EPA 901.1	0.129 ± 0.094 (0.099) C:NA T:NA	pCi/g	11/04/15 15:56	15585-10-1	
Tritium	RP580	0.302 ± 0.412 (0.692) C:NA T:NA	pCi/g	11/06/15 19:38	10028-17-8	
Iron-55	ASTM D4922-97	-0.915 ± 1.626 (3.001) C:NA T:86%	pCi/g	11/05/15 22:11	14681-59-5	
Nickel-63	RP300	-0.480 ± 1.240 (3.944) C:74% T:NA	pCi/g	11/05/15 15:59	13981-37-8	
Carbon-14	PGH-R-034	-0.027 ± 0.303 (0.587) C:NA T:NA	pCi/g	11/12/15 19:05	14762-75-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

Sample: VS-0009-2 Lab ID: 30163346002 Collected: 10/22/15 08:00 Received: 10/28/15 10:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.042 (0.050) C:NA T:NA	pCi/g	11/02/15 11:24	10045-97-3	
Cobalt-57	EPA 901.1	-0.009 ± 0.025 (0.031) C:NA T:NA	pCi/g	11/02/15 11:24	13981-50-5	
Cobalt-60	EPA 901.1	0.089 ± 0.048 (0.087) C:NA T:NA	pCi/g	11/02/15 11:24	10198-40-0	
Europium-152	EPA 901.1	0.000 ± 0.017 (0.092) C:NA T:NA	pCi/g	11/02/15 11:24	14683-23-9	
Europium-154	EPA 901.1	0.000 ± 0.033 (0.062) C:NA T:NA	pCi/g	11/02/15 11:24	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30163346

Sample: VS-0009-3 Lab ID: 30163346003 Collected: 10/22/15 08:00 Received: 10/28/15 10:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.009 ± 0.059 (0.070) C:NA T:NA	pCi/g	11/03/15 12:03	10045-97-3	
Cobalt-57	EPA 901.1	0.050 ± 0.042 (0.048) C:NA T:NA	pCi/g	11/03/15 12:03	13981-50-5	
Cobalt-60	EPA 901.1	0.000 ± 0.027 (0.107) C:NA T:NA	pCi/g	11/03/15 12:03	10198-40-0	
Europium-152	EPA 901.1	0.153 ± 0.236 (0.169) C:NA T:NA	pCi/g	11/03/15 12:03	14683-23-9	
Europium-154	EPA 901.1	0.004 ± 0.100 (0.125) C:NA T:NA	pCi/g	11/03/15 12:03	15585-10-1	
Tritium	RP580	0.237 ± 0.623 (1.09) C:NA T:NA	pCi/g	11/06/15 20:09	10028-17-8	
Iron-55	ASTM D4922-97	-0.432 ± 1.398 (2.544) C:NA T:86%	pCi/g	11/05/15 22:42	14681-59-5	
Nickel-63	RP300	-0.414 ± 1.151 (3.399) C:83% T:NA	pCi/g	11/05/15 16:30	13981-37-8	
Carbon-14	PGH-R-034	0.027 ± 0.302 (0.567) C:NA T:NA	pCi/g	11/12/15 19:54	14762-75-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

Sample: VS-0010-1 Lab ID: 30163346004 Collected: 10/22/15 09:00 Received: 10/28/15 10:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.014 (0.063) C:NA T:NA	pCi/g	11/04/15 14:28	10045-97-3	
Cobalt-57	EPA 901.1	0.000 ± 0.205 (0.049) C:NA T:NA	pCi/g	11/04/15 14:28	13981-50-5	
Cobalt-60	EPA 901.1	0.000 ± 0.041 (0.091) C:NA T:NA	pCi/g	11/04/15 14:28	10198-40-0	
Europium-152	EPA 901.1	0.175 ± 0.104 (0.318) C:NA T:NA	pCi/g	11/04/15 14:28	14683-23-9	
Europium-154	EPA 901.1	0.048 ± 0.072 (0.106) C:NA T:NA	pCi/g	11/04/15 14:28	15585-10-1	
Tritium	RP580	0.895 ± 0.480 (0.706) C:NA T:NA	pCi/g	11/06/15 20:40	10028-17-8	
Iron-55	ASTM D4922-97	-0.023 ± 1.587 (2.828) C:NA T:86%	pCi/g	11/05/15 23:13	14681-59-5	
Nickel-63	RP300	-1.449 ± 1.088 (3.343) C:84% T:NA	pCi/g	11/05/15 17:01	13981-37-8	
Carbon-14	PGH-R-034	-0.239 ± 0.273 (0.597) C:NA T:NA	pCi/g	11/12/15 20:10	14762-75-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

Sample: VS-0010-2 Lab ID: 30163346005 Collected: 10/22/15 09:00 Received: 10/28/15 10:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	-0.008 ± 0.080 (0.095) C:NA T:NA	pCi/g	11/02/15 12:57	10045-97-3	
Cobalt-57	EPA 901.1	0.001 ± 0.028 (0.036) C:NA T:NA	pCi/g	11/02/15 12:57	13981-50-5	
Cobalt-60	EPA 901.1	0.030 ± 0.045 (0.072) C:NA T:NA	pCi/g	11/02/15 12:57	10198-40-0	
Europium-152	EPA 901.1	0.000 ± 0.041 (0.113) C:NA T:NA	pCi/g	11/02/15 12:57	14683-23-9	
Europium-154	EPA 901.1	0.077 ± 0.059 (0.082) C:NA T:NA	pCi/g	11/02/15 12:57	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

Sample: VS-0010-3 **Lab ID:** 30163346006 **Collected:** 10/22/15 09:00 **Received:** 10/28/15 10:15 **Matrix:** Solid
PWS: **Site ID:** **Sample Type:**

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	-0.017 ± 0.062 (0.071) C:NA T:NA	pCi/g	11/03/15 13:39	10045-97-3	
Cobalt-57	EPA 901.1	0.000 ± 0.212 (0.048) C:NA T:NA	pCi/g	11/03/15 13:39	13981-50-5	
Cobalt-60	EPA 901.1	0.008 ± 0.081 (0.088) C:NA T:NA	pCi/g	11/03/15 13:39	10198-40-0	
Europium-152	EPA 901.1	0.284 ± 0.611 (0.629) C:NA T:NA	pCi/g	11/03/15 13:39	14683-23-9	
Europium-154	EPA 901.1	0.070 ± 0.073 (0.089) C:NA T:NA	pCi/g	11/03/15 13:39	15585-10-1	
Tritium	RP580	-0.563 ± 0.562 (1.11) C:NA T:NA	pCi/g	11/06/15 21:11	10028-17-8	
Iron-55	ASTM D4922-97	-0.869 ± 1.277 (2.371) C:NA T:86%	pCi/g	11/05/15 23:44	14681-59-5	
Nickel-63	RP300	-0.180 ± 1.084 (2.958) C:79% T:NA	pCi/g	11/05/15 17:32	13981-37-8	
Carbon-14	PGH-R-034	-0.179 ± 0.269 (0.569) C:NA T:NA	pCi/g	11/12/15 20:43	14762-75-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30163346

Sample: VS-0011-1 Lab ID: 30163346007 Collected: 10/22/15 10:00 Received: 10/28/15 10:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.008 ± 0.072 (0.076) C:NA T:NA	pCi/g	11/04/15 16:27	10045-97-3	
Cobalt-57	EPA 901.1	0.004 ± 0.080 (0.066) C:NA T:NA	pCi/g	11/04/15 16:27	13981-50-5	
Cobalt-60	EPA 901.1	0.000 ± 0.031 (0.087) C:NA T:NA	pCi/g	11/04/15 16:27	10198-40-0	
Europium-152	EPA 901.1	0.008 ± 0.163 (0.196) C:NA T:NA	pCi/g	11/04/15 16:27	14683-23-9	
Europium-154	EPA 901.1	0.135 ± 0.156 (0.143) C:NA T:NA	pCi/g	11/04/15 16:27	15585-10-1	
Tritium	RP580	0.134 ± 0.667 (1.18) C:NA T:NA	pCi/g	11/06/15 21:42	10028-17-8	
Iron-55	ASTM D4922-97	-0.570 ± 1.534 (2.800) C:NA T:86%	pCi/g	11/06/15 00:15	14681-59-5	
Nickel-63	RP300	-16.070 ± 1.534 (5.648) C:130% T:NA	pCi/g	11/07/15 23:42	13981-37-8	1c
Carbon-14	PGH-R-034	-0.159 ± 0.285 (0.595) C:NA T:NA	pCi/g	11/12/15 20:59	14762-75-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30163346

Sample: VS-0011-2 Lab ID: 30163346008 Collected: 10/22/15 10:00 Received: 10/28/15 10:15 Matrix: Solid

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.000 ± 0.029 (0.080) C:NA T:NA	pCi/g	11/02/15 13:13	10045-97-3	
Cobalt-57	EPA 901.1	0.016 ± 0.034 (0.042) C:NA T:NA	pCi/g	11/02/15 13:13	13981-50-5	
Cobalt-60	EPA 901.1	0.034 ± 0.111 (0.116) C:NA T:NA	pCi/g	11/02/15 13:13	10198-40-0	
Europium-152	EPA 901.1	0.172 ± 0.233 (0.132) C:NA T:NA	pCi/g	11/02/15 13:13	14683-23-9	
Europium-154	EPA 901.1	0.015 ± 0.072 (0.090) C:NA T:NA	pCi/g	11/02/15 13:13	15585-10-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

Sample: VS-0011-3 Lab ID: 30163346009 Collected: 10/22/15 10:00 Received: 10/28/15 10:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1	0.041 ± 0.050 (0.051) C:NA T:NA	pCi/g	11/03/15 14:30	10045-97-3	
Cobalt-57	EPA 901.1	0.033 ± 0.036 (0.053) C:NA T:NA	pCi/g	11/03/15 14:30	13981-50-5	
Cobalt-60	EPA 901.1	0.000 ± 0.025 (0.081) C:NA T:NA	pCi/g	11/03/15 14:30	10198-40-0	
Europium-152	EPA 901.1	0.083 ± 0.055 (0.615) C:NA T:NA	pCi/g	11/03/15 14:30	14683-23-9	
Europium-154	EPA 901.1	0.063 ± 0.108 (0.101) C:NA T:NA	pCi/g	11/03/15 14:30	15585-10-1	
Tritium	RP580	0.242 ± 0.438 (0.750) C:NA T:NA	pCi/g	11/06/15 22:12	10028-17-8	
Iron-55	ASTM D4922-97	-0.160 ± 1.396 (2.504) C:NA T:86%	pCi/g	11/06/15 00:46	14681-59-5	
Nickel-63	RP300	-0.834 ± 1.098 (3.226) C:81% T:NA	pCi/g	11/05/15 18:34	13981-37-8	
Carbon-14	PGH-R-034	-0.078 ± 0.294 (0.587) C:NA T:NA	pCi/g	11/12/15 21:15	14762-75-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

QC Batch:	RADC/26315	Analysis Method:	EPA 901.1
QC Batch Method:	EPA 901.1	Analysis Description:	901.1 Gamma Spec
Associated Lab Samples:	30163346004		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

QC Batch:	RADC/26629	Analysis Method:	RP300
QC Batch Method:	RP300	Analysis Description:	PGH-R-013 Nickel 59/63
Associated Lab Samples:	30163346001, 30163346003, 30163346004, 30163346006, 30163346007, 30163346009		

METHOD BLANK:	974324	Matrix:	Solid
---------------	--------	---------	-------

Associated Lab Samples: 30163346001, 30163346003, 30163346004, 30163346006, 30163346007, 30163346009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Nickel-63	-0.203 ± 1.231 (3.806) C:74% T:NA	pCi/g	11/05/15 14:27	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

QC Batch:	RADC/26672	Analysis Method:	EPA 901.1
QC Batch Method:	EPA 901.1	Analysis Description:	901.1 Gamma Spec
Associated Lab Samples: 30163346002, 30163346005, 30163346008			

METHOD BLANK: 976691 Matrix: Solid

Associated Lab Samples: 30163346002, 30163346005, 30163346008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Cesium-137	0.000 ± 0.037 (0.081) C:NA T:NA	pCi/g	11/02/15 11:23	
Cobalt-57	-0.014 ± 0.034 (0.042) C:NA T:NA	pCi/g	11/02/15 11:23	
Cobalt-60	0.000 ± 0.023 (0.098) C:NA T:NA	pCi/g	11/02/15 11:23	
Europium-152	-0.025 ± 0.096 (0.119) C:NA T:NA	pCi/g	11/02/15 11:23	
Europium-154	-0.001 ± 0.061 (0.077) C:NA T:NA	pCi/g	11/02/15 11:23	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

QC Batch:	RADC/26502	Analysis Method:	EPA 901.1
QC Batch Method:	EPA 901.1	Analysis Description:	901.1 Gamma Spec
Associated Lab Samples: . 30163346001, 30163346007			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

QC Batch:	RADC/26697	Analysis Method:	PGH-R-034
QC Batch Method:	PGH-R-034	Analysis Description:	PGH-R-034 Carbon 14
Associated Lab Samples:	30163346001, 30163346003, 30163346004, 30163346006, 30163346007, 30163346009		

METHOD BLANK:	977712	Matrix:	Solid
---------------	--------	---------	-------

Associated Lab Samples: 30163346001, 30163346003, 30163346004, 30163346006, 30163346007, 30163346009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Carbon-14	0.053 ± 0.328 (0.609) C:NA T:NA	pCi/g	11/12/15 18:48	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

QC Batch:	RADC/26710	Analysis Method:	RP580
QC Batch Method:	RP580	Analysis Description:	906.0 Tritium
Associated Lab Samples:	30163346001, 30163346003, 30163346004, 30163346006, 30163346007, 30163346009		

METHOD BLANK:	978420	Matrix:	Solid
Associated Lab Samples:	30163346001, 30163346003, 30163346004, 30163346006, 30163346007, 30163346009		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Tritium	-0.0361 ± 0.187 (0.344) C:NA T:NA	pCi/g	11/06/15 18:36	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky
Pace Project No.: 30163346

QC Batch:	RADC/26581	Analysis Method:	EPA 901.1
QC Batch Method:	EPA 901.1	Analysis Description:	901.1 Gamma Spec
Associated Lab Samples:	30163346003, 30163346006, 30163346009		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL - RADIOCHEMISTRY

Project: AJ Blotcky

Pace Project No.: 30163346

QC Batch:	RADC/26673	Analysis Method:	ASTM D4922-97
QC Batch Method:	ASTM D4922-97	Analysis Description:	D4922-97 Iron-55
Associated Lab Samples:	30163346001, 30163346003, 30163346004, 30163346006, 30163346007, 30163346009		

METHOD BLANK: 976700 Matrix: Solid

Associated Lab Samples: 30163346001, 30163346003, 30163346004, 30163346006, 30163346007, 30163346009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Iron-55	1.165 ± 1.641 (2.754) C:NA T:86%	pCi/g	11/05/15 21:09	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALIFIERS

Project: AJ Blotcky
Pace Project No.: 30163346

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

- 1c Chemical recovery is determined gravimetrically for Ni-63 analysis. Sample 30163346007 had a chemical recovery of 687.2%. During the analysis, it was noted that a white precipitate formed in addition to the expected Ni-DMG precipitate per the method. Cobalt can precipitate with nickel in the presence of DMG and may be the cause for the high chemical yield. To minimize the bias caused by the elevated yield on the final result, Pace has applied the maximum recovery of 130% to sample 30163346007 Ni-63 results, however, it should be noted that the results may still be biased low depending on the actual contribution of the unknown contaminant. An attempt will be made to re-prepare and re-analyze the sample using a lesser aliquot.
- N2 The lab does not hold TNI accreditation for this parameter.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AJ Blotcky
Pace Project No.: 30163346

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30163346001	VS-0009-1	EPA 901.1	RADC/26502		
30163346002	VS-0009-2	EPA 901.1	RADC/26672		
30163346003	VS-0009-3	EPA 901.1	RADC/26581		
30163346004	VS-0010-1	EPA 901.1	RADC/26315		
30163346005	VS-0010-2	EPA 901.1	RADC/26672		
30163346006	VS-0010-3	EPA 901.1	RADC/26581		
30163346007	VS-0011-1	EPA 901.1	RADC/26502		
30163346008	VS-0011-2	EPA 901.1	RADC/26672		
30163346009	VS-0011-3	EPA 901.1	RADC/26581		
30163346001	VS-0009-1	RP580	RADC/26710		
30163346003	VS-0009-3	RP580	RADC/26710		
30163346004	VS-0010-1	RP580	RADC/26710		
30163346006	VS-0010-3	RP580	RADC/26710		
30163346007	VS-0011-1	RP580	RADC/26710		
30163346009	VS-0011-3	RP580	RADC/26710		
30163346001	VS-0009-1	ASTM D4922-97	RADC/26673		
30163346003	VS-0009-3	ASTM D4922-97	RADC/26673		
30163346004	VS-0010-1	ASTM D4922-97	RADC/26673		
30163346006	VS-0010-3	ASTM D4922-97	RADC/26673		
30163346007	VS-0011-1	ASTM D4922-97	RADC/26673		
30163346009	VS-0011-3	ASTM D4922-97	RADC/26673		
30163346001	VS-0009-1	RP300	RADC/26629		
30163346003	VS-0009-3	RP300	RADC/26629		
30163346004	VS-0010-1	RP300	RADC/26629		
30163346006	VS-0010-3	RP300	RADC/26629		
30163346007	VS-0011-1	RP300	RADC/26629		
30163346009	VS-0011-3	RP300	RADC/26629		
30163346001	VS-0009-1	PGH-R-034	RADC/26697		
30163346003	VS-0009-3	PGH-R-034	RADC/26697		
30163346004	VS-0010-1	PGH-R-034	RADC/26697		
30163346006	VS-0010-3	PGH-R-034	RADC/26697		
30163346007	VS-0011-1	PGH-R-034	RADC/26697		
30163346009	VS-0011-3	PGH-R-034	RADC/26697		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc. - Pittsburgh Chain of Custody/Analytical Request Record

Page 1 of 1

AJ Blotcky 2015-EFS035-002 EFS035 Frank Brown
Project Name COC # Project # Sample (Print/Sign)

Client P.O. EFS035
Charge # EFS035

Frank Brown 10/23/15 0800 / 10/28/15 1015
Requested by (Print/Sign) Date/Time Received by (Print/Sign) Date/Time

Requested by (Print/Sign) Date/Time Received by (Print/Sign) Date/Time

Requested by (Print/Sign) Date/Time Received by (Print/Sign) Date/Time

Lab Use Only
30163346
Project #

Pace Analytical
www.pacelabs.com

Shipping Address:
Pace Analytical Services, Inc.-Pittsburgh
1538 Roseytown Road,
Suites 2, 3 & 4
Greensburg, PA 15601
724-850-5600
724-850-5601 (fax)

container type (see legend)
of containers
analyze solids
grab sample
composite sample

pH / Sp. Cond (circle)
Iron, total
Aluminum, total
Magnesium, total
ZSS / TDS (circle)
Total Nitrogen / Total Phosphorus / Total SO₄ (circle)
Conditable P / Conditable Cl (circle)
Leachable NO₃ / Leachable PO₄ (circle)
Leachable SO₄
ICP (Full Elemental Scan)
H-3
C-14
Fe-55
Co-57
Co-60
Ni-63
Cs-137
Eu-152
Eu-154

Other (as listed)

Container Legend
L = bottle, 1L poly
5 = bottle, 500mL poly
2 = bottle, 250mL poly
1 = bottle, 100mL poly
B = Bag, 1g poly (12"x12")
b = bag, 5m poly (6"x6")
F = Filter, 52mm
f = filter, 26mm
G = jar, 1L Glass
g = jar, 500mL glass

10CFR61 List
gamma spec
H-3 C-14
Fe-55 Ni-63
Sr-90 Tc-99
I-129 Pu-241
Am-isotopic
Cm-isotopic
Pu-isotopic

5 Sample Information																					
SAMPLE IDENTIFICATION	DATE	TIME	DESCRIPTION																		
VS-0009-1	10/22/2015	8:00:00 AM	Gunitite	B	1																
VS-0009-2	10/22/2015	8:00:00 AM	Steel	B	1																
VS-0009-3	10/22/2015	8:00:00 AM	Concrete	B	1																
VS-0010-1	10/22/2015	9:00:00 AM	Gunitite	B	1																
VS-0010-2	10/22/2015	9:00:00 AM	Steel	B	1																
VS-0010-3	10/22/2015	9:00:00 AM	Concrete	B	1																
VS-0011-1	10/22/2015	10:00:00 AM	Gunitite	B	1																
VS-0011-2	10/22/2015	10:00:00 AM	Steel	B	1																
VS-0011-3	10/22/2015	10:00:00 AM	Concrete	B	1																

Lab Use Only
Lab Sample ID

001
002
003
004
005
006
007
008
009

7 Special Instructions
7 business day TAT

Please notify prior to disposal

8 QA and Record Retention

10CFR50/NQA-1 request? ☐ Yes ☒ No

10CFR Part 21 request? ☐ Yes ☒ No

Site Remediation request? ☐ Yes ☒ No

Utah disposal request? ☐ Yes ☒ No

9 Sample Disposition

☐ Return to Client

☒ Disposal by Pace

☐ Archive per agreement

10 Results to: Frank Brown (fbrown@enacpm.com)

Copy to:

Invoice to: Frank Brown
1501 Ardmore Blvd.
Suite 200
Pittsburgh, PA 15221

11 Lab Use Only
Sample Condition

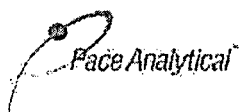
12 Required Detection Limits
See attached for required MDAs

13 Report due date

Fields 9, 6 and 11 to be completed ONLY by laboratory personnel. All other fields are REQUIRED to be completed by client. All requests beyond the scope of this Chain of Custody/Analytical Request Record MUST be indicated in field 7-Special Instructions. Client representative/agent and PACE agent signatures indicate acceptance of terms and conditions of this record and the mutually agreed upon report due date as indicated above.

Pace Analytical Agent Acceptance Date

Client Agent Acceptance Date



Sample Condition Upon Receipt

Client Name: Emerson Services

Project # 30163346

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1ZFI0F740394746179

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals Intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap _____ Bubble Bags None Other _____

Thermometer Used N/A Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 8°C

Comments:

Date and Initials of person

examining contents: Jul 10/29/15

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>SL</u>		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, collform, TOC, O&G, Phenols	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed <u>Jul</u> Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 10/29/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

