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The enclosed electronic media contains the requested Final Status Survey Report for Naval Surface Warfare Center, Dahlgren Division (Mail Control No 608846) and Naval Research Laboratory Chesapeake Beach Detachment (Mail Control No 698820) is being forwarded from the DoD Contracting Agency on behalf of the Department of Navy.

Please contact Erik Abkemeier (757-887-7635) Joe Sevcik (757-887-4483) at the Navy's Radiological Affairs Support Office if you have any questions concerning this coorespondance.

608820

Rec'd. in LAT-01/02/2019

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FINAL STATUS SURVEY REPORT
BLDG. 218, HYPERVELOCITY GUN FACILITY
NAVAL RESEARCH LABORATORY, CHESAPEAKE BAY DETACHMENT, CHESAPEAKE BEACH, MD

For the:

U.S. ARMY JOINT MUNITIONS COMMAND

ROCK ISLAND, IL

Project No. USN 2017-012

Contract No. W52P1J-08-D-0034/DO:0104

November 20, 2018
Rev. 2

Prepared by:

Aleut World Solutions
3601 C. St. Suite 1000-32
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Approvals Page

FINAL STATUS SURVEY REPORT

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Daniel Spicuzza, AWS Project Manager

Approved by: George M Taylor — Date: 11/23/2018
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RASO Representative

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ATTACHMENTS AND APPENDICES

ABBREVIATIONS AND ACRONYMS

ALARA	As Low As Reasonably Achievable
ANS	American Nuclear Society
ANSI	American National Standards Institute
AOC	Areas of Concern
BLDG	Building
Ci	curie(s)
CFR	Code of Federal Regulations
cpm	Counts per minute
CV	Critical Value
DCGLs	Derived Concentration Guideline Limits
D&D	Decontamination and Decommissioning
DOD	Department of Defense
dpm/100 cm^2	disintegrations per minute per 100 square centimeters
DQO	Data Quality Objectives
DU	Depleted Uranium
ε_i	Instrument Efficiency
ε_s	Surface Efficiency Factor
EPA	Environmental Protection Agency
ft	Feet
ft^2	square feet
FOP	Field Operation Procedure
FSSI	Field Support Services Inc.
HASP	Health and Safety Plan
ISO	International Organization for Standardization
LLRW	Low Level Radioactive Waste

m	Meter
m^2	square meter
MARSSIM	Multi Agency Radiation Survey & Site Investigation Manual
MDC	Minimum Detectable Concentration
MDCR	Minimal Detectable Count Rate
MML	Master Materials License
MOU	Memorandum of Understanding
mrem/y	millirem per year
N/A	Not Applicable
NaI	Sodium Iodide
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
NRMP	Navy Radioactive Materials Permit
NWE	New World Environmental, Inc.
OSHA	Occupational Safety and Health Administration
Pa-234^m	Protactinium-234^m
Lead	Lead
pCi/g	Picocuries per gram
PM	Project Manager
PPE	Personal Protective Equipment
PWS	Performance Work Statement
QA	Quality Assurance
QC	Quality Control
RASO	Naval Sea Systems Command Detachment, Radiological Affairs Support Office
RAMSA	Radioactive Material Storage Area
Rn	Radon
RWP	Radiation Work Permit
SDS	Safety Data Sheets

SOPs	Standard Operating Procedures
TEDE	Total Effective Dose Equivalent
Th-234	Thorium-234
TLD	thermoluminescent dosimeter
U-234	Uranium-234
U-235	Uranium-235
U-238	Uranium-238
µR/h	microRoentgen(s) per hour
WRS	Wilcoxon Rank Sum
Y	Year

RECORD OF REVISIONS

Revision Number	Description	Date
0	Draft Final Status Survey Report	8/17/2018
1	Draft Final Status Survey Report	11/16/2018
2	Final Status Survey Report	11/20/2018

1.0 INTRODUCTION

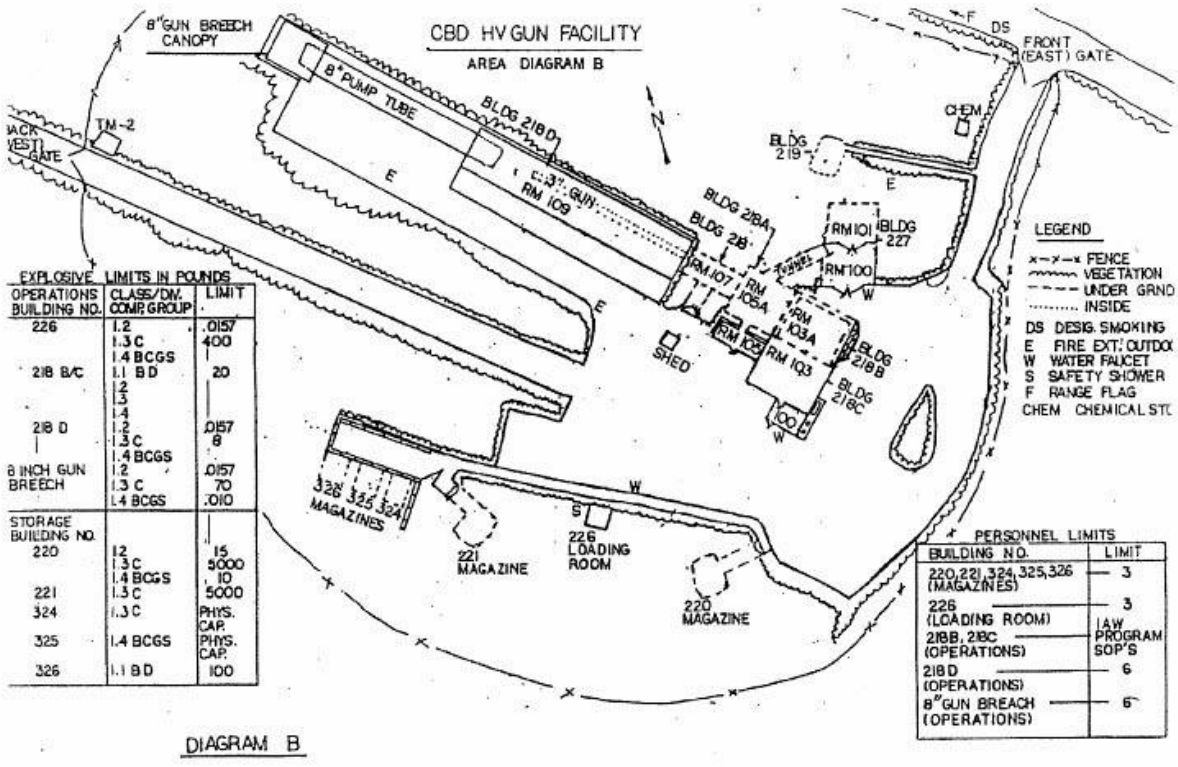
Aleut World Solutions (AWS) was under contract by the U.S. Army Joint Munitions Command (JMC) to perform radiological Final Status Surveys at Building 218 located at the Naval Research Laboratory Chesapeake Bay Detachment (NRLCBD) facility located in Chesapeake Beach, MD. The work was performed from 2 April 2018 to 27 April 2018.

A satellite image showing the location of NRL Chesapeake is provided in Figure 1.

A map showing the layout of Building 218 is provided in Figure 2.

Figure 1 NRLCBD HVGF Satellite View

Figure 2 NRLCBD HVGF Layout Map



1.1 Scope of Work Performed

The work that was performed included:

- Performed final status surveys of the floors, walls, and overhead/ceiling areas of Building 218. These surveys included gross alpha/beta-gamma scan, direct measurement, and swipe surveys.

- All work was done in accordance with the previously approved Decommissioning Plan (NWE, 2008) and the Addendum Work Plan (AWS, 2017a).

1.2 License History

The Atomic Energy Commission (AEC) issued Source Materials License (SMB-448) on October 6, 1972 to NRL. The license authorized NRL to use the following radioactive materials: natural uranium, depleted uranium, and thorium for research and development. In 1974, the authority to regulate byproduct materials in the United States was transferred from the AEC to the Nuclear Regulatory Commission (NRC). License No. SMB-448 was renewed on August 23, 1978. The authorized use was possession of natural uranium, depleted uranium, and thorium for research and development including hypervelocity impact studies.

The AEC also issued a Type A License of Broad Scope (No. 08- 01393-02) on January 8, 1957 to NRL, which authorized the possession of any byproduct material in any chemical or physical form in "unspecified" amounts for research and development purposes. NRC License No. 08-01393-02 was converted into the current Navy Radioactive Materials Permit (NRMP No. 08-00173-ElNP) when the Department of the Navy was issued a Master Materials License for the use and control of radioactive material within the Navy and Marine Corps by the NRC in 1987. Similarly, License No. SMB-448 was converted to NRMP 08-00173-SlNP. NRMP No. 08-00173-E1NP was amended on June 13, 1988 to include the use of depleted uranium and NRMP 08-00173-SlNP was terminated. NRMP No. 08-00173-E1NP, Amendment 14 was approved by the Naval Radiation Safety Committee on August 26, 2002 and was to expire on March 31, 2007. In September of 2006 the NRL filed its renewal package and is currently operating under a timely filed letter.

1.3 Building 218 History

The NRL Radiation Safety Committee issued RSR2884 on 14 Jun 77 to authorize purchase of depleted uranium and begin research at the Chesapeake Bay Detachment Hypervelocity Gun Facility.

The NRL Radiation Safety Committee issued RSR4099 on 17 Jun 88 which authorized the storage and use of DU in high velocity impact studies in the Building 218C target chamber and Building 227 vault.

High velocity projectiles were impacted on depleted uranium and, in some cases, depleted uranium and explosives. Depleted uranium targets were located in the spherical target chamber with target debris contained in the target chamber and the flight tube. In a few tests, the quick closing valve did not function and allowed target debris from explosive tests to blow back through the flight tube into the orthogonal room, shadowgraph tube, and blast tank as far as the muzzle of the projectile launch tube. DU remains embedded in some walls of the blast tank.

Surveys were conducted periodically and areas decontaminated. It is possible that DU was lodged in inaccessible areas that were not affected by periodic cleaning and decontamination. The last use of depleted uranium (DU) at the NRLCBD Hypervelocity Gun Facility was in the fall of 1992. Other non-DU tests were conducted in the gun after the fall of 1992 and for the first several tests, some DU dust shook loose from nooks and crannies and was collected for disposal as low-level radioactive waste. The facility is currently not in use.

1.4 Conceptual Site Model

Based on historical information provided in the performance work statement (PWS) the radionuclide of concern was DU. The potential receptors would have been workers walking through a contaminated area that had fixed and removable contamination.

1.5 Release Criteria

The building surface release criteria was developed and approved by the NRC in the previously approved Decommissioning Plan (NWE, 2008).

1.5.1 Equipment, Material and Tools

For equipment, material, and tools the surface activity limits as stated in the "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses, By-product, Source, or Special Nuclear Materials, (NRC 1987)" were used.

Table 1 identifies the limits.

Table 1 Surface Activity Limits for Equipment, Materials, and Tools

Radionuclide	Removable in dpm/100cm^2	Fixed + Removable Average [1] in dpm/100cm^2	Fixed + Removable Maximum [2] in dpm/100cm^2	Radiations Emitted
U-238	1,000	5,000	15,000	α

1. Measurements of average contaminant should not be over more than 1 m^2
2. The maximum contamination level applies to an area of not more than 100 cm^2

1.5.2 Building Surfaces (Gross Alpha DCGL)

The site specific DU gross alpha DCGL for building surfaces was 1,150dpm/100 cm^2. The DU DCGL was calculated using DandD Version 2.1 and NUREG1720 "Re-evaluation of the Indoor Resuspension Factor for the Screening Analysis of the Building

Occupancy Scenario for NRC's License Termination Rule". DU for purposes of this calculation consisted of 99.7% U-238, 0.250% U-235, and 0.005% U-234 by weight.

Using the formula for gross activity DCGL found in MARSSIM Equation 4-4, and DandD Version 2.1 results in a DCGL of 81 dpm/100 cm^2 (42 dpm/100cm^2 U-238 + 39dpm/100cm^2 U-234). Adjusting for a revised resuspension factor resulted in 81 dpm/100cm^2 x (1 x 10-6)/1.42 x 10-5) which equals 1,150 dpm/100 cm^2 for building surfaces. The adjustment uses the ratio of the default resuspension factor at the 90th percentile from DandD 2.1 compared to the resuspension factor recommended by NUREG 1720 for the 90th percentile. This is the only adjustment to the default screening values used by DandD 2.1. The use of a revised suspension factor is appropriate since surveys demonstrate that the contamination is not easily removed from building surfaces.

1.5.3 Building Surfaces (Gross Beta DCGL)

A gross beta DCGL was developed below as a surrogate for measurement of alpha radiation.

In the case of U-238, the decay product is thorium-234 (Th-234), which is also radioactive and which has a very short half-life (24.1 days) compared to the half-life of U-238 (4.51 billion years). Thorium-234 decays by emitting a beta particle and a gamma ray, producing protactinium-234 (Pa-234). Protactinium-234 is radioactive (half life 6.75 hours) and it also decays by beta particle and gamma ray emission, producing uranium-234, which has a half life of 247,000 years. In fact, there are 14 steps between U-238 and Pb-206 which is a stable, non-radioactive substance. There are no primary beta emitters from U-234 and progeny untl past Rn-222. These first three steps of the radioactive decay sequence can be depicted with the following equation:

U-238 -(alpha)--> Th-234 -(beta & gamma)--> Pa-234 -(beta & gamma)--> U-234

Therefore for every single atom of U-238 that disintegrates-one alpha particle, two beta particles and two gamma rays are emitted. A Gross Beta DCGL of 1,192 dpm/100cm^2 was applied for the final status surveys.

Table 2 presents a summary of the building surface DCGL's

Table 2 Building Surface DCGL Summary Table

Type of Measurement	Fixed Activity in dpm/100cm^2	Removable Activity in dpm/100cm^2
Gross Alpha	1,150	115
Gross Beta	1,192	119

1.6 Types of Surveys Performed/Instrumentation

The final status surveys consisted of gross alpha/beta-gamma scan surveys, systematic gross alpha/beta-gamma direct (static) measurements. Swipe surveys for gross alpha/beta-gamma removable contamination were also performed at each systematic gross alpha/beta-gamma direct measurement location.

Instruments were selected that were suitable for the physical and environmental conditions at the site. The instruments and measurement methods selected were able to detect the radionuclide(s) of concern and radiation types of interest, and in relation to the survey or analytical technique, capable of measuring levels that were equal to or less than the release limits.

The instruments used for the final status surveys were a combination of large area scintillation detectors coupled to scalers/ratemeters and a large area floor monitor (gas proportional detector). Audible indicators were used during the surveys. Swipes were counted on a dual channel phoswich scintillation counting system.

1.7 License Number, Status, and Authorized Activities

All work detailed in this report was performed under the AWS Nuclear Regulatory Commission (NRC) Broad Scope Radioactive Materials License # 50-29273-01.

A Memorandum of Understanding (MOU) was completed between RASO, JMC, and AWS prior to the start of the final status survey activities defining the license responsibilities between the organizations.

A copy of the MOU is presented in Appendix A of this report.

1.8 Results/Conclusions

The results of the final status surveys indicated that, based on the criteria in Sections 1.5.1, 1.5.2, and 1.5.3 some Building 218 areas/survey units require additional remediation in order to release the areas for unconditional use.

2.0 PROJECT BACKGROUND INFORMATION

2.1 Facilities

2.1.1 Site Location and Description

The Chesapeake Bay Detachment occupies a 168-acre site near Chesapeake Beach, Maryland in Calvert County and provides facilities and support services for research in radar, electronic warfare, optical devices, materials, communications, and fire research. The Hypervelocity Gun Facility is located approximately two miles south of the center of Chesapeake Beach and approximately 1000 feet west of the Chesapeake Bay on the west side of Bayside Drive.

Figure 2 shows a layout of the Hypervelocity Gun Facility. The gun facility consists of a light gas gun, a blast tank at the gun muzzle, a shadowgraph tube with optics to measure the projectile velocity, an orthogonal room, a quick closing gate valve, a flight tube between the orthogonal room and the spherical target chamber that is 12 feet in diameter. All components are steel except for aluminum in a quick closing valve and the shadowgraph tube. Part of the gas gun is enclosed by concrete walls and ceilings and buried in the hill. The entire blast tube is buried in the hillside with a small access to crawl into the tube. The optics room containing the shadowgraph tube and orthogonal room are surrounded by concrete walls and ceilings and partly buried in a hill. The optics room is easily accessible. The target chamber is contained in a structure called the environmental room. This part of the facility contained the areas of residual contamination from past operations.

2.2 Radiological Status of the Facility

Building 218 rooms and areas underwent a decommissioning from January 2011 until March 2011 by New World Environmental (NWE). A summary of the final status survey findings is provided in their report (NWE, 2014).

3.0 RADIOLOGICAL CONTROL REQUIREMENTS

3.1 Radiation Work Permit

A Radiation Work Permit (RWP) was prepared and specified the activities to be performed and all radiological safety requirements for the work. All personnel assigned to site work were required to read and sign the RWP, acknowledging that they understood the requirements of the RWP, prior to beginning work.

The RWP was also used as an information document for industrial safety. Hazards other than radiological were included in the RWP so proper protection could be taken for all possible hazards.

The RWP listed tasks and specific levels of protection for each worker covered by the RWP. The RWP also detailed the dosimetry requirements, the protective clothing requirements, and the expected radiation and contamination levels to be encountered during the decontamination and field survey activity.

A copy of the RWP is presented in Appendix B.

3.2 Personnel Monitoring and Dosimetry

Even though the work consisted of area decontamination and surveys, and the likelihood that personnel would receive any external or internal exposure was very minimal, Aleut World Solutions administrative policies require the use of external dosimetry on any field project that has the potential for exposure to radioactive material. The Project Manager (PM) was responsible for ensuring that all AWS personnel assigned to perform the decontamination and surveys were appropriately monitored for exposure to ionizing radiation. Each individual working at the site wore the dosimetry devices specified in the RWP. The PM specified the requirement for work assignments. Personnel were issued appropriate personnel monitoring devices consisting of a thermoluminescent dosimeter (TLD). The issuance of monitoring devices was documented on a Badge Issue Log.

3.3 Proper Location for Wearing Dosimetry Devices

Personnel monitoring dosimetry was worn on the front of the body between the neck and the waist.

3.4 Official Exposure Determination and Project Dose Estimate

The official and permanent record of accumulated external dose received by individuals was obtained from the processing of the personnel monitoring devices. The vendor TLD processing report showed that no personnel received any detectable whole body exposure greater than 10 millirem, which is the detection threshold of the TLDs.

A copy of the vendor TLD report can be furnished upon request.

4.0 SITE PREPARATION, EQUIPMENT AND PERSONNEL

4.1 Accessibility

Access to the active work areas were restricted using barricades, and boundary rope/tape. The appropriate postings were displayed. This limited access to only those personnel performing work in the areas.

4.2 Restroom Facilities/Office Space

A temporary office trailer and restrooms were utilized during the task.

4.3 Electrical Power

Electrical power in Building 218 was used.

4.4 Training

Prior to the start of work, all site personnel attended a briefing that discussed expected radiological conditions and radiological controls that will be implemented at the site.

4.5 Personnel

Task personnel consisted of the following:

Project Manager - Responsible for the overall operations and safety of the project team.

Health Physics Technicians - Perform surveys, sampling operations.

All AWS personnel were trained and experienced at the tasks to be performed.

4.6 Survey Unit Gridding

Prior to the commencing of surveys in the survey units, all of the survey units were gridded into sub grids. For building surface survey units, the survey units were divided into 3' by 3' grids.

Copies of the grid maps are presented along with the survey data in the applicable attached Appendix to this report.

5.0 PLANNING PHASE OF RADIOLOGICAL SURVEYS

The design of this final status survey incorporated the methods and locations for performing gross alpha/beta/gamma scanning, direct measurements, and gross alpha/beta swipe surveys in order to assess the nature and extent of the depleted uranium contamination in Bay 4 and the adjacent outdoor areas.

5.1 Radionuclide of Concern

Based on historical information, the radionuclide of concern is depleted uranium (DU). See Table 3 below for the composition of depleted uranium. Therefore, the residual surface activity release limits were determined for this radionuclide constituent of potential concern.

The radionuclide of concern is the radionuclide at a particular site that could contribute significantly to the dose received by the public.

Table 3 Radionuclide of Concern

DU	Fraction by Weight	Specific Activity Ci/g	Activity Ci	Fraction Total Activity
U-234	.005%	6.19 x 10-3	3.10 x 10-7	47.84%
U-235	.250%	2.10 x 10-6	5.25 x 10-9	.81%
U-238	99.7%	3.3 x 10-7	3.32 x 10-7	51.35%
		Total:	6.47 x 10-7	

5.2 Data Quality Objectives

Data quality objectives (DQOs) were developed for this final status survey effort in accordance with the guidelines outlined in Appendix D of MARSSIM and using the U.S. Environmental Protection Agency's (EPA's) seven-step DQO process described in *EPA QA - G4: Guidance for the Data Quality Objective Process* (EPA, 2006). Below is a summary of the seven-step process and the resulting project-specific DQOs.

5.2.1 Statement of the Problem (Step 1)

The problem is determining the nature and extent of DU contaminated building surfaces in Building 218. The objective of the final status survey activities described in this report was to obtain data of sufficient quality and quantity to support the decision

that areas have or have not been impacted by radiological activities at the site.

5.2.2 Identification of Decisions (Step 2)

The principle study question for this project through completion of the Final Status Surveys/ is:

• Have areas in Building 218 been impacted by the radiological activities at the site?

Potential actions include: additional investigation of radiologically impacted areas (i.e., additional review of existing data, collection of additional environmental data, and/or additional remediation) or release of non-impacted areas from radiological controls. Impacted areas have a possibility of containing residual radioactivity in excess of natural background (NRC, 2000). Non-impacted areas have no reasonable possibility of residual radioactivity. All areas are either impacted or non-impacted.

5.2.3 Inputs to the Decision (Step 3)

Radiological surveys and sampling required to support the unrestricted release of the areas included:

Locate and survey a background reference area where meaningful background radiation levels were determined;

100 % gross alpha/beta-gamma scan surveys of the Class 1 surface areas (floor and lower walls below 6') in Building 218 with large area scintillation detectors or equivalent were performed;

Systematic gross alpha/beta-gamma 2 minute direct (static) measurements in the Class 1 survey units of Building 218 with large area scintillation detectors or equivalent were performed;

Gross/alpha beta analysis of swipe samples collected at each of the gross alpha/beta-gamma direct measurement locations;

50 % gross alpha/beta-gamma scan surveys of the Class 2 surface areas (upper walls above 6') in Building 218 with large area scintillation detectors or equivalent were performed;

Systematic gross alpha/beta-gamma 2 minute direct (static) measurements in the Class 2 survey units of Building 218 with large area scintillation detectors or equivalent were performed;

Gross/alpha beta analysis of swipe samples collected at each of the gross

alpha/beta-gamma direct measurement locations;

25 % gross alpha/beta-gamma scan surveys of the Class 2 surface areas (overhead, ceiling areas) in Building 218 with large area scintillation detectors or equivalent were performed;

Systematic gross alpha/beta-gamma 2 minute direct (static) measurements in the Class 2 survey units of Building 218 with large area scintillation detectors or equivalent were performed;

Gross/alpha beta analysis of swipe samples collected at each of the gross alpha/beta-gamma direct measurement locations;

Statistical analysis of collected data.

5.2.4 Definition of Study Boundaries (Step 4)

The spatial boundary for this survey effort was the entire Building 218 interior floor, walls, and ceiling areas.

5.2.5 Development of a Decision Rule (Step 5)

The primary parameters of interest are depleted uranium, and associated decay progeny in secular equilibrium.

The decision rules for this final status survey effort were as follows:

5.2.5.1 Building Surfaces

If the radioactivity concentration exceeded the DCGLs (see Section 1.5) then the areas were designated as radiologically contaminated and marked for decontamination/further investigation.

5.2.5.2 Investigation Level

Investigation levels are specific levels of radioactivity used to indicate when additional investigation may be necessary. Investigation levels also serve as a Quality Control (QC) check. For example, in addition to indicating potential contamination, a measurement that exceeds the investigation level may indicate a failing instrument.

When determining an investigation level using a statistical-based parameter (e.g., standard deviation), the following may be considered: survey objectives, underlying radionuclide distributions (e.g., normal, log normal, non-parametric),

data population descriptors (e.g., standard deviation, mean, median), and prior survey and historical information.

If an investigation level is exceeded, the measurement would have to be confirmed to ensure that the initial measurement/sample actually exceeded the particular investigation level. This involved taking further measurements to confirm the initial result, and as appropriate, to quantify the area of elevated residual radioactivity.

For the gross alpha surveys the investigation level was established at 1,035 dpm/100cm^2 (90% of the DCGL).

For the gross beta surveys the investigation level was established at 1,070 dpm/100cm^2 (90% of the DCGL).

5.2.6 Limits on Decision Errors (Step 6)

Actions to minimize errors need to be implemented during the data collection phase of the radiological survey. Qualified radiation survey personnel performed the survey and record the data. Additional actions, such as instrument calibration, daily instrument source checks, and backup surveys with separate instruments provided the primary steps to be taken to avoid errors in the data collection phase of the survey process.

In order to minimize errors, the applicable requirements of AWS Standard Operating Procedures (SOPs) for performing surveys and instrumentation calibration and use will be followed.

Data collection and transcribing is the first phase where errors may arise. To avoid data errors for manual surveys, experienced personnel will record and transcribe the data.

The ongoing on-site analyses and evaluation of survey results provides a final check for errors, which if detected, were corrected.

There are two types of decision errors that can be made when performing the statistical tests described in this plan. The first type of decision error, called a Type I error, occurs when the null hypothesis is rejected when it is actually true. A Type I error is sometimes called a “false positive.” The probability of a Type I error is usually denoted by α. The Type I error rate is often referred to as the significance level or size of the test.

The second type of decision error, called a Type II error, occurs when the null hypothesis is not rejected when it is actually false. A Type II error is sometimes called a “false negative.” The probability of a Type II error is usually denoted by β. The power of a statistical test is defined as the probability of rejecting the null hypotheses when it is

false. It is numerically equal to 1-β, where β is the Type II error rate.

This final status survey is designed to limit Type I and Type II errors to 5%. It is important to minimize the chances that survey units exceeding the release limits will be missed (Type I Error) and survey units meeting the release limits will be rejected as too high (Type II Error). The probability of either of these occurring was set at a maximum of 5%.

Radioactive source readings were used to check instruments for consistency prior to use in each daily shift. The instrument was only to be used after readings were compared and agree within +/- 3σ of the predetermined responses. The Project Manager reviewed the data to verify that equipment was operating satisfactorily.

5.2.7 Optimizing Data Collection (Step 7)

The survey and sampling activities described in the following sections of this document constitute a final status survey approach that can achieve the stated project objectives within the available resource and schedule constraints. This approach represents the optimal design for surveying the Building 218 areas based on the currently available information.

Scan surveys for alpha/beta-gamma radiation were performed using a Ludlum Model 2360 data logger equipped with either a Ludlum a Ludlum Model43-93 ZnS(Ag) scintillation detector or Ludlum Model 43-37 large area gas proportional detector. Any areas exceeding the release criteria were swipe sampled and static surveyed in accordance with SOP-001, Radiation and Contamination Survey Techniques. The swipe sample was used to identify removable alpha/beta contamination.

Static surveys for alpha/beta/gamma radiation were performed using a Ludlum Model 2360 data logger equipped with a Ludlum Model 43-93 ZnS(Ag) scintillation detector .

Swipe samples for gross alpha/beta-gamma removable surface contamination were counted on a Ludlum Model 2929 dual channel scaler.

5.2.7.1 Sampling Process Design

The types of samples and sampling matrices for the Final Status Survey of the areas are gross alpha/beta-gamma scans, alpha/beta-gamma direct measurements, and swipe samples.

The sampling frequency at the areas was set at a minimum of 16 direct measurements/swipe and soil samples for each of the survey units.

6.0 IMPLEMENTATION PHASE OF SURVEYS

6.1 Building Surface Background Reference Radiation Levels

A site background reference area was chosen that had similar physical, chemical, geological, radiological, and biological characteristics as the survey unit being evaluated. Background reference areas are normally selected from non-impacted areas, but are not limited to natural areas undisturbed by human activities.

The site background count rate levels were established for the final status surveys by obtaining sixteen, 2-minute static gross alpha/beta readings (with each instrument used), taken at ¼" from building surfaces from areas unlikely to be affected by the residual radioactive materials that could be present at the different survey areas. The average value for these readings was used as the area background radiation levels.

Figure 3 presents a map of the indoor background reference area locations.

Table 4 presents a summary of the background reference area data.

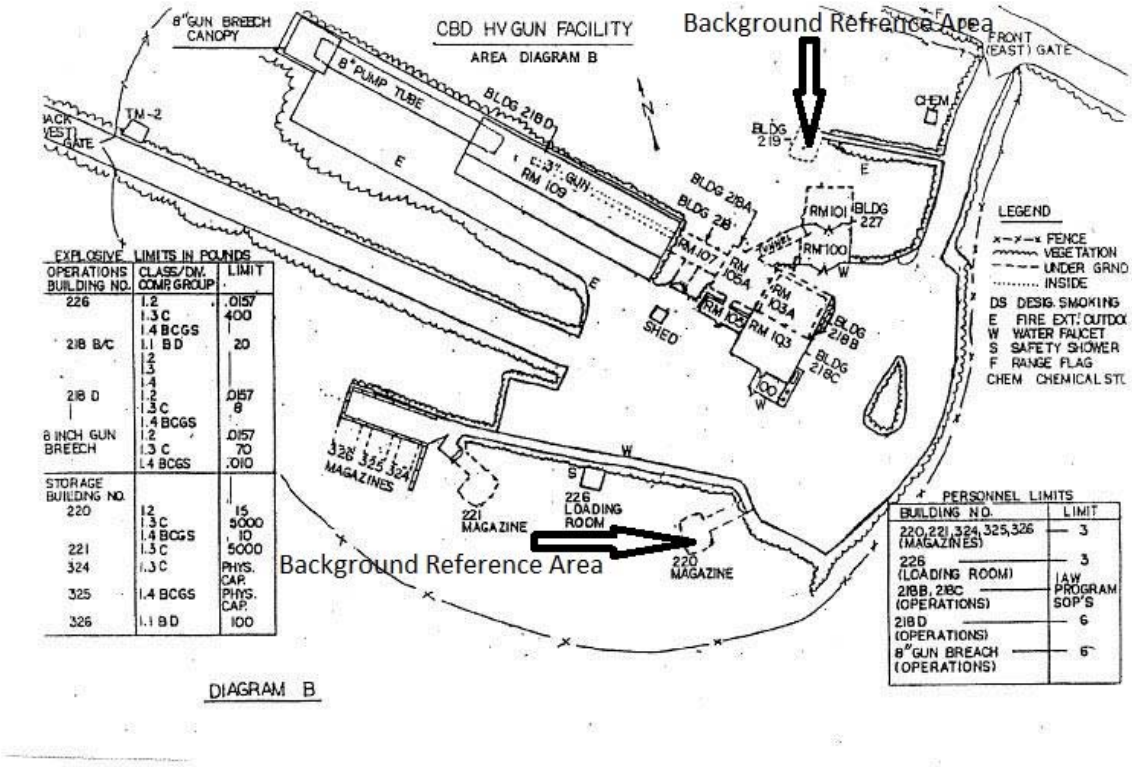
The background reference data sheets are present in this report in Appendix C.

Table 4 Background Reference Area Data

Instrument/Probe Serial Number	Probe Size In cm^2	Alpha $2\pi/4\pi$ Instrument Efficiency %	Beta $2\pi/4\pi$ Instrument Efficiency %	Mean Gross Alpha Background Activity in $dpm/100cm^2$	Mean Gross Beta-Gamma Background Activity in $dpm/100cm^2$	Gross Alpha Scan Probability %	Gross Alpha Static MDC in $dpm/100cm^2$	Gross Beta Scan MDC in $dpm/100cm^2$	Gross Beta Static MDC in $dpm/100cm^2$	Calibration Due Date
Cinder Block										
184949/268605	100	42.3/21.3	26.8/14.7	46	3,512	100	83	1,264	630	03/06/19
193668/326725	100	49.7/25.1	32.7/18.0	25	3,242	100	59	1,099	547	08/15/18
268488/190672	582	30.2/15.3	37.0/18.2	13	1,459	100	21	1,256	142	10/27/18
268497/093965	582	31.0/15.7	35.2/17.3	11	1,720	100	19	1,398	158	10/10/18
297743/302111	582	31.9/16.1	38.4/18.9	18	1,804	100	32	1,187	116	10/10/18
297758/299597	100	44.4/22.5	31.3/17.2	61	4,033	100	90	1,253	623	02/14/19
297766/323074	100	40.4/20.4	25.4/14.0	49	4,206	100	87	1,421	707	12/20/18
Concrete Floor										
184949/268605	100	42.3/21.3	26.8/14.7	17	1,689	100	56	780	391	03/06/19
193668/326725	100	49.7/25.1	32.7/18.0	18	2,180	100	52	901	451	08/15/18
268488/190672	582	30.2/15.3	37.0/18.2	13	1,091	100	22	1,086	123	10/27/18
268497/093965	582	31.0/15.7	35.2/17.3	11	1,158	100	19	1,147	130	10/10/18
276990/190620	582	28.7/14.5	39.5/19.5	8	940	100	25	976	110	03/20/19
297743/302111	582	31.9/16.1	38.4/18.9	14	1,353	100	29	1,187	134	10/10/18
297758/299597	100	44.4/22.5	31.3/17.2	16	2,379	100	76	963	481	02/14/19
297766/323074	100	40..4/20.4	25.4/14.0	21	2,853	100	62	1,170	585	12/20/18
Concrete Wall										
184949/268605	100	42.3/21.3	26.8/14.7	11	1,689	100	48	876	441	03/06/19
193668/326725	100	49.7/25.1	32.7/18.0	13	1,402	100	46	723	364	08/15/18
268488/190672	582	30.2/15.3	37.0/18.2	13	594	100	21	801	91	10/27/18
268497/093965	582	31.0/15.7	35.2/17.3	9	717	100	18	903	102	10/10/18
297743/302111	582	31.9/16.1	38.4/18.9	11	799	100	19	790	78	10/10/18
297758/299597	100	44.4/22.5	31.3/17.2	15	1,679	100	52	809	406	02/14/19
297766/323074	100	40.4/20.4	25.4/14.0	19	1,892	100	60	953	479	12/20/18

Corrugated Metal										
184949/268605	100	42.3/21.3	26.8/14.7	7	1,659	100	41	869	438	03/06/19
193668/326725	100	49.7/25.1	32.7/18.0	10	1,302	100	42	697	351	08/15/18
297758/299597	100	44.4/22.5	31.3/17.2	8	1,491	100	42	762	384	02/14/19
297766/323074	100	40.4/20.4	25.4/14.0	9	2,023	100	46	985	495	12/20/18
Metal										
184949/268605	100	42.3/21.3	26.8/14.7	7	1,362	100	61	787	398	03/06/19
193668/326725	100	49.7/25.1	32.7/18.0	7	1,142	100	37	653	330	08/15/18
268488/190672	582	30.2/15.3	37.0/18.2	7	558	100	16	777	88	10/27/18
268497/093965	582	31.0/15.7	35.2/17.3	7	630	100	17	846	96	10/10/18
276990/190620	582	28.7/14.5	39.5/19.5	5	567	100	15	758	501	03/20/19
297743/302111	582	31.9/16.1	38.4/18.9	9	644	100	18	819	541	10/10/18
297758/299597	100	44.4/22.5	31.3/17.2	11	1,296	100	46	710	358	02/14/19
297766/323074	100	40.4/20.4	25.4/14.0	11	1,733	100	49	912	460	12/20/18

Figure 3 Background Reference Areas



6.2 Area Classifications

For the purposes of establishing the sampling and measurement frequency and pattern, the Bay 218 areas were divided into impacted areas with one of three following classifications:

Class 1 Areas: Areas that have, or had prior to remediation, a potential for radioactive contamination (based on site operational history) or known contamination (based on previous radiation surveys) above the release limits. Examples of Class 1 areas include:

- site areas previously subjected to remedial actions
- locations where leaks or spills are known (or suspected) to have occurred
- radioactive material storage areas

- areas with contaminants in discrete solid pieces of material or high specific activity

*Class 2 Area*s: Areas that have, or had prior to remediation, a potential for radioactive contamination or known contamination but are not expected to exceed the DCGL's provided in Section 1.4. To justify changing the classification from Class 1 to Class 2, there should be measurement data that provides a high degree of confidence that no individual measurement would exceed the release limits. Other justifications for reclassifying an area, as Class 2 may be appropriate, based on site-specific considerations. Examples of areas that might be classified as Class 2 include:

- locations where radioactive materials were present in an unsealed form
- areas downwind from the main areas of concern (AOC)
- areas handling radioactive materials
- areas on the perimeter of former contamination control areas

*Class 3 Area*s: Any impacted areas that are not expected to contain any residual radioactivity, or are expected to contain levels of residual radioactivity at a small fraction of the release limits, based on site operating history and previous radiation surveys. Examples of areas that might be classified as Class 3 include buffer zones around Class 1 or Class 2 areas and areas with very low potential for residual contamination but insufficient information to justify a non-impacted classification.

Based upon process knowledge, and operational history, the Building 218 rooms floors and lower walls (below 6') were classified as C*lass 1* areas, the upper walls and ceiling/overhead areas were classified as *Class 2 a*reas.

6.3 Survey Units

Table 5 below presents the classifications and number of survey units of the areas where radiological surveys were performed during this effort.

Table 5 Building 218 Survey Unit Summary Table

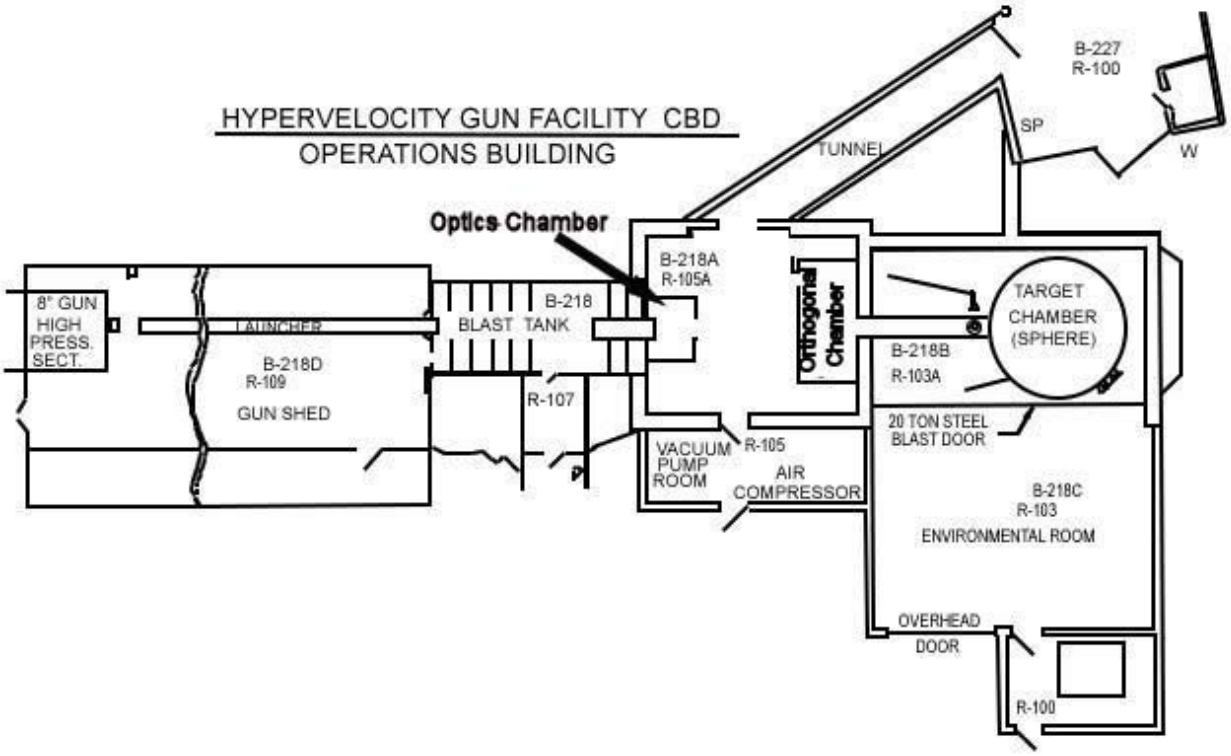
Area/Location	MARSSIM Classification	Total Surface Area (m^2/ft^2)	Radionuclide(s) of Concern	Number of Survey Units	Number of Direct Measurements/S wipe Samples	Length of Grid Pattern in Meters/Feet
Bldg. 218 Room 100 Floor	Class 1	~9/96	DU	1	16	~ 0.8/2.5
Bldg. 218 Room 100 Lower Walls	Class 1	~22/240	DU	1	16	~ 1.2/4
Bldg. 218 Room 100 Upper Walls	Class 2	~22/240	DU	1	16	~ 1.2/4
Bldg. 218 Room 100 Ceiling	Class 2	~9/96	DU	1	16	~ 0.8/2.5
Bldg 218 Room 103 Floor	Class 1	~152/500	DU	1	16	~ 1.8/6
Bldg 218 Room 103 Lower Walls	Class 1	~164/540	DU	1	16	~1.8/6
Bldg 218 Room 103 Upper Walls	Class 2	~246/810	DU	1	16	~ 2.3/7.5
Bldg 218 Room 103 Ceiling	Class 2	~152/500	DU	1	16	~ 1.8/6
Bldg 218 Room 103A Floor	Class 1	~114/375	DU	1	16	~ 1.5/5
Bldg 218 Room 103A Lower Walls	Class 1	~146/480	DU	1	16	~ 1.8/6
Bldg 218 Room 103A Upper Walls	Class 2	~219/720	DU	1	16	~ 2.1/7
Bldg 218 Room 103A Ceiling	Class 2	~114/375	DU	1	16	~ 1.5/5
Bldg 218 Room 105 Floor	Class 1	~44/143	DU	1	16	~ 0.9/3
Bldg 218 Room 105 Lower Wall	Class 1	~96/318	DU	1	16	~ 1.5/5
Bldg 218 Room 105A Floor	Class 1	~93/306	DU	1	16	~ 0.9/3
Bldg 218 Room 105A Lower Walls	Class 1	~190/624	DU	1	16	~ 2.1/7
Bldg 218 Room 105A Ceiling	Class 1	~93/306	DU	1	16	~ 0.9/3
Tunnel Floor	Class 1	~13/45	DU	1	16	~ 0.6/2
Tunnel Ceiling	Class 2	~13/45	DU	1	16	~ 0.6/2
Tunnel Wall	Class 1	~74/246	DU	1	16	~ 1.2/4
Bldg 227 Room 100 Floor	Class 1	~77/255	DU	1	16	~ 1.2/4
Bldg 227 Room 100 Lower Wall	Class 1	~117/384	DU	1	16	~ 1.5/5
Target Sphere Bottom	Class 1	~21/226	DU	1	16	~0.9/3
Target Sphere Top	Class 1	~21/226	DU	1	16	~0.9/3
Blast Tank	Class 1	~ 71/766	DU	1	N/A	N/A
Optics Chamber	Class 1	~34/368	DU	1	N/A	N/A
Orthogonal Chamber	Class 1	~ 36/386	DU	1	N/A	N/A

Survey units are limited in size based on classification, exposure pathway modeling assumptions, and site-specific conditions. MARSSIM (Rev. 1, August 2000) recommends areas for survey units according to the following:

Classification	Suggested Area
Class 1 Building Surfaces	up to 100 m^2/1,076 ft^2 floor area
Class 2 Building Surfaces	100 m^2/1076 ft^2 to 1,000 m^2/10,763 ft^2
Class 3 Building Surfaces	no limit
Class 1 Outdoor Areas	up to 2,000 m^2/21,528 ft^2
Class 2 Outdoor Areas	2,000 m^2/21,528 ft^2 to 10,764 m^2/ ft^2
Class 3 Outdoor Areas	no limit

Figure 4 presents a map showing the locations of the rooms and areas.

Figure 4 Building 217 Room/Area Location Map



6.4 Reference Grids

A reference coordinate system was laid out for each survey unit to obtain survey data and sample location points. A square grid system was used for the Final Status Surveys in the Bay 4 areas. The length, L, of a side of the square grid is determined by the total number of samples or measurements to be taken. The length of the square determined the distance between direct measurements (MARSSIM, 2000). The length or spacing of the grids was calculated for the survey unit using the following equation:

Where,

$$L = \sqrt{\frac{A}{N}}$$

L = length of squares grids (ft);

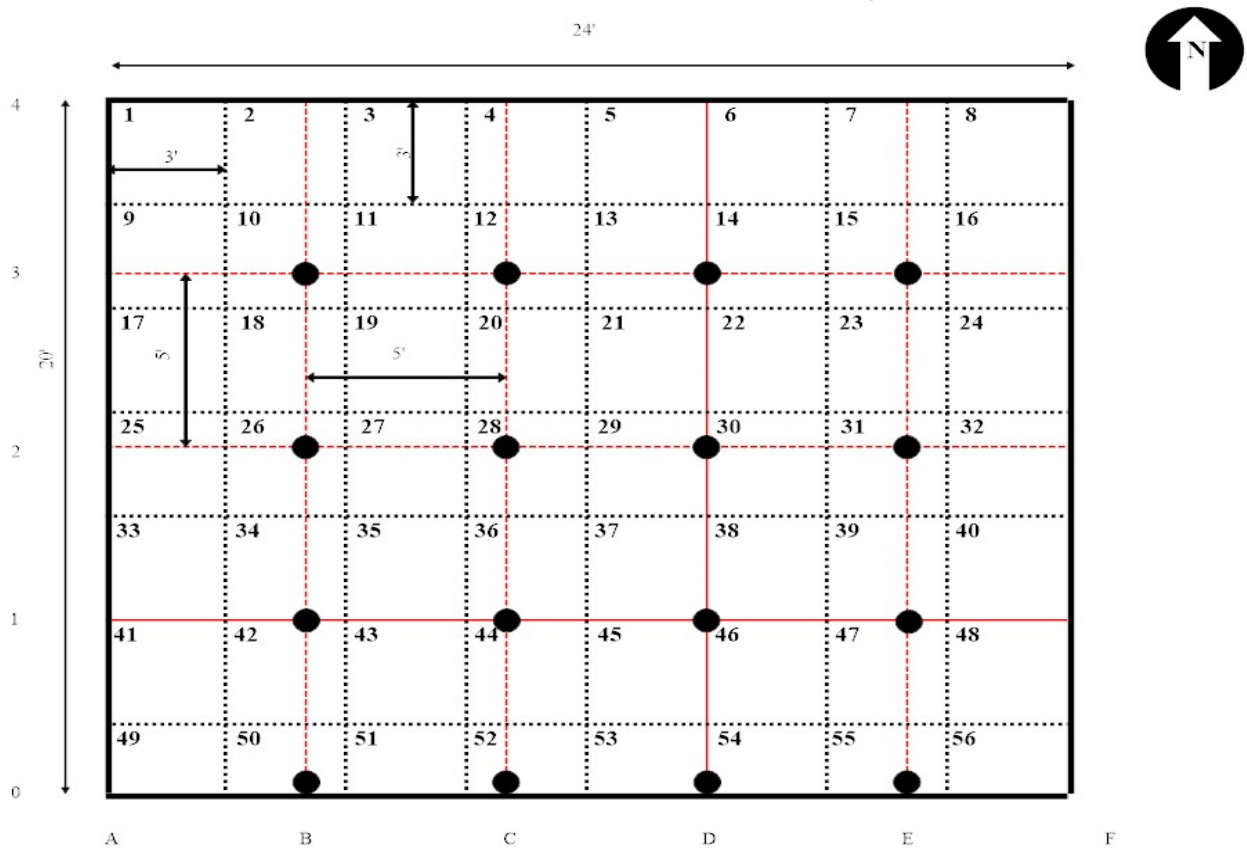
A = surface area of the survey unit (ft^2); and

N = statistically calculated number of samples.

NOTE: Figures 5, 6, 7, and 8 present illustrative diagrams of the survey units for the Room 103 floor, lower walls, upper walls, and ceiling. Other survey units were laid out in the same manner as described above, but are not illustratively presented in the body of this report, but are included in the applicable attached Appendix with the survey reports of the survey unit. A minimum of 16 direct measurement/swipe or soil samples were collected in each survey unit.

Figure 5 Room 103 Floor Survey Unit Layout Diagram

Room 103 Floor Static Point and Scan Survey



Denotes Direct Measurement/Swipe Sample Location Point

Denotes Scan Grids is Coincident with Direct Measurement/Swipe Sample Location

Denotes Distance Between Direct Measurement/Swipe Sample Location Point

Denotes Scan Grids

Figure 6 Room 103 Lower Walls Survey Unit Layout Diagram

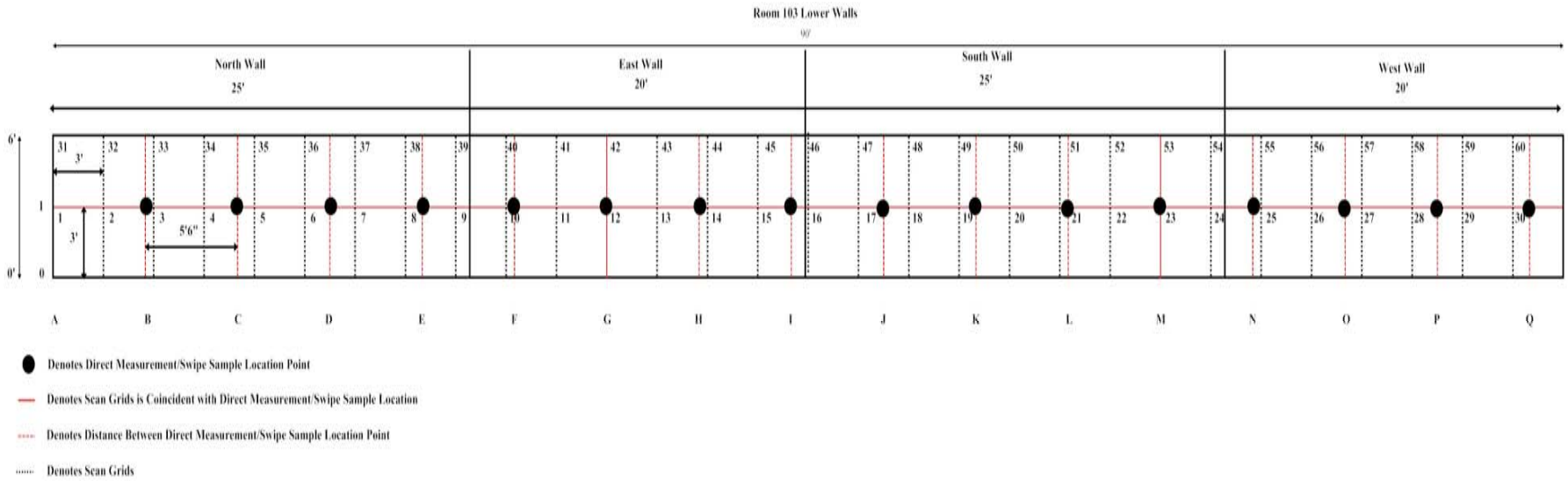


Figure 7 Room 103 Upper Walls Survey Unit Layout Diagram

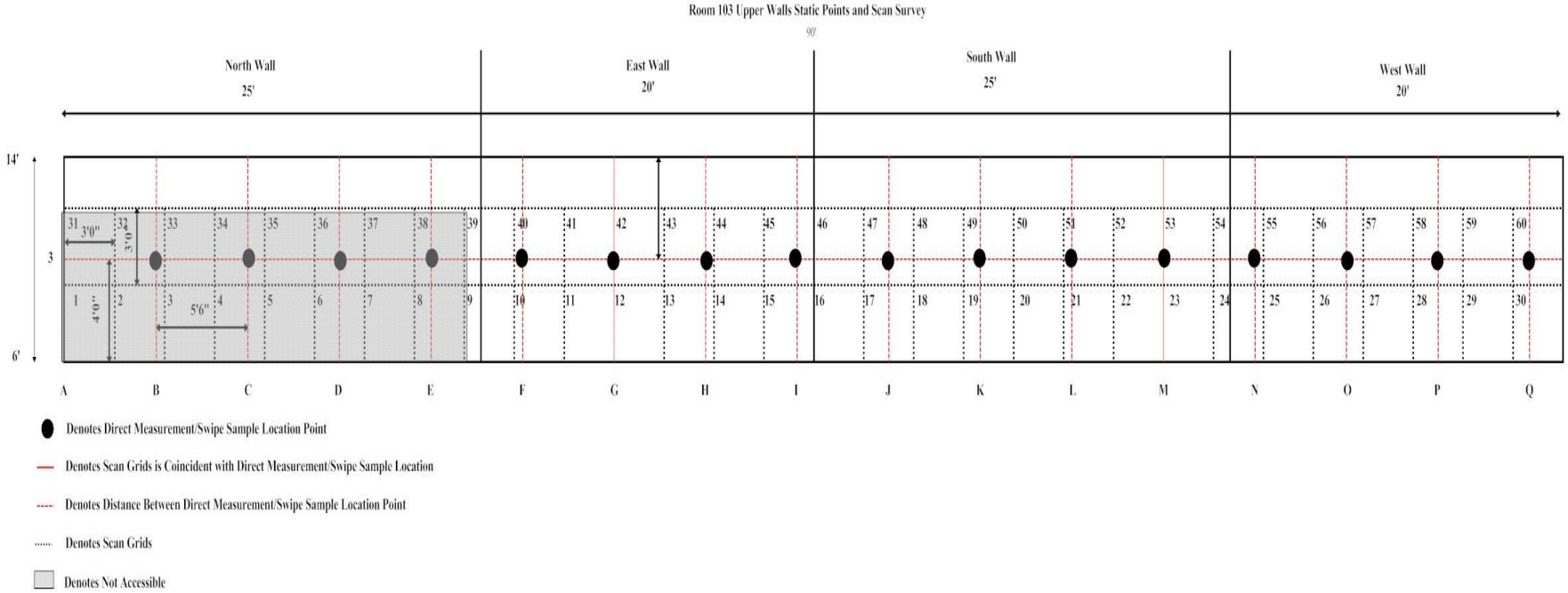
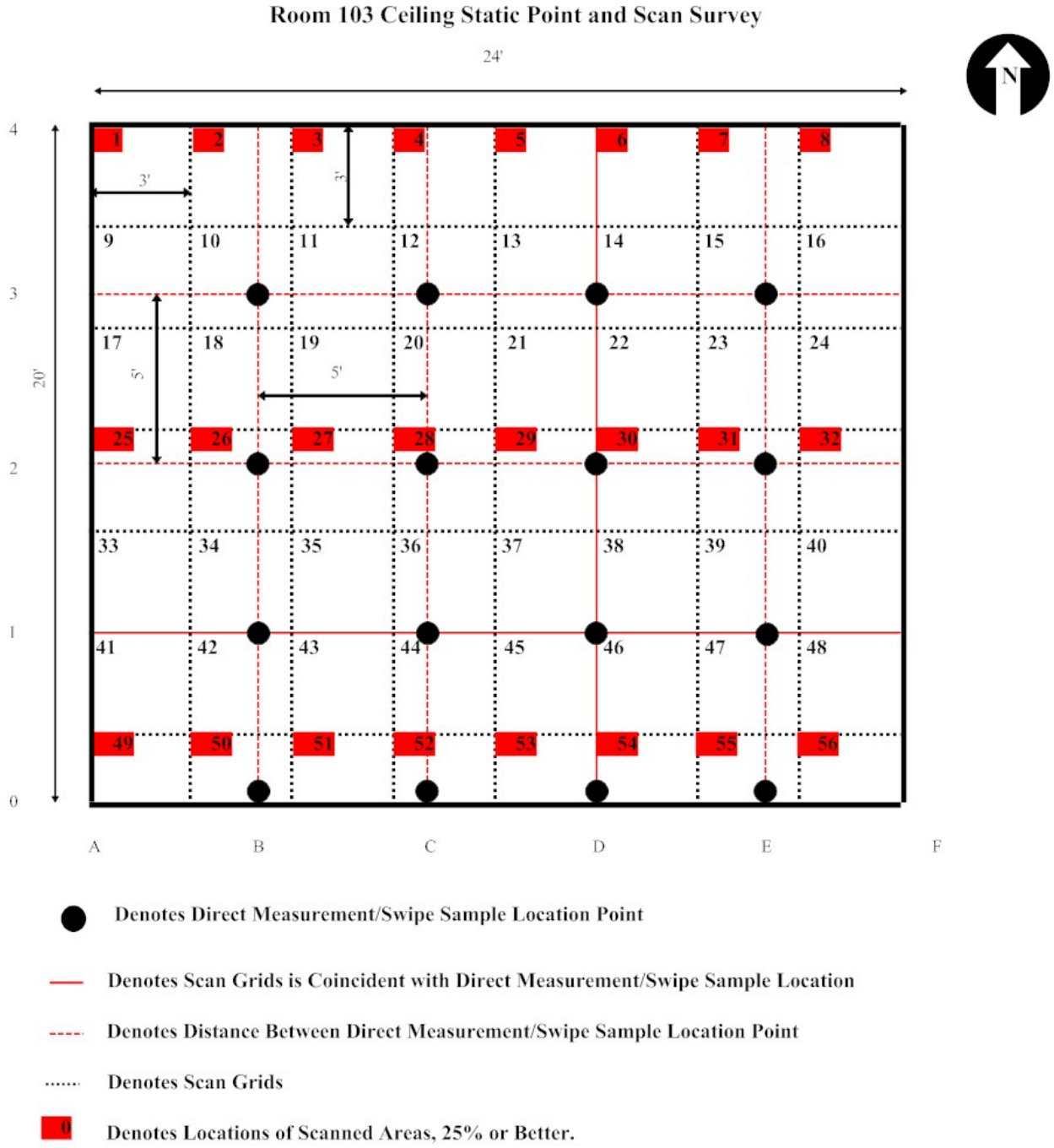


Figure 8 Room 103 Ceiling Survey Unit Layout Diagram



6.5 Systematic vs. Biased Sampling

It is important to randomly survey a site, so that each part of the site has an equal chance of being surveyed. This type of survey is called systematic. However, knowledge of the site can identify areas that are more likely to contain contaminants. These were examined closely. This type of survey is called biased.

Systematic and biased sampling was employed during the surveys. Systematic direct measurement/swipe samples were collected in all of the survey units. However, in addition to these systematic direct measurement/swipe samples, other direct measurement/swipe samples were collected only where the gross alpha/beta-gamma scan surveys indicated elevated levels of residual contamination, that were discovered.

6.6 Survey Instrumentation

6.6.1 Instrumentation Selection

Instruments were selected that are suitable for the physical and environmental conditions at the site. The instruments and measurement methods selected were able to detect the radionuclide of concern or radiation types of interest, and are, in relation to the survey or analytical technique, capable of measuring levels that are equal to or less than the release limits.

6.6.2 Instrument for the Scan Surveys for Alpha and Beta Surface Activity (Personnel)

Surface scan surveys for alpha and beta radiation were conducted with Ludlum Model 44-9 thin windowed GM probes or equivalent, coupled to Ludlum Model 3 survey meters or equivalent. The probes had 1.7 $mg/cm^2 \pm 0.3$ mg/cm^2 thick mica windows. The detectors were moved over the surface being surveyed at a rate of 0.5 cm per second. The detectors were held within ¼" of the surface being surveyed. Audible indicators were used during the surveys

6.6.3 Instrument for the Scan Surveys for Alpha and Beta Surface Activity (Walls, Floor, and Ceiling Building Surfaces)

Surface scan surveys for alpha and beta radiation were conducted with Ludlum Model 43-37 large area gas proportional detectors, coupled to Ludlum Model 2360 Data Loggers. The probes had 0.8 mg/cm^2 thick mylar windows. The detectors were moved over the surface being surveyed at a rate of 0.7 to 1.5 cm per second. The detectors were held within ¼" of the surface being surveyed. Audible indicators were used during the surveys

6.6.4 Instrument for the Direct Measurements for Alpha and Beta Surface Activity (Walls, floor, and Ceiling Building Surfaces, Equipment, and Tools)

Direct surface contamination surveys for alpha and beta radiation were conducted with Ludlum Model 43-93 large area scintillation detectors, coupled to Ludlum Model 2360 Data Loggers. The probes had 1.2 mg/cm^2 thick mylar windows. Direct measurements were conducted with the detector ¼" or less away from the surface for a period of 2 minutes.

6.6.5 Gross Beta-Gamma-Alpha Loose Surface Contamination Surveys

Loose surface contamination surveys of alpha and beta/gamma emitters were performed using cloth smears.

The swipe survey was performed by wiping over an area of 100 cm^2 (~ 4" by 4") with a cloth smear, and applying moderate pressure.

The smears were analyzed with a Ludlum Model-2929 Dual Channel Scaler phoswich detector or equivalent.

6.6.6 Instrument for the Measurement of Gamma Exposure Rates

Gamma exposure rate measurements were performed using a Ludlum Model 19 microR/meter. The Ludlum Model 19 is a high sensitivity gamma microR/meter employing an internally housed 1-inch diameter by 1-inch thick NaI crystal.

6.6.7 Instrument for the Measurement of Gamma Count Rate

Gamma count rate measurements were performed using a Ludlum Model 2350-1 data logger coupled to a Ludlum Model 44-10 2" by 2" Na I detector.

NOTE: The following sections are for informational purposes. The actual calculated values are listed along with the background reference area data presented in Table 4.

6.7 Detection Sensitivity—Static and Scan Minimum Detectable Concentration (MDC), Gross Alpha-Gross Beta Surveys

6.7.1 Determination of Instrument Efficiency (ε_I) for Alpha and Beta Surface Activity Measurements

The instrument efficiency (ε_i) is determined during calibration and is defined as the ratio between the net count rate (in counts per minute (cpm)) of the instrument and the surface emission rate of the calibration source for a specified geometry. The surface emission rate is the 2π particle fluence that is affected by both the attenuation and backscatter of the radiation emitted from the calibration source. Equation 1 wasbe used

to calculate the instrument efficiency in counts per particle, although efficiency is typically reported as having no units or unitless.

Equation 1

$$\varepsilon_i = \frac{R_{S+B} - R_B}{q_{2\Pi}\left(W_A / S_A\right)}$$

Where,
R_{S+B} = the gross count rate of the calibration measurement (cpm)
R_B = the background count rate in cpm
$q_{2\pi}$ = surface emission rate of the calibration source (NIST traceable)
W_A = Active Area of the detector window (cm^2)
S_A = Area of the source (cm^2)

Note: This equation assumes that the dimensions of the calibration source are sufficient to cover the window of the instrument detector. If the dimensions of the calibration source are smaller than the detector's window, set W_A equal to the dimensions of the calibration source, i.e., set the quotient of W_A and S_A equal to 1.

The instrument efficiency was determined during calibration by obtaining static counts with the detector over a calibration source that has a National Institute of Standards and Technology (NIST) traceable surface emission rate. The 2π particle fluence rate is corrected for decay, attenuation and scatter, then; the surface emission rate of the source must be corrected for the area subtended by the probe. Factors that can also affect the instruments efficiency are discussed below:

Calibration Sources: The calibration sources selected emit alpha or beta radiation with energies similar to those expected from the contaminant in the field, i.e., similar to the expected radionuclide(s) of concern.

Source Geometry Factors: The instrument efficiency is determined with a calibration source equal to or greater than the area of the probe.

Source-to-Detector Distance: The detector is calibrated at a source-to-detector distance that is the same as the detector-to-surface distance used in the field.

Window Density Thickness: The detector is calibrated with a probe window density thickness that is the same as the probe window density thickness used in the field.

Detector-Related Factors - Ambient Conditions: If ambient conditions such as the

temperature, pressure, and humidity vary significantly, during calibration and during field use, corrections to the detector's response will be considered.

6.7.2 Static MDC

The static MDC is the level of radioactivity, on a surface, that is practically achievable by the overall measurement process. The conventional equation, Equation 2, was used to calculate instrument MDCs in dpm per 100 cm^2 when the background and sample are counted for the same time intervals.

Equation 2

$$MDC = \frac{3 + 4.65\sqrt{C_B * T_B}}{\varepsilon_i \varepsilon_s \frac{W_A}{100\ cm^2} T_B}$$

where;
C_B = background count rate (cpm)
T_B = background counting time (min)
ε_i = instrument efficiency (count per particle)
ε_s = contaminated surface efficiency (particle per disintegration)
W_A= area of the detector window (cm^2)

If the background and sample are counted for different time intervals, Equation 3 was used to calculate the MDC in dpm per 100 cm^2.

Equation 3

$$MDC = \frac{3 + 3.29\sqrt{R_B T_{S+B}\left(1 + \frac{T_{S+B}}{T_B}\right)}}{\varepsilon_i \varepsilon_s \frac{W_A}{100\ cm^2} T_{S+B}}$$

where;

R_B = background count rate (cpm)
T_B = background counting time (min)
T_{S+B} = sample counting time (min)
ε_i = the instrument efficiency (count per particle)

ε_s = the contaminated surface efficiency (particle per disintegration)
W_A = the area of the detector window (cm^2)

6.7.3 Surface Efficiency (ε_s) for Surface Activity Measurements

The surface efficiency term in Equations 2 and 3 is used to determine the 4π total efficiency for a particular surface and condition. Suitable values are based on the radiation and radiation energy, and are primarily impacted by the backscatter and self-absorption characteristics of the surface on which the contamination exists in the field. Backscatter is most affected by the energy of the radiation and the density of the surface material. Self-absorption characteristics or attenuation are also a function of the radiation's energy and surface condition. Surfaces typically encountered in the field include concrete, wood, dry wall, plaster, carpet, and metal. Surface conditions include both physical effects, such as scabbled concrete, and the effect of surface coatings, i.e., dust, paint, rust, water, and oil.

In the absence of experimentally determined surface efficiencies, ISO-7503-1 and NUREG 1507, provide conservative recommendations for surface efficiencies. ISO-7503-1, recommends a surface efficiency of 0.5 for maximum beta energies exceeding 0.5 MeV, and to use a surface efficiency of 0.25 for beta energies between 0.15 and 0.4 MeV and for alpha emitters (ISO, 1998), (NRC, 1997). NUREG-1507 provides surface efficiencies based on studies performed primarily at ORISE. In general, NUREG-1507 indicates that the ISO rule-of-thumb for surface efficiencies is conservative, particularly for beta-emitting radionuclides with end-point energies between 0.25 MeV and 0.4 MeV.

The surface condition on the building surfaces were concrete and metal surfaces that were slightly covered with dust. The surface efficiency for alpha emitters used in accordance with ISO-7503-1 is 0.25 and for beta emitters is 0.375. The weighted surface efficiency for the beta emitter is based upon the beta energy of 2.2 MeV for the decay of Pa-234m.

6.7.4 Probe Area Correction Factor for Surface Activity Measurements

In Equation 2, W_A is the size of the "active" area of the detector window. If the area of the detector window (cm^2) does not equal 100 cm^2, it is necessary to convert the detector response to units of dpm per 100 cm^2.

NOTE: The following calculations are for illustrative purposes only. Actual values were calculated using site specific (background, instrument efficiencies, etc.) data.

6.7.5 Scanning Minimal Detectable Count Rate, (MDCR)

The minimum detectable number of net source counts in the scan interval, for an ideal observer, can be arrived at by multiplying the square root of the number of background counts (in the scan interval) by the detectability value associated with the

desired performance (as reflected in d') as shown in Equation 4.

Equation 4

$$MDCR = d'\sqrt{b_i} \times 60/i$$

where,

d' = index of sensitivity (α and β error) – MARSSIM Table 6.5
b_i = number of background counts in scan time interval (count)
i = scan or observation interval (s) (time that a typical source remains under the probe during the scan)

6.7.6 Scan MDCs for Building Surfaces, Equipment, Material, and Tools (Beta-Gamma, 100cm^2 probe)

The scan MDC is determined from the minimum detectable count rate (MDCR) by applying conversion factors that account for detector and surface characteristics and surveyor efficiency. As discussed below, the MDCR accounts for the background level, performance criteria (d'), and observation interval. The observation interval during scanning is the actual time that the detector can respond to the contamination source. This interval depends on the scan speed, detector size in the direction of the scan, and area of elevated activity.

The scan MDC for building, equipment, material, and tool surfaces was calculated using Equation 5.

Equation 5

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

Where;
MDCR = discussed in Section 6.7.5
p = surveyor efficiency factor
ε_ι = instrument efficiency (count per particle)
ε_s = contaminated surface efficiency (particles per disintegration)
W_A = area of the detector window (cm^2)

6.7.7 Scan MDCs for Building Surfaces, Equipment, Material, and Tools (Alpha, 100cm^2 probe)

Scanning for alpha emitters differs significantly from scanning for beta and gamma emitters in that the expected background response of most alpha detectors is very close to zero. The following section cover scanning for alpha emitters and assumes that the surface being surveyed is similar in nature to the material on which the detector was calibrated. In this respect, the approach is purely theoretical. Surveying surfaces that are dirty, non-planar, or weathered can significantly affect the detection efficiency and therefore bias the expected MDC for the scan. The use of reasonable detection efficiency values instead of optimistic values is highly recommended.

Since the time a contaminated area is under the probe varies and the background count rate of some alpha instruments is less than 1 cpm, it is not reasonable to determine a fixed MDC for scanning. Instead, it is more practical to determine the probability of detecting an area of contamination at a predetermined DCGL for given scan rates.

For alpha survey instrumentation with backgrounds ranging from <1 to 3 cpm, a single count provides a surveyor sufficient cause to stop and investigate further. Assuming this to be true, the probability of detecting given levels of alpha surface contamination can be calculated by use of Poisson summation statistics.

Given a known scan rate and a surface contamination release limit, the probability of detecting a single count while passing over the contaminated area was calculated using Equation 6 below:

Equation 6

$$P(n \geq 1) = 1 - e^{\frac{-GEd}{60v}}$$

Where;

P(n≥1)	=	probability of observing a single count
G	=	contamination activity (dpm)
e	=	2.7182818
E	=	detector efficiency (4π)
d	=	width of detector in direction of scan (cm)
v	=	scan speed (cm/s)

$$100\% = 1 - 2.7182818^{\frac{-1150*.182*8}{60*1.5}}$$

Once a count is recorded and the guideline level of contamination is present the surveyor should stop and wait until the probability of getting another count is at least 90%. This time interval can be calculated using Equation 7 below:

Equation 7

$$t = \frac{13,800}{CAE}$$

Where

t	=	time period for static count(s)
C	=	contamination guideline (dpm/100cm^2)
A	=	physical probe area (cm^2)
E	=	detector efficiency (4π)

6.7.8 Scan MDCs for Alpha Emitters (582 cm^2 probe)

The larger (582cm^2) gas proportional detectors have background count rates on the order of 5 to 10 cpm, and a single count will not cause a surveyor to investigate further. A counting period long enough to establish that a single count indicates an elevated contamination level would be prohibitively inefficient. For these types of instruments, the surveyor usually will need to get at least 2 counts while passing over the source area before stopping for further investigation.

Assuming this to be a valid assumption, the probability of getting two or more counts was calculated by Equation 8 below.

Equation 8

$$P(n \geq 2) = 1 - e^{-\frac{(GE+B)t}{60}}\left(1 + \frac{(GE+B)t}{60}\right)$$

Where

P(n≥2)	=	probability of getting 2 or more counts during the time interval *t*
t	=	d/v, dwell time over source (s)
G	=	contamination activity (dpm)
e	=	2.7182818
E	=	detector efficiency (4π)
B	=	background count rate (cpm)

Using Equation 8 above, the scan probability calculation is illustrated below using the parameters of one of the instruments actually used during the surveys at a scan rate of 1.5 cm/s:

$$100\% = 1 - 2.7182818^{-\frac{(1150*0.157+4.9)9}{60}}\left(1+\frac{(1150*0.157+4.9)9}{60}\right)$$

6.7.9 Scan MDC (Alpha)

Using the following equation (Abelquist, 2001), one can calculate the activity of a 100 cm^2 "hot spot" with a 90 % probability of detection using Equation 9 below.

Equation 9

$$\alpha\ scanMDC = \frac{[-\ln(1-P(n\geq 1))]60}{t\varepsilon_S\varepsilon_i}$$

Where

t	=	dwell time over source (seconds)
ε_i	=	Instrument efficiency (counts per particle)
ε_s	=	contaminated surface efficiency (particles per disintegration)

6.8 Survey Design

6.8.1 Building 218 Rooms, Floor, Lower Wall Class 1 Survey Units

6.9.1.1 Gross Alpha/Gross Beta Scan Surveys

100% coverage surface scan surveys for gross alpha and beta radiation were conducted with a Ludlum Model 43-37 large area gas proportional detector, coupled to a Ludlum Model 2360 Data Logger. The probes had 0.8 mg/cm^2 thick mylar windows. The detector was moved over the surface being surveyed at a variable rate of 0.75 to 1.5 cm per second. The detector was held within ¼" of the surface being surveyed. Audible indicators were used during the surveys. The data loggers were setup to record a gross alpha and gross beta count rate every 6 seconds (due to the limitations of the data logger, count rates were recorded every 11-12 seconds).

6.9.1.2 Gross Alpha/Gross Beta-Gamma Direct Measurements

The surveys consisted of 2 minute direct measurement surveys for alpha-beta radiations using a large area scintillation detector system (Ludlum Instruments Model 2360 Data Logger coupled to a Ludlum Instruments Model 43-93 scintillation detector).

The results of the direct measurements were recorded on form AWS-001RCS, Radiation Contamination Survey Cover Sheet or equivalent electronic spreadsheet.

6.9.1.3 Gross Beta-Gamma-Alpha Loose Surface Contaminations Surveys

Loose surface contamination surveys of alpha and beta/gamma emitters were performed using cloth smears.

The swipe survey was performed by wiping over an area of 100 cm^2 (~ 4" by 4") with a cloth smear, and applying moderate pressure.

The smears were analyzed with a Ludlum Model-2929 Dual Channel Scaler phoswich detector or equivalent in accordance with AWS SOP IOP-2, "Operation and Calibration of the Ludlum Model 2929 Dual Channel Scaler".

One swipe sample was collected at each gross alpha/beta direct measurement location.

The results of the smears were recorded on form AWS-006, Smear Counting Analysis Report or equivalent electronic spreadsheet.

6.8.2 Building 218 Rooms Upper Wall Class 2 Survey Units

6.9.1.1 Gross Alpha/Gross Beta Scan Surveys

80 % coverage surface scan surveys for gross alpha and beta radiation were conducted with a Ludlum Model 43-37 large area gas proportional detector, coupled to a Ludlum Model 2360 Data Logger. The probes had 0.8 mg/cm^2 thick mylar windows. The detector was moved over the surface being surveyed at a variable rate of 0.75 to 1.5 cm per second. The detector was held within ¼" of the surface being surveyed. Audible indicators were used during the surveys. The data loggers were setup to record a gross alpha and gross beta count rate every 6 seconds (due to the limitations of the data logger, count rates were recorded every 11-12 seconds).

6.9.1.2 Gross Alpha/Gross Beta-Gamma Direct Measurements

The surveys consisted of 2 minute direct measurement surveys for alpha-beta radiations using a large area scintillation detector system (Ludlum Instruments Model 2360 Data Logger coupled to a Ludlum Instruments Model 43-93 scintillation detector).

The results of the direct measurements were recorded on form AWS-001RCS, Radiation Contamination Survey Cover Sheet or equivalent electronic spreadsheet.

6.9.1.3 Gross Beta-Gamma-Alpha Loose Surface Contaminations Surveys

Loose surface contamination surveys of alpha and beta/gamma emitters were performed using cloth smears.

The swipe survey was performed by wiping over an area of 100 cm^2 (~ 4" by 4") with a cloth smear, and applying moderate pressure.

The smears were analyzed with a Ludlum Model-2929 Dual Channel Scaler phoswich detector or equivalent in accordance with AWS SOP IOP-2, "Operation and Calibration of the Ludlum Model 2929 Dual Channel Scaler".

One swipe sample was collected at each gross alpha/beta direct measurement location.

The results of the smears were recorded on form AWS-006, Smear Counting Analysis Report or equivalent electronic spreadsheet.

6.8.3 Building 218 Rooms, Ceiling/Overhead Class 2 Survey Units

6.9.1.1 Gross Alpha/Gross Beta Scan Surveys

30 % coverage surface scan surveys for gross alpha and beta radiation were conducted with a Ludlum Model 43-37 large area gas proportional detector, coupled to a Ludlum Model 2360 Data Logger. The probes had 0.8 mg/cm^2 thick mylar windows. The detector was moved over the surface being surveyed at a variable rate of 0.75 to 1.5 cm per second. The detector was held within ¼" of the surface being surveyed. Audible indicators were used during the surveys. The data loggers were setup to record a gross alpha and gross beta count rate every 6 seconds (due to the limitations of the data logger, count rates were recorded every 11-12 seconds).

6.9.1.2 Gross Alpha/Gross Beta-Gamma Direct Measurements

The surveys consisted of 2 minute direct measurement surveys for alpha-beta radiations using a large area scintillation detector system (Ludlum Instruments Model 2360 Data Logger coupled to a Ludlum Instruments Model 43-93 scintillation detector).

The results of the direct measurements were recorded on form AWS-001RCS, Radiation Contamination Survey Cover Sheet or equivalent electronic spreadsheet.

6.9.1.3 Gross Beta-Gamma-Alpha Loose Surface Contaminations Surveys

Loose surface contamination surveys of alpha and beta/gamma emitters were performed using cloth smears.

The swipe survey was performed by wiping over an area of 100 cm^2 (~ 4" by 4") with a cloth smear, and applying moderate pressure.

The smears were analyzed with a Ludlum Model-2929 Dual Channel Scaler phoswich detector or equivalent in accordance with AWS SOP IOP-2, "Operation and Calibration of the Ludlum Model 2929 Dual Channel Scaler".

One swipe sample was collected at each gross alpha/beta direct measurement location.

The results of the smears were recorded on form AWS-006, Smear Counting Analysis Report or equivalent electronic spreadsheet.

6.8.4 Building 218 Blast Tank, Target Sphere, Orthogonal Chamber, Optics Chamber

6.9.1.1 Gross Alpha/Gross Beta Scan Surveys

100% coverage surface scan surveys for gross alpha and beta radiation were conducted with a Ludlum Model 43-93 large area scintillation detector, coupled to a Ludlum Model 2360 Data Logger. The probes had 1.2 mg/cm^2 thick mylar windows. The detector was moved over the surface being surveyed at a variable rate of 0.75 to 1.5 cm per second. The detector was held within ¼" of the surface being surveyed. Audible indicators were used during the surveys. Due to the confined nature of these areas, the data loggers were not setup to record a gross alpha and gross beta count rate, instead, the surveyor manually recorded the count rate ranges during the survey.

6.9.1.2 Gross Alpha/Gross Beta-Gamma Direct Measurements

The surveys consisted of systematic and biased 2 minute direct measurement surveys for alpha-beta radiations using a large area scintillation detector system (Ludlum Instruments Model 2360 Data Logger coupled to a Ludlum Instruments Model 43-93 scintillation detector).

The results of the direct measurements were recorded on form AWS-001RCS, Radiation Contamination Survey Cover Sheet or equivalent electronic spreadsheet.

6.9.1.3 Gross Beta-Gamma-Alpha Loose Surface Contaminations Surveys

Systematic and biased loose surface contamination surveys of alpha and beta/gamma emitters were performed using cloth smears.

The swipe survey was performed by wiping over an area of 100 cm^2 (~ 4" by 4") with a cloth smear, and applying moderate pressure.

The smears were analyzed with a Ludlum Model-2929 Dual Channel Scaler phoswich detector or equivalent in accordance with AWS SOP IOP-2, "Operation and Calibration of the Ludlum Model 2929 Dual Channel Scaler".

The results of the smears were recorded on form AWS-006, Smear Counting Analysis Report or equivalent electronic spreadsheet.

7.0 HEALTH AND SAFETY CONSIDERATIONS

The final status surveys at NRLCBD were conducted in accordance with the AWS Site Health and Safety Plan (SHASP). All on site personnel read and understood the contents of the plan prior to beginning work on the project.

7.1 Hazard Analysis

The job hazard analysis identifies potential safety, health and environmental hazards and provides for the protection of personnel, the community, and the environment.

7.1.1 Radiological Exposure

Residual amounts of low-level radioactive material were present on the building surfaces in Building 218. Personnel performing the final status surveys and sampling wore dosimetry and modified Level D PPE as described in Sections 3.2 and 7.2.2 of this report.

7.2 Hazard Controls

The following control measures were implemented during the survey activities. The control measures were intended to supplement the HASP.

7.2.1 Radiation Work Permit

A Radiation Work Permit (RWP) was prepared and specified the activities to be performed and all radiological safety requirements for the work. All personnel assigned to site work were required to read and sign the RWP acknowledging that they understand the requirements prior to beginning work.

The RWP was also used as an information document for industrial safety. Hazards other than radiological were included in the RWP so proper protection could be taken for all possible hazards from one controlling document. Implicit in any RWP is the need for a briefing on the radiological conditions present in the work environment.

The RWP listed tasks and specific levels of protection for each worker covered by the RWP. The RWP also detailed the dosimetry requirements, the protective clothing requirements, and the expected radiation and contamination levels to be encountered during the job.

A copy of the RWP is presented in Appendix B.

7.2.2 PPE

Personnel performing the work at NRLCBD wore modified Level D PPE in accordance with the PPE selection matrix in the SHASP.

The modified Level D PPE consisted of:

- Steel-toed shoes;
- Safety glasses;
- Latex rubber or equivalent gloves (when collecting swipe samples).

7.2.3 Safety Equipment

In addition to other equipment specified in this report, the following safety equipment were staged at the NRLCBD job site:

- First aid kit
- Eye wash kit

7.3 Training

Personnel performing activities associated with the NRLCBD work activities received training, which included a review of the Work Plan, SHASP, and Sampling and Analysis Plan (SAP).

All on-site project personnel have completed at least 40 hours of hazardous waste operations-related training, as required by the Occupational Safety and Health administration (OSHA) Regulation 29 CFR Part 1910.120. Those personnel who had completed the 40-hour training more than 12 months prior to start of field activities had completed an 8-hour refresher course within the past twelve months.

The Project Manager had completed an additional 8 hours of relevant supervisory health and safety training.

Personnel operating the survey detection equipment were qualified ANSI 3.1 Senior Health Physics Technicians based on training and experience outlined in Section 4.4.6 and 4.5.3.2 of ANSI standard ANSI/ANS-3.1-1993 (ANSI/ANS, 1993).

A formal review of the key personnel qualifications to perform the required work was made by management and verified during the pre job briefing that was conducted prior to start of work.

The personnel were familiar with the handling and storage of radioactive materials, contamination controls, and the use of radiation survey equipment.

7.4 Hazard Communications

The Project Manager ensured that crewmembers understand their obligation to safety and ensure that members were familiar with the elements of the safety program. A copy of the applicable work plans were maintained in the on-site project office.

Daily tailgate safety meetings were conducted and documented as specified in the Site Health and Safety Plan. Material Safety Data Sheets (MSDSs) for all hazardous substances and materials that were used on site were maintained in the on-site project office.

8.0 QUALITY ASSURANCE

8.1 Instrument Calibration

The instruments and systems used for the survey effort were calibrated on an annual frequency using the manufacturer's calibration protocol to National Institute of Standards and Technology (NIST) traceable sources.

The instrumentation calibration paperwork is presented in Appendix D of this report.

8.2 QC Source and Background Checks

Prior to daily use, instruments were QC checked by comparing the instruments' response to a designated radiation source and to ambient background. Prior to the commencement of field operations a reference location was used for performance of these checks. Background checks were performed in an identical fashion with the source removed.

During QC checks, instruments used to obtain qualitative radiological data were inspected for physical damage, current calibration, and erroneous readings in accordance with applicable procedures and protocols. Instrument response to the designated QC check source was evaluated against the average established at the start of the field activities. . The instruments were used after readings were compared and agreed within +/- 3σ of the true source reading in accordance with the requirements of ANSI Standard N323A-1997, "American National Standard Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments".

The daily instrument response check data is presented in Appendix E of this report.

8.3 Records and Reports

The Project Manager was responsible for reviewing data for accuracy and completeness before on-site activities are concluded. Electronic records may be substituted, provided appropriate access authorization procedures are in place and quality assurance requirements are met.

All data, notes, measurements, calibrations, and other information pertinent to a survey site must be recorded and maintained. Records must conform to the following basic requirements:

- Marked with date of entry.

- Signed or initialed (by hand or electronically) by the author of the entry.
- Written or printed in a legible manner.
- Contain all pertinent information in a concise, accurate entry.

Column headings or requested information on record data forms may be inappropriate or incorrect for specific site situations. If so, appropriate handwritten changes must be made on the forms. When certain information requested on the presented form is not required, the space or columns should be crossed through or marked "NA" (not applicable) as an indication that such information was not required, rather than having possibly been forgotten.

If data corrections are necessary a single line will be drawn through the entry. New data, initials of the surveyor, and date of correction will be recorded. Data will not be obliterated by erasing or with the use of white-out.

All training records were maintained. The training records included brief biographies (resumes) certifications, or documents that demonstrate the qualifications of the personnel performing the work.

This Final Status Survey Report contains records and information necessary to document and support the Final Status Survey effort. All generated records for the project were maintained in the on-site office. Records that must be controlled and maintained during the project and presented in this Final Status Survey Report, in addition to site activities may have included but were not limited to:

- Description of survey design;
- Instrument calibration data;
- Daily instrument performance check data;
- Instrument efficiency determination data;
- Survey records;
- Dates surveys were performed;
- Survey results and data;
- Description of instrumentation used;
- Instrumentation MDC calculations;
- Smear sample location records;

- Identification of release limits used;
- Sample analysis results;
- Survey maps;
- Quality control data;

Listed records were maintained on site during project activities. All listed records were transmitted with the final project report and are maintained on the secure file server located in the AWS corporate office in Anchorage, AK.

8.4 Quality Control Swipe Samples

Field duplicate swipe samples were collected at a frequency of 10%. The results of the QC field duplicate samples were compared to each other. A maximum deviation of ± 20% was the satisfactory objective of the comparison of the samples. All field duplicate swipe samples results were within 20% goal.

8.5 Data Management

Data was maintained in the on-site office. Backup copies of data was made routinely and maintained on the computer provided. Further, backup copies of survey and sample results were routinely made to CDs or other removable electronic media.

8.6 QA Audit

An independent QA audits was conducted for the survey activities. The audit was completed by Mr. Brad Squibb of Solutient Technologies, LLC who was not on site or part of daily activities.

The result of the QA audit was satisfactory. The following data was reviewed during the audit;

- Radiological Survey Reports
- Daily Instrument Response Check Data
- Instrument Calibration Data
- Chi Square Test Data
- Instrument Background Data
- Field and Sample Log Books

- Laboratory Data Reports
- Sample Collection
- Sample Labeling
- Sample Delivery
- Supporting Documentation for Sample Collection (COC's, etc.)
- Sample Containers
- Adherence to Applicable SOP's

The QA audit report is presented in Appendix F of this report.

8.7 Data Validation

Independent data validation was conducted for solid sampling activities. The data validation was completed by Mr. Paul Wall who was not on site or part of daily activities.

All soil sample data was validated at 80 percent EPA Level III and 20 percent EPA Level IV frequencies.

EPA Level III-equivalent data validation included the comparison of QC parameters to the appropriate criteria or limits. (QC parameters include holding times, tune, calibration, blanks, spikes, surrogates, and internal standards, as applicable.) EPA Level IV-equivalent data validation included not only what was performed in a Level III-equivalent validation but also review of raw data and backup documentation (for calibrations, standards, analysis run logs, etc.). This information was used for checking calculations of quantified analytical data during a Level IV-equivalent data validation review.

The Data Validation reports is presented in Appendix G of this report.

9.0 SURVEY ANALYSIS AND RESULTS

9.1 Surface Activity Measurements

Measurements to quantify surface activity levels represent the fundamental compliance measurements for buildings and structures. ISO-7503, NUREG-1507, and ASTM were used as technical guidance to ensure the accurate measurement of surface activity.

Equation 10 was used to document and calculate the surface activity in dpm per 100 cm^2.

Equation 10

$$A_S = \frac{R_{S+B} - R_B}{\varepsilon_i \varepsilon_S \frac{W_A}{100\,cm^2}}$$

Where;

A_S = total surface activity (dpm/100 cm^2)

R_{S+B} = the gross count rate of the measurement in cpm,

R_B = the background count rate in cpm

ε_ι = the instrument efficiency (counts per particle)

ε_s = the contaminated surface efficiency (particles per disintegration)

W_A = the area of the detector window (cm^2)

This equation has two efficiency terms, which account for differences between the conditions under which the detector is calibrated, and conditions under which the detector is used in the field. The instrument efficiency (ε_i) is discussed in Section 6.7.1, and is determined under ideal conditions in the laboratory. The surface efficiency, is discussed in Section 6.7.3, and is used to determine the 4π total efficiency for a particular surface and condition.

9.2 Investigation Level Calculations

The gross alpha and beta investigation levels in net cpm, discussed in Section 5.2.5.2 were calculated using Equations 11 and 12 below:

Equation 11

$$\text{Net CPM } \alpha = 1035 * \left(\varepsilon_i \ \varepsilon_s \ \frac{W_A}{100\ cm^2} \right)$$

Equation 12

$$\text{Net CPM } \beta = 1070*\left(\varepsilon_i \ \varepsilon_s \ \frac{W_A}{100 \text{ cm}^2}\right)$$

9.3 Data Assessment

Basic statistical quantities were calculated for the data in order to identify patterns, relationships and any type anomaly.

The Project Manager reviewed data at the end of each phase of the survey to determine the validity of the results and adequate coverage of the survey areas.

9.4 Building 218 Room 100 Floor Class 1Survey Unit

9.4.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.4.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

The H_o is rejected for the survey unit as the survey unit means (average) are less than the gross alpha release criteria, and there was no evidence of small areas of elevated activity.

Table 6 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.4.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.4.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

Table 6 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 6 Building 218 Room 100 Floor Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 100 Floor	30/269	3/19	2/0	0/0

9.4.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.5 Building 218 Room 100 Lower Walls Class 1 Survey Unit

9.5.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were

detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.5.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

The H_o is rejected for the survey unit as the survey unit means (average) are less than the gross alpha release criteria, and there was no evidence of small areas of elevated activity.

Table 7 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.5.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.5.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

Table 7 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 7 Building 218 Room 100 Lower Walls Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 100 Lower Walls	0/647	0/84	5/0 [1]	0/0

[1] Actual results are recorded even though the results are below the MDC of the counting system. The value of the alpha result is above the maximum fixed alpha results which could be attributed to the counting uncertainty of the instrument.

9.5.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.6 Building 218 Room 100 Upper Walls Class 2 Survey Unit

9.6.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.6.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 8 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.6.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

Some elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and are discussed in Section 9.6.5.

The scan survey results are provided in Appendix H of this report.

9.6.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. Two of the individual readings exceeded the release criteria.

Table 8 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 8 Building 218 Room 100 Upper Walls Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 100 Upper Walls	0/612	0/147	5/4 [1]	0/0

[1] Actual results are recorded even though the results are below the MDC of the counting system. The value of the alpha result is above the maximum fixed alpha results which could be attributed to the counting uncertainty of the instrument.

9.6.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.7 Building 218 Room 100 Ceiling/Overhead Class 2 Survey Unit

9.7.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.7.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 9 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.7.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.7.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM

guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 9 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 9 Building 218 Room 100 Ceiling/Overhead Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 100 Ceiling/Overhead	13/545	0/407	5/2	0/0

9.7.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.8 Building 218 Room 103 Floor Class 1 Survey Unit

9.8.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.8.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release

criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 10 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.8.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.8.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 10 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 10 Building 218 Room 103 Floor Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in	Average Fixed Net Alpha/Beta Results in	Maximum Net Removable Alpha/Beta Results in	Average Net Removable Alpha/Beta Results in

	dpm/100cm^2	dpm/100cm^2	dpm/100cm^2	dpm/100cm^2
Room 103 Floor	24/230	9/0	11/4	3/0

9.8.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.9 Building 218 Room 103 Lower Walls Class 1 Survey Unit

9.9.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.9.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 11 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.9.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.9.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 11 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 11 Building 218 Room 103 Lower Walls Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 103 Lower Walls	3/264	0/54	2/0	0/0

9.9.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.10 Building 218 Room 103 Upper Walls Class 2 Survey Unit

9.10.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.10.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 12 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.10.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.10.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 12 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 12 Building 218 Room 103 Upper Walls Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 103 Upper Walls	7/115	0/5	8/0	2/0

9.10.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.11 Building 218 Room 103 Ceiling/Overhead Class 2 Survey Unit

9.11.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.11.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 13 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.11.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

A few elevated areas of activity distinguishable from background levels were detected during the scan surveys. These were mostly on the top of horizontal surfaces such as I-Beams and light fixtures. Biased readings were collected from these areas and the results are discussed in Section 9.11.5 of this report.

The scan survey results are provided in Appendix F of this report.

9.11.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 13 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 13 Building 218 Room 103 Ceiling/Overhead Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 103 Ceiling/Overhead	21/518	3/275	2/24	0/0

9.11.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

Biased measurements were collected in this survey unit and the results are summarized in Table 14 below.

The biased survey results are present in Appendix J of this report.

Table 14 Building 218 Room 103 Ceiling Survey Unit Biased Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Room 103 Overhead/Ceiling	56/4,893	27/3,268	30

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.12 Building 218 Room 103A Floor Class 1 Survey Unit

9.12.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.12.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release

criteria. No individual reading exceeded the release criteria.

Table 15 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.12.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

Numerous areas of elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased reading were collected in these areas and the results are discussed in Section 9.12.5 of this report.

The scan survey results are provided in Appendix H of this report.

9.12.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 6 located on page 33 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. One of the individual readings exceeded the release criteria.

Table 15 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 15 Building 218 Room 103A Floor Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 103A Floor	24/2,026	9/597	5/7	0/0

9.12.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

Biased measurements were collected in this survey unit and the results are summarized in Table 16 below.

The biased survey results are present in Appendix J of this report.

Table 16 Building 218 Room 103A Floor Survey Unit Biased Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Room 103A Floor	24/4,192	8/2,627	20

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.13 Building 218 Room 103A Lower Walls Class 1 Survey Unit

9.13.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.13.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments

used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 17 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.13.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

Numerous areas of elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased reading were collected in these areas and the results are discussed in Section 9.13.5 of this report.

The scan survey results are provided in Appendix H of this report.

9.13.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. Three of the individual readings exceeded the release criteria.

Table 17 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 17 Building 218 Room 103A Lower Walls Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed	Average Fixed Net	Maximum Net Removable	Average Net Removable

	Alpha/Beta Results in dpm/100cm^2	**Alpha/Beta Results in dpm/100cm^2**	**Alpha/Beta Results in dpm/100cm^2**	**Alpha/Beta Results in dpm/100cm^2**
Room 103A Lower Walls	25/2,719	5/499	2/9	0/0

9.13.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

Biased measurements were collected in this survey unit and the results are summarized in Table 18 below.

The biased survey results are present in Appendix J of this report.

Table 18 Building 218 Room 103A Lower Walls Survey Unit Biased Measurement Alpha/Beta Results

Area/Location	**Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2**	**Average Fixed Net Alpha/Beta Results in dpm/100cm^2**	**Estimated Total Area of Elevated Activity Areas In ft^2**
Room 103A Lower Walls	24/4,420	8/1,967	40

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.14 Building 218 Room 103A Upper Walls Class 2 Survey Unit

9.14.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.14.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate

reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 19 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.14.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

Numerous areas of elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased reading were collected in these areas and the results are discussed in Section 9.14.5 of this report.

The scan survey results are provided in Appendix H of this report.

9.14.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. Five of the individual readings exceeded the release criteria.

Table 19 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 19 Building 218 Room 103A Upper Walls Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 103 A Upper Walls	13/2,645	2/856	2/9	0/0

9.14.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

Biased measurements were collected in this survey unit and the results are summarized in Table 20 below.

The biased survey results are present in Appendix J of this report.

Table 20 Building 218 Room 103A Upper Walls Survey Unit Biased Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Room 103A Upper Walls	24/8,620	9/3,804	100

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.15 Building 218 Room 103A Ceiling/Overhead Class 2 Survey Unit

9.15.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.15.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate

reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 21 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.15.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

A few areas of elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected in these areas and the results are discussed in Section 9.15.5 of this report.

The scan survey results are provided in Appendix H of this report.

9.15.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 21 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 21 Building 218 Room 103A Ceiling/Overhead Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 103A Ceiling/Overhead	13/631	0/260	2/4	0/0

9.15.5 Biased Alpha-Beta Measurements of Survey Unit, Analysis and Results

Biased measurements were collected in this survey unit and the results are summarized in Table 22 below.

The biased survey results are present in Appendix J of this report.

Table 22 Building 218 Room 103A Ceiling Survey Unit Biased Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Room 103A Ceiling	31/3,719	21/2,881	10

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.16 Building 218 Tunnel Floor Class 1 Survey Unit

9.16.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.16.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 23 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.16.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.16.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 23 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 23 Building 218 Tunnel Floor Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Tunnel Floor	19/173	1/0	5/4	1/0

9.16.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.17 Building 218 Tunnel Lower/Upper Walls Class 1 Survey Unit

9.17.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.17.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 24 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.17.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

A few areas of elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected in these areas and the results are discussed in Section 9.17.5 of this report.

The scan survey results are provided in Appendix H of this report.

9.17.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 24 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 24 Building 218 Tunnel Lower/Upper Walls Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Tunnel Lower/Upper Walls	93/483	13/274	2/0	0/0

9.17.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

Biased measurements were collected in this survey unit and the results are summarized in Table 25 below.

The biased survey results are present in Appendix J of this report.

Table 25 Building 218 Tunnel Lower/Upper Walls Unit Biased Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Tunnel Lower/Upper Walls	31/1,191	23/1,128	3

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.18 Building 218 Tunnel Ceiling/Overhead Class 2 Survey Unit

9.18.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.18.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 26 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.18.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels was detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.18.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 26 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 26 Building 218 Tunnel Ceiling/Overhead Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Tunnel Ceiling/Overhead	17/328	1/237	2/4	0/0

9.18.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.19 Building 218 Room 105A Floor Class 1 Survey Unit

9.19.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were

detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.19.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 27 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.19.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.19.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 27 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 27 Building 218 Room 105A Floor Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 105A Floor	24/132	2/0	2/4	0/0

9.19.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.20 Room 105A Lower/Upper Walls Class 1 Survey Unit

9.20.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.20.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 28 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.20.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

A few elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and are discussed in Section 9.20.5.

The scan survey results are provided in Appendix H of this report.

9.20.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 28 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 28 Room 105A Lower/Upper Walls Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 105A Lower/Upper Walls	25/430	9/134	5/4	2/0

9.20.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

Biased measurements were collected in this survey unit and the results are summarized in Table 29 below.

The biased survey results are present in Appendix J of this report.

Table 29 Room 105A Survey Unit Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Room 105A Lower/Upper Walls	24/1,582	11/1,366	8

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.21 Building 218 Room 105A Overhead/Ceiling Class 2 Survey Unit

9.21.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.21.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 30 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.21.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.21.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 30 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 30 Building 218 Room 105A Ceiling/Overhead Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 105A Ceiling/Overhead	13/294	2/151	2/9	0/0

9.21.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.22 Building 218 Room 105 Floor Survey Unit

9.22.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were

detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.22.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 31 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.22.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.22.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 31 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 31 Building 218 Room 105 Floor Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Bldg. 218 Room 105 Floor	24/132	2/0	2/4	0/0

9.22.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.23 Building 218 Room 105 Lower/Upper Walls Class 1 Survey Unit

9.23.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.23.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 32 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.23.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.23.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. One of the individual readings exceeded the release criteria.

Table 32 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 32 Building 218 Room 105 Lower/Upper Wall Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Room 105 Lower/Upper Walls	11/473	0/121	2/4	0/0

9.23.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.24 Building 227 Room 100 Floor Class 1 Survey Unit

9.24.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were

detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.24.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 33 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.24.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.24.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 33 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 33 Building 227 Room 100 Floor Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Bldg. 227 Room 100 Floor	24/277	10/79	2/22	0/0

9.24.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

No biased measurements were collected in this survey unit.

9.25 Building 227 Room 100 Lower Walls Class 1 Survey Unit

9.25.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix H of this report.

9.25.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 34 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix I of this report.

9.25.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

A few areas elevated area of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Section 9.25.5.

The scan survey results are provided in Appendix H of this report.

9.25.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. None of the individual readings exceeded the release criteria.

Table 34 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix I of this report.

Table 34 Building 227 Room 100 Lower Walls Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Bldg. 227 Room 100 Lower Walls	9/622	0/226	2/10	0/0

9.25.5 Biased Fixed Alpha-Beta Measurements of Survey Unit, Analysis and Results

Biased measurements were collected in this survey unit and the results are summarized in Table 35 below.

The biased survey results are present in Appendix J of this report.

Table 35 Building 227 Room 100 Lower Walls Survey Unit Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Bldg. 227 Room 100 Lower Walls	11/3,202	5/1,871	10

9.26 Target Sphere Interior Survey Unit

9.26.1 Alpha Scan Surveys of Survey Unit, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix K of this report.

9.26.2 Fixed Alpha Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of alpha measurements were conducted in the appropriate reference (background) areas and in the survey unit. The alpha survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate alpha surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross alpha release criteria for the radionuclide of concern was 1,150 dpm per 100 cm^2.

The mean (average) alpha levels for the survey unit was less than the release criteria. No individual reading exceeded the release criteria.

Table 36 presents a summary of the survey results for the survey unit

Alpha results are provided in Appendix K of this report.

9.26.3 Beta-Gamma Scan Surveys of Survey Unit, Analysis and Results

Numerous areas elevated area of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Sections 9.29.3 and 9.30.3.

The scan survey results are provided in Appendix K of this report.

9.26.4 Fixed Beta-Gamma Measurements of Survey Unit, Analysis and Results

This final status survey was implemented in accordance with MARSSIM guidelines. One complete set of beta-gamma measurements were conducted in the appropriate reference (background) areas and in the survey unit. The beta-gamma survey data was converted to units of dpm per 100 cm^2 so the results could be compared directly to the release criteria. Table 2 located on page 24 of this report presents a summary of the instruments used to evaluate beta-gamma surface activities and the efficiencies used to convert instrument readings to DCGL units. It also provides a summary of the instrument sensitivities. The gross beta-gamma release criteria for the radionuclide of concern was 1,192 dpm per 100 cm^2.

The mean (average) beta levels for the survey unit was less than the release criteria. One of the individual readings exceeded the release criteria.

Table 36 presents a summary of the survey results for the survey unit.

Beta-Gamma results are provided in Appendix K of this report.

Table 36 Target Sphere Interior Survey Unit Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Maximum Net Removable Alpha/Beta Results in dpm/100cm^2	Average Net Removable Alpha/Beta Results in dpm/100cm^2
Target Sphere Interior	11/3,448	2/299	8/2	2/0

9.27 Target Sphere Upper Exterior

Due to the confined space and irregular shape of this item, gross alpha/beta-gamma scan results were manually recorded.

9.27.1 Alpha Scan Surveys of Item, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix K of this report.

9.27.2 Beta-Gamma Scan Surveys of Survey Item, Analysis and Results

Numerous elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Section 9.27.3.

The scan survey results are provided in Appendix K of this report.

9.27.3 Biased Fixed Alpha-Beta Measurements of Item, Analysis and Results

Biased measurements were collected on this item and the results are summarized in Table 37 below.

The biased survey results are present in Appendix K of this report.

Table 37 Target Sphere Upper Exterior Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Target Sphere Upper Exterior	20/19,717	8/13,080	25

9.28 Target Sphere Lower Exterior

Due to the confined space and irregular shape of this item, gross alpha/beta-gamma scan results were manually recorded.

9.28.1 Alpha Scan Surveys of Item, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix K of this report.

9.28.2 Beta-Gamma Scan Surveys of Survey Item, Analysis and Results

Numerous elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Section 9.28.3.

The scan survey results are provided in Appendix K of this report.

9.28.3 Biased Fixed Alpha-Beta Measurements of Item, Analysis and Results

Biased measurements were collected on this item and the results are summarized in Table 38 below.

The biased survey results are present in Appendix K of this report.

Table 38 Target Sphere Upper Exterior Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Target Sphere Lower Exterior	16/11,890	5/5,400	10

9.29 Target Sphere Upper Interior

Due to the confined space and irregular shape of this item, gross alpha/beta-gamma scan results were manually recorded.

9.29.1 Alpha Scan Surveys of Item, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix K of this report.

9.29.2 Beta-Gamma Scan Surveys of Survey Item, Analysis and Results

Numerous elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Section 9.29.3.

The scan survey results are provided in Appendix K of this report.

9.29.3 Biased Fixed Alpha-Beta Measurements of Item, Analysis and Results

Biased measurements were collected on this item and the results are summarized in Table 39 below.

The biased survey results are present in Appendix K of this report.

Table 39 Target Sphere Upper Interior Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2

Target Sphere Upper Interior	26/82,658	9/15,598	20

9.30 Target Sphere Lower Interior

Due to the confined space and irregular shape of this item, gross alpha/beta-gamma scan results were manually recorded.

9.30.1 Alpha Scan Surveys of Item, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix K of this report.

9.30.2 Beta-Gamma Scan Surveys of Survey Item, Analysis and Results

Numerous elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Section 9.30.3.

The scan survey results are provided in Appendix K of this report.

9.30.3 Biased Fixed Alpha-Beta Measurements of Item, Analysis and Results

Biased measurements were collected on this item and the results are summarized in Table 40 below.

The biased survey results are present in Appendix K of this report

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Table 40 Target Sphere Lower Interior Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2

Target Sphere Lower Interior	26/15,642	11/11,536	15

9.31 Orthogonal Chamber

Due to the confined space and irregular shape of this item, gross alpha/beta-gamma scan results were manually recorded.

9.31.1 Alpha Scan Surveys of Item, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix K of this report.

9.31.2 Beta-Gamma Scan Surveys of Survey Item, Analysis and Results

Numerous elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Section 9.31.3.

The scan survey results are provided in Appendix K of this report.

9.31.3 Biased Fixed Alpha-Beta Measurements of Item, Analysis and Results

Biased measurements were collected on this item and the results are summarized in Table 41 below.

The biased survey results are present in Appendix K of this report.

Table 41 Orthogonal Chamber Interior Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Orthogonal Chamber Interior	24/10,096	14/7,057	30

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.32 Optics Chamber Interior

Due to the confined space and irregular shape of this item, gross alpha/beta-gamma scan results were manually recorded.

9.32.1 Alpha Scan Surveys of Item, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix K of this report.

9.32.2 Beta-Gamma Scan Surveys of Survey Item, Analysis and Results

Numerous elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Section 9.32.3.

The scan survey results are provided in Appendix K of this report.

9.32.3 Biased Fixed Alpha-Beta Measurements of Item, Analysis and Results

Biased measurements were collected on this item and the results are summarized in Table 42 below.

The biased survey results are present in Appendix K of this report.

Table 42 Optics Chamber Interior Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Optics Chamber Interior	29/15,423	11/2,420	8

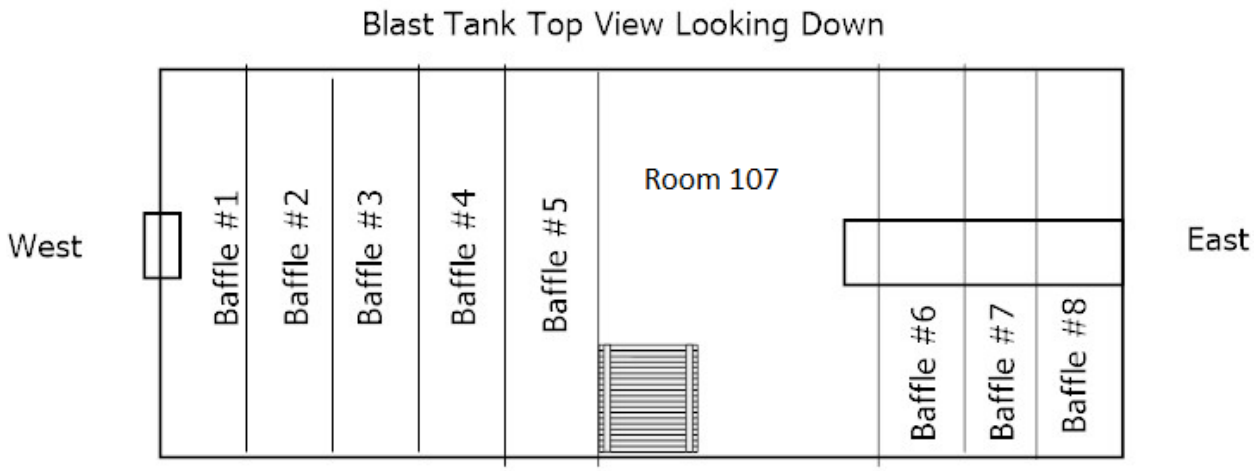
Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.33 Blast Tank Interior

Due to the confined space and irregular shape of this item, gross alpha/beta-gamma scan results were manually recorded.

In order to more accurately identify areas of the blast tank, Figure 8 was generated to identify the different areas of the blast tank.

Figure 9 Blast Tank Diagram



9.33.1 Alpha Scan Surveys of Item, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix K of this report.

9.33.2 Beta-Gamma Scan Surveys of Survey Item, Analysis and Results

Numerous elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Section 9.33.3.

The scan survey results are provided in Appendix K of this report.

9.33.3 Biased Fixed Alpha-Beta Measurements of Item, Analysis and Results

Biased measurements were collected on this item and the results are summarized in Table 43 below.

The biased survey results are present in Appendix K of this report.

Table 43 Blast Tank Interior Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Baffle #1 Interior	34/42,530	14/7,254	8
Baffle #2 Interior	17/2,863	4/2,241	5
Baffle #3 Interior	2/1,522	0/1,453	5
Baffle #4 Interior	60/4,587	16/2,068	6
Baffle #5 Interior	49/4,326	25/4,021	6
Baffle #6 Interior	24/3,437	7/1,959	5
Baffle #7 Interior	30/3,592	8/2,928	6
Baffle #8 Interior	59/10.025	17/4,126	6
Room 107 Interior	30/6,672	12,3,087	10

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.34 Flight Tube

Due to the confined space and irregular shape of this item, gross alpha/beta-gamma scan results were manually recorded.

9.34.1 Alpha Scan Surveys of Item, Analysis and Results

No elevated areas of activity distinguishable from background levels were detected during the scan surveys.

The scan survey results are provided in Appendix K of this report.

9.34.2 Beta-Gamma Scan Surveys of Survey Item, Analysis and Results

Numerous elevated areas of activity distinguishable from background levels were detected during the scan surveys. Biased readings were collected from these areas and the results are discussed in Section 9.34.3.

The scan survey results are provided in Appendix K of this report.

9.34.3 Biased Fixed Alpha-Beta Measurements of Item, Analysis and Results

Biased measurements were collected on this item and the results are summarized in Table 44 below.

The biased survey results are present in Appendix K of this report.

Table 44 Flight Tube Interior Biased Direct Measurement Alpha/Beta Results

Area/Location	Maximum Net Fixed Alpha/Beta Results in dpm/100cm^2	Average Fixed Net Alpha/Beta Results in dpm/100cm^2	Estimated Total Area of Elevated Activity Areas In ft^2
Flight Tube Interior	29/51,213	13/17,483	25

Gross large area masslin swipe surveys were conducted in the biased survey locations. No detectable gross alpha/beta-gamma activity above background was found on any of the masslinn swipes.

9.35 Miscellaneous Surveys

Other miscellaneous surveys were performed during the project. These included swipe surveys and miscellaneous item surveys. All of the survey results were were below the release criteria/DCGL.

The miscellaneous surveys are presented in this report in Appendix M.

10.0 WASTE MANAGEMENT

Two 55-gallon drums of dust/debris were generated in preparing the area surfaces for surveys. HEPA vacuums were used to prepare the areas. The two HEPA vacuums were packaged into one 55-gallon drum and the debris/dust collected from the vacuum cleaners were packaged into the other 55-gallon drum.

Composite waste profiles sample was collected from the drums and sent to the offsite laboratory for isotopic uranium (alpha spectroscopy) and TCLP metals analysis. The results of the samples are summarized in Table 45 below.

The laboratory data report in presented in Appendix L of this report.

Table 45 Waste Profile Sample Summary Table

Sample ID#	U-233/234 Results in pCi/g	U-235/236 Results in pCi/g	U-238 Results in pCi/g	TCLP Lead Results in mg/l
NRLCBD-1	3.38	0.305	19.4	N/A
NRLCBD-2	N/A	N/A	N/A	11

11.0 CONCLUSION

The results of the final status surveys indicated that, based on the criteria in Sections 1.5.1, 1.5.2, and 1.5.3 some Building 218 areas/survey units require additional remediation in order to release the areas for unconditional use.

12.0 REFERENCES

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Appendix A

Memorandum of Understanding (MOU)

MEMORANDUM OF UNDERSTANDING

Between
Naval Sea Systems Command Detachment, Radiological Affairs Support Office
U.S. Army Joint Munitions Command, Rock Island, Illinois, and
Aleut World Solutions (Contractor)

RE: PERFORMANCE OF FINAL STATUS SURVEYS UNDER ALEUT WORLD SOLUTIONS NRC LICENSE NO. 50-29273-01 AT NAVAL RESEARCH LABORATORY CHESAPEAKE BAY DETACHMENT, CHESAPEAKE BEACH MD

1. Background

a. The Naval Sea Systems Command Detachment, Radiological Affairs Support Office (NAVSEADET RASO) has requested that Aleut World Solutions (AWS) provide radiological services in support of final status survey actions at the Building 218 located at the Naval Research Laboratory Chesapeake Bay Detachment (NRLCBD), Chesapeake Beach, MD. These services have been contracted by the U.S. Army Joint Munitions Command (JMC), Rock Island, Illinois, through the Naval Low Level Radioactive Waste (LLRW) Disposal Program which functions as part of the Department of Defense LLRW Disposal Program managed by JMC. As a requirement of the contract, radiological services will be performed under AWS's Nuclear Regulatory Commission (NRC) Radioactive Materials License No. 50-29273-01.

b. For the purposes of this memorandum of understanding (MOU), AWS will perform final status surveys in Building 218.

c. The intent of this memorandum is to outline the general applicability and responsibilities of each organization as it applies to the performance work statement, approved work practices, health and safety plan, radiation health plan, and license implementation.

2. Organizational Responsibilities. Each organization has distinct areas of responsibility as defined by their respective functions.

a. AWS shall:

(1) Perform work using radiologically sound work practices following standard operating procedures approved under their NRC license, approved work practices, health and safety plan, radiation health plan, and performance work statement.

(2) Maintain training and dose records for AWS employees and subcontractors, as appropriate.

(3) Control radioactive materials used for operational checks of radiation detection and laboratory equipment.

(4) Control access to individual work areas under AWS control for activities where radioactive materials are known or suspected of being present.

(5) Issue and maintain Radiation Work Permits for work controlled by AWS.

(6) Submit reports and other administrative requirements concerning the work, including daily progress reports, to the NAVSEADET RASO, JMC, NRLCBD, or additional Navy offices as requested. Information will be provided regarding the radiological conditions of all work areas, radioactive contamination found, and status of any identified radioactive waste.

(7) In the event that radioactive waste is generated, even though none is expected, NRLCBD will maintain custody of the waste under their Radioactive Material Permit under the Navy's NRC Master Materials License # 45-23645-01NA.

b. NAVSEADET RASO shall: Ensure that AWS performs work using radiologically sound standard operating procedures, health and safety, and work plans. The NRLCBD RSO and ARSO will provide oversight for RASO of onsite activities.

c. JMC shall: Provide necessary contracting services to ensure AWS performs radiologically sound work practices following standard operating procedures approved under their NRC license, approved work practices, health and safety plan, radiation health plan, and performance work statement.

3. Responsibilities for Performance of Site Work

a. AWS shall:

(1) Perform radiological final status surveys in accordance with approved work practices, standard operating procedures, and direction from NAVSEADET RASO and JMC.

(2) Secure the AWS work areas allocated by NRLCBD by use of a method controlled by AWS during performance of work.

(3) Assess contamination levels on building materials, outdoor areas and materials and equipment.

(4) Free release of all equipment, areas, and spaces used during the performance of this project.

(5) Control access to all work and storage areas under their NRC license and post, and secure such areas as appropriate.

(6) Coordinate public health and safety assurance issues with NAVSEADET RASO, and NSWCDD.

(7) AWS Site Project Manager will be Mr. Dan Spicuzza.

b. NAVSEADET RASO shall:

(1) Monitor site work by performing on-site visits, tracking on daily site reports and/or participating in conference calls.

(2) Review all site investigative data.

(3) Work with the contractor to address any unexpected contamination or radiological control issues.

(4) Provide assistance with public health and safety assurance issues, in coordination with NRLCBD and the contractor.

(5) Approve public statements regarding radiological issues before issuance.
(6) Approve clearance of areas prior to turnover of the areas for unrestricted use.
(7) The point of contact for NAVSEADET RASO is Mr. Eric Lieberman.

c. JMC shall:

(1) Monitor site work by performing on-site visits, tracking on daily site reports and/or participating in conference calls.
(2) Work with the contractor, NAVSEADET RASO, and NRLCBD to contractually address any unexpected contamination issues.
(3) Point of contact for JMC is Mr. Frank Whitaker.

4. Jurisdictional Issues and Changes. Jurisdictional issues or specific situations not covered under this agreement will be discussed between, NAVSEADET RASO, JMC, and AWS for resolution and documented by amendment of this memorandum of understanding.

5. Effective Period: This MOU is effective upon signatures by all parties and will expire in 6 months. Either party may terminate this agreement by giving 90 days advance written notice of the effective date of termination, or upon the written agreement of both parties at a mutually agreeable date.

6. Approval:

_____ _____
Eric Lieberman, NAVSEADET RASO Representative Date

Daniel M. Spicuzza

_____ __3/23/18____
Dan Spicuzza, AWS Project Manager Date

_____ _____
Mr. Frank Whitaker, JMC COR Date

Appendix B

Radiation Work Permit (RWP)

RADIATION WORK PERMIT (RWP)

RWP #: NRL-2018-01 Regular X Extended ___

SECTION I

Contract # USN-2017-012	Date: 4-3-18	Time: 0800

Location/Project: NRL Chesapeake Bay Detachment Building 218

Exposure Category: FSS D&D Source Transfer Waste Processing Characterization

Job Description: Perform finl status surveys and sampling in Building 218.

Estimated Start Date: 4-3-18 Estimated End Date: 4-17-18

SECTION II

Existing Radiological Conditions:

Radiation Survey No. N/A Airborne Survey No. N/A Contamination Survey No. N/A .

Existing General Area Radiation Level(s):	Existing General Contamination Levels:	Airborne DAC Level(s):
.006.010 mR/hr/γ N/A mrad/hr/corrected β N/A mrem/hr/η	< 20 dpm/100cm² α Loose < 500 dpm/100cm² βγ Loose < 1,150 dpm/100cm² α Fixed < 1,192 dpm/100cm² βγ Fixed	< 10 % P < 10 % P N/A % H_3
Existing Maximum Radiation Level(s):	Existing Maximum Contamination Level(s)	Hot Particle?
.01 mR/hr/γ N/A mrad/hr/corrected β N/A mrem/hr/η	< 70 dpm/100cm² α Loose < 1,000 dpm/100cm² βγ Loose < 1,150 dpm/100cm² α Fixed < 1,192 dpm/100cm² βγ Fixed	Yes No

Remarks: None.

SECTION III

Radiological Limits:

Maximum Allowed WB Exposure Rate : 4 mr/hr γ or mrem/hr η

Corrected : N/A mrad/hr Maximum Extremity Exposure Rate: 4 mr/hr

Maximum Allowed Contamination Level : 100 dpm/100cm² α Loose : 1, 000 dpm/100cm² βγ Loose

Maximum Allowed Contamination Level : 5,000 dpm/100cm² α Fixed : 100,000 dpm/100cm² βγ Fixed

Maximum Allowed Airborne Concentration Level: 10 % DAC

Remarks: ___

Industrial Hygiene/Safety Concerns: Potential fall hazard on ladders, scossor lift.

RADIATION WORK PERMIT (RWP)

RWP #: NRL-2018-01 Regular ✓ Extended ____

SECTION IV

WORKER REQUIREMENTS

CLOTHING:	DOSIMETRY:	INSTRUCTIONS:	RESPIRATORY:
☐ Coveralls ☐ Lab Coat ☐ Cloth Hood ☒ Paper Coveralls[1] ☐ Plastic Suit ☒ Plastic Booties[1] ☐ Rubber Shoe Covers ☐ Canvas Shoe Covers ☐ Cotton Gloves ☒ Rubber Gloves[1 2] ☒ Leather Gloves[1] ☐ Beta Goggles/Face Shield ☐ Extra ☐ Other Clothing Stay Time (Heat Stress, Radiaton, Exposure Limits, etc.): 6 hrs.	☒ TLD ☐ Film Badge ☐ SRD ☒ Standard ☐ Elbows ☐ Gonad Pack ☐ Hot Cell Entry ☐ Extremity ☐ Head Pack ☐ Special ☐ Knees ☐ Varying Field ☐ Upper Field ☐ Ground Field ☐ Alarming Dosimetry ☐ None	☒ Contact HP for Line Breaks ☒ Protect Cuts ☒ Pre-Job Briefing ☒ Post-Job Briefing ☒ Contact HP Prior to Work In New Areas ☐ Modesty Required ☒ Site Specific Instructions ☒ Equipment Monitor at Job End ☒ Clean Up Work Area During and After Job ☒ Eating, Drinking, Smoking, Chewing Prohibited ☒ Frisk Upon Exiting Contaminated Area ☒ Have Prescribed HP Coverage or Stop Work ☒ Exit Area Immediately Upon Emergency or Injury. Notify HP Immediately	☐ FFNP ☐ FFAL ☐ SCBA ☐ PAPR ☒ Dust Mask[1] ☐ Half Face ☐ Bubble Hood Cartridges: ☐ Particulate ☐ Vapor ☐ Combination ☐ Other

Special Instructions: [1] Per HP supervision instructions. [2] When collecting swipe samples and handling potentially contaminated items.

SECTION V

Health Physics Requirements

1. Job Coverage: Continuous ☐ Intermittent ☒ Start ☐ End of Job ☐
2. Air Sampling: General Area ☐ Breathing Zone ☐ Lapel ☐ AgZ ☐
   Tritium/C-14 ☐ Particulate ☐ Charcoal ☐ LoVol ☐ HiVol ☐
3. Exposure Rate Surveys: Start of Job ☒ Continuous Monitoring ☐ Area Monitoring ☐
   Intermittent Monitoring ☐ End of Job ☒
4. Contamination Surveys: Start of Job ☒ Continuous Monitoring ☐
   Intermittent Monitoring ☒ End of Job ☒
5. Is the ALARA Consideration Complete and Attached? Yes No Why?____
6. Other: ____

RWP #: NRL-2018-01 Regular X Extended

SECTION VI

Personnel Authorized to Perform Work & Acceptance of Responsibility

*My signature verifies that I have read and fully understand the RWP Requirements

Date	Name (Print)	Signature*	Last Four Digits SSN	HPS Init	Year Dose to Date (Rem) TEDE	TODE	LDE	SDE WB	SDE EX
4/3/18	Josefina L. Matus		3078		Ø	Ø	Ø	Ø	Ø
4/3/18	Joan Cosgrove		8450		0	0	0	0	0
4/3/18	Richard Thatcher		7692		Ø	Ø	Ø	Ø	Ø
4/3/18	Thomas Hogan		3996		0	0	0	0	0
4/3/18	Dan Spaven		4551		0	0	0	0	0
4-3-18	Adolfo Matus		6731		0	0	0	0	0

H	Approvals/Reviews	I	Termination
Technician Generating RWP:		Date: 04/26/2018	
Date/Time: 04-03-2018 / 0800		Time: 1450	
Industrial Hygiene Approval:		Health Physics Rep: Adolfo Matus	
Date/Time: N/A			
HP Supervisor Approval:		Reason: Job Complete	RWP Revision
Date/Time: N/A			
RSO Manager Approval:		HP Supervisor Review:	
Date/Time: 4/7/18 0807		4/26/18 1500	

Appendix C

Background Reference Area Data

Walls

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		184949	
Last Calibration Date:		3/6/2018					
Detector Model:		43-93		Detector Serial No.:		268605	
Today's Date:		4/4/2018		Data Collected by:		Joan Cosgrove	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.423	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.213

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	16	8	3.09		9.57
2	8	4	-0.91		0.82
3	12	6	1.09		1.20
4	12	6	1.09		1.20
5	12	6	1.09		1.20
6	10	5	0.09		0.01
7	10	5	0.09		0.01
8	14	7	2.09		4.38
9	7	3.5	-1.41		1.98
10	7	3.5	-1.41		1.98
11	9	4.5	-0.41		0.17
12	6	3	-1.91		3.63
13	8	4	-0.91		0.82
14	7	3.5	-1.41		1.98
15	9	4.5	-0.41		0.17
16	10	5	0.09		0.01
Mean Count: $\bar{x}$		4.91		SUM	29.11
Standard Deviation (σ)		1.39		Variance:	1.00
Background Count Rate:			4.91	CPM + -	2.79 CPM

Background in dpm/100cm^2
46

Scan Probability %	**Static MDC in dpm/100cm^2**
100	**83**
Action Level in CPM	Release Limit in CPM
114	123

Calculations Completed by:	Joan Cosgrove	Date:	4/4/2018
Reviewed by:	Daniel Spicuzza	Date:	4/4/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		184949	
Last Calibration Date:		3/6/2018					
Detector Model:		43-93		Detector Serial No.:		268605	
Today's Date:		4/4/2018		Data Collected by:		Joan Cosgrove	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.268	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.147
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	739	370	16.59		275.35		
2	716	358	5.09		25.95		
3	743	372	18.59		345.73		
4	698	349	-3.91		15.26		
5	657	329	-24.41		595.67		
6	728	364	11.09		123.07		
7	680	340	-12.91		166.57		
8	695	348	-5.41		29.23		
9	698	349	-3.91		15.26		
10	708	354	1.09		1.20		
11	704	352	-0.91		0.82		
12	680	340	-12.91		166.57		**Background in dpm/100cm^2**
13	738	369	16.09		259.01		**3512**
14	679	340	-13.41		179.73		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	724	362	9.09		82.70		
16	706	353	0.09		0.01		**1264** / **630**
Mean Count: $\bar{x}$		352.91		SUM	2282.11		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		12.33		Variance:	78.69		
Background Count Rate:			352.91	CPM + -	24.67	CPM	496 / 513
Calculations Completed by:			Joan Cosgrove				Date: 4/4/2018
Reviewed by:			Daniel Spicuzza				Date: 4/4/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		193668	
Last Calibration Date:		8/15/2017					
Detector Model:		43-93		Detector Serial No.:		326725	
Today's Date:		4/5/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.497	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.251

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	8	4	0.88		0.77
2	4	2	-1.13		1.27
3	6	3	-0.13		0.02
4	4	2	-1.13		1.27
5	8	4	0.88		0.77
6	8	4	0.88		0.77
7	4	2	-1.13		1.27
8	6	3	-0.13		0.02
9	7	3.5	0.38		0.14
10	5	2.5	-0.63		0.39
11	10	5	1.88		3.52
12	2	1	-2.13		4.52
13	4	2	-1.13		1.27
14	8	4	0.88		0.77
15	9	4.5	1.38		1.89
16	7	3.5	0.38		0.14
Mean Count: $\bar{x}$		3.13		SUM	18.75
Standard Deviation (σ)		1.12		Variance:	0.65
Background Count Rate:			3.13	CPM + -	2.24 CPM

Background in dpm/100cm^2
25

Scan Probability %	Static MDC in dpm/100cm^2
100	**59**
Action Level in CPM	Release Limit in CPM
132	144

Calculations Completed by:	Thomas Hogan	Date:	4/5/2018
Reviewed by:	Daniel Spicuzza	Date:	4/5/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		193668	
Last Calibration Date:		8/15/2017					
Detector Model:		43-93		Detector Serial No.:		326725	
Today's Date:		4/5/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.327	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.18

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	799	400	1.91		3.63
2	765	383	-15.09		227.82
3	769	385	-13.09		171.45
4	803	402	3.91		15.26
5	729	365	-33.09		1095.20
6	749	375	-23.09		533.32
7	851	426	27.91		778.76
8	746	373	-24.59		604.85
9	862	431	33.41		1115.98
10	880	440	42.41		1798.29
11	783	392	-6.09		37.13
12	817	409	10.91		118.95
13	797	399	0.91		0.82
14	837	419	20.91		437.07
15	747	374	-24.09		580.51
16	789	395	-3.09		9.57
Mean Count: $\bar{x}$		397.59		SUM	7528.61
Standard Deviation (σ)		22.40		Variance:	259.61
Background Count Rate:			397.59	CPM + -	44.81 CPM

Background in dpm/100cm^2
3242

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
1099	**547**
Action Level in CPM	Release Limit in CPM
573	592

Calculations Completed by:	Thomas Hogan	Date:	4/5/2018
Reviewed by:	Daniel Spicuzza	Date:	4/5/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268488	
Last Calibration Date:		10/27/2017					
Detector Model:		43-37		Detector Serial No.:		190672	
Today's Date:		4/10/2018		Data Collected by:		Adolfo Matus Jr.	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.302	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.153
Count Number			(x - x)		(x - x)^2		
1	15	7.5	1.88		3.52		
2	7	3.5	-2.13		4.52		
3	9	4.5	-1.13		1.27		
4	10	5	-0.63		0.39		
5	12	6	0.38		0.14		
6	12	6	0.38		0.14		
7	10	5	-0.63		0.39		
8	10	5	-0.63		0.39		
9	19	9.5	3.88		15.02		
10	11	5.5	-0.13		0.02		
11	7	3.5	-2.13		4.52		
12	9	4.5	-1.13		1.27		
13	18	9	3.38		11.39		
14	12	6	0.38		0.14		
15	10	5	-0.63		0.39		
16	9	4.5	-1.13		1.27		
Mean Count: $\bar{x}$		5.63		SUM	44.75		
Standard Deviation (σ)		1.73		Variance:	1.54		
Background Count Rate:			5.63	CPM + -	3.45	CPM	

Background in dpm/100cm^2

13

Scan Probability %	**Static MDC in dpm/100cm2**
100	**21**
Action Level in CPM	Release Limit in CPM
460	511

Calculations Completed by:	Adolfo Matus Jr.	Date:	4/10/2018
Reviewed by:	Daniel Spicuzza	Date:	4/10/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268488	
Last Calibration Date:		10/27/2017					
Detector Model:		43-37		Detector Serial No.:		190672	
Today's Date:		4/10/2018		Data Collected by:		Adolfo Matus Jr.	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.37	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.182
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	2256	1128	-50.19		2518.79		
2	2218	1109	-69.19		4786.91		
3	2198	1099	-79.19		6270.66		
4	2148	1074	-104.19		10855.04		
5	2204	1102	-76.19		5804.54		
6	2308	1154	-24.19		585.04		
7	2394	1197	18.81		353.91		
8	2502	1251	72.81		5301.66		
9	2424	1212	33.81		1143.29		
10	2507	1254	75.31		5671.97		
11	2548	1274	95.81		9180.04		
12	2529	1265	86.31		7449.85		**Background in dpm/100cm^2**
13	2297	1149	-29.69		881.35		**1459**
14	2371	1186	7.31		53.47		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	2412	1206	27.81		773.54		
16	2386	1193	14.81		219.41		**1256** / **142**
Mean Count: $\bar{x}$		1178.19		SUM	61849.44		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		64.21		Variance:	2132.74		
Background Count Rate:			1178.19	CPM + -	128.43	CPM	2330 / 2462
Calculations Completed by:			Adolfo Matus Jr.				Date: 4/10/2018
Reviewed by:			Daniel Spicuzza				Date: 4/10/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268497	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		O93965	
Today's Date:		4/3/2018		Data Collected by:		Josefina Matus	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.31	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.157

Count Number			$(x - \bar{x})$		$(x - \bar{x})^2$
1	9	4.5	-0.31		0.10
2	9	4.5	-0.31		0.10
3	15	7.5	2.69		7.22
4	10	5	0.19		0.04
5	10	5	0.19		0.04
6	7	3.5	-1.31		1.72
7	6	3	-1.81		3.29
8	11	5.5	0.69		0.47
9	5	2.5	-2.31		5.35
10	13	6.5	1.69		2.85
11	13	6.5	1.69		2.85
12	9	4.5	-0.31		0.10
13	7	3.5	-1.31		1.72
14	12	6	1.19		1.41
15	9	4.5	-0.31		0.10
16	9	4.5	-0.31		0.10
Mean Count: $\bar{x}$		4.81		SUM	27.44
Standard Deviation (σ)		1.35		Variance:	0.95
Background Count Rate:			4.81	CPM + -	2.70 CPM

Background in dpm/100cm^2

11

Scan Probability %	**Static MDC in dpm/100cm2**
100	**19**
Action Level in CPM	Release Limit in CPM
472	524

Calculations Completed by:	Josefina Matus	Date:	2/7/2018
Reviewed by:	Daniel Spicuzza	Date:	2/7/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268497	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		O93965	
Today's Date:		4/4/2018		Data Collected by:		Josefina Matus	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.352	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.173
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	2710	1355	33.75		1139.06		
2	2617	1309	-12.75		162.56		
3	2534	1267	-54.25		2943.06		
4	2518	1259	-62.25		3875.06		
5	2560	1280	-41.25		1701.56		
6	2617	1309	-12.75		162.56		
7	2580	1290	-31.25		976.56		
8	2522	1261	-60.25		3630.06		
9	2760	1380	58.75		3451.56		
10	2644	1322	0.75		0.56		
11	2633	1317	-4.75		22.56		
12	2739	1370	48.25		2328.06		**Background in dpm/100cm^2**
13	2690	1345	23.75		564.06		**1720**
14	2738	1369	47.75		2280.06		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	2682	1341	19.75		390.06		
16	2736	1368	46.75		2185.56		**1398** / **158**
Mean Count: $\bar{x}$		1321.25		SUM	25813.00		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		41.48		Variance:	890.10		
Background Count Rate:			1321.25	CPM + -	82.97	CPM	2417 / 2542
Calculations Completed by:			Josefina Matus				Date: 4/3/2018
Reviewed by:			Daniel Spicuzza				Date: 4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297743	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		302111	
Today's Date:		4/4/2018		Data Collected by:		Adolfo Matus	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.319	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.161
Count Number			$(x - \bar{x})$		$(x - \bar{x})^2$		
1	14	7	-1.38		1.89		
2	16	8	-0.38		0.14		
3	18	9	0.63		0.39		
4	20	10	1.63		2.64		
5	18	9	0.63		0.39		
6	12	6	-2.38		5.64		
7	22	11	2.63		6.89		
8	16	8	-0.38		0.14		
9	20	10	1.63		2.64		
10	11	5.5	-2.88		8.27		
11	16	8	-0.38		0.14		
12	19	9.5	1.13		1.27		**Background in dpm/100cm^2**
13	19	9.5	1.13		1.27		**18**
14	16	8	-0.38		0.14		**Scan Probability %** / **Static MDC in dpm/100cm2**
15	13	6.5	-1.88		3.52		
16	18	9	0.63		0.39		**100** / **32**
Mean Count: $\bar{x}$		8.38		SUM	35.75		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		1.54		Variance:	1.23		
Background Count Rate:			8.38	CPM + -	3.09	CPM	489 / 542
Calculations Completed by:			Adolfo Matus				Date: 4/4/2018
Reviewed by:			Daniel Spicuzza				Date: 4/4/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297743	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		302111	
Today's Date:		4/4/2018		Data Collected by:		Adolfo Matus	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.384	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.189

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2974	1487	-24.72		611.02
2	3102	1551	39.28		1543.02
3	3022	1511	-0.72		0.52
4	3055	1528	15.78		249.05
5	3079	1540	27.78		771.80
6	3012	1506	-5.72		32.70
7	2997	1499	-13.22		174.74
8	3018	1509	-2.72		7.39
9	2990	1495	-16.72		279.52
10	3023	1512	-0.22		0.05
11	2935	1468	-44.22		1955.30
12	3064	1532	20.28		411.33
13	3109	1555	42.78		1830.24
14	3047	1524	11.78		138.80
15	2922	1461	-50.72		2572.39
16	3026	1513	1.28		1.64
Mean Count: $\bar{x}$		1511.72		SUM	10579.48
Standard Deviation (σ)		26.56		Variance:	364.81
Background Count Rate:			1511.72	CPM + -	53.11 CPM

Background in dpm/100cm^2
1804

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
1187	**116**
Action Level in CPM	Release Limit in CPM
2707	2844

Calculations Completed by:	Adolfo Matus	Date:	4/4/2018
Reviewed by:	Daniel Spicuzza	Date:	4/4/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/4/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.444	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.225

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	18	9	2.28		5.20
2	17	8.5	1.78		3.17
3	19	9.5	2.78		7.74
4	15	7.5	0.78		0.61
5	12	6	-0.72		0.52
6	16	8	1.28		1.64
7	13	6.5	-0.22		0.05
8	8	4	-2.72		7.39
9	15	7.5	0.78		0.61
10	6	3	-3.72		13.83
11	13	6.5	-0.22		0.05
12	12	6	-0.72		0.52
13	15	7.5	0.78		0.61
14	15	7.5	0.78		0.61
15	12	6	-0.72		0.52
16	9	4.5	-2.22		4.92
Mean Count: $\bar{x}$		6.72		SUM	47.98
Standard Deviation (σ)		1.79		Variance:	1.65
Background Count Rate:			6.72	CPM + -	3.58 CPM

Background in dpm/100cm^2
61

Scan Probability %	Static MDC in dpm/100cm^2
100	**90**
Action Level in CPM	Release Limit in CPM
122	129

Calculations Completed by:	Thomas Hogan	Date:	4/4/2018
Reviewed by:	Daniel Spicuzza	Date:	4/4/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/4/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.313	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.172

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	1036	518	44.63		1991.39
2	1015	508	34.13		1164.52
3	968	484	10.63		112.89
4	906	453	-20.38		415.14
5	949	475	1.13		1.27
6	940	470	-3.38		11.39
7	925	463	-10.88		118.27
8	892	446	-27.38		749.39
9	919	460	-13.88		192.52
10	871	436	-37.88		1434.52
11	1011	506	32.13		1032.02
12	1033	517	43.13		1859.77
13	977	489	15.13		228.77
14	897	449	-24.88		618.77
15	913	457	-16.88		284.77
16	896	448	-25.38		643.89
Mean Count: $\bar{x}$		473.38		SUM	10859.25
Standard Deviation (σ)		26.91		Variance:	374.46
Background Count Rate:			473.38	CPM + -	53.81 CPM

Background in dpm/100cm^2
4033

Scan MDC in dpm/100cm^2	Static MDC in dpm/100cm^2
1253	**623**
Action Level in CPM	Release Limit in CPM
641	660

Calculations Completed by:	Thomas Hogan	Date:	4/4/2018
Reviewed by:	Daniel Spicuzza	Date:	4/4/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Bldg. 218					
Instrument Model:	2360		Instrument Serial No.		297766	
Last Calibration Date:	12/20/2017					
Detector Model:	43-93		Detector Serial No.:		323074	
Today's Date:	4/4/2018		Data Collected by:		Josefina Matus	
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:	0.404	
Type of Surface:	Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.204

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	9	4.5	-0.47		0.22
2	9	4.5	-0.47		0.22
3	14	7	2.03		4.13
4	6	3	-1.97		3.88
5	12	6	1.03		1.06
6	9	4.5	-0.47		0.22
7	9	4.5	-0.47		0.22
8	12	6	1.03		1.06
9	9	4.5	-0.47		0.22
10	13	6.5	1.53		2.34
11	8	4	-0.97		0.94
12	10	5	0.03		0.00
13	9	4.5	-0.47		0.22
14	15	7.5	2.53		6.41
15	5	2.5	-2.47		6.09
16	10	5	0.03		0.00
Mean Count: $\bar{x}$		4.97		SUM	27.23
Standard Deviation (σ)		1.35		Variance:	0.94
Background Count Rate:			4.97	CPM + -	2.69 CPM

Background in dpm/100cm^2
49

Scan Probability %	Static MDC in dpm/100cm^2
100	**87**
Action Level in CPM	Release Limit in CPM
110	117

Calculations Completed by:	Josefina Matus	Date:	4/4/2018
Reviewed by:	Daniel Spicuzza	Date:	4/4/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297766	
Last Calibration Date:		12/20/2017					
Detector Model:		43-93		Detector Serial No.:		323074	
Today's Date:		4/4/2018		Data Collected by:		Josefina Matus	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.254	
Type of Surface:		Cinder Block		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.14

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	870	435	34.38		1181.64
2	796	398	-2.63		6.89
3	840	420	19.38		375.39
4	888	444	43.38		1881.39
5	785	393	-8.13		66.02
6	800	400	-0.63		0.39
7	835	418	16.88		284.77
8	870	435	34.38		1181.64
9	815	408	6.88		47.27
10	851	426	24.88		618.77
11	832	416	15.38		236.39
12	788	394	-6.63		43.89
13	760	380	-20.63		425.39
14	714	357	-43.63		1903.14
15	606	303	-97.63		9530.64
16	770	385	-15.63		244.14
Mean Count: $\bar{x}$		400.63		SUM	18027.75
Standard Deviation (σ)		34.67		Variance:	621.65
Background Count Rate:			400.63	CPM + -	69.34 CPM

Background in dpm/100cm^2
4206

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
1421	**707**
Action Level in CPM	Release Limit in CPM
537	552

Calculations Completed by:	Josefina Matus	Date:	4/4/2018
Reviewed by:	Daniel Spicuzza	Date:	4/4/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Bldg. 218					
Instrument Model:	2360		Instrument Serial No.		184949	
Last Calibration Date:	3/6/2018					
Detector Model:	43-93		Detector Serial No.:		268605	
Today's Date:	4/3/2018		Data Collected by:		Joan Cosgrove	
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:	0.423	
Type of Surface:	Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.213

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1	-0.16		0.02
2	3	1.5	0.34		0.12
3	2	1	-0.16		0.02
4	2	1	-0.16		0.02
5	3	1.5	0.34		0.12
6	1	0.5	-0.66		0.43
7	2	1	-0.16		0.02
8	2	1	-0.16		0.02
9	3	1.5	0.34		0.12
10	3	1.5	0.34		0.12
11	3	1.5	0.34		0.12
12	1	0.5	-0.66		0.43
13	2	1	-0.16		0.02
14	2	1	-0.16		0.02
15	1	0.5	-0.66		0.43
16	5	2.5	1.34		1.81
Mean Count: $\bar{x}$		1.16		SUM	3.86
Standard Deviation (σ)		0.51		Variance:	0.13
Background Count Rate:			1.16	CPM + -	1.01 CPM

Background in dpm/100cm^2
11

Scan Probability %	Static MDC in dpm/100cm^2
100	**48**
Action Level in CPM	Release Limit in CPM
111	123

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		184949	
Last Calibration Date:		3/6/2018					
Detector Model:		43-93		Detector Serial No.:		268605	
Today's Date:		4/3/2018		Data Collected by:		Joan Cosgrove	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.268	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.147
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	328	164	-5.75		33.06		
2	320	160	-9.75		95.06		
3	349	175	4.75		22.56		
4	322	161	-8.75		76.56		
5	348	174	4.25		18.06		
6	355	178	7.75		60.06		
7	343	172	1.75		3.06		
8	360	180	10.25		105.06		
9	380	190	20.25		410.06		
10	331	166	-4.25		18.06		
11	356	178	8.25		68.06		
12	306	153	-16.75		280.56		
13	336	168	-1.75		3.06		
14	349	175	4.75		22.56		
15	331	166	-4.25		18.06		
16	318	159	-10.75		115.56		
Mean Count: $\bar{x}$		169.75		SUM	1349.50		
Standard Deviation (σ)		9.49		Variance:	46.53		
Background Count Rate:			169.75	CPM + -	18.97	CPM	

Background in dpm/100cm^2
1689

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
876	**441**
Action Level in CPM	Release Limit in CPM
313	329

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Bldg. 218					
Instrument Model:	2360		Instrument Serial No.	193668		
Last Calibration Date:	8/15/2017					
Detector Model:	43-93		Detector Serial No.:	326725		
Today's Date:	4/3/2018		Data Collected by:	Joan Cosgrove		
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background		2 π Instrument Efficiency:	0.497		
Type of Surface:	Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.251

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	8	4	2.34		5.49
2	2	1	-0.66		0.43
3	2	1	-0.66		0.43
4	1	0.5	-1.16		1.34
5	4	2	0.34		0.12
6	1	0.5	-1.16		1.34
7	7	3.5	1.84		3.40
8	2	1	-0.66		0.43
9	0	0	-1.66		2.74
10	6	3	1.34		1.81
11	1	0.5	-1.16		1.34
12	4	2	0.34		0.12
13	5	2.5	0.84		0.71
14	2	1	-0.66		0.43
15	3	1.5	-0.16		0.02
16	5	2.5	0.84		0.71
Mean Count: $\bar{x}$		1.66		SUM	20.86
Standard Deviation (σ)		1.18		Variance:	0.72
Background Count Rate:			1.66	CPM + -	2.36 CPM

Background in dpm/100cm^2
13

Scan Probability %	Static MDC in dpm/100cm^2
100	**46**
Action Level in CPM	Release Limit in CPM
130	144

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218				
Instrument Model:		2360		Instrument Serial No.	193668	
Last Calibration Date:		8/15/2017				
Detector Model:		43-93		Detector Serial No.:	326725	
Today's Date:		4/3/2018		Data Collected by:	Joan Cosgrove	
	Alpha	X	Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:	0.327	
Type of Surface:		Concrete Wall	Count Time:	2	Minutes	4 π Instrument Efficiency: 0.18

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	304	152	-19.88		395.02
2	314	157	-14.88		221.27
3	360	180	8.13		66.02
4	357	179	6.63		43.89
5	368	184	12.13		147.02
6	346	173	1.13		1.27
7	358	179	7.13		50.77
8	314	157	-14.88		221.27
9	327	164	-8.38		70.14
10	309	155	-17.38		301.89
11	363	182	9.63		92.64
12	358	179	7.13		50.77
13	354	177	5.13		26.27
14	362	181	9.13		83.27
15	342	171	-0.88		0.77
16	364	182	10.13		102.52
Mean Count: $\bar{x}$		171.88		SUM	1874.75
Standard Deviation (σ)		11.18		Variance:	64.65
Background Count Rate:			171.88	CPM + -	22.36 CPM

Background in dpm/100cm^2
1402

Scan MDC in dpm/100cm^2	Static MDC in dpm/100cm^2
723	**364**
Action Level in CPM	Release Limit in CPM
347	367

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268488	
Last Calibration Date:		10/27/2017					
Detector Model:		43-37		Detector Serial No.:		190672	
Today's Date:		4/10/2018		Data Collected by:		Adolfo Matus Jr.	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.302	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.153
Count Number			(x - x)		$(x - \bar{x})^2$		
1	8	4	-1.59		2.54		
2	12	6	0.41		0.17		
3	12	6	0.41		0.17		
4	17	8.5	2.91		8.45		
5	12	6	0.41		0.17		
6	12	6	0.41		0.17		
7	12	6	0.41		0.17		
8	14	7	1.41		1.98		
9	11	5.5	-0.09		0.01		
10	7	3.5	-2.09		4.38		
11	6	3	-2.59		6.73		
12	10	5	-0.59		0.35		
13	15	7.5	1.91		3.63		
14	11	5.5	-0.09		0.01		
15	13	6.5	0.91		0.82		
16	7	3.5	-2.09		4.38		
Mean Count: $\bar{x}$		5.59		SUM	34.11		
Standard Deviation (σ)		1.51		Variance:	1.18		
Background Count Rate:			5.59	CPM + -	3.02	CPM	
Calculations Completed by:			Adolfo Matus Jr.				
Reviewed by:			Daniel Spicuzza				

Background in dpm/100cm^2
13

Scan Probability %	Static MDC in dpm/100cm2
100	**21**
Action Level in CPM	Release Limit in CPM
460	511

Date:	4/10/2018
Date:	4/10/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268488	
Last Calibration Date:		10/27/2017					
Detector Model:		43-37		Detector Serial No.:		190672	
Today's Date:		4/10/2018		Data Collected by:		Adolfo Matus Jr.	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.37	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.182
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	984	492	12.34		152.37		
2	933	467	-13.16		173.09		
3	939	470	-10.16		103.15		
4	979	490	9.84		96.90		
5	920	460	-19.66		386.37		
6	927	464	-16.16		261.02		
7	938	469	-10.66		113.56		
8	970	485	5.34		28.56		
9	939	470	-10.16		103.15		
10	972	486	6.34		40.24		
11	960	480	0.34		0.12		
12	956	478	-1.66		2.74		**Background in dpm/100cm^2**
13	949	475	-5.16		26.59		**594**
14	1003	502	21.84		477.15		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	957	479	-1.16		1.34		
16	1023	512	31.84		1014.02		**801** / **91**
Mean Count: $\bar{x}$		479.66		SUM	2980.36		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		14.10		Variance:	102.77		
Background Count Rate:			479.66	CPM + -	28.19	CPM	1632 / 1763
Calculations Completed by:			Adolfo Matus Jr.				Date: 4/10/2018
Reviewed by:			Daniel Spicuzza				Date: 4/10/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268497	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		O93965	
Today's Date:		4/12/2018		Data Collected by:		Josefina Matus	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.31	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.157
Count Number			$(x - \bar{x})$		$(x - \bar{x})^2$		
1	13	6.5	2.28		5.20		
2	3	1.5	-2.72		7.39		
3	10	5	0.78		0.61		
4	12	6	1.78		3.17		
5	9	4.5	0.28		0.08		
6	9	4.5	0.28		0.08		
7	7	3.5	-0.72		0.52		
8	6	3	-1.22		1.49		
9	13	6.5	2.28		5.20		
10	11	5.5	1.28		1.64		
11	4	2	-2.22		4.92		
12	5	2.5	-1.72		2.95		
13	11	5.5	1.28		1.64		
14	7	3.5	-0.72		0.52		
15	11	5.5	1.28		1.64		
16	4	2	-2.22		4.92		
Mean Count: $\bar{x}$		4.22		SUM	41.98		
Standard Deviation (σ)		1.67		Variance:	1.45		
Background Count Rate:			4.22	CPM + -	3.35	CPM	
Calculations Completed by:			Josefina Matus				
Reviewed by:			Daniel Spicuzza				

Background in dpm/100cm^2

9

Scan Probability %	**Static MDC in dpm/100cm2**
100	**18**
Action Level in CPM	Release Limit in CPM
471	523

Date:	4/12/2018
Date:	4/12/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268497	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		O93965	
Today's Date:		4/12/2018		Data Collected by:		Josefina Matus	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.352	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.173
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	1122	561	9.88		97.52		
2	1083	542	-9.63		92.64		
3	1080	540	-11.13		123.77		
4	1130	565	13.88		192.52		
5	1131	566	14.38		206.64		
6	1121	561	9.38		87.89		
7	1182	591	39.88		1590.02		
8	1116	558	6.88		47.27		
9	1093	547	-4.63		21.39		
10	1187	594	42.38		1795.64		
11	1203	602	50.38		2537.64		
12	1007	504	-47.63		2268.14		**Background in dpm/100cm^2**
13	1017	509	-42.63		1816.89		**717**
14	957	479	-72.63		5274.39		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	1020	510	-41.13		1691.27		
16	1187	594	42.38		1795.64		**903** / **102**
Mean Count: $\bar{x}$		551.13		SUM	19639.25		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		36.18		Variance:	677.22		
Background Count Rate:			551.13	CPM + -	72.37	CPM	1647 / 1772
Calculations Completed by:			Josefina Matus				Date: 4/12/2018
Reviewed by:			Daniel Spicuzza				Date: 4/12/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297743	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		302111	
Today's Date:		4/12/2018		Data Collected by:		Adolfo Matus	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.319	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.161

Count Number			$(x - \bar{x})$		$(x - \bar{x})^2$
1	9	4.5	-0.50		0.25
2	8	4	-1.00		1.00
3	11	5.5	0.50		0.25
4	11	5.5	0.50		0.25
5	5	2.5	-2.50		6.25
6	5	2.5	-2.50		6.25
7	8	4	-1.00		1.00
8	9	4.5	-0.50		0.25
9	11	5.5	0.50		0.25
10	9	4.5	-0.50		0.25
11	7	3.5	-1.50		2.25
12	18	9	4.00		16.00
13	11	5.5	0.50		0.25
14	14	7	2.00		4.00
15	13	6.5	1.50		2.25
16	11	5.5	0.50		0.25
Mean Count: $\bar{x}$		5.00		SUM	41.00
Standard Deviation (σ)		1.65		Variance:	1.41
Background Count Rate:			5.00	CPM + -	3.31 CPM

Background in dpm/100cm^2

11

Scan Probability %	**Static MDC in dpm/100cm2**
100	**19**
Action Level in CPM	Release Limit in CPM
485	539

Calculations Completed by:	Adolfo Matus	Date:	4/12/2018
Reviewed by:	Daniel Spicuzza	Date:	4/12/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297743	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		302111	
Today's Date:		4/12/2018		Data Collected by:		Adolfo Matus	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.384	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.189

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	1296	648	-21.25		451.56
2	1416	708	38.75		1501.56
3	1330	665	-4.25		18.06
4	1365	683	13.25		175.56
5	1379	690	20.25		410.06
6	1360	680	10.75		115.56
7	1356	678	8.75		76.56
8	1370	685	15.75		248.06
9	1402	701	31.75		1008.06
10	1361	681	11.25		126.56
11	1377	689	19.25		370.56
12	1371	686	16.25		264.06
13	1309	655	-14.75		217.56
14	1257	629	-40.75		1660.56
15	1237	619	-50.75		2575.56
16	1230	615	-54.25		2943.06
Mean Count: $\bar{x}$		669.25		SUM	12163.00
Standard Deviation (σ)		28.48		Variance:	419.41
Background Count Rate:			669.25	CPM + -	56.95 CPM

Background in dpm/100cm^2
799

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
790	**78**
Action Level in CPM	Release Limit in CPM
1865	2001

Calculations Completed by:	Adolfo Matus	Date:	4/12/2018
Reviewed by:	Daniel Spicuzza	Date:	4/12/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.444	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.225

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	7	3.5	1.81		3.29
2	2	1	-0.69		0.47
3	4	2	0.31		0.10
4	7	3.5	1.81		3.29
5	1	0.5	-1.19		1.41
6	2	1	-0.69		0.47
7	5	2.5	0.81		0.66
8	4	2	0.31		0.10
9	4	2	0.31		0.10
10	2	1	-0.69		0.47
11	4	2	0.31		0.10
12	2	1	-0.69		0.47
13	3	1.5	-0.19		0.04
14	4	2	0.31		0.10
15	3	1.5	-0.19		0.04
16	0	0	-1.69		2.85
Mean Count: $\bar{x}$		1.69		SUM	13.94
Standard Deviation (σ)		0.96		Variance:	0.48
Background Count Rate:			1.69	CPM + -	1.93 CPM

Background in dpm/100cm^2

15

Scan Probability %	**Static MDC in dpm/100cm^2**
100	**52**
Action Level in CPM	Release Limit in CPM
117	129

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.313	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.172
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	387	194	-3.56		12.69		
2	394	197	-0.06		0.00		
3	417	209	11.44		130.82		
4	410	205	7.94		63.00		
5	412	206	8.94		79.88		
6	403	202	4.44		19.69		
7	378	189	-8.06		65.00		
8	428	214	16.94		286.88		
9	395	198	0.44		0.19		
10	379	190	-7.56		57.19		
11	394	197	-0.06		0.00		
12	389	195	-2.56		6.57		**Background in dpm/100cm^2**
13	396	198	0.94		0.88		**1679**
14	375	188	-9.56		91.44		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	373	187	-10.56		111.57		
16	376	188	-9.06		82.13		**809** / **406**
Mean Count: $\bar{x}$		197.06		SUM	1007.94		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		8.20		Variance:	34.76		
Background Count Rate:			197.06	CPM + -	16.39	CPM	365 / 384
Calculations Completed by:			Thomas Hogan				Date: 4/3/2018
Reviewed by:			Daniel Spicuzza				Date: 4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297766	
Last Calibration Date:		12/20/2017					
Detector Model:		43-93		Detector Serial No.:		323074	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.404	
Type of Surface:		Concrete Wall		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.204

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1	-0.91		0.82
2	9	4.5	2.59		6.73
3	3	1.5	-0.41		0.17
4	5	2.5	0.59		0.35
5	4	2	0.09		0.01
6	5	2.5	0.59		0.35
7	5	2.5	0.59		0.35
8	2	1	-0.91		0.82
9	1	0.5	-1.41		1.98
10	7	3.5	1.59		2.54
11	2	1	-0.91		0.82
12	4	2	0.09		0.01
13	1	0.5	-1.41		1.98
14	3	1.5	-0.41		0.17
15	5	2.5	0.59		0.35
16	3	1.5	-0.41		0.17
Mean Count: $\bar{x}$		1.91		SUM	17.61
Standard Deviation (σ)		1.08		Variance:	0.61
Background Count Rate:			1.91	CPM + -	2.17 CPM

Background in dpm/100cm^2
19

Scan Probability %	Static MDC in dpm/100cm^2
100	**60**
Action Level in CPM	Release Limit in CPM
106	117

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218				
Instrument Model:		2360		Instrument Serial No.	297766	
Last Calibration Date:		12/20/2017				
Detector Model:		43-93		Detector Serial No.:	323074	
Today's Date:		4/3/2018		Data Collected by:	Thomas Hogan	
	Alpha	X	Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:	0.254	
Type of Surface:		Concrete Wall	Count Time:	2	Minutes	4 π Instrument Efficiency: 0.14

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	407	204	-3.72		13.83
2	397	199	-8.72		76.02
3	401	201	-6.72		45.14
4	388	194	-13.22		174.74
5	398	199	-8.22		67.55
6	403	202	-5.72		32.70
7	398	199	-8.22		67.55
8	393	197	-10.72		114.89
9	415	208	0.28		0.08
10	388	194	-13.22		174.74
11	379	190	-17.72		313.95
12	457	229	21.28		452.89
13	439	220	12.28		150.83
14	450	225	17.78		316.17
15	488	244	36.78		1352.86
16	430	215	7.78		60.55
Mean Count: $\bar{x}$		207.22		SUM	3414.48
Standard Deviation (σ)		15.09		Variance:	117.74
Background Count Rate:			207.22	CPM + -	30.17 CPM

Background in dpm/100cm^2
2176

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
1022	**513**
Action Level in CPM	Release Limit in CPM
343	359

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Floor

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Bldg. 218					
Instrument Model:	2360		Instrument Serial No.		184949	
Last Calibration Date:	3/6/2018					
Detector Model:	43-93		Detector Serial No.:		268605	
Today's Date:	4/3/2018		Data Collected by:		Joan Cosgrove	
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:	0.423	
Type of Surface:	Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.213

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	6	3	1.22		1.49
2	4	2	0.22		0.05
3	6	3	1.22		1.49
4	1	0.5	-1.28		1.64
5	2	1	-0.78		0.61
6	1	0.5	-1.28		1.64
7	2	1	-0.78		0.61
8	7	3.5	1.72		2.95
9	1	0.5	-1.28		1.64
10	4	2	0.22		0.05
11	3	1.5	-0.28		0.08
12	5	2.5	0.72		0.52
13	3	1.5	-0.28		0.08
14	5	2.5	0.72		0.52
15	5	2.5	0.72		0.52
16	2	1	-0.78		0.61
Mean Count: $\bar{x}$		1.78		SUM	14.48
Standard Deviation (σ)		0.98		Variance:	0.50
Background Count Rate:			1.78	CPM + -	1.97 CPM

Background in dpm/100cm^2
17

Scan Probability %	Static MDC in dpm/100cm^2
100	**56**
Action Level in CPM	Release Limit in CPM
111	123

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		184949	
Last Calibration Date:		3/6/2018					
Detector Model:		43-93		Detector Serial No.:		268605	
Today's Date:		4/3/2018		Data Collected by:		Joan Cosgrove	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.268	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.147
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	515	258	18.47		341.09		
2	504	252	12.97		168.19		
3	501	251	11.47		131.53		
4	510	255	15.97		255.00		
5	437	219	-20.53		421.53		
6	433	217	-22.53		507.66		
7	449	225	-14.53		211.16		
8	484	242	2.97		8.81		
9	513	257	17.47		305.16		
10	487	244	4.47		19.97		
11	512	256	16.97		287.94		
12	448	224	-15.03		225.94		
13	475	238	-1.53		2.34		
14	516	258	18.97		359.81		
15	442	221	-18.03		325.13		
16	423	212	-27.53		757.97		
Mean Count: $\bar{x}$		239.03		SUM	4329.23		
Standard Deviation (σ)		16.99		Variance:	149.28		
Background Count Rate:			239.03	CPM + -	33.98	CPM	
Calculations Completed by:			Joan Cosgrove			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Background in dpm/100cm^2
1784

Scan MDC in dpm/100cm^2	Static MDC in dpm/100cm^2
780	**391**
Action Level in CPM	Release Limit in CPM
382	399

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		193668	
Last Calibration Date:		8/15/2017					
Detector Model:		43-93		Detector Serial No.:		326725	
Today's Date:		4/3/2018		Data Collected by:		Joan Cosgrove	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.497	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.251

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1	-1.28		1.64
2	1	0.5	-1.78		3.17
3	4	2	-0.28		0.08
4	3	1.5	-0.78		0.61
5	4	2	-0.28		0.08
6	2	1	-1.28		1.64
7	5	2.5	0.22		0.05
8	5	2.5	0.22		0.05
9	1	0.5	-1.78		3.17
10	4	2	-0.28		0.08
11	8	4	1.72		2.95
12	5	2.5	0.22		0.05
13	9	4.5	2.22		4.92
14	6	3	0.72		0.52
15	8	4	1.72		2.95
16	6	3	0.72		0.52
Mean Count: $\bar{x}$		2.28		SUM	22.48
Standard Deviation (σ)		1.22		Variance:	0.78
Background Count Rate:			2.28	CPM + -	2.45 CPM

Background in dpm/100cm^2
18

Scan Probability %	Static MDC in dpm/100cm^2
100	**52**
Action Level in CPM	Release Limit in CPM
131	144

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		193668	
Last Calibration Date:		8/15/2017					
Detector Model:		43-93		Detector Serial No.:		326725	
Today's Date:		4/3/2018		Data Collected by:		Joan Cosgrove	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.327	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.18
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	509	255	-12.84		164.96		
2	539	270	2.16		4.65		
3	516	258	-9.34		87.31		
4	540	270	2.66		7.06		
5	564	282	14.66		214.81		
6	520	260	-7.34		53.93		
7	638	319	51.66		2668.37		
8	523	262	-5.84		34.15		
9	540	270	2.66		7.06		
10	535	268	0.16		0.02		
11	506	253	-14.34		205.74		
12	479	240	-27.84		775.27		**Background in dpm/100cm^2**
13	505	253	-14.84		220.34		**2180**
14	543	272	4.16		17.27		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	570	285	17.66		311.74		
16	528	264	-3.34		11.18		**901** / **451**
Mean Count: $\bar{x}$		267.34		SUM	4783.86		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		17.86		Variance:	164.96		
Background Count Rate:			267.34	CPM + -	35.72	CPM	442 / 462
Calculations Completed by:			Joan Cosgrove				Date: 4/3/2018
Reviewed by:			Daniel Spicuzza				Date: 4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268488	
Last Calibration Date:		10/27/2017					
Detector Model:		43-37		Detector Serial No.:		190672	
Today's Date:		4/10/2018		Data Collected by:		Adolfo Matus Jr.	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.302	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.153

Count Number			(x - x)		$(x - x)^2$
1	12	6	0.16		0.02
2	13	6.5	0.66		0.43
3	14	7	1.16		1.34
4	18	9	3.16		9.96
5	10	5	-0.84		0.71
6	12	6	0.16		0.02
7	16	8	2.16		4.65
8	8	4	-1.84		3.40
9	8	4	-1.84		3.40
10	15	7.5	1.66		2.74
11	8	4	-1.84		3.40
12	13	6.5	0.66		0.43
13	12	6	0.16		0.02
14	8	4	-1.84		3.40
15	5	2.5	-3.34		11.18
16	15	7.5	1.66		2.74
Mean Count: $\bar{x}$		5.84		SUM	47.86
Standard Deviation (σ)		1.79		Variance:	1.65
Background Count Rate:			5.84	CPM + -	3.57 CPM

Background in dpm/100cm^2
13

Scan Probability %	**Static MDC in dpm/100cm2**
100	**22**
Action Level in CPM	Release Limit in CPM
461	511

Calculations Completed by:	Adolfo Matus Jr.	Date:	4/10/2018
Reviewed by:	Daniel Spicuzza	Date:	4/10/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268488	
Last Calibration Date:		10/27/2017					
Detector Model:		43-37		Detector Serial No.:		190672	
Today's Date:		4/10/2018		Data Collected by:		Adolfo Matus Jr.	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.37	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.182
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	1708	854	-27.38		749.39		
2	1791	896	14.13		199.52		
3	1830	915	33.63		1130.64		
4	1695	848	-33.88		1147.52		
5	1729	865	-16.88		284.77		
6	1787	894	12.13		147.02		
7	1729	865	-16.88		284.77		
8	1766	883	1.63		2.64		
9	1772	886	4.63		21.39		
10	1761	881	-0.88		0.77		
11	1806	903	21.63		467.64		
12	1809	905	23.13		534.77		**Background in dpm/100cm^2**
13	1793	897	15.13		228.77		**1091**
14	1708	854	-27.38		749.39		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	1742	871	-10.38		107.64		
16	1778	889	7.63		58.14		**1086** / **123**
Mean Count: $\bar{x}$		881.38		SUM	6114.75		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		20.19		Variance:	210.85		
Background Count Rate:			881.38	CPM + -	40.38	CPM	2033 / 2165
Calculations Completed by:			Adolfo Matus Jr.				Date: 4/10/2018
Reviewed by:			Daniel Spicuzza				Date: 4/10/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268497	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		O93965	
Today's Date:		4/3/2018		Data Collected by:		Josefina Matus	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.31	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.157

Count Number			$(x - \bar{x})$		$(x - \bar{x})^2$
1	17	8.5	3.59		12.92
2	7	3.5	-1.41		1.98
3	11	5.5	0.59		0.35
4	9	4.5	-0.41		0.17
5	4	2	-2.91		8.45
6	9	4.5	-0.41		0.17
7	18	9	4.09		16.76
8	8	4	-0.91		0.82
9	10	5	0.09		0.01
10	12	6	1.09		1.20
11	9	4.5	-0.41		0.17
12	6	3	-1.91		3.63
13	7	3.5	-1.41		1.98
14	9	4.5	-0.41		0.17
15	9	4.5	-0.41		0.17
16	12	6	1.09		1.20
Mean Count: $\bar{x}$		4.91		SUM	50.11
Standard Deviation (σ)		1.83		Variance:	1.73
Background Count Rate:			4.91	CPM + -	3.66 CPM

Background in dpm/100cm^2

11

Scan Probability %	**Static MDC in dpm/100cm2**
100	**19**
Action Level in CPM	Release Limit in CPM
472	524

Calculations Completed by:	Josefina Matus	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268497	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		O93965	
Today's Date:		4/3/2018		Data Collected by:		Josefina Matus	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.352	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.173
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	1854	927	37.34		1394.56		
2	1739	870	-20.16		406.27		
3	1687	844	-46.16		2130.40		
4	1742	871	-18.66		348.06		
5	1754	877	-12.66		160.18		
6	1779	890	-0.16		0.02		
7	1756	878	-11.66		135.87		
8	1833	917	26.84		720.59		
9	1755	878	-12.16		147.77		
10	1824	912	22.34		499.24		
11	1673	837	-53.16		2825.59		
12	1789	895	4.84		23.46		**Background in dpm/100cm^2**
13	1829	915	24.84		617.21		**1158**
14	1809	905	14.84		220.34		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	1808	904	14.34		205.74		
16	1838	919	29.34		861.06		**1147** / **130**
Mean Count: $\bar{x}$		889.66		SUM	10696.36		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		26.70		Variance:	368.84		
Background Count Rate:			889.66	CPM + -	53.41	CPM	1986 / 2111
Calculations Completed by:			Josefina Matus				Date: 4/3/2018
Reviewed by:			Daniel Spicuzza				Date: 4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360		Instrument Serial No.		276990	
Last Calibration Date:		3/20/2018					
Detector Model:		43-37		Detector Serial No.:		190620	
Today's Date:		4/3/2018		Data Collected by:		Richard Thatcher	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.287	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.145

Count Number			$(x - \bar{x})$		$(x - \bar{x})^2$
1	14	7	3.59		12.92
2	7	3.5	0.09		0.01
3	3	1.5	-1.91		3.63
4	4	2	-1.41		1.98
5	8	4	0.59		0.35
6	9	4.5	1.09		1.20
7	7	3.5	0.09		0.01
8	5	2.5	-0.91		0.82
9	9	4.5	1.09		1.20
10	5	2.5	-0.91		0.82
11	7	3.5	0.09		0.01
12	9	4.5	1.09		1.20
13	7	3.5	0.09		0.01
14	7	3.5	0.09		0.01
15	3	1.5	-1.91		3.63
16	5	2.5	-0.91		0.82
Mean Count: $\bar{x}$		3.41		SUM	28.61
Standard Deviation (σ)		1.38		Variance:	0.99
Background Count Rate:			3.41	CPM + -	2.76 CPM

Background in dpm/100cm^2
8

Scan Probability %	Static MDC in dpm/100cm2
100	**25**
Action Level in CPM	Release Limit in CPM
436	484

Calculations Completed by:	Richard Thatcher	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360		Instrument Serial No.		276935	
Last Calibration Date:		3/20/2018					
Detector Model:		43-37		Detector Serial No.:		190620	
Today's Date:		4/3/2018		Data Collected by:		Richard Thatcher	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.395	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.195

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	1804	902	91.44		8360.82
2	1706	853	42.44		1800.94
3	1764	882	71.44		5103.32
4	1726	863	52.44		2749.69
5	1783	892	80.94		6550.88
6	1637	819	7.94		63.00
7	1627	814	2.94		8.63
8	1569	785	-26.06		679.25
9	1566	783	-27.56		759.69
10	1499	750	-61.06		3728.63
11	1523	762	-49.06		2407.13
12	1521	761	-50.06		2506.25
13	1483	742	-69.06		4769.63
14	1534	767	-43.56		1897.69
15	1541	771	-40.06		1605.00
16	1655	828	16.94		286.88
Mean Count: $\bar{x}$		810.56		SUM	43277.44
Standard Deviation (σ)		53.71		Variance:	1492.33
Background Count Rate:			810.56	CPM + -	107.43 CPM

Background in dpm/100cm^2
940

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
976	**110**
Action Level in CPM	Release Limit in CPM
2040	2181

Calculations Completed by:	Richard Thatcher	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297743	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		302111	
Today's Date:		4/3/2018		Data Collected by:		Adolfo Matus	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.319	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.161

Count Number			$(x - \bar{x})$		$(x - \bar{x})^2$
1	6	3	-3.63		13.14
2	11	5.5	-1.13		1.27
3	20	10	3.38		11.39
4	9	4.5	-2.13		4.52
5	10	5	-1.63		2.64
6	18	9	2.38		5.64
7	12	6	-0.63		0.39
8	16	8	1.38		1.89
9	10	5	-1.63		2.64
10	14	7	0.38		0.14
11	15	7.5	0.88		0.77
12	15	7.5	0.88		0.77
13	14	7	0.38		0.14
14	17	8.5	1.88		3.52
15	8	4	-2.63		6.89
16	17	8.5	1.88		3.52
Mean Count: $\bar{x}$		6.63		SUM	59.25
Standard Deviation (σ)		1.99		Variance:	2.04
Background Count Rate:			6.63	CPM + -	3.97 CPM

Background in dpm/100cm^2

14

Scan Probability %	Static MDC in dpm/100cm2
100	**29**
Action Level in CPM	Release Limit in CPM
487	540

Calculations Completed by:	Adolfo Matus	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297743	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		302111	
Today's Date:		4/3/2018		Data Collected by:		Adolfo Matus	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.384	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.189

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2289	1145	10.88		118.27
2	2300	1150	16.38		268.14
3	2331	1166	31.88		1016.02
4	2353	1177	42.88		1838.27
5	2283	1142	7.88		62.02
6	2397	1199	64.88		4208.77
7	2317	1159	24.88		618.77
8	2367	1184	49.88		2487.52
9	2238	1119	-14.63		213.89
10	2203	1102	-32.13		1032.02
11	2214	1107	-26.63		708.89
12	2189	1095	-39.13		1530.77
13	2206	1103	-30.63		937.89
14	2182	1091	-42.63		1816.89
15	2191	1096	-38.13		1453.52
16	2216	1108	-25.63		656.64
Mean Count: $\bar{x}$		1133.63		SUM	18968.25
Standard Deviation (σ)		35.56		Variance:	654.08
Background Count Rate:			1133.63	CPM + -	71.12 CPM

Background in dpm/100cm^2
1353

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
1187	**134**
Action Level in CPM	Release Limit in CPM
2329	2466

Calculations Completed by:	Adolfo Matus	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.444	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.225

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	1	0.5	-1.31		1.72
2	2	1	-0.81		0.66
3	4	2	0.19		0.04
4	4	2	0.19		0.04
5	5	2.5	0.69		0.47
6	4	2	0.19		0.04
7	7	3.5	1.69		2.85
8	1	0.5	-1.31		1.72
9	2	1	-0.81		0.66
10	1	0.5	-1.31		1.72
11	8	4	2.19		4.79
12	4	2	0.19		0.04
13	6	3	1.19		1.41
14	4	2	0.19		0.04
15	2	1	-0.81		0.66
16	3	1.5	-0.31		0.10
Mean Count: $\bar{x}$		1.81		SUM	16.94
Standard Deviation (σ)		1.06		Variance:	0.58
Background Count Rate:			1.81	CPM + -	2.13 CPM

Background in dpm/100cm^2
16

Scan Probability %	**Static MDC in dpm/100cm^2**
83	**76**
Action Level in CPM	Release Limit in CPM
117	129

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.313	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.172

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	549	275	-4.75		22.56
2	595	298	18.25		333.06
3	616	308	28.75		826.56
4	526	263	-16.25		264.06
5	631	316	36.25		1314.06
6	544	272	-7.25		52.56
7	542	271	-8.25		68.06
8	522	261	-18.25		333.06
9	557	279	-0.75		0.56
10	580	290	10.75		115.56
11	510	255	-24.25		588.06
12	597	299	19.25		370.56
13	616	308	28.75		826.56
14	529	265	-14.75		217.56
15	532	266	-13.25		175.56
16	490	245	-34.25		1173.06
Mean Count: $\bar{x}$		279.25		SUM	6681.50
Standard Deviation (σ)		21.11		Variance:	230.40
Background Count Rate:			279.25	CPM + -	42.21 CPM

Background in dpm/100cm^2
2379

Scan MDC in dpm/100cm^2	Static MDC in dpm/100cm^2
963	**481**
Action Level in CPM	Release Limit in CPM
447	466

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Bldg. 218					
Instrument Model:	2360		Instrument Serial No.		297766	
Last Calibration Date:	12/20/2017					
Detector Model:	43-93		Detector Serial No.:		323074	
Today's Date:	4/3/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:	0.404	
Type of Surface:	Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.204

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1	-1.13		1.27
2	7	3.5	1.38		1.89
3	3	1.5	-0.63		0.39
4	5	2.5	0.38		0.14
5	6	3	0.88		0.77
6	7	3.5	1.38		1.89
7	4	2	-0.13		0.02
8	4	2	-0.13		0.02
9	5	2.5	0.38		0.14
10	2	1	-1.13		1.27
11	2	1	-1.13		1.27
12	3	1.5	-0.63		0.39
13	3	1.5	-0.63		0.39
14	5	2.5	0.38		0.14
15	6	3	0.88		0.77
16	4	2	-0.13		0.02
Mean Count: $\bar{x}$		2.13		SUM	10.75
Standard Deviation (σ)		0.85		Variance:	0.37
Background Count Rate:			2.13	CPM + -	1.69 CPM

Background in dpm/100cm^2
21

Scan Probability %	Static MDC in dpm/100cm^2
100	**62**
Action Level in CPM	Release Limit in CPM
107	117

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297766	
Last Calibration Date:		12/20/2017					
Detector Model:		43-93		Detector Serial No.:		323074	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.254	
Type of Surface:		Concrete Floor		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.14
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	519	260	-12.22		149.30		
2	545	273	0.78		0.61		
3	526	263	-8.72		76.02		
4	503	252	-20.22		408.80		
5	620	310	38.28		1465.45		
6	556	278	6.28		39.45		
7	535	268	-4.22		17.80		
8	548	274	2.28		5.20		
9	593	297	24.78		614.11		
10	559	280	7.78		60.55		
11	548	274	2.28		5.20		
12	508	254	-17.72		313.95		
13	581	291	18.78		352.74		
14	541	271	-1.22		1.49		
15	499	250	-22.22		493.67		
16	514	257	-14.72		216.64		
Mean Count: $\bar{x}$		271.72		SUM	4220.98		
Standard Deviation (σ)		16.77		Variance:	145.55		
Background Count Rate:			271.72	CPM + -	33.55	CPM	
Calculations Completed by:			Thomas Hogan				Date: 4/3/2018
Reviewed by:			Daniel Spicuzza				Date: 4/3/2018

Background in dpm/100cm^2
2853

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
1170	**585**
Action Level in CPM	Release Limit in CPM
408	423

Metal

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		184949	
Last Calibration Date:		3/6/2018					
Detector Model:		43-93		Detector Serial No.:		268605	
Today's Date:		4/5/2018		Data Collected by:		Joan Cosgrove	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.423	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.213

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	1	0.5	-0.22		0.05
2	2	1	0.28		0.08
3	3	1.5	0.78		0.61
4	1	0.5	-0.22		0.05
5	2	1	0.28		0.08
6	0	0	-0.72		0.52
7	0	0	-0.72		0.52
8	3	1.5	0.78		0.61
9	2	1	0.28		0.08
10	3	1.5	0.78		0.61
11	0	0	-0.72		0.52
12	1	0.5	-0.22		0.05
13	2	1	0.28		0.08
14	1	0.5	-0.22		0.05
15	1	0.5	-0.22		0.05
16	1	0.5	-0.22		0.05
Mean Count: $\bar{x}$		0.72		SUM	3.98
Standard Deviation (σ)		0.52		Variance:	0.14
Background Count Rate:			0.72	CPM + -	1.03 CPM

Background in dpm/100cm^2

7

Scan Probability %	**Static MDC in dpm/100cm^2**
100	**41**
Action Level in CPM	Release Limit in CPM
110	123

Calculations Completed by:	Joan Cosgrove	Date:	4/5/2018
Reviewed by:	Daniel Spicuzza	Date:	4/5/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		184949	
Last Calibration Date:		3/6/2018					
Detector Model:		43-93		Detector Serial No.:		268605	
Today's Date:		4/5/2018		Data Collected by:		Joan Cosgrove	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.268	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.147
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	324	162	-4.75		22.56		
2	327	164	-3.25		10.56		
3	292	146	-20.75		430.56		
4	345	173	5.75		33.06		
5	341	171	3.75		14.06		
6	360	180	13.25		175.56		
7	337	169	1.75		3.06		
8	329	165	-2.25		5.06		
9	367	184	16.75		280.56		
10	314	157	-9.75		95.06		
11	329	165	-2.25		5.06		
12	323	162	-5.25		27.56		**Background in dpm/100cm^2**
13	345	173	5.75		33.06		**1659**
14	341	171	3.75		14.06		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	324	162	-4.75		22.56		
16	338	169	2.25		5.06		**869** / **438**
Mean Count: $\bar{x}$		166.75		SUM	1177.50		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		8.86		Variance:	40.60		
Background Count Rate:			166.75	CPM + -	17.72	CPM	310 / 326
Calculations Completed by:			Joan Cosgrove				Date: 4/5/2018
Reviewed by:			Daniel Spicuzza				Date: 4/5/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		193668	
Last Calibration Date:		8/15/2017					
Detector Model:		43-93		Detector Serial No.:		326725	
Today's Date:		4/5/2018		Data Collected by:		Joan Cosgrove	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.497	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.251

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1	-0.28		0.08
2	8	4	2.72		7.39
3	3	1.5	0.22		0.05
4	1	0.5	-0.78		0.61
5	1	0.5	-0.78		0.61
6	3	1.5	0.22		0.05
7	0	0	-1.28		1.64
8	2	1	-0.28		0.08
9	4	2	0.72		0.52
10	5	2.5	1.22		1.49
11	4	2	0.72		0.52
12	1	0.5	-0.78		0.61
13	2	1	-0.28		0.08
14	2	1	-0.28		0.08
15	1	0.5	-0.78		0.61
16	2	1	-0.28		0.08
Mean Count: $\bar{x}$		1.28		SUM	14.48
Standard Deviation (σ)		0.98		Variance:	0.50
Background Count Rate:			1.28	CPM + -	1.97 CPM

Background in dpm/100cm^2
10

Scan Probability %	Static MDC in dpm/100cm^2
100	**42**
Action Level in CPM	Release Limit in CPM
130	144

Calculations Completed by:	Joan Cosgrove	Date:	4/5/2018
Reviewed by:	Daniel Spicuzza	Date:	4/5/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		193668	
Last Calibration Date:		8/15/2017					
Detector Model:		43-93		Detector Serial No.:		326725	
Today's Date:		4/5/2018		Data Collected by:		Joan Cosgrove	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.327	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.18
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	311	156	-4.16		17.27		
2	349	175	14.84		220.34		
3	298	149	-10.66		113.56		
4	297	149	-11.16		124.46		
5	338	169	9.34		87.31		
6	329	165	4.84		23.46		
7	311	156	-4.16		17.27		
8	330	165	5.34		28.56		
9	295	148	-12.16		147.77		
10	317	159	-1.16		1.34		
11	320	160	0.34		0.12		
12	331	166	5.84		34.15		**Background in dpm/100cm^2**
13	327	164	3.84		14.77		**1302**
14	323	162	1.84		3.40		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	298	149	-10.66		113.56		
16	335	168	7.84		61.52		**697** / **351**
Mean Count: $\bar{x}$		159.66		SUM	1008.86		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		8.20		Variance:	34.79		
Background Count Rate:			159.66	CPM + -	16.40	CPM	335 / 355
Calculations Completed by:			Joan Cosgrove				Date: 4/5/2018
Reviewed by:			Daniel Spicuzza				Date: 4/5/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/5/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.444	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.225

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1	0.06		0.00
2	1	0.5	-0.44		0.19
3	5	2.5	1.56		2.44
4	0	0	-0.94		0.88
5	0	0	-0.94		0.88
6	2	1	0.06		0.00
7	1	0.5	-0.44		0.19
8	2	1	0.06		0.00
9	1	0.5	-0.44		0.19
10	3	1.5	0.56		0.32
11	2	1	0.06		0.00
12	5	2.5	1.56		2.44
13	1	0.5	-0.44		0.19
14	3	1.5	0.56		0.32
15	2	1	0.06		0.00
16	0	0	-0.94		0.88
Mean Count: $\bar{x}$		0.94		SUM	8.94
Standard Deviation (σ)		0.77		Variance:	0.31
Background Count Rate:			0.94	CPM + -	1.54 CPM

Background in dpm/100cm^2

8

Scan Probability %	Static MDC in dpm/100cm^2
100	**42**
Action Level in CPM	Release Limit in CPM
116	129

Calculations Completed by:	Thomas Hogan	Date:	4/5/2018
Reviewed by:	Daniel Spicuzza	Date:	4/5/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/5/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.313	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.172

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	346	173	-2.03		4.13
2	365	183	7.47		55.78
3	357	179	3.47		12.03
4	325	163	-12.53		157.03
5	359	180	4.47		19.97
6	343	172	-3.53		12.47
7	352	176	0.97		0.94
8	336	168	-7.03		49.44
9	353	177	1.47		2.16
10	344	172	-3.03		9.19
11	347	174	-1.53		2.34
12	299	150	-25.53		651.84
13	374	187	11.97		143.25
14	357	179	3.47		12.03
15	378	189	13.97		195.13
16	366	183	7.97		63.50
Mean Count: $\bar{x}$		175.03		SUM	1391.23
Standard Deviation (σ)		9.63		Variance:	47.97
Background Count Rate:			175.03	CPM + -	19.26 CPM

Background in dpm/100cm^2
1491

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
762	**384**
Action Level in CPM	Release Limit in CPM
342	362

Calculations Completed by:	Thomas Hogan	Date:	4/5/2018
Reviewed by:	Daniel Spicuzza	Date:	4/5/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297766	
Last Calibration Date:		12/20/2017					
Detector Model:		43-93		Detector Serial No.:		323074	
Today's Date:		4/5/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.404	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.204

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1	0.06		0.00
2	1	0.5	-0.44		0.19
3	5	2.5	1.56		2.44
4	0	0	-0.94		0.88
5	0	0	-0.94		0.88
6	2	1	0.06		0.00
7	1	0.5	-0.44		0.19
8	2	1	0.06		0.00
9	1	0.5	-0.44		0.19
10	3	1.5	0.56		0.32
11	2	1	0.06		0.00
12	5	2.5	1.56		2.44
13	1	0.5	-0.44		0.19
14	3	1.5	0.56		0.32
15	2	1	0.06		0.00
16	0	0	-0.94		0.88
Mean Count: $\bar{x}$		0.94		SUM	8.94
Standard Deviation (σ)		0.77		Variance:	0.31
Background Count Rate:			0.94	CPM + -	1.54 CPM

Background in dpm/100cm^2

9

Scan Probability %	**Static MDC in dpm/100cm^2**
100	**46**
Action Level in CPM	Release Limit in CPM
105	117

Calculations Completed by:	Thomas Hogan	Date:	4/5/2018
Reviewed by:	Daniel Spicuzza	Date:	4/5/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297766	
Last Calibration Date:		12/20/2017					
Detector Model:		43-93		Detector Serial No.:		323074	
Today's Date:		4/5/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.254	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.14
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	350	175	-17.69		312.85		
2	403	202	8.81		77.66		
3	366	183	-9.69		93.85		
4	394	197	4.31		18.60		
5	374	187	-5.69		32.35		
6	335	168	-25.19		634.41		
7	353	177	-16.19		262.04		
8	388	194	1.31		1.72		
9	397	199	5.81		33.79		
10	363	182	-11.19		125.16		
11	397	199	5.81		33.79		
12	370	185	-7.69		59.10		
13	450	225	32.31		1044.10		
14	413	207	13.81		190.79		
15	407	204	10.81		116.91		
16	406	203	10.31		106.35		
Mean Count: $\bar{x}$		192.69		SUM	3143.44		
Standard Deviation (σ)		14.48		Variance:	108.39		
Background Count Rate:			192.69	CPM + -	28.95	CPM	
Calculations Completed by:			Thomas Hogan				Date: 4/5/2018
Reviewed by:			Daniel Spicuzza				Date: 4/5/2018

Background in dpm/100cm^2
2023

Scan MDC in dpm/100cm^2	Static MDC in dpm/100cm^2
985	**495**
Action Level in CPM	Release Limit in CPM
329	344

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		184949	
Last Calibration Date:		3/6/2018					
Detector Model:		43-93		Detector Serial No.:		268605	
Today's Date:		4/3/2018		Data Collected by:		Joan Cosgrove	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.423	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.213

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	1	0.5	-0.25		0.06
2	0	0	-0.75		0.56
3	0	0	-0.75		0.56
4	4	2	1.25		1.56
5	3	1.5	0.75		0.56
6	3	1.5	0.75		0.56
7	1	0.5	-0.25		0.06
8	2	1	0.25		0.06
9	0	0	-0.75		0.56
10	2	1	0.25		0.06
11	5	2.5	1.75		3.06
12	0	0	-0.75		0.56
13	2	1	0.25		0.06
14	0	0	-0.75		0.56
15	0	0	-0.75		0.56
16	1	0.5	-0.25		0.06
Mean Count: $\bar{x}$		0.75		SUM	9.50
Standard Deviation (σ)		0.80		Variance:	0.33
Background Count Rate:			0.75	CPM + -	1.59 CPM

Background in dpm/100cm^2

7

Scan Probability %	**Static MDC in dpm/100cm^2**
100	**61**
Action Level in CPM	Release Limit in CPM
110	123

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		184949	
Last Calibration Date:		3/6/2018					
Detector Model:		43-93		Detector Serial No.:		268605	
Today's Date:		4/3/2018		Data Collected by:		Joan Cosgrove	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.268	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.147
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	295	148	10.59		112.23		
2	270	135	-1.91		3.63		
3	285	143	5.59		31.29		
4	279	140	2.59		6.73		
5	273	137	-0.41		0.17		
6	250	125	-11.91		141.76		
7	254	127	-9.91		98.13		
8	263	132	-5.41		29.23		
9	284	142	5.09		25.95		
10	272	136	-0.91		0.82		
11	261	131	-6.41		41.04		
12	279	140	2.59		6.73		
13	275	138	0.59		0.35		
14	273	137	-0.41		0.17		
15	293	147	9.59		92.04		
16	275	138	0.59		0.35		
Mean Count: $\bar{x}$		136.91		SUM	590.61		
Standard Deviation (σ)		6.27		Variance:	20.37		
Background Count Rate:			136.91	CPM + -	12.55	CPM	
Calculations Completed by:			Joan Cosgrove				Date: 4/3/2018
Reviewed by:			Daniel Spicuzza				Date: 4/3/2018

Background in dpm/100cm^2	
1362	
Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
787	**398**
Action Level in CPM	Release Limit in CPM
280	297

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		193668	
Last Calibration Date:		8/15/2017					
Detector Model:		43-93		Detector Serial No.:		326725	
Today's Date:		4/3/2018		Data Collected by:		Joan Cosgrove	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.497	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.251

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	0	0	-0.91		0.82
2	3	1.5	0.59		0.35
3	0	0	-0.91		0.82
4	0	0	-0.91		0.82
5	3	1.5	0.59		0.35
6	0	0	-0.91		0.82
7	0	0	-0.91		0.82
8	3	1.5	0.59		0.35
9	2	1	0.09		0.01
10	4	2	1.09		1.20
11	1	0.5	-0.41		0.17
12	2	1	0.09		0.01
13	4	2	1.09		1.20
14	3	1.5	0.59		0.35
15	0	0	-0.91		0.82
16	4	2	1.09		1.20
Mean Count: $\bar{x}$		0.91		SUM	10.11
Standard Deviation (σ)		0.82		Variance:	0.35
Background Count Rate:			0.91	CPM + -	1.64 CPM

Background in dpm/100cm^2

7

Scan Probability %	**Static MDC in dpm/100cm^2**
100	**37**
Action Level in CPM	Release Limit in CPM
130	144

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		193668	
Last Calibration Date:		8/15/2017					
Detector Model:		43-93		Detector Serial No.:		326725	
Today's Date:		4/3/2018		Data Collected by:		Joan Cosgrove	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.327	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.18

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	333	167	26.41		697.29
2	267	134	-6.59		43.48
3	268	134	-6.09		37.13
4	266	133	-7.09		50.32
5	279	140	-0.59		0.35
6	309	155	14.41		207.54
7	278	139	-1.09		1.20
8	274	137	-3.09		9.57
9	282	141	0.91		0.82
10	299	150	9.41		88.48
11	260	130	-10.09		101.88
12	309	155	14.41		207.54
13	272	136	-4.09		16.76
14	256	128	-12.09		146.26
15	271	136	-4.59		21.10
16	260	130	-10.09		101.88
Mean Count: $\bar{x}$		140.09		SUM	1731.61
Standard Deviation (σ)		10.74		Variance:	59.71
Background Count Rate:			140.09	CPM + -	21.49 CPM

Background in dpm/100cm^2
1142

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
653	**330**
Action Level in CPM	Release Limit in CPM
315	335

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268488	
Last Calibration Date:		10/27/2017					
Detector Model:		43-37		Detector Serial No.:		190672	
Today's Date:		4/10/2018		Data Collected by:		Adolfo Matus Jr.	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.302	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.153

Count Number			(x - x)		$(x - x)^2$
1	6	3	0.06		0.00
2	6	3	0.06		0.00
3	1	0.5	-2.44		5.94
4	5	2.5	-0.44		0.19
5	5	2.5	-0.44		0.19
6	12	6	3.06		9.38
7	5	2.5	-0.44		0.19
8	3	1.5	-1.44		2.07
9	4	2	-0.94		0.88
10	5	2.5	-0.44		0.19
11	9	4.5	1.56		2.44
12	8	4	1.06		1.13
13	5	2.5	-0.44		0.19
14	4	2	-0.94		0.88
15	4	2	-0.94		0.88
16	12	6	3.06		9.38
Mean Count: $\bar{x}$		2.94		SUM	33.94
Standard Deviation (σ)		1.50		Variance:	1.17
Background Count Rate:			2.94	CPM + -	3.01 CPM

Background in dpm/100cm^2

7

Scan Probability %	**Static MDC in dpm/100cm2**
100	**16**
Action Level in CPM	Release Limit in CPM
458	508

Calculations Completed by:	Adolfo Matus Jr.	Date:	4/10/2018
Reviewed by:	Daniel Spicuzza	Date:	4/10/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268488	
Last Calibration Date:		10/27/2017					
Detector Model:		43-37		Detector Serial No.:		190672	
Today's Date:		4/10/2018		Data Collected by:		Adolfo Matus Jr.	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.37	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.182

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	936	468	17.16		294.34
2	1013	507	55.66		3097.62
3	933	467	15.66		245.12
4	920	460	9.16		83.84
5	966	483	32.16		1034.02
6	976	488	37.16		1380.59
7	835	418	-33.34		1111.81
8	904	452	1.16		1.34
9	899	450	-1.34		1.81
10	812	406	-44.84		2010.96
11	874	437	-13.84		191.65
12	850	425	-25.84		667.90
13	848	424	-26.84		720.59
14	889	445	-6.34		40.24
15	901	451	-0.34		0.12
16	871	436	-15.34		235.43
Mean Count: $\bar{x}$		450.84		SUM	11117.36
Standard Deviation (σ)		27.22		Variance:	383.36
Background Count Rate:			450.84	CPM + -	54.45 CPM

Background in dpm/100cm^2
558

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
777	**88**
Action Level in CPM	Release Limit in CPM
1603	1734

Calculations Completed by:	Adolfo Matus Jr.	Date:	4/10/2018
Reviewed by:	Daniel Spicuzza	Date:	4/10/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218				
Instrument Model:		2360		Instrument Serial No.	268497	
Last Calibration Date:		10/10/2017				
Detector Model:		43-37		Detector Serial No.:	O93965	
Today's Date:		4/3/2018		Data Collected by:	Josefina Matus	
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:	0.31	
Type of Surface:		Metal	Count Time:	2	Minutes	4 π Instrument Efficiency: 0.157

Count Number			$(x - \bar{x})$		$(x - \bar{x})^2$
1	7	3.5	0.13		0.02
2	8	4	0.63		0.39
3	7	3.5	0.13		0.02
4	5	2.5	-0.88		0.77
5	10	5	1.63		2.64
6	4	2	-1.38		1.89
7	7	3.5	0.13		0.02
8	9	4.5	1.13		1.27
9	7	3.5	0.13		0.02
10	8	4	0.63		0.39
11	10	5	1.63		2.64
12	7	3.5	0.13		0.02
13	4	2	-1.38		1.89
14	6	3	-0.38		0.14
15	5	2.5	-0.88		0.77
16	4	2	-1.38		1.89
Mean Count: $\bar{x}$		3.38		SUM	14.75
Standard Deviation (σ)		0.99		Variance:	0.51
Background Count Rate:			3.38	CPM + -	1.98 CPM

Background in dpm/100cm^2

7

Scan Probability %	**Static MDC in dpm/100cm2**
100	**17**
Action Level in CPM	Release Limit in CPM
470	522

Calculations Completed by:	Josefina Matus	Date:	2/7/2018
Reviewed by:	Daniel Spicuzza	Date:	2/7/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		268497	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		O93965	
Today's Date:		4/3/2018		Data Collected by:		Josefina Matus	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.352	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.173
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	933	467	-17.34		300.81		
2	1004	502	18.16		329.65		
3	1000	500	16.16		261.02		
4	971	486	1.66		2.74		
5	964	482	-1.84		3.40		
6	908	454	-29.84		890.65		
7	984	492	8.16		66.52		
8	1006	503	19.16		366.96		
9	991	496	11.66		135.87		
10	910	455	-28.84		831.96		
11	972	486	2.16		4.65		
12	977	489	4.66		21.68		
13	973	487	2.66		7.06		
14	931	466	-18.34		336.49		
15	1001	501	16.66		277.43		
16	958	479	-4.84		23.46		
Mean Count: $\bar{x}$		483.84		SUM	3860.36		
Standard Deviation (σ)		16.04		Variance:	133.12		
Background Count Rate:			483.84	CPM + -	32.08	CPM	
Calculations Completed by:			Josefina Matus				Date: 4/3/2018
Reviewed by:			Daniel Spicuzza				Date: 4/3/2018

Background in dpm/100cm^2
630

Scan MDC in dpm/100cm^2	**Static MDC in dpm/100cm^2**
846	**96**
Action Level in CPM	Release Limit in CPM
1580	1705

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218					
Instrument Model:	2360		Instrument Serial No.	276990		
Last Calibration Date:	3/20/2018					
Detector Model:	43-37		Detector Serial No.:	190620		
Today's Date:	4/3/2018		Data Collected by:	Richard Thatcher		
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background		2 π Instrument Efficiency:	0.287		
Type of Surface:	Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.145

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	3	1.5	-0.78		0.61
2	4	2	-0.28		0.08
3	6	3	0.72		0.52
4	9	4.5	2.22		4.92
5	6	3	0.72		0.52
6	5	2.5	0.22		0.05
7	4	2	-0.28		0.08
8	3	1.5	-0.78		0.61
9	5	2.5	0.22		0.05
10	4	2	-0.28		0.08
11	4	2	-0.28		0.08
12	5	2.5	0.22		0.05
13	5	2.5	0.22		0.05
14	4	2	-0.28		0.08
15	2	1	-1.28		1.64
16	4	2	-0.28		0.08
Mean Count: $\bar{x}$		2.28		SUM	9.48
Standard Deviation (σ)		0.80		Variance:	0.33
Background Count Rate:			2.28	CPM + -	1.59 CPM

Background in dpm/100cm^2

5

Scan Probability %	**Static MDC in dpm/100cm2**
100	**15**
Action Level in CPM	Release Limit in CPM
434	483

Calculations Completed by:	Richard Thatcher	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360		Instrument Serial No.		276935	
Last Calibration Date:		3/20/2018					
Detector Model:		43-37		Detector Serial No.:		190620	
Today's Date:		4/3/2018		Data Collected by:		Richard Thatcher	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.395	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.195
Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$		
1	867	434	-55.03		3028.44		
2	836	418	-70.53		4974.66		
3	921	461	-28.03		785.75		
4	923	462	-27.03		730.69		
5	915	458	-31.03		962.94		
6	918	459	-29.53		872.09		
7	942	471	-17.53		307.34		
8	931	466	-23.03		530.44		
9	948	474	-14.53		211.16		
10	932	466	-22.53		507.66		
11	931	466	-23.03		530.44		
12	940	470	-18.53		343.41		**Background in dpm/100cm^2**
13	1001	501	11.97		143.25		**567**
14	968	484	-4.53		20.53		**Scan MDC in dpm/100cm^2** / **Static MDC in dpm/100cm^2**
15	1005	503	13.97		195.13		
16	1655	828	338.97		114899.81		**758** / **501**
Mean Count: $\bar{x}$		488.53		SUM	129043.73		Action Level in CPM / Release Limit in CPM
Standard Deviation (σ)		92.75		Variance:	4449.78		
Background Count Rate:			488.53	CPM + -	185.50	CPM	1718 / 1859
Calculations Completed by:			Richard Thatcher				Date: 4/3/2018
Reviewed by:			Daniel Spicuzza				Date: 4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297743	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		302111	
Today's Date:		4/3/2018		Data Collected by:		Adolfo Matus	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.319	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.161
Count Number			$(x - \bar{x})$		$(x - \bar{x})^2$		
1	15	7.5	3.41		11.60		
2	6	3	-1.09		1.20		
3	11	5.5	1.41		1.98		
4	7	3.5	-0.59		0.35		
5	10	5	0.91		0.82		
6	11	5.5	1.41		1.98		
7	10	5	0.91		0.82		
8	3	1.5	-2.59		6.73		
9	8	4	-0.09		0.01		
10	7	3.5	-0.59		0.35		
11	4	2	-2.09		4.38		
12	9	4.5	0.41		0.17		
13	11	5.5	1.41		1.98		
14	3	1.5	-2.59		6.73		
15	6	3	-1.09		1.20		
16	10	5	0.91		0.82		
Mean Count: $\bar{x}$		4.09		SUM	41.11		
Standard Deviation (σ)		1.66		Variance:	1.42		
Background Count Rate:			4.09	CPM + -	3.31	CPM	
Calculations Completed by:			Adolfo Matus				
Reviewed by:			Daniel Spicuzza				

Background in dpm/100cm^2

9

Scan Probability %	**Static MDC in dpm/100cm2**
100	**18**
Action Level in CPM	Release Limit in CPM
484	538
Date:	4/3/2018
Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297743	
Last Calibration Date:		10/10/2017					
Detector Model:		43-37		Detector Serial No.:		302111	
Today's Date:		4/3/2018		Data Collected by:		Adolfo Matus	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.384	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.189

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	1090	545	5.56		30.94
2	1024	512	-27.44		752.82
3	1093	547	7.06		49.88
4	1105	553	13.06		170.63
5	1109	555	15.06		226.88
6	1114	557	17.56		308.44
7	1086	543	3.56		12.69
8	1118	559	19.56		382.69
9	1058	529	-10.44		108.94
10	1033	517	-22.94		526.13
11	1054	527	-12.44		154.69
12	1106	553	13.56		183.94
13	1030	515	-24.44		597.19
14	1054	527	-12.44		154.69
15	1096	548	8.56		73.32
16	1092	546	6.56		43.07
Mean Count: $\bar{x}$		539.44		SUM	3776.94
Standard Deviation (σ)		15.87		Variance:	130.24
Background Count Rate:			539.44	CPM + -	31.74 CPM

Background in dpm/100cm^2
644

Scan MDC in dpm/100cm^2	Static MDC in dpm/100cm^2
819	**541**
Action Level in CPM	Release Limit in CPM
1735	1871

Calculations Completed by:	Adolfo Matus	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.444	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.225

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1	-0.19		0.04
2	3	1.5	0.31		0.10
3	1	0.5	-0.69		0.47
4	3	1.5	0.31		0.10
5	5	2.5	1.31		1.72
6	2	1	-0.19		0.04
7	2	1	-0.19		0.04
8	3	1.5	0.31		0.10
9	2	1	-0.19		0.04
10	0	0	-1.19		1.41
11	2	1	-0.19		0.04
12	2	1	-0.19		0.04
13	2	1	-0.19		0.04
14	1	0.5	-0.69		0.47
15	4	2	0.81		0.66
16	4	2	0.81		0.66
Mean Count: $\bar{x}$		1.19		SUM	5.94
Standard Deviation (σ)		0.63		Variance:	0.20
Background Count Rate:			1.19	CPM + -	1.26 CPM

Background in dpm/100cm^2

11

Scan Probability %	**Static MDC in dpm/100cm^2**
100	**46**
Action Level in CPM	Release Limit in CPM
116	128

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297758	
Last Calibration Date:		2/14/2018					
Detector Model:		43-93		Detector Serial No.:		299597	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.313	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.172

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	293	147	-5.63		31.64
2	333	167	14.38		206.64
3	312	156	3.88		15.02
4	302	151	-1.13		1.27
5	311	156	3.38		11.39
6	288	144	-8.13		66.02
7	311	156	3.38		11.39
8	302	151	-1.13		1.27
9	304	152	-0.13		0.02
10	262	131	-21.13		446.27
11	264	132	-20.13		405.02
12	300	150	-2.13		4.52
13	329	165	12.38		153.14
14	333	167	14.38		206.64
15	311	156	3.38		11.39
16	313	157	4.38		19.14
Mean Count: $\bar{x}$		152.13		SUM	1590.75
Standard Deviation (σ)		10.30		Variance:	54.85
Background Count Rate:			152.13	CPM + -	20.60 CPM

Background in dpm/100cm^2
1296

Scan MDC in dpm/100cm^2	Static MDC in dpm/100cm^2
710	**358**
Action Level in CPM	Release Limit in CPM
320	339

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297766	
Last Calibration Date:		12/20/2017					
Detector Model:		43-93		Detector Serial No.:		323074	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
X	Alpha		Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.404	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.204

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1	-0.09		0.01
2	3	1.5	0.41		0.17
3	3	1.5	0.41		0.17
4	1	0.5	-0.59		0.35
5	4	2	0.91		0.82
6	0	0	-1.09		1.20
7	3	1.5	0.41		0.17
8	2	1	-0.09		0.01
9	7	3.5	2.41		5.79
10	1	0.5	-0.59		0.35
11	2	1	-0.09		0.01
12	0	0	-1.09		1.20
13	2	1	-0.09		0.01
14	2	1	-0.09		0.01
15	1	0.5	-0.59		0.35
16	2	1	-0.09		0.01
Mean Count: $\bar{x}$		1.09		SUM	10.61
Standard Deviation (σ)		0.84		Variance:	0.37
Background Count Rate:			1.09	CPM + -	1.68 CPM

Background in dpm/100cm^2
11

Scan Probability %	Static MDC in dpm/100cm^2
100	**49**
Action Level in CPM	Release Limit in CPM
106	117

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:		NRL Chesapeake Bldg. 218					
Instrument Model:		2360		Instrument Serial No.		297766	
Last Calibration Date:		12/20/2017					
Detector Model:		43-93		Detector Serial No.:		323074	
Today's Date:		4/3/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma	
Remarks:	Instrument Ambient Background			2 π Instrument Efficiency:		0.254	
Type of Surface:		Metal		Count Time:	2	Minutes	4 π Instrument Efficiency: 0.14

Count Number		CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	328	164	-1.09		1.20
2	316	158	-7.09		50.32
3	325	163	-2.59		6.73
4	323	162	-3.59		12.92
5	351	176	10.41		108.29
6	343	172	6.41		41.04
7	338	169	3.91		15.26
8	320	160	-5.09		25.95
9	371	186	20.41		416.42
10	311	156	-9.59		92.04
11	313	157	-8.59		73.85
12	342	171	5.91		34.88
13	305	153	-12.59		158.60
14	299	150	-15.59		243.17
15	326	163	-2.09		4.38
16	372	186	20.91		437.07
Mean Count: $\bar{x}$		165.09		SUM	1722.11
Standard Deviation (σ)		10.71		Variance:	59.38
Background Count Rate:			165.09	CPM + -	21.43 CPM

Background in dpm/100cm^2
1733

Scan MDC in dpm/100cm^2	Static MDC in dpm/100cm^2
912	**460**
Action Level in CPM	Release Limit in CPM
301	316

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Appendix D

Instrument Calibration Data

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFStaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 3	Serial Number: 294756
Contact Name: Mike Pauli			
Contract/Task Number: N/A	Work Order Number: 2017-15322	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value (cpm)	Instrument Response (± 10%) Before Calibration	Instrument Response (± 10%) After Calibration	Comments: Calibrated in accordance with CP-IN-WI-219	
X0.1	100	100	100	Pulser: 151067	Cal Due: 02/28/2018
X0.1	250	250	250	DVM: 88020324	Cal Due: 06/02/2017
X0.1	400	400	400	Temp/Press: 3590	Cal Due: 11/30/2017
X 1	1,000	1,000	1,000	Humidity: 958670	Cal Due: 12/06/2017
X 1	2,500	2,500	2,500	Temp: 24.8 ° C Humidity: 41% Pressure: 739 mmHg	
X 1	4,000	4,000	4,000		
X 10	10,000	10,000	10,000		
X 10	25,000	25,000	25,000	Reset: SAT	Sensitivity: SAT
X 10	40,000	40,000	40,000	Audio: SAT	Geotropism: SAT
X 100	100,000	100,000	100,000	F/S Resp: SAT	BAT: SAT
X 100	250,000	250,000	250,000	Limited Use: X100 scale for info only. Use with GM Detector.	
X 100	400,000	400,000	400,000		
Mech. Zero	0	0	0		
HV Verification					
HV Adjustable from 400 to 1,500		☒ SAT ☐ UNSAT		HV Set at 900 volts to be used with GM detectors.	
				Precision Test Reading 1 = 2,350 Reading 2 = 2,350 Reading 3 = 2,300 Mean = 2,333 ☒ SAT ☐ UNSAT	

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: M. Pauli	Reviewed By: J.H. Patterson	Date: 4/25/17
Certification Date: 04/21/2017	*Certification Due (6 mo.): 10/21/2017	
	*Certification Due (12 mo.): 04/21/2018	

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFStaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 3	Serial Number: 94347
Contact Name: John Barncord			
Contract/Task Number: N/A	Work Order Number: 2017-15513	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value (cpm)	Instrument Response (± 10%) Before Calibration	Instrument Response (± 10%) After Calibration	Comments	
				Calibrated in accordance with CP-IN-WI-219	
X0.1	100	100	100	Pulser: 130364	Cal Due: 8/29/17
X0.1	250	245	245	DVM: 94710023	Cal Due: 3/7/18
X0.1	400	395	395	Temp/Press: 3590	Cal Due: 11/30/17
X 1	1,000	1.05K	1.05K	Humidity: 958670	Cal Due: 12/6/17
X 1	2,500	2.45K	2.45K	Temp: 24.8 ° C Humidity: 38.6 % Pressure: 737 mmHg	
X 1	4,000	3.9K	3.9K		
X 10	10,000	10K	10K		
X 10	25,000	25K	25K	Reset: SAT	Sensitivity: SAT
X 10	40,000	39.5K	39.5K	Audio: SAT	Geotropism: SAT
X 100	100,000	100K	100K	F/S Resp: SAT	BAT: SAT
X 100	250,000	260K	260K	Limited Use: X100 scale for info only. Use with GM Detector.	
X 100	400,000	395K	395K		
Mech. Zero	0	0	0		
HV Verification				HV Set at 900 volts to be used with GM detectors.	
HV Adjustable from 400 to 1,500		☒ SAT ☐ UNSAT			
				Precision Test Reading 1 = 260K Reading 2 = 260K Reading 3 = 260K Mean = 255K ☒ SAT ☐ UNSAT	

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By:	Date: 8/15/17
Certification Date: 8/14/17	*Certification Due (6 mo.): 2/14/18 *Certification Due (12 mo.): 8/14/18	

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

DETECTOR CERTIFICATE

Energy*Solutions* Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFStaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Energy*Solutions* Services, Inc.		**Manufacturer: Ludlum**
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		**Detector Model: 44-9**
Contact Name: Mike Pauli		**Serial Number: 210879**
Customer Purchase Order Number: N/A	**Work Order Number: 2017-15322**	**Evaluation Method: Source**

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: Tc-99	**Serial Number: 119720**	**Original Activity (dpm): 2,562**	**Certification Date: 10/14/97**
2) Source Nuclide: Tc-99	**Serial Number: 119718**	**Original Activity (dpm): 20,520**	**Certification Date: 10/14/97**
3) Source Nuclide: Tc-99	**Serial Number: 069507**	**Original Activity (dpm): 237,960**	**Certification Date: 04/01/95**

Efficiency determined using 180-2 jig @ 1/8" geometry

Source #	Gross CPM	Net CPM	Efficiency				
Source 1	330	300	11.7%				
Source 2	2,350	2,320	11.3%				
Source 3	33,500	33,470	14.1%				
	Geometry set to approx. 1/8" from detector face using 180-2 jig						

INSTRUMENT INFORMATION			DETECTOR INFORMATION		
Model	**Serial Number**	**Due Date**	**Background**	**Operating Voltage**	**Threshold**
3	294756	04/21/2018	30	900Volts	27mV

COMMENTS

Detectors calibrated with a Model 3 or 12 and may be used with any Model 3 or 12 provided that the instrument is in calibration and the Instrument was previously set up to be used with a GM detector (operating voltage 900Volts)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: M. Pauli	**Reviewed By:** [signature] **Date:** 4/25/17
Certification Date: 04/21/2017	**Certification Due (6 mo.): 10/21/2017** **Certification Due (12 mo.): 04/21/2018**

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

DETECTOR CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFStaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Services, Inc.		Manufacturer: Ludlum
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Detector Model: 44-9
Contact Name: John barncord		Serial Number: 115746
Customer Purchase Order Number: N/A	Work Order Number: 2017-15513	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: Tc-99	Serial Number: 119720	Original Activity (dpm): 2,562	Certification Date: 10/14/97
2) Source Nuclide: Tc-99	Serial Number: 119718	Original Activity (dpm): 20,520	Certification Date: 10/14/97
3) Source Nuclide: Tc-99	Serial Number: 069507	Original Activity (dpm): 237,960	Certification Date: 04/01/95

Efficiency determined using 180-2 jig @ 1/8" geometry

Source #	Gross CPM	Net CPM	Efficiency				
Source 1	355	315	12.3%				
Source 2	2.4K	2360	11.5%				
Source 3	33K	32960	13.9%				
	Geometry set to approx. 1/8" from detector face using 180-2 jig						

INSTRUMENT INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background	Operating Voltage	Threshold
3	94347	8/14/18	40	900Volts	28mV

COMMENTS

Detectors calibrated with a Model 3 or 12 and may be used with any Model 3 or 12 provided that the instrument is in calibration and the Instrument was previously set up to be used with a GM detector (operating voltage 900Volts)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By: Date: 8/15/17
Certification Date: 8/14/17	Certification Due (6 mo.): 2/14/18 Certification Due (12 mo.): 8/14/18

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

Energy*Solutions* Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Fax: (865) 220-1346

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Energy*Solutions* Services, Inc.		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 2360	Serial Number: 297766
Contact Name: Mike Pauli		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: N/A	Calibration Method: Electronic	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value (CPM)	Ratemeter (CPM) Response (± 10% of Standard Values)		Calibration Standard Value	Time Base (minutes)	Tolerances (counts) ± 2%	Scaler Response (counts)	
		As Found	As Left				As Found	As Left
X 1	100	100	100	40,000 CPM	0.1	3,920 - 4,080	3,999	3,999
X 1	250	250	250	40,000 CPM	0.5	19.6K - 20.4K	19,996	19,996
X 1	400	400	400	40,000 CPM	1	39.2K - 40.8K	39,993	39,993
X 10	1,000	1,000	1,000	40,000 CPM	2	78.4K - 81.6K	79,984	79,984
X 10	2,500	2,500	2,500					
X 10	4,000	4,000	4,000					
X 100	10,000	10,000	10,000					
X 100	25,000	25,000	25,000					
X 100	40,000	40,000	40,000					
X 1000	100,000	100,000	100,000	Calibrated in accordance with OEM Technical Manual				
X 1000	250,000	250,000	250,000					
X 1000	400,000	400,000	400,000					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: Mike Yome	Reviewed By: [signature] Date: 12/21/17
Calibration Date: 12/20/2017	* Calibration Due (6 mo.): 06/20/2018 * Calibration Due (12 mo.): 12/20/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

Model: 2360 Serial Number: 297766

M&TE					Environmental Conditions			
Volt Meter	ID#	97960214	Cal Due:	08/15/18	Barometer	ID#	3314	Cal Due: 02/01/18
Pulser	ID#	101500	Cal Due:	04/19/18	Thermometer	ID#	3314	Cal Due: 02/01/18
Humidity	ID#	992290	Cal Due:	03/13/18	Temp: 22.9°C	Pressure: 740 mmHg		Humidity: 42.7 %

Special Test

Mechanical Zero	Sat (√) Unsat ( )	Geotropism	Sat (√) Unsat ( )
LCD Display Check	Sat (√) Unsat ( )	Audio Check	Sat (√) Unsat ( )
BAT Check	Sat (√) Unsat ( )	Low BAT Set	Sat (√) Unsat ( )
Reset	Sat (√) Unsat ( )		
HV Analog Display	Sat (√) Unsat ( )	As Found	As Left
High Voltage Calibration (± 10%)		Alpha Sensitivity = 126 mV	Alpha Sensitivity = 120 mV
Beta Sensitivity = 4.1 mV		Beta Sensitivity = 3.5 mV	
Beta Window = 30.5 mV		Beta Window = 30.0 mV	
Beta Setpoints--Pulser counts detected at 3.5 mV ± 1 mV and shut off at 30 mV for beta. For Alpha channel counts detected at 120 mV and above.			
H.V. Set With Detector Not Connected		Overload to be set with detector to be used	

Voltage	Tolerance	As Found	As Left
500	450 - 550	529	529
1,000	900 - 1,100	1,012	1,012
1,500	1,350 - 1,650	1,512	1,512

COMMENTS

Calibrated in accordance with OEM Technical Manual

See detector certificate for High Voltage setting

Calibrated with 5 ft. cable

Instrument Calibrated By: Mike Yonce	Reviewed By: [signature] Date: 12/21/17
Calibration Date: 12/20/2017	* Calibration Due (6 mo.): 06/20/2018
	* Calibration Due (12 mo.): 12/20/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFstaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Services, Inc.		Manufacturer: Ludlum
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Detector Model: 43-93
Contact Name: Mike Pauli		Serial Number: 323074
Customer Purchase: Order Number: N/A	Work Order Number: N/A	Evaluation Method: Source

DETECTOR EVALUATION INFORMATION (Efficiencies determined with source on contact)

Source Nuclide	Serial Number	Activity (dpm)	2 Pi Emissions	Net Response (cpm)	4pi Eff (%)	2pi Eff (%)
Th-230	051301	20,694	10,450 / min	4,219	20.4	40.4
Tc-99	051304	24,330	13,380 / min	3,398	14.0	25.4
Pu-239	071601	23,887	12,060 / min	5,380	22.5	44.6
SrY-90	101502	42,503	24,300 / min	13,044	30.7	53.7

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background	Operating Voltage	Threshold
2360	297766	12/20/18	3	650V	Alpha (120 mV)
2360	297766	12/20/18	235	650V	Beta (3.5 - 30 mV)

ATTACHMENTS

Voltage Plateau: √YES NO

Cross Talk Evaluation: √YES NO

COMMENTS

Calibrated with 5 ft. cable

Linearity test performed with Tc-99, #051304.

Calibrated in accordance with original equipment technical manual.

Background counts were performed using a 5 minute count.

LINEARITY TEST (Gross Counts)

Count 1 (Toe)	3,534
Count 2 (Mid)	3,628
Count 3 (Heel)	3,737
Average	3,633
Pass/Fail	PASS (+/-10% Tolerance)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: Mike Yonn

Reviewed By: Jeff Nikonow

Date: 12/21/17

Certification Date: 12/20/2017

* Certification Due (6 mo.): 06/20/2018

* Certification Due (12 mo.): 12/20/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc
1570 Bear Creek Road
Oak Ridge, TN 37830

Phone: (877) 462-4873
Fax: (865) 220-1346
Email: Isfstaff@energysolutions.com

http://www.energysolutions.com/

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION				INSTRUMENT INFORMATION			
Customer Name:	EnergySolutions			Manufacturer:			
Address:	1570 Bear Creek Rd. Oak Ridge, TN 37830			Model:	2360	S.N.	297766
Contact Name:	Mike Pauli			Probe:	43-93	S.N.	323074
Customer PO No.:	N/A	Work Order Number:	N/A	Calibration Method:	Source		

Source Information

	Isotope	Source ID	Certifcation Date	Activity (dpm)
α Source	Pu-239	071601	7/25/16	23,887
β Source	Tc-99	051304	5/15/13	24,330

Ludlum Model 43-93 High Voltage Plateau with crosstalk

Operating Voltage	High Voltage	Background		Alpha Source		Beta Source		Crosstalk		Efficiency	
		Alpha	Beta	Alpha	Beta	Alpha	Beta	α to β	β to α	α	β
	600	1	107	4,810	275	2	1,998	3.49%	0.05%	20.13%	7.77%
	625	3	171	5,204	295	3	2,883	2.38%	0.00%	21.77%	11.15%
SET	**650**	**2**	**233**	**5,348**	**392**	**3**	**3,633**	**2.97%**	**0.03%**	**22.38%**	**13.97%**
	675	3	267	5,472	544	2	4,312	5.06%	0.00	22.90%	16.63%

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Comments:

Calibrated By: Mike Young Reviewed By: [signature] Date: 12/21/17

Calibration Date: 12/20/17 Calibration Due: 12/20/18

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Fax: (865) 220-1346

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: EnergySolutions Services, Inc.		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Model: 2360	Serial Number: 193668
Contact Name: Mike Pauli		Probe: 43-93	Serial Number: 326725
Customer Purchase Order Number: N/A	Work Order Number: 2017-15513	Calibration Method: Electronic	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Tolerance (cpm) (±10%)	Ratemeter Response		Calibration Standard Value (CPM)	Time Base (minutes)	Tolerances (cpm) ±2%	Scaler Response	
			As Found	As Left				As Found	As Left
X 1	100	90 - 110	100	100	40,000 CPM	0.1	3,920-4,080	3,988	3,988
X 1	250	225 - 275	250	250	40,000 CPM	0.5	19.6K-20.4K	19,941	19,941
X 1	400	360 – 440	400	400	40,000 CPM	1	39.2K-40.8K	39,881	39,881
X 10	1,000	900 – 1,100	1,000	1,000	40,000 CPM	2	78.4K–81.6K	79,762	79,762
X 10	2,500	2,250 – 2,750	2,500	2,500					
X 10	4,000	3,600 – 4,400	4,000	4,000					
X 100	10,000	9,000 – 11,000	10,000	10,000					
X 100	25,000	22,500 – 27,500	25,000	25,000					
X 100	40,000	36,000 – 44,000	40,000	40,000					
X 1000	100,000	90,000 – 110,000	100,000	100,000	Calibrated in accordance with OEM Technical Manual				
X 1000	250,000	225,000 – 275,000	250,000	250,000					
X 1000	400,000	360,000 – 440,000	400,000	400,000					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: M Pauli	Reviewed By: [signature] Date: 8/16/17
Calibration Date: 08/15/2017	*Calibration Due (6mo): 02/15/2018
	*Calibration Due (12mo): 08/15/2018

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

Model: 2360 Serial Number: 193668

M&TE					Environmental Conditions		
Volt Meter	ID#	92260808	Cal Due:	07/17/2018	Barometer	ID# 3590	Cal Due: 11/30/17
Pulser	ID#	151067	Cal Due:	02/28/2018	Thermometer	ID# 3590	Cal Due: 11/30/17
Humidity	ID#	958670	Cal Due:	12/06/2017	Temp: 22.4°C	Pressure: 740 mmHg	Humidity: 32.9%

Special Test

Mechanical Zero	Sat (√) Unsat ( )	Geotropism	Sat (√) Unsat ( )
LCD Display Check	Sat (√) Unsat ( )	Audio Check	Sat (√) Unsat ( )
BAT Check	Sat (√) Unsat ( )	Low BAT Set	Sat (√) Unsat ( )
Reset	Sat (√) Unsat ( )	Physical Condition	Sat (√) Unsat ( )
HV Analog Display	Sat (√) Unsat ( )	As Found	As Left

High Voltage Calibration (± 10%)							
Voltage	Tolerance	As Found	As Left	Alpha Sensitivity =	108 mv	Alpha Sensitivity =	120 mv
500	450-550	467	478	Beta Sensitivity =	3.3 mv	Beta Sensitivity =	3.5 mv
1000	900-1100	981	1,000	Beta Window =	28.1 mv	Beta Window =	30 mv
1500	1350-1650	1,491	1,543	Beta Setpoints--Pulser counts detected at 3.5mv ± 1mv and shut off at 30mv for beta. For Alpha channel counts detected at 120mv and above.			
H.V. Set With Detector Not Connected				Overload to be set with detector to be used			

COMMENTS

Calibrated in accordance with OEM Technical Manual

See detector certificate for High Voltage setting

Calibrated with 5ft cable

Instrument	
Calibrated By: M Paul	Reviewed By: [illegible] Date: 8/16/17
Calibration Date: 08/15/2017	*Calibration Due (6mo): 02/15/2018
	*Calibration Due (12mo): 08/15/2018

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFstaff@ energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Services, Inc.		Manufacturer: Ludlum
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Detector Model: 43-93
Contact Name: Mike Pauli		Serial Number: 326725
Customer Purchase: Order Number: N/A	Work Order Number: 2017-15513	Evaluation Method: Source

DETECTOR EVALUATION INFORMATION

Source Nuclide	Serial Number	Activity (dpm)	2 Pi Emissions	Net Response (cpm)	4pi Eff (%) **	2pi Eff (%) **
Th-230	051301	20,694	10,450 / min	5,192	25.1	49.7
Tc-99	051304	24,330	13,380 / min	4,372	18.0	32.7
Pu^{239}	101501	24,222	12,230 / min	6,441	26.6	52.7
SrY-90	101502	42,953	24,557 / min	15,328	35.7	62.4

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background	Operating Voltage	Threshold
2360	193668	08/15/2018	2.1	675 V	Alpha (120 mV)
2360	193668	08/15/2018	198.8	675 V	Beta (3.5 - 30 mV)

ATTACHMENTS

Voltage Plateau: √YES NO

MDA/Cross Talk Evaluation: √YES NO

COMMENTS

Calibrated with 5 ft. cable

Linearity test performed with Tc-99 #051304.

Calibrated in accordance with original equipment technical manual.

** Efficiencies done on contact with detector screen.

LINEARITY TEST (Gross Counts)

Count 1 (Toe)	4,369
Count 2 (Mid)	4,765
Count 3 (Heel)	4,579
Average	4,571
Pass/Fail	PASS (+/-10% Tolerance)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector

Certified By: M. Pauli

Reviewed By: [illegible]

Date: 8/16/17

Certification Date: 08/15/2017

* Certification Due (6 mo.): 02/15/2018

* Certification Due (12 mo.): 08/15/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc
1570 Bear Creek Road
Oak Ridge, TN 37830

Phone: (877) 462-4873
Fax: (865) 220-1346
Email: Isfstaff@energysolutions.com

http://www.energysolutions.com/

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION				INSTRUMENT INFORMATION			
Customer Name:	EnergySolutions Services, Inc.			Manufacturer:			
Address:	1570 Bear Creek Rd., Oak Ridge, TN 37830			Model:	2360	S.N.	193668
Contact Name:	Mike Pauli			Probe:	43-93	S.N.	326725
Customer PO No.:	N/A	Work Order Number:	2017-15513	Calibration Method:	Source		

Source Information

	Isotope	Source ID	Certifcation Date	Activity (dpm)
α Source	Pu-239	101501	11/1/15	24,222
β Source	Tc-99	051304	5/15/13	24,330

Ludlum Model 43-93 High Voltage Plateau with crosstalk

Operating Voltage	High Voltage	Background		Alpha Source		Beta Source		Crosstalk		Efficiency	
		Alpha	Beta	Alpha	Beta	Alpha	Beta	α to β	β to α	α	β
	625	2	117	5,939	236	4	2,971	2.00%	0.07%	24.51%	11.73%
	650	0	160	6,101	305	3	3,763	2.38%	0.08%	25.19%	14.81%
SET	**675**	**0**	**207**	**6,186**	**457**	**5**	**4,660**	**4.04%**	**0.11%**	**25.54%**	**18.30%**
	700	4	233	6,312	726	1	5,217	7.82%	0.00	26.04%	20.48%

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Comments:

Calibrated By: M. Pauli Reviewed By: Jeff Dabonzo Date: 8/16/17

Calibration Date: 8/15/17 Calibration Due: 8/15/18

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

Energy*Solutions* Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Fax: (865) 220-1346

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Energy*Solutions* Services, Inc.		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 2360	Serial Number: 297743
Contact Name: Mike Pauli		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: 2017-15616	Calibration Method: Electronic	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value (CPM)	Ratemeter (CPM) Response (± 10% of Standard Values)		Calibration Standard Value	Time Base (minutes)	Tolerances (counts) ± 2%	Scaler Response (counts)	
		As Found	As Left				As Found	As Left
X 1	100	100	100	40,000 CPM	0.1	3,920 - 4,080	3,981	3,981
X 1	250	250	250	40,000 CPM	0.5	19.6K - 20.4K	19,903	19,903
X 1	400	400	400	40,000 CPM	1	39.2K - 40.8K	39,803	39,803
X 10	1,000	1,000	1,000	40,000 CPM	2	78.4K - 81.6K	79,606	79,606
X 10	2,500	2,500	2,500					
X 10	4,000	4,000	4,000					
X 100	10,000	10,000	10,000					
X 100	25,000	25,000	25,000					
X 100	40,000	40,000	40,000					
X 1000	100,000	100,000	100,000	Calibrated in accordance with OEM Technical Manual				
X 1000	250,000	250,000	250,000					
X 1000	400,000	400,000	400,000					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument	
Calibrated By: M. Pauli	Reviewed By: [signature] Date: 10/12/17
Calibration Date: 10/10/2017	* Calibration Due (6 mo.): 04/10/2018
	* Calibration Due (12 mo.): 10/10/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

Model: 2360 Serial Number: 297743

M&TE					Environmental Conditions			
Volt Meter	ID#	94710023	Cal Due:	03/07/2018	Barometer	ID#	3590	Cal Due: 11/30/17
Pulser	ID#	151067	Cal Due:	02/28/2018	Thermometer	ID#	3590	Cal Due: 11/30/17
Humidity	ID#	958670	Cal Due:	12/06/2017	Temp: 25.2 °C	Pressure: 740 mmHg		Humidity: 42.8 %

Special Test			
Mechanical Zero	Sat (√) Unsat ( )	Geotropism	Sat (√) Unsat ( )
LCD Display Check	Sat (√) Unsat ( )	Audio Check	Sat (√) Unsat ( )
BAT Check	Sat (√) Unsat ( )	Low BAT Set	Sat (√) Unsat ( )
Reset	Sat (√) Unsat ( )		
HV Analog Display	Sat (√) Unsat ( )	As Found	As Left
High Voltage Calibration (± 10%)		Alpha Sensitivity = 123 mV	Alpha Sensitivity = 120 mV
Beta Sensitivity = 3.6 mV		Beta Sensitivity = 3.5 mV	
Beta Window = 32 mV		Beta Window = 30 mV	
Beta Setpoints—Pulser counts detected at 3.5 mV ± 1 mV and shut off at 30 mV for beta. For Alpha channel counts detected at 120 mV and above.			
H.V. Set With Detector Not Connected		Overload to be set with detector to be used	

Voltage	Tolerance	As Found	As Left
500	450 - 550	501	501
1,000	900 - 1,100	996	996
1,500	1,350 - 1,650	1,504	1,504

COMMENTS

Calibrated in accordance with OEM Technical Manual

See detector certificate for High Voltage setting

****Calibrated with 8ft cable****

Instrument	
Calibrated By: M. Paul	Reviewed By: [signature] Date: 10/12/17
Calibration Date: 10/10/2017	* Calibration Due (6 mo.): 04/10/2018
	* Calibration Due (12 mo.): 10/10/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFstaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Detector Model: 43-37A
Contact Name: Mike Pauli		Serial Number: 302111
Customer Purchase Order Number: N/A	Work Order Number: 2017-15616	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Th^{230}	Serial Number: 051301	Activity: 20,694 dpm	2 Pi Emissions: 10,450 /min	Certification Date: 05/15/2013

Parameter	As Found	As Left	Precision Test	CPM
Count 1	3,500	3,500	Count 1 (Heel)	2,933
Count 2	3,297	3,297	Count 2 (Center)	2,882
Count 3	3,246	3,246	Count 3 (Toe)	2,889
Count 4	3,270	3,270	Average	2,898
Count 5	3,418	3,418	Tolerance	±10%
Count 6	3,326	3,326	Pass/Fail	Pass
Average	3,343	3,343		
Background (CPM)	4.8	4.8		
Net Counts	3,338	3,338		
2pi Efficiency	31.9%	31.9%		
4pi Efficiency	16.1%	16.1%		

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): N/A	Calibration Constant (CC): N/A

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2360	297743	10/10/2018	4.8	1775V	Alpha (120mV) Beta (3.5-30mV)

Detector Setup Report YES NO √	Barcode Report YES NO √	Voltage Plateau YES √ NO

COMMENTS

5 minute background performed Efficiency performed on contact with 8ft cable 2 layer mylar (0.8mg/cm2)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: M. Pauli	Reviewed By: [signature]	Date: 10/13/17
Certification Date: 10/11/2017	*Certification Due (6mo): 04/11/2018	
	* Certification Due (12mo): 10/11/2018	

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFstaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Detector Model: 43-37B
Contact Name: Mike Pauli		Serial Number: 302111
Customer Purchase Order Number: N/A	Work Order Number: 2017-15616	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Tc^{99}	Serial Number: 099608	Activity: 21,311 dpm	2 Pi Emissions: 10,499/min	Certification Date: 08/08/1996

Parameter	As Found	As Left	Precision Test	CPM
Count 1	4,780	4,780	Count 1 (Heel)	4,824
Count 2	4,947	4,947	Count 2 (Center)	4,646
Count 3	4,744	4,744	Count 3 (Toe)	4,499
Count 4	4,950	4,950	Average	4,656
Count 5	4,285	4,285	Tolerance	±10%
Count 6	4,545	4,545	Pass/Fail	Pass
Average	4,709	4,709		
Background (CPM)	679.6	679.6		
Net Counts	4,029	4,029		
2pi Efficiency	38.4%	38.4%		
4pi Efficiency	18.9%	18.9%		

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): N/A	Calibration Constant (CC): N/A

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2360	297743	10/10/2018	679.6	1775V	Alpha (120mV) Beta (3.5-30mV)

Detector Setup Report YES NO √	Barcode Report YES NO √	Voltage Plateau YES √ NO

COMMENTS

5 minute background performed Efficiency performed on contact with 8ft cable 2 layer mylar (0.8mg/cm2)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: M Pauli	Reviewed By: Jeff Dakenso	Date: 10/13/17
Certification Date: 10/11/2017	*Certification Due (6mo): 04/11/2018	
	* Certification Due (12mo): 10/11/2018	

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc
1570 Bear Creek Road
Oak Ridge, TN 37830

Phone: (877) 462-4873
Fax: (865) 220-1346
Email: lsfstaff@energysolutions.com

http://www.energysolutions.com/

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION				INSTRUMENT INFORMATION			
Customer Name:	EnergySolutions			Manufacturer:			
Address:	1570 Bear Creek Rd Oak Ridge, TN 37830			Model:	2360	S.N.	297743
Contact Name:	Mike Pauli			Probe:	43-37	S.N.	302111
Customer PO No.:	N/A	Work Order Number:	2017-15616	Calibration Method:	Source		

Source Information

	Isotope	Source ID	Certifcation Date	Activity (dpm)
α Source	Pu-239	071601	7/25/16	23,887
β Source	Tc-99	**099608**	8/8/96	21,311

Ludlum Model 43-37 High Voltage Plateau with crosstalk

Operating Voltage	High Voltage	Background		Alpha Source		Beta Source		Crosstalk		Efficiency	
		Alpha	Beta	Alpha	Beta	Alpha	Beta	α to β	β to α	α	β
	1,700	4.0	277.0	2,294.0	537.0	6.0	3,702.0	11.35%	0.06%	9.59%	16.07%
	1,725	5.0	361.0	2,720.0	665.0	9.0	4,171.0	11.20%	0.10%	11.37%	17.88%
	1,750	3.0	497.0	2,992.0	819.0	3.0	4,383.0	10.77%	0.00%	12.51%	18.23%
SET	**1,775**	**6.0**	**721.0**	**3,250.0**	**958.0**	**6.0**	**4,379.0**	**7.31%**	**0.00%**	**13.58%**	**17.16%**
	1,800	6.0	800.0	3,840.0	1,074.0	9.0	4,480.0	9.01%	0.08%	16.05%	17.27%
	1,825	12.0	864.0	3,714.0	1,119.0	21.0	4,096.0	8.95%	0.28%	15.50%	15.17%

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Comments:

Calibrated using 8ft C cable assembly

Calibrated By: M. Pauli Reviewed By: Jeff Dikeman Date: 10/17/17

Calibration Date: 10/17/17 Calibration Due: 10/17/18

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Fax: (865) 220-1346

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: EnergySolutions Services, Inc.		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 2360	Serial Number: 268497
Contact Name: Mike Pauli		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: 2017-15616	Calibration Method: Electronic	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value (CPM)	Ratemeter (CPM) Response (± 10% of Standard Values)		Calibration Standard Value	Time Base (minutes)	Tolerances (counts) ± 2%	Scaler Response (counts)	
		As Found	As Left				As Found	As Left
X 1	100	100	100	40,000 CPM	0.1	3,920 - 4,080	3,995	3,995
X 1	250	250	250	40,000 CPM	0.5	19.6K - 20.4K	19,972	19,972
X 1	400	400	400	40,000 CPM	1	39.2K - 40.8K	39,942	39,942
X 10	1,000	1,000	1,000	40,000 CPM	2	78.4K - 81.6K	79,884	79,884
X 10	2,500	2,500	2,500					
X 10	4,000	4,000	4,000					
X 100	10,000	10,000	10,000					
X 100	25,000	25,000	25,000					
X 100	40,000	40,000	40,000					
X 1000	100,000	100,000	100,000	Calibrated in accordance with OEM Technical Manual				
X 1000	250,000	250,000	250,000					
X 1000	400,000	400,000	400,000					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: M. Pauli	Reviewed By: [illegible] Date: 10/12/17
Calibration Date: 10/10/2017	* Calibration Due (6 mo.): 04/10/2018
	* Calibration Due (12 mo.): 10/10/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

Model: 2360 Serial Number: 268497

M&TE					Environmental Conditions			
Volt Meter	ID#	94710023	Cal Due:	03/07/2018	Barometer	ID#	3590	Cal Due: 11/30/17
Pulser	ID#	151067	Cal Due:	02/28/2018	Thermometer	ID#	3590	Cal Due: 11/30/17
Humidity	ID#	958670	Cal Due:	12/06/2017	Temp: 25.2°C	Pressure: 740 mmHg		Humidity: 42.8 %

Special Test

Mechanical Zero	Sat (√) Unsat ( )	Geotropism	Sat (√) Unsat ( )
LCD Display Check	Sat (√) Unsat ( )	Audio Check	Sat (√) Unsat ( )
BAT Check	Sat (√) Unsat ( )	Low BAT Set	Sat (√) Unsat ( )
Reset	Sat (√) Unsat ( )		
HV Analog Display	Sat (√) Unsat ( )	As Found	As Left

High Voltage Calibration (± 10%)				Alpha Sensitivity = 115 mV	Alpha Sensitivity = 120 mV
Voltage	Tolerance	As Found	As Left	Beta Sensitivity = 3.6 mV	Beta Sensitivity = 3.5 mV
500	450 - 550	514	514	Beta Window = 31.6 mV	Beta Window = 30 mV
1,000	900 - 1,100	1,014	1,014	Beta Setpoints--Pulser counts detected at 3.5 mV ± 1 mV and shut off at 30 mV for beta. For Alpha channel counts detected at 120 mV and above.	
1,500	1,350 - 1,650	1,527	1,527		
H.V. Set With Detector Not Connected				Overload to be set with detector to be used	

COMMENTS

Calibrated in accordance with OEM Technical Manual

See detector certificate for High Voltage setting

****Calibrated with 8ft cable****

Instrument	
Calibrated By: M Paul	Reviewed By: S Dickinson Date: 10/12/17
Calibration Date: 10/10/2017	* Calibration Due (6 mo.): 04/10/2018
	* Calibration Due (12 mo.): 10/10/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFstaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Detector Model: 43-37A
Contact Name: Mike Pauli		Serial Number: 093965
Customer Purchase Order Number: N/A	Work Order Number: 2017-15616	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Th^{230}	Serial Number: 051301	Activity: 20,694 dpm	2 Pi Emissions: 10,450 /min	Certification Date: 05/15/2013

Parameter	As Found	As Left	Precision Test	CPM
Count 1	3,295	3,295	Count 1 (Heel)	3,303
Count 2	3,174	3,174	Count 2 (Center)	3,242
Count 3	3,309	3,309	Count 3 (Toe)	3,291
Count 4	3,191	3,191	Average	3,279
Count 5	3,342	3,342	Tolerance	±10%
Count 6	3,180	3,180	Pass/Fail	Pass
Average	3,249	3,249		
Background (CPM)	8.6	8.6		
Net Counts	3,240	3,240		
2pi Efficiency	31.0%	31.0%		
4pi Efficiency	15.7%	15.7%		

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): N/A	Calibration Constant (CC): N/A

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2360	268497	10/10/2018	8.6	1750V	Alpha (120mV) Beta (3.5-30mV)

Detector Setup Report YES NO √	Barcode Report YES NO √	Voltage Plateau YES √ NO

COMMENTS

5 minute background performed Efficiency performed on contact with 8ft cable 2 layer mylar (0.8mg/cm2)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: M Pauli	Reviewed By: JJ Dabenso	Date: 10/12/17
Certification Date: 10/12/2017	*Certification Due (6mo): 04/12/2018	
	* Certification Due (12mo): 10/12/2018	

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFstaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Detector Model: 43-37B
Contact Name: Mike Pauli		Serial Number: 093965
Customer Purchase Order Number: N/A	Work Order Number: 2017-15616	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Tc^{99}	Serial Number: 099608	Activity: 21,311 dpm	2 Pi Emissions: 10,499/min	Certification Date: 08/08/1996

Parameter	As Found	As Left	Precision Test	CPM
Count 1	4,692	4,692	Count 1 (Heel)	4,765
Count 2	4,540	4,540	Count 2 (Center)	4,331
Count 3	4,580	4,580	Count 3 (Toe)	4,522
Count 4	4,352	4,352	Average	4,539
Count 5	4,547	4,547	Tolerance	±10%
Count 6	4,472	4,472	Pass/Fail	Pass
Average	4,531	4,531		
Background (CPM)	838.2	838.2		
Net Counts	3,692	3,692		
2pi Efficiency	35.2%	35.2%		
4pi Efficiency	17.3%	17.3%		

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): N/A	Calibration Constant (CC): N/A

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2360	268497	10/10/2018	838.2	1750V	Alpha (120mV) Beta (3.5-30mV)

Detector Setup Report YES NO √	Barcode Report YES NO √	Voltage Plateau YES √ NO

COMMENTS

5 minute background performed Efficiency performed on contact with 8ft cable 2 layer mylar (0.8mg/cm2)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: M. Paul	Reviewed By: Jeff Dakinson	Date: 10/12/17
Certification Date: 10/12/2017	*Certification Due (6mo): 04/12/2018	
	* Certification Due (12mo): 10/12/2018	

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc
1570 Bear Creek Road
Oak Ridge, TN 37830

Phone: (877) 462-4873
Fax: (865) 220-1346
Email: Isfstaff@energysolutions.com

http://www.energysolutions.com/

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION				INSTRUMENT INFORMATION			
Customer Name:	EnergySolutions			Manufacturer:			
Address:	1570 Bear Creek Rd Oak Ridge, TN 37830			Model:	2360	S.N.	268497
Contact Name:	Mike Pauli			Probe:	43-37	S.N.	093965
Customer PO No.:	N/A	Work Order Number:	2017-15616	Calibration Method:	Source		

Source Information

	Isotope	Source ID	Certifcation Date	Activity (dpm)
α Source	Pu-239	071601	7/25/16	23,887
β Source	Tc-99	099608	8/8/96	21,311

Ludlum Model 43-37 High Voltage Plateau with crosstalk

Operating Voltage	High Voltage	Background		Alpha Source		Beta Source		Crosstalk		Efficiency	
		Alpha	Beta	Alpha	Beta	Alpha	Beta	α to β	β to α	α	β
	1,700	4.0	551.0	3,484.0	811.0	6.0	4,587.0	7.47%	0.05%	14.57%	18.94%
	1,725	7.0	655.0	3,785.0	1,006.0	7.0	4,638.0	9.29%	0.00%	15.82%	18.69%
SET	**1,750**	**9.0**	**831.0**	**4,217.0**	**1,124.0**	**7.0**	**4,348.0**	**6.96%**	**0.00**	**17.62%**	**16.50%**
	1,775	7.0	887.0	4,306.0	1,232.0	25.0	3,967.0	8.03%	0.58%	18.00%	14.45%
	1,800	8.0	849.0	4,640.0	1,154.0	111.0	3,276.0	8.05%	4.24%	19.39%	11.39%
	1,825	25.0	769.0	4,745.0	1,083.0	300.0	2,539.0	7.90%	15.54%	19.76%	8.31%

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Comments:

Calibrated using 8ft C cable assembly

Calibrated By: M. Pauli Reviewed By: Jeff Nilenso Date: 10/17/17

Calibration Date: 10/17/17 Calibration Due: 10/17/18

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

Energy*Solutions* Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Fax: (865) 220-1346

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Energy*Solutions* Instrument Services		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 2360	Serial Number: 276990
Contact Name: John Barncord		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: N/A	Calibration Method: Electronic	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value (CPM)	Ratemeter (CPM) Response (± 10% of Standard Values)		Calibration Standard Value	Time Base (minutes)	Tolerances (counts) ± 2%	Scaler Response (counts)	
		As Found	As Left				As Found	As Left
X 1	100	97.5	97.5	40,000 CPM	0.1	3,920 - 4,080	4010	4010
X 1	250	245	245	40,000 CPM	0.5	19.6K - 20.4K	20054	20054
X 1	400	390	390	40,000 CPM	1	39.2K - 40.8K	40107	40107
X 10	1,000	950	950	40,000 CPM	2	78.4K - 81.6K	80216	80216
X 10	2,500	2.5K	2.5K					
X 10	4,000	3.9K	3.9K					
X 100	10,000	9.75K	9.75K					
X 100	25,000	24.5K	24.5K					
X 100	40,000	40K	40K					
X 1000	100,000	95K	95K	Calibrated in accordance with OEM Technical Manual				
X 1000	250,000	245K	245K					
X 1000	400,000	390K	390K					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By: Date: 3/20/18
Calibration Date: 3/20/18	* Calibration Due (6 mo.): 9/20/18
	* Calibration Due (12 mo.): 3/20/19

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

Model: 2360 **Serial Number:** 276990

M&TE					Environmental Conditions			
Volt Meter	ID#:	92260808	Cal Due:	7/17/18	Barometer	ID#:	3063	Cal Due: 02/07/19
Pulser	ID#:	120935	Cal Due:	7/12/18	Thermometer	ID#:	3063	Cal Due: 02/07/19
Humidity	ID#:	958670	Cal Due:	12/15/18	Temp: 23.4˚C	Pressure: 727 mmHg		Humidity: 49.7 %

Special Test

Mechanical Zero	Sat (√) Unsat ( )	Geotropism	Sat (√) Unsat ( )
LCD Display Check	Sat (√) Unsat ( )	Audio Check	Sat (√) Unsat ( )
BAT Check	Sat (√) Unsat ( )	Low BAT Set	Sat (√) Unsat ( )
Reset	Sat (√) Unsat ( )		
HV Analog Display	Sat (√) Unsat ( )	As Found	As Left

High Voltage Calibration (± 10%)

Voltage	Tolerance	As Found	As Left
500	450 - 550	518	518
1,000	900 - 1,100	1006	1006
1,500	1,350 - 1,650	1503	1503

Alpha Sensitivity = 127 mV	Alpha Sensitivity = 120 mV
Beta Sensitivity = 4.1 mV	Beta Sensitivity = 3.5 mV
Beta Window = 29.8 mV	Beta Window = 30.0 mV

Beta Setpoints--Pulser counts detected at 3.5 mV ± 1 mV and shut off at 30 mV for beta. For Alpha channel counts detected at 120 mV and above.

H.V. Set With Detector Not Connected

Overload to be set with detector to be used

COMMENTS

Calibrated in accordance with OEM Technical Manual

See detector certificate for High Voltage setting

****Calibrated with 5 ft. cable****

Instrument Calibrated By:	Reviewed By: Date: 3/20/18
Calibration Date: 3/20/18	* Calibration Due (6 mo.): 9/20/18
	* Calibration Due (12 mo.): 3/20/19

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFstaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Detector Model: 43-37A
Contact Name: Mike Pauli		Serial Number: 190620
Customer Purchase Order Number: N/A	Work Order Number: N/A	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Th^{230}	Serial Number: 051301	Activity: 20,694 dpm	2 Pi Emissions: 10,450 /min	Certification Date: 05/15/2013

Parameter	As Found	As Left	Precision Test	CPM
Count 1	2,818	2,818	Count 1 (Heel)	2,786
Count 2	3,042	3,042	Count 2 (Center)	2,967
Count 3	3,130	3,130	Count 3 (Toe)	3,083
Count 4	3,012	3,012	Average	2,945
Count 5	2,994	2,994	Tolerance	±10%
Count 6	3,043	3,043	Pass/Fail	Pass
Average	3,007	3,007		
Background (CPM)	3.4	3.4		
Net Counts	3,003	3,003		
2pi Efficiency	28.7%	28.7%		
4pi Efficiency	14.5%	14.5%		

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): N/A	Calibration Constant (CC): N/A

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2360	276990	03/20/2019	3.4	1750V	Alpha (120mV) Beta (3.5-30mV)

Detector Setup Report YES NO √	Barcode Report YES NO √	Voltage Plateau YES √ NO

COMMENTS

5 minute background performed Efficiency performed on contact with 8ft cable 2 layer mylar (0.8mg/cm2)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By: M. Pauli	Date: 3/22/2018
Certification Date: 03/22/2018	*Certification Due (6mo): 09/22/2018	
	* Certification Due (12mo): 03/22/2019	

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

Energy*Solutions* Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFstaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Energy*Solutions* Instrument Services		Manufacturer: Ludlum
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Detector Model: 43-37B
Contact Name: Mike Pauli		Serial Number: 190620
Customer Purchase Order Number: N/A	Work Order Number: N/A	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Tc^{99}	Serial Number: 099608	Activity: 21,311 dpm	2 Pi Emissions: 10,499/min	Certification Date: 08/08/1996

Parameter	As Found	As Left	Precision Test	CPM
Count 1	4,849	4,849	Count 1 (Heel)	4,827
Count 2	4,744	4,744	Count 2 (Center)	4,668
Count 3	4,705	4,705	Count 3 (Toe)	4,788
Count 4	4,831	4,831	Average	4,761
Count 5	4,707	4,707	Tolerance	±10%
Count 6	4,997	4,997	Pass/Fail	Pass
Average	4,806	4,806		
Background (CPM)	645.8	645.8		
Net Counts	4,160	4,160		
2pi Efficiency	39.6%	39.6%		
4pi Efficiency	19.5%	19.5%		

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): N/A	Calibration Constant (CC): N/A

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2360	276990	03/20/2019	645.8	1750V	Alpha (120mV) Beta (3.5-30mV)

Detector Setup Report YES NO √ | Barcode Report YES NO √ | Voltage Plateau YES √ NO

COMMENTS

5 minute background performed | Efficiency performed on contact with 8ft cable | 2 layer mylar (0.8mg/cm2)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: | Reviewed By: M. Pauli | Date: 3/22/2018

Certification Date: 03/22/2018 | *Certification Due (6mo): 09/22/2018 | * Certification Due (12mo): 03/22/2019

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc
1570 Bear Creek Road
Oak Ridge, TN 37830

Phone: (877) 462-4873
Fax: (865) 220-1346
Email: Isfstaff@energysolutions.com

http://www.energysolutions.com/

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION				INSTRUMENT INFORMATION			
Customer Name:	EnergySolutions			Manufacturer:			
Address:	1570 Bear Creek Rd Oak Ridge, TN 37830			Model:	2360	S.N.	276990
Contact Name:	Mike Pauli			Probe:	43-37	S.N.	190620
Customer PO No.:	N/A	Work Order Number:	N/A	Calibration Method:	Source		

Source Information

	Isotope	Source ID	Certifcation Date	Activity (dpm)
α Source	Pu-239	071601	7/25/16	23,887
β Source	Tc-99	099608	8/8/96	21,311

Ludlum Model 43-37 High Voltage Plateau with crosstalk

Operating Voltage	High Voltage	Background		Alpha Source		Beta Source		Crosstalk		Efficiency	
		Alpha	Beta	Alpha	Beta	Alpha	Beta	α to β	β to α	α	β
	1,700	7.0	441.0	3,302.0	728.0	6.0	4,821.0	8.71%	0.00	13.79%	20.55%
	1,725	2.0	617.0	3,551.0	914.0	6.0	5,026.0	8.37%	0.09%	14.86%	20.69%
SET	**1,750**	**5.0**	**799.0**	**3,859.0**	**1,052.0**	**7.0**	**4,537.0**	**6.56%**	**0.05%**	**16.13%**	**17.54%**
	1,775	6.0	912.0	4,191.0	1,181.0	18.0	4,193.0	6.43%	0.37%	17.52%	15.40%
	1,800	15.0	938.0	4,451.0	1,225.0	44.0	3,681.0	8.17%	1.06%	18.57%	12.87%

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Comments:

Calibrated using 8ft C cable assembly

Calibrated By: _____ Reviewed By: M. Pauli Date: 3/22/2018

Calibration Date: 3/22/18 Calibration Due: 3/22/19

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Rd
Oak Ridge, TN 37830
Phone: (877) 462-4873
Fax: (865) 220-1346

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: EnergySolutions Services, Inc.		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 19	Serial Number: 109899
Contact Name: Mike Pauli		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: 2017-15513	Calibration Method: Electronic And Source	

INSTRUMENT CALIBRATION INFORMATION

Range (µR/hr)	Calibration Standard Value	Tolerances (µR/hr)	Instrument Response		Comments	
			As Found (µR/hr)	As Left (µR/hr)	Calibrated in accordance with CP-IN-WI-211	
5000 Black	4,000 µR/hr	3,600 - 4,400	3,750	3,850	Pulser: 151067	Cal Due: 02/28/2018
	2,500 µR/hr	2,250 - 2,750	2,400	2,500	DVM: 92260808	Cal Due: 07/17/2018
	1,000 µR/hr	900 - 1,100	950	1,000	Temp/Press: 3590	Cal Due: 11/30/2017
500 Black	400 µR/hr	360 - 440	365	380	Humidity: 958670	Cal Due: 12/06/2017
	250 µR/hr	225 - 275	235	250	Temp: 24.8 ° C Humidity: 39% Pressure: 737 mmHg	
	Input cpm = 16,700	90 - 110	90	100		
250 Red	Input cpm = 32,000	180 - 220	185	200		
	Input cpm = 19,200	108 - 132	110	120	Geotropism: SAT	Over Range: SAT
	Input cpm = 8,000	45 - 55	45	50	Batteries: SAT	Mech. Zero: SAT
50 Black	Input cpm = 6,400	36 - 44	37	39	F/S Response: SAT	Audio: SAT
	Input cpm = 4,000	22.5 - 27.5	22	25	Light: SAT	
	Input cpm = 1,660	9 - 11	9.5	10		
25 Red	Input cpm = 3,200	18 - 22	18	20	Source:	Due Date:
	Input cpm = 1,920	10.8 - 13.2	11	12	High Voltage As Found: 650V	As Left: 650V
	Input cpm = 800	4.5 - 5.5	4.5	5	cpm/µR/hr: As Found: 176	As Left: 160

Precision Test --- Reading 1: 250µR/hr 2: 248µR/hr 3: 245 µR/hr Mean: 248µR/hr Precision Test: SAT

COMMENTS

Special Remarks: High Voltage: 650Volts cpm/µR/hr: 160

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument		
Calibrated By: M. Paul	Reviewed By:	Date: 8/16/17
Certification Date: 08/15/2017	* Certification Due (6 mo.): 02/15/2018	
	* Certification Due (12 mo.): 08/15/2018	

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFStaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

Customer Information		Instrument Information	
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 2929	Serial Number: 146780
Contact Name: John Barncord		Probe: 43-10-1	Serial Number: 151113
Customer Purchase Order Number: N/A	Work Order Number: 2017-XXXX	Calibration Method: Electronic And Source	

Instrument Calibration Information

M&TE	ID Number	Calibration Due Date	Environmental Conditions	
Thermometer	3590	11/30/17	Temperature (°C)	24.7
Barometer	3590	11/30/17	Pressure (mmHg)	737
Hygrometer	958670	12/6/17	Humidity (%)	37.1
Pulse Generator	130364	8/29/17	Calibrated in accordance with CP-IN-WI-235	
DVM	94710023	3/7/18		
Isotope	**Source ID Number**	**Decayed Activity (dpm)**	**2Pi Emissions (EPM)**	**Source Cert. Date**
Pu^{239}	101501	24,222	12,230/ min	11/10/2015
Tc^{99}	099608	21,311	10,500/ min	08/08/1996
Th^{230}	119738	18,600	8,638/ min	10/27/1997
Sry^{90}	129676	11,320	7,974/min	05/12/2003

Frequency Calibration

Desired (cpm)	Tolerances (cpm)	Alpha As Found (cpm)	Alpha As Left (cpm)	Beta As Found (cpm)	Beta As Left (cpm)
40	40	40	40	40	40
400	(392 - 408)	398	398	399	399
4,000	(3,920 - 4,080)	3,983	3,983	3,983	3,983
40,000	(39.2K - 40.8K)	39,829	39,829	39,836	39,836
400,000	(392K - 408K)	398,270	398,270	398,246	398,246

Background Determination	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Counts, C_b	18	6	917	864
Time, T_b (min)	20	20	20	20
Rate, R_b (cpm)	.9	.3	45.85	43.2

Statement of Certification

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Calibrated By: [signature] Reviewed By: M. Paul Date: 6/20/2017

Calibration Date: 06/17/2017

* Calibration Due (6 mo.): 12/17/2017

* Calibration Due (12 mo.): 06/17/2018

* Calibration due date is dependent on users regulatory requirements.

CROSS TALK & EFFICIENCY SHEET

Instrument ID: 146780

As Found Alpha Threshold (mV)	As Left Alpha Threshold (mV)
172.5	172.5

Alpha Source: Cross Talk – Performed using Pu^{239} #101501

Parameter and Tolerance	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Source Count, C_s	39,186	39,505	1,584	1,476
Time, T_s (min)	5	5	5	5
Rate, R_s (cpm)	$R_{s[\alpha]} = 7{,}837.2$	$R_{s[\alpha]} = 7{,}901$	$R_{s[\beta]} = 316.8$	$R_{s[\beta]} = 295.2$
4π EFF (% Net cpm/dpm) (>25%)	32.35%	32.6%	N/A	N/A
2π EFF (% Net cpm/emissions)	64.1%	64.6%	N/A	N/A
%Crosstalk [α to β] (< 10%)	$\frac{R_{s[\beta]} - R_{b[\beta]}}{R_{s[\alpha]} - R_{b[\alpha]}} = \frac{295.2 - 43.2}{7903 - 0.3} = 3.19\%$			

As Found Beta Low Threshold	As Left Beta Low Threshold	As Found Beta High Threshold	As Left Beta High Threshold
4.0 mV	4.0 mV	50.0 mV	50.0 mV

Beta Source: Cross Talk Performed Using Tc^{99} #099608

Parameter and Tolerance	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Source Count, C_s	14	6	27,977	27,829
Time, T_s (min)	5	5	5	5
Rate, R_s (cpm)	$R_{s[\alpha]} = 2.8$	$R_{s[\alpha]} = 1.2$	$R_{s[\beta]} = 5{,}595.4$	$R_{s[\beta]} = 5{,}565.8$
4π EFF (% Net cpm/dpm) (>10%)	N/A	N/A	26.26%	26.1%
2π EFF (% Net cpm/emissions)	N/A	N/A	53.29%	53.0%
%Crosstalk [β to α] (< 1%)	$\frac{R_{s[\alpha]} - R_{b[\alpha]}}{R_{s[\beta]} - R_{b[\beta]}} = \frac{1.2 - 0.3}{5565.8 - 43.2} = 0.016\%$			

High Voltage Power Supply Calibration

Desired Voltage	Tolerance	DVM As Found	DVM As Left	2929 Meter As Found	2929 Meter As Left
600	540 - 660	570	570	600	600
800	720 - 880	789	789	800	800
1,000	900 - 1,100	1,006	1,006	1,000	1,000
1,200	1,080 - 1,320	1,221	1,221	1,200	1,200
1,300	1,170 - 1,430	1,336	1,336	1,300	1,300

High Voltage	As Found	Vern Dial Reading	As Left	Vern Dial Reading
	850V	3.40	850V	3.40

Statement of Certification

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Calibrated By: Reviewed By: M. Paul Date: 6/20/2017

Calibration Date: 06/17/2017

* Calibration Due (6 mo.): 12/17/2017

* Calibration Due (12 mo.): 06/17/2018

* Calibration due date is dependent on users regulatory requirements.

EFFICIENCY SHEET

Instrument ID: 146780

As Found Alpha Threshold (mV)	As Left Alpha Threshold (mV)
172.5	172.5

Alpha Source: Efficiency determined using Th^{230} #119738

Parameter and Tolerance	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Source Count, C_s	30,561	30,681	3,688	3,607
Time, T_s (min)	5	5	5	5
Rate, R_s (cpm)	$R_{s[\alpha]} = 6{,}113.2$	$R_{s[\alpha]} = 6{,}136.2$	$R_{s[\beta]} = 737$	$R_{s[\beta]} = 721.4$
4π EFF (% Net cpm/dpm) (>25%)	32.86%	32.99%	N/A	N/A
2π EFF (% Net cpm/emissions)	70.75%	71.04%	N/A	N/A

As Found Beta Low Threshold	As Left Beta Low Threshold	As Found Beta High Threshold	As Left Beta High Threshold
4.0 mV	4.0 mV	50.0 mV	50.0 mV

Beta Source: Efficiency determined using Sry^{90} #129676

Parameter and Tolerance	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Source Count, C_s	18	29	18,728	18,884
Time, T_s (min)	5	5	5	5
Rate, R_s (cpm)	$R_{s[\alpha]} = 3.6$	$R_{s[\alpha]} = 5.8$	$R_{s[\beta]} = 3{,}745.6$	$R_{s[\beta]} = 3{,}776.8$
4π EFF (% Net cpm/dpm) (>10%)	N/A	N/A	30.09%	33.3%
2π EFF (% Net cpm/emissions)	N/A	N/A	46.97%	47.4%

Statement of Certification

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Calibrated By: Reviewed By: M. Paul Date: 6/20/2017

Calibration Date: 06/17/2017

* Calibration Due (6 mo.): 12/17/2017

* Calibration Due (12 mo.): 06/17/2018

* Calibration due date is dependent on users regulatory requirements.

Instrument ID: 146780

Source and Background Plateau Worksheet								
High Voltage	Background		Alpha Source		Beta Source		Cross Talk	
	Alpha	Beta	Alpha	Beta	Alpha	Beta	α to β	β to α
600								
650								
700								
750								
800								
850	Plateau not required—All As Founds within tolerance							
900								
950	As Found HV = As Left HV							
1000								
1050								
1100								
1150								

Statement of Certification

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By: M. Paul Date: 6/20/2017
Calibration Date: 06/17/2017	* Calibration Due (6 mo.): 12/17/2017 * Calibration Due (12 mo.): 06/17/2018

* Calibration due date is dependent on users regulatory requirements.

Ludlum Model 2929	**Serial Number:**	146780	
Beta Background (cpm):	43.2	**Alpha Background (cpm):**	0.3
Beta Source Nuclide:	Tc99	**Alpha Source Nuclide:**	Th230
Beta Source ID Number:	99608	**Alpha Source ID Number:**	119738

Spreadsheet Modified and V&V by Jeff Dickinson on 3/30/04

Chi-Square and Control Chart Data:

Beta Source Count Number (N)	Beta Source Source Count (x)	Alpha Source Count Number (N)	Alpha Source Source Count (x)
1	5529	1	6,126
2	5457	2	6087
3	5580	3	5977
4	5560	4	6061
5	5602	5	6040
6	5485	6	5995
7	5491	7	6059
8	5612	8	6145
9	5644	9	5922
10	5744	10	6239
11	5503	11	6086
12	5503	12	6181
13	5523	13	6217
14	5412	14	5995
15	5545	15	6139
16	5712	16	6098
17	5588	17	6257
18	5557	18	6088
19	5655	19	6062
20	5637	20	6145

Print Macros:

Beta Source Data/Chart

Alpha Source Data/Chart

Source and Background Plateau Worksheet

High Voltage	Background Alpha	Background Beta	Alpha Source Alpha	Alpha Source Beta	Beta Source Alpha	Beta Source Beta	Cross Talk α to β	Cross Talk β to α
600	N/A	N/A	N/A	N/A	N/A	N/A	#VALUE!	#VALUE!
650							0.00%	0.00%
700							0.00%	0.00%
750							0.00%	0.00%
800							0.00%	0.00%
850							0.00%	0.00%
900							0.00%	0.00%
950							0.00%	0.00%
1000							0.00%	0.00%
1050							0.00%	0.00%
1100							0.00%	0.00%
1150							0.00%	0.00%
1200							0.00%	0.00%
1250							0.00%	0.00%
1300							0.00%	0.00%

Computer Equivalent of Form IN-WI-235-F1 (Page 4 of 6)

Beta Source Chi-Square Test

Ludlum Model 2929 Serial Number: 146780 Tc99 99608

Count Number (N)	Source Count (x)	x-Mean	(x-Mean)²
1	5529	-37.95	1440.20
2	5457	-109.95	12089.00
3	5580	13.05	170.30
4	5560	-6.95	48.30
5	5602	35.05	1228.50
6	5485	-81.95	6715.80
7	5491	-75.95	5768.40
8	5612	45.05	2029.50
9	5644	77.05	5936.70
10	5744	177.05	31346.70
11	5503	-63.95	4089.60
12	5503	-63.95	4089.60
13	5523	-43.95	1931.60
14	5412	-154.95	24009.50
15	5545	-21.95	481.80
16	5712	145.05	21039.50
17	5588	21.05	443.10
18	5557	-9.95	99.00
19	5655	88.05	7752.80
20	5637	70.05	4907.00
Σ=	111339	(x-Mean)² =	135616.95

Mean = 5566.95 Chi² = 24.36

σ = 84.49 2σ= 168.9702

Reduce Chi Square= 1.282162 3σ= 253.46

Reduced Chi Pass/Fail= PASS

Performed By/Date _____ / 6/17/17

Reviewed By/Date M. Paul / 6/20/2017

Computer Equivalent of Form IN-WI-235-F1 (Page 4 of 6)

Alpha Source Chi-Square Test

Ludlum Model 2929	Serial Number:	146780	Source Nuclide Th230	Source ID 119738

Count Number (N)	Source Count (x)	x-Mean	(x-Mean)²
1	6126	30.05	903.00
2	6087	-8.95	80.10
3	5977	-118.95	14149.10
4	6061	-34.95	1221.50
5	6040	-55.95	3130.40
6	5995	-100.95	10190.90
7	6059	-36.95	1365.30
8	6145	49.05	2405.90
9	5922	-173.95	30258.60
10	6239	143.05	20463.30
11	6086	-9.95	99.00
12	6181	85.05	7233.50
13	6217	121.05	14653.10
14	5995	-100.95	10190.90
15	6139	43.05	1853.30
16	6098	2.05	4.20
17	6257	161.05	25937.10
18	6088	-7.95	63.20
19	6062	-33.95	1152.60
20	6145	49.05	2405.90
Σ=	121919	(x-Mean)² =	147760.95

Mean = 6095.95

Chi² = 24.24

σ = 88.19

2σ= 176.3733779

Reduce Chi Square= 1.275747

3σ= 264.56

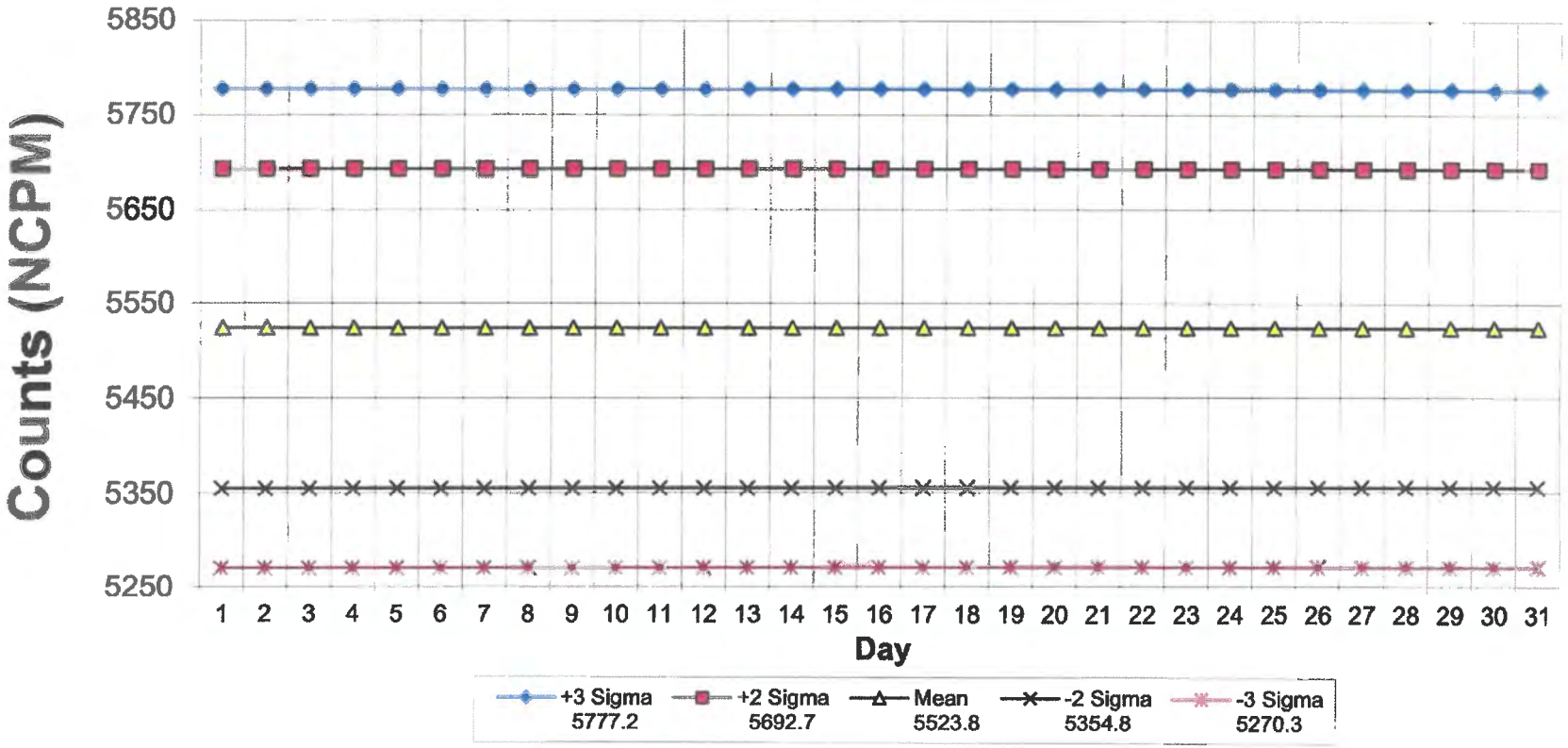
Reduced Chi Pass/Fail= PASS

Performed By/Date _____ / 6/17/17

Reviewed By/Date M. Pauli / 6/20/2017

Control Chart **Month Of**_____**20**_____

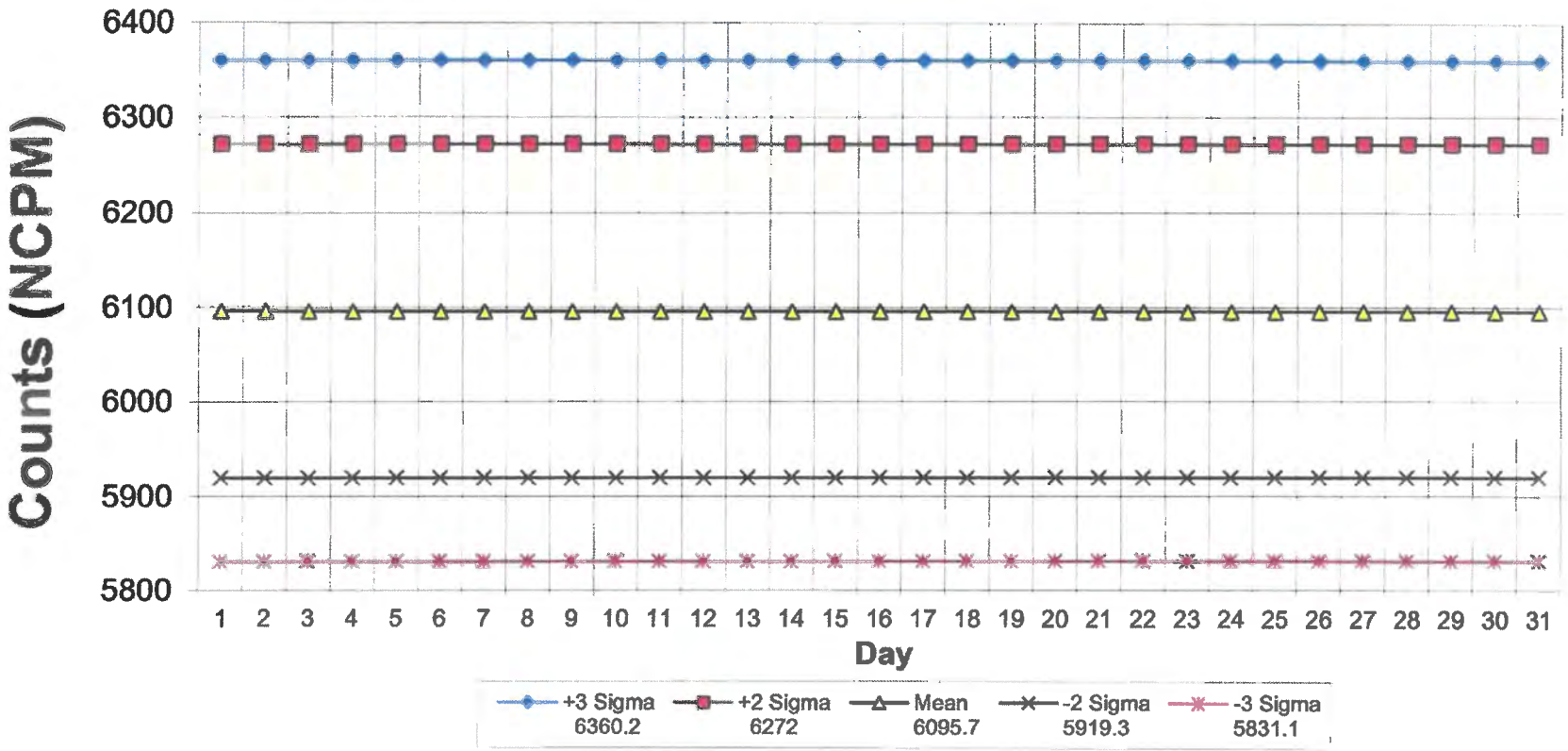
Instrument_____, **Source#**_____, **Isotope**_____



Reviewed By_____Date_____

Control Chart Month Of_____20_____

Instrument_____, Source#_____, Isotope_____



Reviewed By_____Date_____

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

Energy*Solutions* Services, Inc.
1570 Bear Creek Rd
Oak Ridge, TN 37830
Phone: (877) 462-4873
Fax: (865) 220-1346
Email: ISFStaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Energy*Solutions* Instrument Services		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 2350-1	Serial Number: 203475
Contact Name: Mike Pauli		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: 2018-15781	Calibration Method: Electronic	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range (CPM)	Calibration Standard Value (CPM)	Instrument Response (±10%)		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with CP-IN-WI-239	
400	400	399	399	Pulser: 151067	Cal Due: 02/28/2018
4,000	4,000	3,989	3,989	DVM: 94710023	Cal Due: 03/07/2018
40,000	40,000	39,886	39,886	Temp / Press: 3314	Cal Due: 02/01/2018
400,000	400,000	398,868	398,868	Humidity: 992290	Cal Due: 03/13/2018
HV Cal Values (M2350 HV Entry)	Desired HV Tolerance (Voltmeter) (VDC)	As Found (VDC)	As Left (VDC)	CP Firmware Version: 37122N28 I/O Firmware Version: 37123N05	
500	(490 - 510)	498	498		
1,500	(1,498 - 1,502)	1,499	1,499	Temp: 18.7 °C Pressure: 752 mmHg Humidity: 12.1 %	
2,000	(1,940 - 2,060)	1,997	1,997		
Parameter	**Tolerance (±10%)**	**As Found**	**As Left**		
Threshold T = 100	10 ± (9 to 11) mVDC	10.5	10.5	BAT > 4.5: SAT	
Threshold T = 500	50 ± (45 to 55) mVDC	51.3	51.3	Volume: SAT	ACK / Scroll: SAT
Threshold T = 1000	100 ± (90 to 110) mVDC	102	102	Audio Divide: SAT	Count: SAT
Window Width W = 100	10 ± (9 to 11) mVDC	9.6	9.6	Backlight: SAT	Alarms: SAT
Display-to-mV ratio:	100 to 10 mV			Overload Test: SAT	Physical Cond: SAT

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: M. Pauli	Reviewed By: J. Wilson	Date: 1/19/18
Calibration Date: 01/18/2018	* Certification Due (6 mo.): 07/18/2018 * Certification Due (12 mo.): 01/18/2019	

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFStaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Detector Model: 44-10
Contact Name: Mike Pauli		Serial Number: 185844
Customer Purchase Order Number: N/A	Work Order Number: 2017-15322	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION			
1) Source Nuclide: Cs^{137}	Serial Number: 019454	Activity: 5µCi nominal	Certification Date: N/A (Used for Plateau Only)
2) Source Nuclide: Cs^{137}	Serial Number: 049711	Activity: Variable	Due Date: 09/16/2017

Scaler Information		Precision Test	mR/Hr (Source #2)
2350-1	#95352	Count 1	2.00
Due Date	10/17/2017	Count 2	2.01
Threshold	T=100 (10mV)	Count 3	1.99
Cable Length	5ft	Average	2.00
Temp/Press: 3590	Cal Due: 11/30/2017	Tolerance ±10%	All counts within ±10% of Average
Humidity Pen: 958670	Cal Due: 12/06/2017	Pass/Fail	
Temp: 24.8 °C		Humidity: 41%	Press: 739 mmHg

Low Sample Activity (400uR/hr): Using Source #2 = 70,500	High Sample Activity (2mR/hr) Using Source #2 = 264,384	Dead Time (DT): 1.418247E-05	Calibration Constant (CC): 5.768112E+10

ATTACHMENTS			DETECTOR DATA: DOSE RATE PROBES (mR/Hr)			
Detector Setup Report	√YES	NO	Desired Exposure	Tolerance ±10%	As Found	As Left
Barcode Report	√YES	NO	0.400	0.360-0.440	0.406	0.406
Voltage Plateau:	√YES	NO	0.900	0.810 – 0.990	0.874	0.874
High Voltage: 950V			2	1.8-2.2	2.00	2.00

COMMENTS

Detectors set up with a 2350-1 may be used with any 2350-1 provided that the 2350-1 to be used is in calibration and the setup parameters are scanned into the 2350-1 prior to use with that specific detector

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: M. Pauli	Reviewed By: [signature]	Date: 4/25/17
Certification Date: 04/21/2017	*Certification Due (6mo): 10/21/2017	
	*certification Due (12mo): 04/21/2018	

* Calibration due date is dependant on users regulatory requirements.

background plateau 44-10#185844 2/22/2017

750	1139
800	1212
850	1131
900	1237
950	1186
1000	1145
1050	1089
1100	1132
1150	1128
1200	1234
1250	1453
1300	2171
1350	3582

source plateau Cs-137#1296117 5uCi

700	4254
750	4537
800	4609
850	4854
900	4933
950	4844
1000	4835
1050	4978
1100	4804
1150	4923
1200	4978
1250	5465
1300	7204
1350	9903

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D1 in the Model 2350.
Today's date is 04/21/2017.
The current time of day is: 14:14:20.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: _____

Comments:

Model 2350 Serial # =	95352.
User I.D. =	
High Voltage =	950 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	12 seconds.
Readout Units =	R.
Readout Time Base =	hr.
Readout Range Multiplier =	auto.
Detector Dead Time =	1.418247E-05.
Detector Calibration Constant =	5.768112E+10.
Detector Model =	44-10DOSE.
Detector Serial # =	185844.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.8 volts.

det1 Generated: 04/21/2017 14:13:02.

Model 2350 Serial #95352

H950$R
Set High Voltage: 950

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F12$E
Set Scaler Count Time: 12

SU4$F
Set Readout Units = R

SB2$.
Set Readout Time Base = hr

SM0$3
Set Readout Range Multiplier = auto

SL1.418247E-05$Z
Set Dead Time: 1.418247E-05

SC5.768112E+10$U
Set Calibration Constant: 5.768112E+10

M44-10DOSE$D
Set Detector Model: 44-10DOSE

N185844$6
Set Detector Serial #: 185844

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP1$7
SAVE PARAMETERS AS D1

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D2 in the Model 2350.
Today's date is 04/21/2017.
The current time of day is: 14:14:42.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: _____

Comments:

Model 2350 Serial # =	95352.
User I.D. =	
High Voltage =	950 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	1.420000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	44-10CPM.
Detector Serial # =	185844.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.8 volts.

det2 Generated: 04/21/2017 14:13:38.

Model 2350 Serial #95352

H950$R
Set High Voltage: 950

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL1.420000E-05$F
Set Dead Time: 1.420000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M44-10CPM$-
Set Detector Model: 44-10CPM

N185844$6
Set Detector Serial #: 185844

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP2$8
SAVE PARAMETERS AS D2

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Fax: (865) 220-1346

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Energy*Solutions* Services, Inc.		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Model: 2360	Serial Number: 297758
Contact Name: Mike Pauli		Probe: 43-93	Serial Number: 299597
Customer Purchase Order Number: N/A	Work Order Number: 2018-15832	Calibration Method: Electronic	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Tolerance (cpm) (± 10%)	Ratemeter Response		Calibration Standard Value (CPM)	Time Base (minutes)	Tolerances (cpm) ± 2%	Scaler Response	
			As Found	As Left				As Found	As Left
X 1	100	90 - 110	100	100	40,000 CPM	0.1	3,920-4,080	3,987	3,987
X 1	250	225 - 275	250	250	40,000 CPM	0.5	19.6K-20.4K	19,935	19,935
X 1	400	360 – 440	400	400	40,000 CPM	1	39.2K-40.8K	39,863	39,863
X 10	1,000	900 – 1,100	1,000	1,000	40,000 CPM	2	78.4K–81.6K	79,726	79,726
X 10	2,500	2,250 – 2,750	2,500	2,500					
X 10	4,000	3,600 – 4,400	4,000	4,000					
X 100	10,000	9,000 – 11,000	10,000	10,000					
X 100	25,000	22,500 – 27,500	25,000	25,000					
X 100	40,000	36,000 – 44,000	40,000	40,000					
X 1000	100,000	90,000 – 110,000	100,000	100,000	Calibrated in accordance with OEM Technical Manual				
X 1000	250,000	225,000 – 275,000	250,000	250,000					
X 1000	400,000	360,000 – 440,000	400,000	400,000					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: M. Pauli	Reviewed By: [signature] Date: 2/15/18
Calibration Date: 02/14/2018	*Calibration Due (6mo): 08/14/2018
	*Calibration Due (12mo): 02/14/2019

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

Model: 2360 Serial Number: 297758

M&TE					Environmental Conditions		
Volt Meter	ID#	94710023	Cal Due:	03/07/2018	Barometer	ID# A070146	Cal Due: 03/13/18
Pulser	ID#	151067	Cal Due:	02/28/2018	Thermometer	ID# A070146	Cal Due: 03/13/18
Humidity	ID#	992290	Cal Due:	03/13/2018	Temp: 21.4°C	Pressure: 751 mmHg	Humidity: 44 %

Special Test			
Mechanical Zero	Sat (√) Unsat ( )	Geotropism	Sat (√) Unsat ( )
LCD Display Check	Sat (√) Unsat ( )	Audio Check	Sat (√) Unsat ( )
BAT Check	Sat (√) Unsat ( )	Low BAT Set	Sat (√) Unsat ( )
Reset	Sat (√) Unsat ( )	Physical Condition	Sat (√) Unsat ( )
HV Analog Display	Sat (√) Unsat ( )	As Found	As Left

High Voltage Calibration (± 10%)				Alpha Sensitivity = 124 mv	Alpha Sensitivity = 120 mv
Voltage	Tolerance	As Found	As Left	Beta Sensitivity = 3.8 mv	Beta Sensitivity = 3.5 mv
500	450-550	502	502	Beta Window = 31.4 mv	Beta Window = 30 mv
1000	900-1100	990	990	Beta Setpoints--Pulser counts detected at 3.5mv ± 1mv and shut off at 30mv for beta. For Alpha channel counts detected at 120mv and above.	
1500	1350-1650	1,476	1,476		
H.V. Set With Detector Not Connected				Overload to be set with detector to be used	

COMMENTS

Calibrated in accordance with OEM Technical Manual

See detector certificate for High Voltage setting

Calibrated with 5ft cable

Instrument	
Calibrated By: M. Paul	Reviewed By: [signature] Date: 2/15/18
Calibration Date: 02/14/2018	*Calibration Due (6mo): 08/14/2018
	*Calibration Due (12mo): 02/14/2019

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISFstaff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Services, Inc.		Manufacturer: Ludlum
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Detector Model: 43-93
Contact Name: Mike Pauli		Serial Number: 299597
Customer Purchase: Order Number: N/A	Work Order Number: 2018-15837	Evaluation Method: Source

DETECTOR EVALUATION INFORMATION

Source Nuclide	Serial Number	Activity (dpm)	2 Pi Emissions	Net Response (cpm)	4pi Eff (%) **	2pi Eff (%) **
Th-230	051301	20,694	10,450 / min	4,649	22.5	44.4
Tc-99	051304	24,330	13,380 / min	4,191	17.2	31.3
Pu^{239}	101501	24,222	12,230 / min	5,341	22.1	43.7
SrY-90	101502	42,348	24,211 / min	14,373	33.9	59.4

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background	Operating Voltage	Threshold
2360	297758	02/14/2019	0.8	900 V	Alpha (120 mV)
2360	297758	02/14/2019	201.8	900 V	Beta (3.5 - 30 mV)

ATTACHMENTS

Voltage Plateau: √ YES NO

MDA/Cross Talk Evaluation: √ YES NO

COMMENTS

Calibrated with 5ft. cable

Linearity test performed with Tc-99, #051304.

Calibrated in accordance with original equipment technical manual.

** Efficiencies done on contact with detector screen.

LINEARITY TEST (Gross Counts)

Count 1 (Toe)	4,248
Count 2 (Mid)	4,362
Count 3 (Heel)	4,568
Average	4,393
Pass/Fail	PASS (+/-10% Tolerance)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector

Certified By: M. Pauli

Reviewed By: [signature]

Date: 2-15-18

Certification Date: 02/14/2018

* Certification Due (6 mo.): 08/14/2018

* Certification Due (12 mo.): 02/14/2019

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc
1570 Bear Creek Road
Oak Ridge, TN 37830

Phone: (877) 462-4873
Fax: (865) 220-1346
Email: Isfstaff@energysolutions.com

http://www.energysolutions.com/

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION				INSTRUMENT INFORMATION			
Customer Name:	EnergySolutions Services, Inc.			Manufacturer:			
Address:	1570 Bear Creek Rd., Oak Ridge, TN 37830			Model:	2360	S.N.	297758
Contact Name:	Mike Pauli			Probe:	43-93	S.N.	299597
Customer PO No.:	N/A	Work Order Number:	2018-15837	Calibration Method:	Source		

Source Information

	Isotope	Source ID	Certifcation Date	Activity (dpm)
α Source	Pu-239	101501	11/1/15	24,222
β Source	Tc-99	051304	5/15/13	24,330

Ludlum Model 43-93 High Voltage Plateau with crosstalk

Operating Voltage	High Voltage	Background		Alpha Source		Beta Source		Crosstalk		Efficiency	
		Alpha	Beta	Alpha	Beta	Alpha	Beta	α to β	β to α	α	β
	850	4	134	5,119	273	1	3,351	2.72%	0.00	21.12%	13.22%
	875	1	173	5,168	343	1	3,844	3.29%	0.00%	21.33%	15.09%
SET	**900**	**2**	**200**	**5,297**	**494**	**1**	**4,444**	**5.55%**	**0.00**	**21.86%**	**17.44%**
	925	1	213	5,371	697	1	4,827	9.38%	0.00%	22.17%	18.96%
	950	2	277	5,453	932	2	5,185	12.65%	0.00%	22.50%	20.17%

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Comments:

Calibrated By: M. Pauli Reviewed By: Date: 2-15-18

Calibration Date: 2/14/18 Calibration Due: 2/14/19

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc.
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Fax: (865) 220-1346

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: EnergySolutions Services, Inc.		Manufacturer: Ludlum	
Address: 1570 Bear Creek Road, Oak Ridge, TN 37830		Model: 2360	Serial Number: 268488
Contact Name: Mike Pauli		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: 2017-15616	Calibration Method: Electronic	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value (CPM)	Ratemeter (CPM) Response (± 10% of Standard Values)		Calibration Standard Value	Time Base (minutes)	Tolerances (counts) ± 2%	Scaler Response (counts)	
		As Found	As Left				As Found	As Left
X 1	100	100	100	40,000 CPM	0.1	3,920 - 4,080	3,978	3,978
X 1	250	250	250	40,000 CPM	0.5	19.6K - 20.4K	19,891	19,891
X 1	400	400	400	40,000 CPM	1	39.2K - 40.8K	39,788	39,788
X 10	1,000	1,000	1,000	40,000 CPM	2	78.4K - 81.6K	79,587	79,587
X 10	2,500	2,500	2,500					
X 10	4,000	4,000	4,000					
X 100	10,000	10,000	10,000					
X 100	25,000	25,000	25,000					
X 100	40,000	40,000	40,000					
X 1000	100,000	100,000	100,000	Calibrated in accordance with OEM Technical Manual				
X 1000	250,000	250,000	250,000					
X 1000	400,000	400,000	400,000					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: M. Paul	Reviewed By: J. Nilemso Date: 10/30/17
Calibration Date: 10/27/2017	* Calibration Due (6 mo.): 04/27/2018
	* Calibration Due (12 mo.): 10/27/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

Model: 2360 Serial Number: 268488

M&TE					Environmental Conditions			
Volt Meter	ID#	94710023 ~~958670~~ 10-30-17	Cal Due:	3/7/2018 ~~12/06/2017~~ 10-30-17	Barometer	ID#	3590	Cal Due: 11/30/17
Pulser	ID#	151067	Cal Due:	02/28/2018	Thermometer	ID#	3590	Cal Due: 11/30/17
Humidity	ID#	958670	Cal Due:	12/06/2017	Temp: 23.2°C	Pressure: 738 mmHg		Humidity: 38.5 %

Special Test

Mechanical Zero	Sat (√) Unsat ( )	Geotropism	Sat (√) Unsat ( )
LCD Display Check	Sat (√) Unsat ( )	Audio Check	Sat (√) Unsat ( )
BAT Check	Sat (√) Unsat ( )	Low BAT Set	Sat (√) Unsat ( )
Reset	Sat (√) Unsat ( )		
HV Analog Display	Sat (√) Unsat ( )	As Found	As Left

High Voltage Calibration (± 10%)

Voltage	Tolerance	As Found	As Left
500	450 - 550	545	503
1,000	900 - 1,100	1,036	993
1,500	1,350 - 1,650	1,548	1,499

Alpha Sensitivity = 125 mV	Alpha Sensitivity = 120 mV
Beta Sensitivity = 3.8 mV	Beta Sensitivity = 3.5 mV
Beta Window = 35.6 mV	Beta Window = 30 mV

Beta Setpoints--Pulser counts detected at 3.5 mV ± 1 mV and shut off at 30 mV for beta. For Alpha channel counts detected at 120 mV and above.

H.V. Set With Detector Not Connected

Overload to be set with detector to be used

COMMENTS

Calibrated in accordance with OEM Technical Manual

See detector certificate for High Voltage setting

Calibrated with 8ft cable

Instrument Calibrated By: M. Paul	Reviewed By: Jeff Dulemin Date: 10/30/17
Calibration Date: 10/27/2017	* Calibration Due (6 mo.): 04/27/2018
	* Calibration Due (12 mo.): 10/27/2018

* Calibration due date is dependent on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISI staff@ energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Detector Model: 43-37B
Contact Name: Mike Pauli		Serial Number: 190672
Customer Purchase Order Number: N/A	Work Order Number: 2017-15616	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Tc^{99}	Serial Number: 099608	Activity: 21,311 dpm	2 Pi Emissions: 10,499/min	Certification Date: 08/08/1996

Parameter	As Found	As Left	Precision Test	CPM
Count 1	4,862	4,862	Count 1 (Heel)	4,866
Count 2	4,774	4,774	Count 2 (Center)	4,648
Count 3	4,543	4,543	Count 3 (Toe)	4,307
Count 4	4,662	4,662	Average	4,607
Count 5	4,547	4,547	Tolerance	±10%
Count 6	4,584	4,584	Pass/Fail	Pass
Average	4,662	4,662		
Background (CPM)	772.8	772.8		
Net Counts	3,889	3,889		
2pi Efficiency	37.0%	37.0%		
4pi Efficiency	18.2%	18.2%		

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): N/A	Calibration Constant (CC): N/A

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2360	268488	10/27/2018	772.8	1750V	Alpha (120mV) Beta (3.5-30mV)

Detector Setup Report YES NO √	Barcode Report YES NO √	Voltage Plateau YES √ NO

COMMENTS

5 minute background performed Efficiency performed on contact with 8ft cable 2 layer mylar (0.8mg/cm2)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: M. Pauli	Reviewed By: [illegible]	Date: 10/30/17
Certification Date: 10/30/2017	*Certification Due (6mo): 04/30/2018	
	* Certification Due (12mo): 10/30/2018	

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Instrument Services
1570 Bear Creek Road
Oak Ridge, TN 37830
Phone: (877) 462-4873
Email: ISI staff@energysolutions.com

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: EnergySolutions Instrument Services		Manufacturer: Ludlum
Address: 1570 Bear Creek Road Oak Ridge, TN 37830		Detector Model: 43-37A
Contact Name: Mike Pauli		Serial Number: 190672
Customer Purchase Order Number: N/A	Work Order Number: 2017-15616	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Th^{230}	Serial Number: 051301	Activity: 20,694 dpm	2 Pi Emissions: 10,450 /min	Certification Date: 05/15/2013

Parameter	As Found	As Left	Precision Test	CPM
Count 1	2,865	2,865	Count 1 (Heel)	3,012
Count 2	2,986	2,986	Count 2 (Center)	3,169
Count 3	3,145	3,145	Count 3 (Toe)	3,329
Count 4	3,270	3,270	Average	3,170
Count 5	3,338	3,338	Tolerance	±10%
Count 6	3,354	3,354	Pass/Fail	Pass
Average	3,160	3,160		
Background (CPM)	3.8	3.8		
Net Counts	3,156	3,156		
2pi Efficiency	30.2%	30.2%		
4pi Efficiency	15.3%	15.3%		

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): N/A	Calibration Constant (CC): N/A

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2360	268488	10/27/2018	3.8	1750V	Alpha (120mV) Beta (3.5-30mV)

Detector Setup Report YES NO √	Barcode Report YES NO √	Voltage Plateau YES √ NO

COMMENTS

5 minute background performed Efficiency performed on contact with 8ft cable 2 layer mylar (0.8mg/cm2)

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: M. Pauli	Reviewed By: [signature]	Date: 10/30/17
Certification Date: 10/30/2017	*Certification Due (6mo): 04/30/2018	
	* Certification Due (12mo): 10/30/2018	

* Calibration due date is dependant on users regulatory requirements.

ENERGYSOLUTIONS

CALIBRATION CERTIFICATE

EnergySolutions Services, Inc
1570 Bear Creek Road
Oak Ridge, TN 37830

Phone: (877) 462-4873
Fax: (865) 220-1346
Email: lsfstaff@energysolutions.com

http://www.energysolutions.com/

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION				INSTRUMENT INFORMATION			
Customer Name:	EnergySolutions			Manufacturer:			
Address:	1570 Bear Creek Rd Oak Ridge, TN 37830			Model:	2360	S.N.	268488
Contact Name:	Mike Pauli			Probe:	43-37	S.N.	190672
Customer PO No.:	N/A	Work Order Number:	2017-15616	Calibration Method:	Source		

Source Information

	Isotope	Source ID	Certifcation Date	Activity (dpm)
α Source	Pu-239	071601	7/25/16	23,887
β Source	Tc-99	099608	8/8/96	21,311

Ludlum Model 43-37 High Voltage Plateau with crosstalk

Operating Voltage	High Voltage	Background		Alpha Source		Beta Source		Crosstalk		Efficiency	
		Alpha	Beta	Alpha	Beta	Alpha	Beta	α to β	β to α	α	β
	1,700	0.0	446.0	3,491.0	760.0	4.0	4,440.0	8.99%	0.10%	14.61%	18.74%
	1,725	0.0	662.0	3,800.0	866.0	8.0	4,675.0	5.37%	0.20%	15.91%	18.83%
SET	**1,750**	**3.0**	**784.0**	**4,104.0**	**1,094.0**	**4.0**	**4,539.0**	**7.56%**	**0.03%**	**17.17%**	**17.62%**
	1,775	6.0	838.0	4,397.0	1,197.0	13.0	4,075.0	8.18%	0.22%	18.38%	15.19%
	1,800	7.0	928.0	4,523.0	1,189.0	37.0	3,632.0	7.26%	1.11%	18.91%	12.69%

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Comments:

Calibrated using 8ft C cable assembly

Calibrated By: M Pauli Reviewed By: Jeff Dibrinso Date: 10/30/17

Calibration Date: 10/30/17 Calibration Due: 10/30/18

SEG# 049410

CERTIFICATE OF CALIBRATION

CUSTOM BETA STANDARD[1]

Radionuclide Tc-99 Activity 9.504 nCi Serial Number B399

Reference Date April 1, 1994 Half-Life[2] $(2.13 \pm 0.05) \times 10^5$ years

Beta Flux Rate (2 pi emission rate) 12131.9 particles/minute

PRINCIPAL EMISSIONS[2]

Type	Energy (keV)	Intensity (%)
beta	E_{max} = 294 E_{avg} = 85	100

SOURCE DESCRIPTION
The activity is homogeneously incorporated into the anodized layer of an aluminum plate. The active dimensions are 150 mm by 67 mm and the overall dimensions are 159 mm by 69 mm by 6.35 mm thick.

METHOD OF CALIBRATION
This is a provisional assay. Final assay results will be reported for this source upon completion of intercomparison with the National Institute of Standards and Technology.

The total activity and beta flux rate were calibrated on a wide-area gas-flow proportional counter using an efficiency determined through intercomparison with the National Institute of Standards and Technology.

North American Scientific, Inc. actively participates in the Radioactivity Measurements Assurance Program conducted by the National Institute of Standards and Technology in cooperation with the U.S. Council for Energy Awareness.

TOTAL UNCERTAINTY (99% Confidence Level)

Systematic uncertainty	± 3.08%
Weighing uncertainty	± 0.72%
Total uncertainty	± 3.80%

ORIGINAL

Daniel Oh 4-8-94

Calibration Laboratory Date

Notes

(1) A provisional assay is provided as specified in the Method of Calibration.
(2) Table of Radioactive Isotopes, 7th edition, 1986.

•LEAK TEST CERTIFICATION ON REVERSE•

North American Scientific, Inc. 7435 Greenbush Ave., North Hollywood, CA 91605 (818) 503-9201 Fax (818) 503-0764

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661·309·1010
Fax 661·257·8303

011404

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOURCE

Radionuclide:	Th-230	**Customer:**	ENERGYSOLUTIONS (ENVIROCARE)
Half-life:	(7.54 ± 0.03)E+04 years	**P.O. No.:**	639313
Catalog No.:	EAB-230-47U	**Reference Date:**	15-Feb-14 12:00 PST
Source No.:	L1-640	**Contained Radioactivity:**	7.383 **nCi** 273.2 **Bq**

Physical Description:

A. Capsule type:	Disk (47 mm OD x 0.76 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded oxide
C. Active diameter/volume:	45 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities:

None detected

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.5 %
B. Type B (systematic) uncertainty:	± 3.0 %
C. Uncertainty in aliquot weighing:	± 0.0 %
D. Total uncertainty at the 99% confidence level:	± 3.0 %

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a surface emission rate of 8278 α/min in 2π on 15-Jan-14.

Daniel James Van Dalsem
Quality Control

17-Jan-14
Date

EZIP Ref. No.: 1703-75

THE LEAK TEST(S) INDICATED BY THE CHECKED BOX(ES) WAS(WERE) APPLIED TO DETERMINE THE INTEGRITY OF THE SOURCE DESCRIBED ON THE FRONT SIDE. THE LEAK TESTS INDICATED BELOW WERE EITHER TAKEN DIRECTLY FROM ISO 9978:1992 OR DERIVED FROM THE LEAK TEST METHODS LISTED IN ISO 9978:1992. THE REGULATORY LIMIT FOR LEAK TEST RESULTS IS <5 nCi (185 Bq) FOR BOTH ALPHA AND BETA-GAMMA ACTIVITY. LEAK TEST RESULTS MARKED BELOW CONTAINED <5 nCi (185 Bq) OF REMOVABLE ACTIVITY UNLESS OTHERWISE STATED ON THIS CERTIFICATE.

✓ **Standard Wipe Test**

The source was wiped over its entire surface with a moistened filter paper disk. After drying, the disk was checked for activity using a scintillation detector.

☐ **Special Wipe Test**

The source was wiped over its entire surface with moistened polystyrene. The polystyrene was then dissolved in a liquid scintillation cocktail and counted in a liquid scintillation counter.

☐ **Distilled Water Soak Test**

The source was immersed in distilled water and maintained at (50 ± 5)°C for a minimum of four hours or room temperature (20 ± 5)°C for 24 hours. After removal of the source, the liquid was a) checked for activity using a liquid scintillation counter, or b) evaporated in a planchet and the residue checked for activity using a windowless proportional counter or end-window G.M. tube.

☐ **Liquid Scintillation Soak Test**

The source was immersed for a minimum of 3 hours at room temperature(20 ± 5)°C in a liquid scintillation cocktail, which does not attack the source's outer surface material. The source was stored away from light to avoid photoluminescence. The sealed source was then removed and the activity of the liquid scintillation cocktail was measured.

☐ **Gas Source Test**

The source was placed in a vacuum desiccator and maintained at a pressure of <10 mm Hg for not less than 12 hours. The activity was checked by introducing air into the desiccator and monitoring the air with an end-window G.M. tube.

☐ **Ampoule Leak Test**

The ampoule was kept in an inverted position on a filter paper disk or polystyrene wipe for a minimum of 16 hours. The wipe was then checked for activity using a scintillation detector or liquid scintillation counter.

☐ **Bubble Leak Test**

The container was pressurized to its fill pressure; then soapy water was applied over its valve and neck or, the valve and neck of the vessel were immersed in water. If no growing bubbles were observed, the container was considered leak free.

☐ **Wipe Test for Industrial Ni-63 Sources**

The sources were wipe tested by an approved sampling plan, which called for either 100% of the batch to be individually wipe tested, or, a subset thereof. The wipe test(s) used to test for removable contamination and the results of those tests are recorded on the front of this form.

☐ **Pressure Test for Triotech Kr-85 Sources**

Prior to filling the vessel with Kr-85 gas, the vessel was evacuated to <5 mm Hg, the gas manifold system shut off and the system allowed to stand for a minimum of 30 minutes. A vacuum difference not greater than the known vacuum loss of the manifold system itself signified the vessel did not leak.

☐ **Leak Test Not Applicable**

The active area of the source is uncovered or is protected by a very thin coating. Although the deposit is adherent, it is not designed or certified to pass a standard leak test. The inactive portions of the source have been checked using the standard wipe test or special wipe test depending on the nuclide.

☐ **Other Leak Test**

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661·309·1010
Fax 661·257·8303

011403

CERTIFICATE OF CALIBRATION
BETA STANDARD SOURCE

Radionuclide:	Tc-99	**Customer:**	ENERGYSOLUTIONS (ENVIROCARE)
Half-life:	(2.13 ± 0.05)E+05 years	**P.O. No.:**	639313
Catalog No.:	EAB-099-47U	**Reference Date:**	15-Feb-14 12:00 PST
Source No.:	L1-618	**Contained Radioactivity:**	9.862 **nCi** 364.9 **Bq**

Physical Description:

A. Capsule type:	Disk (47 mm OD x 0.76 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded Technetium metal
C. Active diameter/volume:	45 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities:

None detected

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	±	0.3	%
B. Type B (systematic) uncertainty:	±	3.0	%
C. Uncertainty in aliquot weighing:	±	0.0	%
D. Total uncertainty at the 99% confidence level:	±	3.0	%

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a surface emission rate of 12040 β/min in 2π on 15-Jan-14.

Daniel James Van Dalsem
Quality Control

17-Jan-14
Date

EZIP Ref. No.: 1703-75

THE LEAK TEST(S) INDICATED BY THE CHECKED BOX(ES) WAS(WERE) APPLIED TO DETERMINE THE INTEGRITY OF THE SOURCE DESCRIBED ON THE FRONT SIDE. THE LEAK TESTS INDICATED BELOW WERE EITHER TAKEN DIRECTLY FROM ISO 9978:1992 OR DERIVED FROM THE LEAK TEST METHODS LISTED IN ISO 9978:1992. THE REGULATORY LIMIT FOR LEAK TEST RESULTS IS <5 nCi (185 Bq) FOR BOTH ALPHA AND BETA-GAMMA ACTIVITY. LEAK TEST RESULTS MARKED BELOW CONTAINED <5 nCi (185 Bq) OF REMOVABLE ACTIVITY UNLESS OTHERWISE STATED ON THIS CERTIFICATE.

☑ **Standard Wipe Test**

The source was wiped over its entire surface with a moistened filter paper disk. After drying, the disk was checked for activity using a scintillation detector.

☐ **Special Wipe Test**

The source was wiped over its entire surface with moistened polystyrene. The polystyrene was then dissolved in a liquid scintillation cocktail and counted in a liquid scintillation counter.

☐ **Distilled Water Soak Test**

The source was immersed in distilled water and maintained at (50 ± 5)°C for a minimum of four hours or room temperature (20 ± 5)°C for 24 hours. After removal of the source, the liquid was a) checked for activity using a liquid scintillation counter, or b) evaporated in a planchet and the residue checked for activity using a windowless proportional counter or end-window G.M. tube.

☐ **Liquid Scintillation Soak Test**

The source was immersed for a minimum of 3 hours at room temperature(20 ± 5)°C in a liquid scintillation cocktail, which does not attack the source's outer surface material. The source was stored away from light to avoid photoluminescence. The sealed source was then removed and the activity of the liquid scintillation cocktail was measured.

☐ **Gas Source Test**

The source was placed in a vacuum desiccator and maintained at a pressure of <10 mm Hg for not less than 12 hours. The activity was checked by introducing air into the desiccator and monitoring the air with an end-window G.M. tube.

☐ **Ampoule Leak Test**

The ampoule was kept in an inverted position on a filter paper disk or polystyrene wipe for a minimum of 16 hours. The wipe was then checked for activity using a scintillation detector or liquid scintillation counter.

☐ **Bubble Leak Test**

The container was pressurized to its fill pressure; then soapy water was applied over its valve and neck or, the valve and neck of the vessel were immersed in water. If no growing bubbles were observed, the container was considered leak free.

☐ **Wipe Test for Industrial Ni-63 Sources**

The sources were wipe tested by an approved sampling plan, which called for either 100% of the batch to be individually wipe tested, or, a subset thereof. The wipe test(s) used to test for removable contamination and the results of those tests are recorded on the front of this form.

☐ **Pressure Test for Triotech Kr-85 Sources**

Prior to filling the vessel with Kr-85 gas, the vessel was evacuated to <5 mm Hg, the gas manifold system shut off and the system allowed to stand for a minimum of 30 minutes. A vacuum difference not greater than the known vacuum loss of the manifold system itself signified the vessel did not leak.

☐ **Leak Test Not Applicable**

The active area of the source is uncovered or is protected by a very thin coating. Although the deposit is adherent, it is not designed or certified to pass a standard leak test. The inactive portions of the source have been checked using the standard wipe test or special wipe test depending on the nuclide.

☐ **Other Leak Test**

SBG # 035404

CERTIFICATE OF CALIBRATION

CUSTOM ALPHA STANDARD[1]

Radionuclide Th-230 Activity 2.585 nCi Serial Number B403

Reference Date Feb. 1, 1994 Half-Life[2] $(7.54 \pm 0.03) \times 10^4$ years

Alpha Flux Rate (2 pi emission rate) 2869.4 particles/minute

PRINCIPAL EMISSIONS[2]

Type	Energy (keV)	Intensity (%)
alpha	4621.1	23.4
	4687.6	76.3

SOURCE DESCRIPTION
The activity is homogenously incorporated into the anodized layer of an aluminum plate. The active dimensions are 150 mm by 67 mm and the overall dimensions are 159 mm by 69 mm by 6.35 mm thick.

METHOD OF CALIBRATION
This is a provisional assay. Final assay results will be reported for this source upon completion of intercomparison with the National Institute of Standards and Technology.

The total activity and alpha flux rate were calibrated on a wide-area gas-flow proportional counter using an efficiency determined through intercomparison with the National Institute of Standards and Technology.

North American Scientific, Inc. actively participates in the Radioactivity Measurements Assurance Program conducted by the National Institute of Standards and Technology in cooperation with the U.S. Council for Energy Awareness.

TOTAL UNCERTAINTY (99% Confidence Level)

ORIGINAL

Systematic uncertainty	± 1.56%
Random uncertainty	± 0.97%
Total uncertainty	± 2.53%

Daniel J Thle
Calibration Laboratory

2-24-94
Date

Notes

(1) A provisional assay is provided as specified in the Method of Calibration.
(2) Table of Radioactive Isotopes, 7th edition, 1986.

•LEAK TEST CERTIFICATION ON REVERSE•

North American Scientific, Inc. 7435 Greenbush Ave., North Hollywood, CA 91605 (818) 503-9201 Fax (818) 503-0764

ENVIRO-EQUIPMENT, INC.

RAE SYSTEMS QRAE 3 CALIBRATION DATA SHEET

Serial Number: MØZAØØ8687 Date: Ø4/Ø3/18 Inspector: CSF

Battery Voltage: 4.1 VDC Date & Time: ✓ Alarm Mode = Auto Reset: ✓

Automatic Datalog: ✓ Datalog Cleared: ✓ Datalog Period = 60 Seconds: ✓

Sample Pump Flow: 354 cc/min Low Flow Alarm: ✓

Calibration Check (Performed at Room Temperature)

Calibration Gas	Calibration Gas Concentration	Reading	Tolerance
Methane	5Ø %LEL	5Ø % LEL	± 10%
Carbon Monoxide	5Ø PPM	5Ø PPM	± 10%
Hydrogen Sulfide	1Ø PPM	1Ø.Ø PPM	± 10%
Ambient Oxygen	20.9 %	2Ø.9 %	± 0.2%
Low Oxygen	18 %	18 %	± 0.2%

Fresh Air Zero: Done Span Cal: Done

Factory Alarm Setpoints

	Low	High	STEL	TWA
TOX 1 (CO)	35 ppm ✓	200 ppm ✓	100 ppm ✓	35 ppm ✓
TOX 2 (H2S)	10 ppm ✓	20 ppm ✓	15 ppm ✓	10 ppm ✓
Oxygen	19.5% ✓	23.5% ✓	N/A	N/A
LEL	10% ✓	20% ✓	N/A	N/A

INSPECTOR'S MAINTENANCE NOTES

Appendix E

Daily Instrument Response Check Data

Ambient Background Data

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2360		Instrument Serial No.	268488	
Last Calibration Date:	10/27/2017				
Detector Model:	43-37		Detector Serial No.:	190672	
Today's Date:	4/9/2018		Data Collected by:	Adolfo Matus Jr.	
X	Alpha		Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.302	
Type of Surface:	Ambient		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	4	-2.40		5.76
2	6	-0.40		0.16
3	5	-1.40		1.96
4	11	4.60		21.16
5	5	-1.40		1.96
6	2	-4.40		19.36
7	4	-2.40		5.76
8	4	-2.40		5.76
9	9	2.60		6.76
10	3	-3.40		11.56
11	7	0.60		0.36
12	8	1.60		2.56
13	7	0.60		0.36
14	4	-2.40		5.76
15	4	-2.40		5.76
16	6	-0.40		0.16
17	4	-2.40		5.76
18	8	1.60		2.56
19	3	-3.40		11.56
20	6	-0.40		0.16
21	10	3.60		12.96
22	9	2.60		6.76
23	7	0.60		0.36
24	8	1.60		2.56
25	6	-0.40		0.16
26	10	3.60		12.96
27	11	4.60		21.16
28	9	2.60		6.76
29	4	-2.40		5.76
30	8	1.60		2.56
Mean Count: $\bar{x}$	6.40		SUM	187.20
Standard Deviation (σ)	2.54		Variance:	6.46
Background Count Rate:		6.40	CPM + -	5.08 CPM

Background in dpm/100cm^2	
14.56	
CPM Low	CPM High
1.32	11.48

Calculations Completed by:	Adolfo Matus Jr.	Date:	4/9/2018
Reviewed by:	Daniel Spicuzza	Date:	4/9/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218					
Instrument Model:	2360		Instrument Serial No.	268488		
Last Calibration Date:	10/27/2017					
Detector Model:	43-37		Detector Serial No.:	190672		
Today's Date:	4/9/2018		Data Collected by:	Adolfo Matus Jr.		
	Alpha	X	Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.37		
Type of Surface:	Ambient		Count Time:	1	Minutes	

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	751	-14.87		221.02
2	803	37.13		1378.88
3	760	-5.87		34.42
4	765	-0.87		0.75
5	769	3.13		9.82
6	740	-25.87		669.08
7	718	-47.87		2291.22
8	731	-34.87		1215.68
9	758	-7.87		61.88
10	775	9.13		83.42
11	756	-9.87		97.35
12	742	-23.87		569.62
13	771	5.13		26.35
14	783	17.13		293.55
15	819	53.13		2823.15
16	737	-28.87		833.28
17	755	-10.87		118.08
18	769	3.13		9.82
19	745	-20.87		435.42
20	783	17.13		293.55
21	754	-11.87		140.82
22	759	-6.87		47.15
23	821	55.13		3039.68
24	778	12.13		147.22
25	812	46.13		2128.28
26	736	-29.87		892.02
27	791	25.13		631.68
28	766	0.13		0.02
29	790	24.13		582.42
30	739	-26.87		721.82
Mean Count: $\bar{x}$	765.87		SUM	19797.47
Standard Deviation (σ)	26.13		Variance:	682.67
Background Count Rate:		765.87	CPM + -	52.26

Background in dpm/100cm^2			
1422.62			
CPM Low	CPM High		
714	818		
CPM			

Calculations Completed by:	Adolfo Matus Jr.	Date:	4/9/2018
Reviewed by:	Daniel Spicuzza	Date:	4/9/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218		
Instrument Model:	2360	Instrument Serial No.	268497
Last Calibration Date:	10/10/2017		
Detector Model:	43-37	Detector Serial No.:	93965
Today's Date:	4/3/2018	Data Collected by:	Josefina Matus

X	Alpha		Beta-Gamma		Gamma

Remarks: Instrument Ambient Background Instrument Efficiency: 0.31

Type of Surface:	Ambient		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	6	1.40		1.96
2	4	-0.60		0.36
3	9	4.40		19.36
4	5	0.40		0.16
5	4	-0.60		0.36
6	6	1.40		1.96
7	3	-1.60		2.56
8	4	-0.60		0.36
9	3	-1.60		2.56
10	3	-1.60		2.56
11	3	-1.60		2.56
12	3	-1.60		2.56
13	8	3.40		11.56
14	8	3.40		11.56
15	5	0.40		0.16
16	5	0.40		0.16
17	4	-0.60		0.36
18	4	-0.60		0.36
19	4	-0.60		0.36
20	1	-3.60		12.96
21	2	-2.60		6.76
22	10	5.40		29.16
23	5	0.40		0.16
24	3	-1.60		2.56
25	8	3.40		11.56
26	2	-2.60		6.76
27	1	-3.60		12.96
28	5	0.40		0.16
29	5	0.40		0.16
30	5	0.40		0.16
Mean Count: $\bar{x}$	4.60		SUM	145.20
Standard Deviation (σ)	2.24		Variance:	5.01
Background Count Rate:		4.60	CPM + -	4.48 CPM

Background in dpm/100cm^2	
10.20	
CPM Low	CPM High
0.12	9.08

Calculations Completed by:	Josefina Matus	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2360		Instrument Serial No.	268497	
Last Calibration Date:	10/10/2017				
Detector Model:	43-37		Detector Serial No.:	93965	
Today's Date:	4/3/2018		Data Collected by:	Josefina Matus	
	Alpha	X	Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background		Instrument Efficiency:	0.352	
Type of Surface:	Ambient		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	733	-32.93		1084.60
2	736	-29.93		896.00
3	783	17.07		291.27
4	777	11.07		122.47
5	792	26.07		679.47
6	742	-23.93		572.80
7	756	-9.93		98.67
8	749	-16.93		286.74
9	738	-27.93		780.27
10	773	7.07		49.94
11	752	-13.93		194.14
12	750	-15.93		253.87
13	722	-43.93		1930.14
14	783	17.07		291.27
15	747	-18.93		358.47
16	718	-47.93		2297.60
17	791	25.07		628.34
18	760	-5.93		35.20
19	775	9.07		82.20
20	763	-2.93		8.60
21	774	8.07		65.07
22	803	37.07		1373.94
23	759	-6.93		48.07
24	753	-12.93		167.27
25	766	0.07		0.00
26	778	12.07		145.60
27	782	16.07		258.14
28	820	54.07		2923.20
29	821	55.07		3032.34
30	782	16.07		258.14
Mean Count: $\bar{x}$	765.93		SUM	19213.87
Standard Deviation (σ)	25.74		Variance:	662.55
Background Count Rate:		765.93	CPM + -	51.48

Background in dpm/100cm^2	
1495.50	
CPM Low	CPM High
714	817

Calculations Completed by:	Josefina Matus	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2360		Instrument Serial No.	276990	
Last Calibration Date:	3/20/2018				
Detector Model:	43-37		Detector Serial No.:	190620	
Today's Date:	4/3/2018		Data Collected by:	Josefina Matus	
X	Alpha		Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.287	
Type of Surface:	Ambient		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	7	-0.97		0.93
2	7	-0.97		0.93
3	13	5.03		25.33
4	3	-4.97		24.67
5	9	1.03		1.07
6	10	2.03		4.13
7	7	-0.97		0.93
8	2	-5.97		35.60
9	7	-0.97		0.93
10	7	-0.97		0.93
11	5	-2.97		8.80
12	7	-0.97		0.93
13	11	3.03		9.20
14	7	-0.97		0.93
15	8	0.03		0.00
16	4	-3.97		15.73
17	11	3.03		9.20
18	10	2.03		4.13
19	14	6.03		36.40
20	9	1.03		1.07
21	14	6.03		36.40
22	10	2.03		4.13
23	8	0.03		0.00
24	8	0.03		0.00
25	4	-3.97		15.73
26	9	1.03		1.07
27	9	1.03		1.07
28	8	0.03		0.00
29	5	-2.97		8.80
30	6	-1.97		3.87
Mean Count: $\bar{x}$	7.97		SUM	252.97
Standard Deviation (σ)	2.95		Variance:	8.72
Background Count Rate:		7.97	CPM + -	5.91 CPM

Background in dpm/100cm^2	
19.08	
CPM Low	CPM High
2.06	13.87

Calculations Completed by:	Josefina Matus	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2360		Instrument Serial No.	276990	
Last Calibration Date:	3/20/2018				
Detector Model:	43-37		Detector Serial No.:	190620	
Today's Date:	4/3/2018		Data Collected by:	Josefina Matus	
	Alpha	X	Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background		Instrument Efficiency:	0.396	
Type of Surface:	Ambient		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	916	-9.47		89.62
2	944	18.53		343.48
3	944	18.53		343.48
4	920	-5.47		29.88
5	892	-33.47		1120.02
6	989	63.53		4036.48
7	888	-37.47		1403.75
8	897	-28.47		810.35
9	904	-21.47		460.82
10	857	-68.47		4687.68
11	927	1.53		2.35
12	973	47.53		2259.42
13	915	-10.47		109.55
14	907	-18.47		341.02
15	908	-17.47		305.08
16	966	40.53		1642.95
17	943	17.53		307.42
18	875	-50.47		2546.88
19	928	2.53		6.42
20	948	22.53		507.75
21	952	26.53		704.02
22	941	15.53		241.28
23	913	-12.47		155.42
24	915	-10.47		109.55
25	945	19.53		381.55
26	969	43.53		1895.15
27	902	-23.47		550.68
28	1007	81.53		6647.68
29	850	-75.47		5695.22
30	929	3.53		12.48
Mean Count: $\bar{x}$	925.47		SUM	37747.47
Standard Deviation (σ)	36.08		Variance:	1301.64
Background Count Rate:		925.47	CPM + -	72.16

		Background in dpm/100cm^2	
		1606.21	
		CPM Low	CPM High
	CPM	853	998
Calculations Completed by:	Josefina Matus	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2360		Instrument Serial No.	297743	
Last Calibration Date:	10/10/2017				
Detector Model:	43-37		Detector Serial No.:	302111	
Today's Date:	4/3/2018		Data Collected by:	Richard Thatcher	
X	Alpha		Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.319	
Type of Surface:	Ambient		Count Time:	1	Minutes

Count Number	CPM	$(x - \overline{x})$		$(x - \overline{x})^2$
1	9	2.17		4.69
2	8	1.17		1.36
3	8	1.17		1.36
4	8	1.17		1.36
5	6	-0.83		0.69
6	10	3.17		10.03
7	6	-0.83		0.69
8	13	6.17		38.03
9	7	0.17		0.03
10	5	-1.83		3.36
11	6	-0.83		0.69
12	5	-1.83		3.36
13	6	-0.83		0.69
14	8	1.17		1.36
15	7	0.17		0.03
16	7	0.17		0.03
17	4	-2.83		8.03
18	6	-0.83		0.69
19	11	4.17		17.36
20	12	5.17		26.69
21	9	2.17		4.69
22	3	-3.83		14.69
23	6	-0.83		0.69
24	7	0.17		0.03
25	2	-4.83		23.36
26	5	-1.83		3.36
27	4	-2.83		8.03
28	7	0.17		0.03
29	3	-3.83		14.69
30	7	0.17		0.03
Mean Count: $\overline{x}$	6.83		SUM	190.17
Standard Deviation (σ)	2.56		Variance:	6.56
Background Count Rate:		6.83	CPM + -	5.12

Background in dpm/100cm^2	14.72
CPM Low	CPM High
1.71	11.95

Calculations Completed by:	Richard Thatcher	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2360		Instrument Serial No.	297743	
Last Calibration Date:	10/10/2017				
Detector Model:	43-37		Detector Serial No.:	302111	
Today's Date:	4/3/2018		Data Collected by:	Richard Thatcher	
	Alpha	X	Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.384	
Type of Surface:	Ambient		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	1076	-8.00		64.00
2	1053	-31.00		961.00
3	1074	-10.00		100.00
4	1036	-48.00		2304.00
5	1065	-19.00		361.00
6	1061	-23.00		529.00
7	1108	24.00		576.00
8	1057	-27.00		729.00
9	1067	-17.00		289.00
10	1132	48.00		2304.00
11	1064	-20.00		400.00
12	1111	27.00		729.00
13	1123	39.00		1521.00
14	1078	-6.00		36.00
15	1081	-3.00		9.00
16	1114	30.00		900.00
17	1050	-34.00		1156.00
18	1078	-6.00		36.00
19	1074	-10.00		100.00
20	1088	4.00		16.00
21	1119	35.00		1225.00
22	1143	59.00		3481.00
23	1063	-21.00		441.00
24	1103	19.00		361.00
25	1024	-60.00		3600.00
26	1078	-6.00		36.00
27	1120	36.00		1296.00
28	1071	-13.00		169.00
29	1110	26.00		676.00
30	1099	15.00		225.00
Mean Count: $\bar{x}$	1084.00		SUM	24630.00
Standard Deviation (σ)	29.14		Variance:	849.31
Background Count Rate:		1084.00	CPM + -	58.29

Background in dpm/100cm^2	1940.15
CPM Low	CPM High
1026	1142

Calculations Completed by:	Richard Thatcher	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218					
Instrument Model:	2360		Instrument Serial No.	193668		
Last Calibration Date:	8/15/2017					
Detector Model:	43-93		Detector Serial No.:	326725		
Today's Date:	4/3/2018		Data Collected by:	Joan Cosgrove		
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.497		
Type of Surface:	Ambient		Count Time:	1	Minutes	

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	1	-0.30		0.09
2	1	-0.30		0.09
3	2	0.70		0.49
4	0	-1.30		1.69
5	0	-1.30		1.69
6	0	-1.30		1.69
7	1	-0.30		0.09
8	0	-1.30		1.69
9	0	-1.30		1.69
10	1	-0.30		0.09
11	3	1.70		2.89
12	1	-0.30		0.09
13	0	-1.30		1.69
14	2	0.70		0.49
15	1	-0.30		0.09
16	0	-1.30		1.69
17	3	1.70		2.89
18	1	-0.30		0.09
19	0	-1.30		1.69
20	3	1.70		2.89
21	3	1.70		2.89
22	2	0.70		0.49
23	0	-1.30		1.69
24	1	-0.30		0.09
25	4	2.70		7.29
26	0	-1.30		1.69
27	5	3.70		13.69
28	3	1.70		2.89
29	0	-1.30		1.69
30	1	-0.30		0.09
Mean Count: $\bar{x}$	1.30		SUM	56.30
Standard Deviation (σ)	1.39		Variance:	1.94
Background Count Rate:		1.30	CPM + -	2.79

Background in dpm/100cm^2	
10.46	
CPM Low	CPM High
-1.49	4.09

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2360		Instrument Serial No.	193668	
Last Calibration Date:	8/15/2017				
Detector Model:	43-93		Detector Serial No.:	326725	
Today's Date:	4/3/2018		Data Collected by:	Joan Cosgrove	
	Alpha	X	Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.327	
Type of Surface:	Ambient		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	144	-6.37		40.53
2	138	-12.37		152.93
3	142	-8.37		70.00
4	132	-18.37		337.33
5	127	-23.37		546.00
6	153	2.63		6.93
7	144	-6.37		40.53
8	151	0.63		0.40
9	160	9.63		92.80
10	132	-18.37		337.33
11	145	-5.37		28.80
12	172	21.63		468.00
13	153	2.63		6.93
14	152	1.63		2.67
15	150	-0.37		0.13
16	157	6.63		44.00
17	159	8.63		74.53
18	162	11.63		135.33
19	160	9.63		92.80
20	157	6.63		44.00
21	163	12.63		159.60
22	153	2.63		6.93
23	141	-9.37		87.73
24	165	14.63		214.13
25	154	3.63		13.20
26	143	-7.37		54.27
27	139	-11.37		129.20
28	160	9.63		92.80
29	158	7.63		58.27
30	145	-5.37		28.80
Mean Count: $\bar{x}$	150.37		SUM	3366.97
Standard Deviation (σ)	10.78		Variance:	116.10
Background Count Rate:		150.37	CPM + -	21.55 CPM

Background in dpm/100cm^2	
1839.35	
CPM Low	CPM High
128.82	171.92

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218					
Instrument Model:	2360		Instrument Serial No.	297758		
Last Calibration Date:	2/14/2018					
Detector Model:	43-93		Detector Serial No.:	299597		
Today's Date:	4/3/2018		Data Collected by:	Thomas Hogan		
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.444		
Type of Surface:	Ambient		Count Time:	1	Minutes	

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	0	-0.57		0.32
2	0	-0.57		0.32
3	1	0.43		0.19
4	0	-0.57		0.32
5	0	-0.57		0.32
6	0	-0.57		0.32
7	2	1.43		2.05
8	1	0.43		0.19
9	0	-0.57		0.32
10	0	-0.57		0.32
11	1	0.43		0.19
12	1	0.43		0.19
13	1	0.43		0.19
14	0	-0.57		0.32
15	0	-0.57		0.32
16	0	-0.57		0.32
17	0	-0.57		0.32
18	0	-0.57		0.32
19	0	-0.57		0.32
20	2	1.43		2.05
21	1	0.43		0.19
22	1	0.43		0.19
23	0	-0.57		0.32
24	0	-0.57		0.32
25	1	0.43		0.19
26	0	-0.57		0.32
27	0	-0.57		0.32
28	2	1.43		2.05
29	2	1.43		2.05
30	1	0.43		0.19
Mean Count: $\bar{x}$	0.57		SUM	15.37
Standard Deviation (σ)	0.73		Variance:	0.53
Background Count Rate:		0.57	CPM + -	1.46 CPM

Background in dpm/100cm^2	
5.11	
CPM Low	CPM High
-1	2

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218					
Instrument Model:	2360		Instrument Serial No.		297758	
Last Calibration Date:	2/14/2018					
Detector Model:	43-93		Detector Serial No.:		299597	
Today's Date:	4/3/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.313		
Type of Surface:	Ambient		Count Time:	1	Minutes	

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	177	5.17		26.69
2	197	25.17		633.36
3	187	15.17		230.03
4	177	5.17		26.69
5	167	-4.83		23.36
6	147	-24.83		616.69
7	161	-10.83		117.36
8	167	-4.83		23.36
9	166	-5.83		34.03
10	176	4.17		17.36
11	188	16.17		261.36
12	167	-4.83		23.36
13	164	-7.83		61.36
14	155	-16.83		283.36
15	152	-19.83		393.36
16	193	21.17		448.03
17	163	-8.83		78.03
18	170	-1.83		3.36
19	169	-2.83		8.03
20	179	7.17		51.36
21	160	-11.83		140.03
22	165	-6.83		46.69
23	201	29.17		850.69
24	172	0.17		0.03
25	168	-3.83		14.69
26	175	3.17		10.03
27	156	-15.83		250.69
28	174	2.17		4.69
29	197	25.17		633.36
30	165	-6.83		46.69
Mean Count: $\bar{x}$	171.83		SUM	5358.17
Standard Deviation (σ)	13.59		Variance:	184.76
Background Count Rate:		171.83	CPM + -	27.19 CPM

Background in dpm/100cm^2	
2195.95	
CPM Low	CPM High
145	199

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218					
Instrument Model:	2360		Instrument Serial No.	297766		
Last Calibration Date:	12/20/2017					
Detector Model:	43-93		Detector Serial No.:	323074		
Today's Date:	4/3/2018		Data Collected by:	Thomas Hogan		
X	Alpha		Beta-Gamma		Gamma	
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.404		
Type of Surface:	Ambient		Count Time:	1	Minutes	

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	2	1.10		1.21
2	3	2.10		4.41
3	0	-0.90		0.81
4	0	-0.90		0.81
5	1	0.10		0.01
6	0	-0.90		0.81
7	0	-0.90		0.81
8	0	-0.90		0.81
9	1	0.10		0.01
10	0	-0.90		0.81
11	0	-0.90		0.81
12	0	-0.90		0.81
13	0	-0.90		0.81
14	4	3.10		9.61
15	0	-0.90		0.81
16	1	0.10		0.01
17	1	0.10		0.01
18	0	-0.90		0.81
19	1	0.10		0.01
20	1	0.10		0.01
21	1	0.10		0.01
22	1	0.10		0.01
23	0	-0.90		0.81
24	1	0.10		0.01
25	1	0.10		0.01
26	3	2.10		4.41
27	2	1.10		1.21
28	1	0.10		0.01
29	2	1.10		1.21
30	0	-0.90		0.81
Mean Count: $\bar{x}$	0.90		SUM	32.70
Standard Deviation (σ)	1.06		Variance:	1.13
Background Count Rate:		0.90	CPM + -	2.12 CPM

Background in dpm/100cm^2	
8.91	
CPM Low	CPM High
-1.22	3.02

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218					
Instrument Model:	2360		Instrument Serial No.		297766	
Last Calibration Date:	12/20/2017					
Detector Model:	43-93		Detector Serial No.:		323074	
Today's Date:	4/3/2018		Data Collected by:		Thomas Hogan	
	Alpha	X	Beta-Gamma			Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.254		
Type of Surface:	Ambient		Count Time:	1	Minutes	

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	173	2.60		6.76
2	190	19.60		384.16
3	180	9.60		92.16
4	180	9.60		92.16
5	167	-3.40		11.56
6	159	-11.40		129.96
7	176	5.60		31.36
8	202	31.60		998.56
9	179	8.60		73.96
10	158	-12.40		153.76
11	130	-40.40		1632.16
12	159	-11.40		129.96
13	170	-0.40		0.16
14	176	5.60		31.36
15	164	-6.40		40.96
16	178	7.60		57.76
17	168	-2.40		5.76
18	187	16.60		275.56
19	179	8.60		73.96
20	167	-3.40		11.56
21	151	-19.40		376.36
22	171	0.60		0.36
23	169	-1.40		1.96
24	174	3.60		12.96
25	159	-11.40		129.96
26	168	-2.40		5.76
27	158	-12.40		153.76
28	167	-3.40		11.56
29	172	1.60		2.56
30	181	10.60		112.36
Mean Count: $\bar{x}$	170.40		SUM	5041.20
Standard Deviation (σ)	13.18		Variance:	173.83
Background Count Rate:		170.40	CPM + -	26.37

Background in dpm/100cm^2			
2683.46			
CPM Low	CPM High		
144.03	196.77		
Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2360		Instrument Serial No.	184949	
Last Calibration Date:	3/6/2018				
Detector Model:	43-93		Detector Serial No.:	268605	
Today's Date:	4/3/2018		Data Collected by:	Joan Cosgrove	
X	Alpha		Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.423	
Type of Surface:	N/A		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	0	-1.23		1.52
2	0	-1.23		1.52
3	0	-1.23		1.52
4	0	-1.23		1.52
5	0	-1.23		1.52
6	0	-1.23		1.52
7	0	-1.23		1.52
8	0	-1.23		1.52
9	1	-0.23		0.05
10	0	-1.23		1.52
11	0	-1.23		1.52
12	1	-0.23		0.05
13	2	0.77		0.59
14	1	-0.23		0.05
15	2	0.77		0.59
16	3	1.77		3.12
17	2	0.77		0.59
18	2	0.77		0.59
19	2	0.77		0.59
20	0	-1.23		1.52
21	1	-0.23		0.05
22	2	0.77		0.59
23	2	0.77		0.59
24	1	-0.23		0.05
25	3	1.77		3.12
26	2	0.77		0.59
27	1	-0.23		0.05
28	3	1.77		3.12
29	2	0.77		0.59
30	4	2.77		7.65
Mean Count: $\bar{x}$	1.23		SUM	39.37
Standard Deviation (σ)	1.17		Variance:	1.36
Background Count Rate:		1.23	CPM + -	2.33 CPM

Instrument Background in DPM	
11.66	
CPM Low	CPM High
-1.1	3.6

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2360		Instrument Serial No.	184949	
Last Calibration Date:	3/6/2018				
Detector Model:	43-93		Detector Serial No.:	268605	
Today's Date:	4/3/2018		Data Collected by:	Joan Cosgrove	
	Alpha	X	Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.268	
Type of Surface:	N/A		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	143	4.27		18.20
2	133	-5.73		32.87
3	142	3.27		10.67
4	141	2.27		5.14
5	117	-21.73		472.34
6	148	9.27		85.87
7	134	-4.73		22.40
8	137	-1.73		3.00
9	139	0.27		0.07
10	164	25.27		638.40
11	128	-10.73		115.20
12	146	7.27		52.80
13	131	-7.73		59.80
14	120	-18.73		350.94
15	167	28.27		799.00
16	156	17.27		298.14
17	148	9.27		85.87
18	140	1.27		1.60
19	128	-10.73		115.20
20	123	-15.73		247.54
21	127	-11.73		137.67
22	134	-4.73		22.40
23	142	3.27		10.67
24	140	1.27		1.60
25	153	14.27		203.54
26	145	6.27		39.27
27	138	-0.73		0.54
28	140	1.27		1.60
29	140	1.27		1.60
30	118	-20.73		429.87
Mean Count: $\bar{x}$	138.73		SUM	4263.87
Standard Deviation (σ)	12.13		Variance:	147.03
Background Count Rate:		138.73	CPM + -	24.25

Instrument Background in DPM	
2070.65	
CPM Low	CPM High
114.5	163.0

Calculations Completed by:	Joan Cosgrove	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2929		Instrument Serial No.	146870	
Last Calibration Date:	6/17/2017				
Detector Model:	43-10-1		Detector Serial No.:	151113	
Today's Date:			Data Collected by:		
X	Alpha		Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.71	
Type of Surface:	N/A		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	0	0.00		0.00
2	0	-0.33		0.11
3	0	-0.33		0.11
4	1	0.67		0.44
5	0	-0.33		0.11
6	0	-0.33		0.11
7	1	0.67		0.44
8	1	0.67		0.44
9	0	-0.33		0.11
10	1	0.67		0.44
11	0	-0.33		0.11
12	0	-0.33		0.11
13	0	-0.33		0.11
14	0	-0.33		0.11
15	0	-0.33		0.11
16	1	0.67		0.44
17	0	-0.33		0.11
18	0	-0.33		0.11
19	0	-0.33		0.11
20	1	0.67		0.44
21	0	-0.33		0.11
22	0	-0.33		0.11
23	0	-0.33		0.11
24	1	0.67		0.44
25	0	-0.33		0.11
26	1	0.67		0.44
27	1	0.67		0.44
28	0	-0.33		0.11
29	0	-0.33		0.11
30	1	0.67		0.44
Mean Count: $\bar{x}$	0.33		SUM	6.56
Standard Deviation (σ)	0.48		Variance:	0.23
Background Count Rate:		0.33	CPM + -	0.96 CPM

Instrument Background in DPM	
1.88	
CPM Low	CPM High
-0.6	1.3

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Aleut World Solutions
Background Determination Data Sheet

Project/Location:	NRL Chesapeake Building 218				
Instrument Model:	2929		Instrument Serial No.	146780	
Last Calibration Date:	6/17/2017				
Detector Model:	43-10-1		Detector Serial No.:	151113	
Today's Date:	4/3/2018		Data Collected by:	Thomas Hogan	
	Alpha	X	Beta-Gamma		Gamma
Remarks:	Instrument Ambient Background			Instrument Efficiency: 0.53	
Type of Surface:	N/A		Count Time:	1	Minutes

Count Number	CPM	$(x - \bar{x})$		$(x - \bar{x})^2$
1	41	1.63		2.67
2	46	6.63		44.00
3	40	0.63		0.40
4	36	-3.37		11.33
5	49	9.63		92.80
6	38	-1.37		1.87
7	43	3.63		13.20
8	44	4.63		21.47
9	36	-3.37		11.33
10	48	8.63		74.53
11	39	-0.37		0.13
12	30	-9.37		87.73
13	37	-2.37		5.60
14	31	-8.37		70.00
15	42	2.63		6.93
16	37	-2.37		5.60
17	41	1.63		2.67
18	34	-5.37		28.80
19	44	4.63		21.47
20	36	-3.37		11.33
21	30	-9.37		87.73
22	40	0.63		0.40
23	33	-6.37		40.53
24	38	-1.37		1.87
25	42	2.63		6.93
26	35	-4.37		19.07
27	40	0.63		0.40
28	46	6.63		44.00
29	40	0.63		0.40
30	45	5.63		31.73
Mean Count: $\bar{x}$	39.37		SUM	746.97
Standard Deviation (σ)	5.08		Variance:	25.76
Background Count Rate:		39.37	CPM + -	10.15

Instrument Background in DPM	
297.11	
CPM Low	CPM High
29.2	49.5

Calculations Completed by:	Thomas Hogan	Date:	4/3/2018
Reviewed by:	Daniel Spicuzza	Date:	4/3/2018

Chi Square Tests

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	268488	
Last Calibration Date:		10/27/2017			Background Count Rate:	6.4	C_B
Detector Model:		43-37			Detector Serial No.:	190672	
Today's Date:		4/9/2018			Data Collected by:	Adolfo Matus Jr.	
Source ID:	039404	Activity	2,869	alphas/min	Efficiency:	30.2 %	
Radionuclide:	Th-230	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**521**	514.6		0.95	0.90	
2		**497**	490.6		-23.05	531.30	
3		**488**	481.6		-32.05	1027.20	
4		**510**	503.6		-10.05	101.00	
5		**523**	516.6		2.95	8.70	
6		**526**	519.6		5.95	35.40	
7		**532**	525.6		11.95	142.80	
8		**569**	562.6		48.95	2396.10	
9		**478**	471.6		-42.05	1768.20	
10		**497**	490.6		-23.05	531.30	
11		**479**	472.6		-41.05	1685.10	
12		**579**	572.6		58.95	3475.10	
13		**522**	515.6		1.95	3.80	
14		**536**	529.6		15.95	254.40	
15		**518**	511.6		-2.05	4.20	
16		**532**	525.6		11.95	142.80	
17		**521**	514.6		0.95	0.90	
18		**532**	525.6		11.95	142.80	
19		**546**	539.6		25.95	673.40	
20		**495**	488.6		-25.05	627.50	
Total		10401	10273		SUM	13552.95	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			514				
Chi Squared Value (C^2):		26.39	10.11 - 30.14	Standard Deviation:	27		
+ 20% Value:	616	- 20% Value:	411	+ 3 σ Value:	594	- 3 σ Value:	434
Calculations Completed by:			Adolfo Matus Jr.			Date:	4/9/2018
Reviewed by:			Daniel Spicuzza			Date:	4/9/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	268488	
Last Calibration Date:		10/27/2017			Background Count Rate:	766	C_B
Detector Model:		43-37			Detector Serial No.:	190672	
Today's Date:		4/9/2018			Data Collected by:	Adolfo Matus Jr.	
Source ID:	049410	Activity	12,131	betas/min	Efficiency:	37.0 %	
Radionuclide:	Tc-99	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**4376**	3610		-88.55	7841.10	
2		**4386**	3620		-78.55	6170.10	
3		**4465**	3699		0.45	0.20	
4		**4428**	3662		-36.55	1335.90	
5		**4443**	3677		-21.55	464.40	
6		**4411**	3645		-53.55	2867.60	
7		**4393**	3627		-71.55	5119.40	
8		**4538**	3772		73.45	5394.90	
9		**4391**	3625		-73.55	5409.60	
10		**4487**	3721		22.45	504.00	
11		**4521**	3755		56.45	3186.60	
12		**4522**	3756		57.45	3300.50	
13		**4512**	3746		47.45	2251.50	
14		**4578**	3812		113.45	12870.90	
15		**4467**	3701		2.45	6.00	
16		**4632**	3866		167.45	28039.50	
17		**4338**	3572		-126.55	16014.90	
18		**4495**	3729		30.45	927.20	
19		**4476**	3710		11.45	131.10	
20		**4432**	3666		-32.55	1059.50	
Total		89291	73971		SUM	102894.95	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			3699				
Chi Squared Value (C^2):		27.82	10.11 - 30.14	Standard Deviation:	74		
+ 20% Value:	4438	- 20% Value:	2959	+ 3 σ Value:	3919	- 3 σ Value:	3478
Calculations Completed by:			Adolfo Matus Jr.			Date:	4/9/2018
Reviewed by:			Daniel Spicuzza			Date:	4/9/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	268497	
Last Calibration Date:		10/10/2017			Background Count Rate:	4.6	C_B
Detector Model:		43-93			Detector Serial No.:	93965	
Today's Date:		4/3/2018			Data Collected by:	Josefina Matus	
Source ID:	039404	Activity	2,869	alphas/min	Efficiency:	31.0 %	
Radionuclide:	Th-230	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**448**	443.4		13.85	191.82	
2		**467**	462.4		32.85	1079.12	
3		**463**	458.4		28.85	832.32	
4		**457**	452.4		22.85	522.12	
5		**396**	391.4		-38.15	1455.42	
6		**416**	411.4		-18.15	329.42	
7		**421**	416.4		-13.15	172.92	
8		**439**	434.4		4.85	23.52	
9		**423**	418.4		-11.15	124.32	
10		**448**	443.4		13.85	191.82	
11		**456**	451.4		21.85	477.42	
12		**419**	414.4		-15.15	229.52	
13		**465**	460.4		30.85	951.72	
14		**464**	459.4		29.85	891.02	
15		**433**	428.4		-1.15	1.32	
16		**403**	398.4		-31.15	970.32	
17		**422**	417.4		-12.15	147.62	
18		**425**	420.4		-9.15	83.72	
19		**402**	397.4		-32.15	1033.62	
20		**416**	411.4		-18.15	329.42	
Total		8683	8591		SUM	10038.55	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			430				
Chi Squared Value (C^2):		23.37	10.11 - 30.14	Standard Deviation:	23		
+ 20% Value:	515	- 20% Value:	344	+ 3 σ Value:	499	- 3 σ Value:	361
Calculations Completed by:			Josefina Matus			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	268497	
Last Calibration Date:		10/10/2017			Background Count Rate:	766	C_B
Detector Model:		43-37			Detector Serial No.:	93965	
Today's Date:		4/3/2018			Data Collected by:	Josefina Matus	
Source ID:	049410	Activity	12,131	betas/min	Efficiency:	35.2 %	
Radionuclide:	Tc-99	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**4443**	3677		34.15	1166.22	
2		**4421**	3655		12.15	147.62	
3		**4413**	3647		4.15	17.22	
4		**4255**	3489		-153.85	23669.82	
5		**4433**	3667		24.15	583.22	
6		**4309**	3543		-99.85	9970.02	
7		**4409**	3643		0.15	0.02	
8		**4471**	3705		62.15	3862.62	
9		**4425**	3659		16.15	260.82	
10		**4361**	3595		-47.85	2289.62	
11		**4376**	3610		-32.85	1079.12	
12		**4535**	3769		126.15	15913.82	
13		**4403**	3637		-5.85	34.22	
14		**4313**	3547		-95.85	9187.22	
15		**4397**	3631		-11.85	140.42	
16		**4450**	3684		41.15	1693.32	
17		**4580**	3814		171.15	29292.32	
18		**4363**	3597		-45.85	2102.22	
19		**4375**	3609		-33.85	1145.82	
20		**4445**	3679		36.15	1306.82	
Total		88177	72857		SUM	103862.55	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			3643				
Chi Squared Value (C^2):		28.51	10.11 - 30.14	Standard Deviation:	74		
+ 20% Value:	4371	- 20% Value:	2914	+ 3 σ Value:	3865	- 3 σ Value:	3421
Calculations Completed by:			Josefina Matus			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	297743	
Last Calibration Date:		10/10/2017			Background Count Rate:	6.8	C_B
Detector Model:		43-37			Detector Serial No.:	302111	
Today's Date:		4/3/2018			Data Collected by:	Richard Thatcher	
Source ID:	039404	Activity	2,869	alphas/min	Efficiency:	31.9 %	
Radionuclide:	Th-230	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**604**	597.2		15.80	249.64	
2		**661**	654.2		72.80	5299.84	
3		**622**	615.2		33.80	1142.44	
4		**539**	532.2		-49.20	2420.64	
5		**590**	583.2		1.80	3.24	
6		**601**	594.2		12.80	163.84	
7		**593**	586.2		4.80	23.04	
8		**608**	601.2		19.80	392.04	
9		**559**	552.2		-29.20	852.64	
10		**579**	572.2		-9.20	84.64	
11		**555**	548.2		-33.20	1102.24	
12		**543**	536.2		-45.20	2043.04	
13		**578**	571.2		-10.20	104.04	
14		**586**	579.2		-2.20	4.84	
15		**582**	575.2		-6.20	38.44	
16		**573**	566.2		-15.20	231.04	
17		**574**	567.2		-14.20	201.64	
18		**590**	583.2		1.80	3.24	
19		**626**	619.2		37.80	1428.84	
20		**601**	594.2		12.80	163.84	
Total		11764	11628		SUM	15953.2	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			581				
Chi Squared Value (C^2):		27.44	10.11 - 30.14	Standard Deviation:	29		
+ 20% Value:	698	- 20% Value:	465	+ 3 σ Value:	668	- 3 σ Value:	494
Calculations Completed by:			Richard Thatcher			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	297743	
Last Calibration Date:		10/10/2017			Background Count Rate:	1084	C_B
Detector Model:		43-37			Detector Serial No.:	302111	
Today's Date:		4/3/2018			Data Collected by:	Richard Thatcher	
Source ID:	049410	Activity	12,131	betas/min	Efficiency:	38.4 %	
Radionuclide:	Tc-99	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**4224**	3140		-42.55	1810.50	
2		**4142**	3058		-124.55	15512.70	
3		**4163**	3079		-103.55	10722.60	
4		**4225**	3141		-41.55	1726.40	
5		**4294**	3210		27.45	753.50	
6		**4331**	3247		64.45	4153.80	
7		**4233**	3149		-33.55	1125.60	
8		**4192**	3108		-74.55	5557.70	
9		**4249**	3165		-17.55	308.00	
10		**4212**	3128		-54.55	2975.70	
11		**4266**	3182		-0.55	0.30	
12		**4240**	3156		-26.55	704.90	
13		**4368**	3284		101.45	10292.10	
14		**4343**	3259		76.45	5844.60	
15		**4387**	3303		120.45	14508.20	
16		**4236**	3152		-30.55	933.30	
17		**4332**	3248		65.45	4283.70	
18		**4293**	3209		26.45	699.60	
19		**4289**	3205		22.45	504.00	
20		**4312**	3228		45.45	2065.70	
Total		85331	63651		SUM	84482.95	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			3183				
Chi Squared Value (C^2):		26.55	10.11 - 30.14	Standard Deviation:	67		
+ 20% Value:	3819	- 20% Value:	2546	+ 3 σ Value:	3383	- 3 σ Value:	2983
Calculations Completed by:			Richard Thatcher			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	184949	
Last Calibration Date:		3/6/2018			Background Count Rate:	1.2	C_B
Detector Model:		43-93			Detector Serial No.:	268605	
Today's Date:		4/3/2018			Data Collected by:	Joan Cosgrove	
Source ID:	039404	Activity	2,869	alphas/min	Efficiency:	42.3 %	
Radionuclide:	Th-230	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**701**	699.8		7.70	59.29	
2		**639**	637.8		-54.30	2948.49	
3		**683**	681.8		-10.30	106.09	
4		**669**	667.8		-24.30	590.49	
5		**724**	722.8		30.70	942.49	
6		**719**	717.8		25.70	660.49	
7		**694**	692.8		0.70	0.49	
8		**706**	704.8		12.70	161.29	
9		**700**	698.8		6.70	44.89	
10		**722**	720.8		28.70	823.69	
11		**681**	679.8		-12.30	151.29	
12		**708**	706.8		14.70	216.09	
13		**706**	704.8		12.70	161.29	
14		**679**	677.8		-14.30	204.49	
15		**660**	658.8		-33.30	1108.89	
16		**671**	669.8		-22.30	497.29	
17		**742**	740.8		48.70	2371.69	
18		**705**	703.8		11.70	136.89	
19		**704**	702.8		10.70	114.49	
20		**653**	651.8		-40.30	1624.09	
Total		13866	13842		SUM	12924.2	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			692				
Chi Squared Value (C^2):		18.67	10.11 - 30.14	Standard Deviation:	26		
+ 20% Value:	831	- 20% Value:	554		770	- 3 σ Value:	614
Calculations Completed by:			Joan Cosgrove			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	184949	
Last Calibration Date:		3/6/2018			Background Count Rate:	139	C_B
Detector Model:		43-93			Detector Serial No.:	268605	
Today's Date:		4/3/2018			Data Collected by:	Joan Cosgrove	
Source ID:	049410	Activity	12,131	betas/min	Efficiency:	26.8 %	
Radionuclide:	Tc-99	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**2652**	2513		-112.80	12723.84	
2		**2722**	2583		-42.80	1831.84	
3		**2853**	2714		88.20	7779.24	
4		**2753**	2614		-11.80	139.24	
5		**2688**	2549		-76.80	5898.24	
6		**2772**	2633		7.20	51.84	
7		**2743**	2604		-21.80	475.24	
8		**2764**	2625		-0.80	0.64	
9		**2899**	2760		134.20	18009.64	
10		**2768**	2629		3.20	10.24	
11		**2815**	2676		50.20	2520.04	
12		**2698**	2559		-66.80	4462.24	
13		**2781**	2642		16.20	262.44	
14		**2769**	2630		4.20	17.64	
15		**2705**	2566		-59.80	3576.04	
16		**2760**	2621		-4.80	23.04	
17		**2751**	2612		-13.80	190.44	
18		**2742**	2603		-22.80	519.84	
19		**2829**	2690		64.20	4121.64	
20		**2832**	2693		67.20	4515.84	
Total		55296	52516		SUM	67129.2	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			2626				
Chi Squared Value (C^2):		25.57	10.11 - 30.14	Standard Deviation:	59		
+ 20% Value:	3151	- 20% Value:	2101	+ 3 σ Value:	2804	- 3 σ Value:	2447
Calculations Completed by:			Joan Cosgrove			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	193668	
Last Calibration Date:		8/15/2017			Background Count Rate:	1.3	C_B
Detector Model:		43-93			Detector Serial No.:	326725	
Today's Date:		4/3/2018			Data Collected by:	Joan Cosgrove	
Source ID:	039404	Activity	2,869	alphas/min	Efficiency:	49.7 %	
Radionuclide:	Th-230	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**725**	723.7		-2.70	7.29	
2		**694**	692.7		-33.70	1135.69	
3		**738**	736.7		10.30	106.09	
4		**692**	690.7		-35.70	1274.49	
5		**700**	698.7		-27.70	767.29	
6		**713**	711.7		-14.70	216.09	
7		**663**	661.7		-64.70	4186.09	
8		**718**	716.7		-9.70	94.09	
9		**702**	700.7		-25.70	660.49	
10		**754**	752.7		26.30	691.69	
11		**742**	740.7		14.30	204.49	
12		**716**	714.7		-11.70	136.89	
13		**737**	735.7		9.30	86.49	
14		**771**	769.7		43.30	1874.89	
15		**765**	763.7		37.30	1391.29	
16		**787**	785.7		59.30	3516.49	
17		**755**	753.7		27.30	745.29	
18		**707**	705.7		-20.70	428.49	
19		**776**	774.7		48.30	2332.89	
20		**699**	697.7		-28.70	823.69	
Total		14554	14528		SUM	20680.2	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			726				
Chi Squared Value (C^2):		28.47	10.11 - 30.14	Standard Deviation:	33		
+ 20% Value:	872	- 20% Value:	581	+ 3 σ Value:	825	- 3 σ Value:	627
Calculations Completed by:			Joan Cosgrove			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	193668	
Last Calibration Date:		8/15/2017			Background Count Rate:	150	C_B
Detector Model:		43-93			Detector Serial No.:	326725	
Today's Date:		4/3/2018			Data Collected by:	Joan Cosgrove	
Source ID:	049410	Activity	12,131	betas/min	Efficiency:	32.7 %	
Radionuclide:	Tc-99	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**3131**	2981		-34.90	1218.01	
2		**3208**	3058		42.10	1772.41	
3		**3173**	3023		7.10	50.41	
4		**3209**	3059		43.10	1857.61	
5		**3099**	2949		-66.90	4475.61	
6		**3052**	2902		-113.90	12973.21	
7		**3147**	2997		-18.90	357.21	
8		**3243**	3093		77.10	5944.41	
9		**3168**	3018		2.10	4.41	
10		**3208**	3058		42.10	1772.41	
11		**3075**	2925		-90.90	8262.81	
12		**3120**	2970		-45.90	2106.81	
13		**3208**	3058		42.10	1772.41	
14		**3160**	3010		-5.90	34.81	
15		**3296**	3146		130.10	16926.01	
16		**3098**	2948		-67.90	4610.41	
17		**3223**	3073		57.10	3260.41	
18		**3267**	3117		101.10	10221.21	
19		**3134**	2984		-31.90	1017.61	
20		**3099**	2949		-66.90	4475.61	
Total		63318	60318		SUM	83113.8	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			3016				
Chi Squared Value (C^2):		27.56	10.11 - 30.14	Standard Deviation:	66		
+ 20% Value:	3619	- 20% Value:	2413	+ 3 σ Value:	3214	- 3 σ Value:	2817
Calculations Completed by:			Joan Cosgrove			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	276990	
Last Calibration Date:		3/20/2018			Background Count Rate:	8	C_B
Detector Model:		43-37			Detector Serial No.:	190620	
Today's Date:		4/3/2018			Data Collected by:	Josefina Matus	
Source ID:	039404	Activity	2,869	alphas/min	Efficiency:	28.7 %	
Radionuclide:	Th-230	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**566**	558		16.10	259.21	
2		**580**	572		30.10	906.01	
3		**578**	570		28.10	789.61	
4		**546**	538		-3.90	15.21	
5		**560**	552		10.10	102.01	
6		**544**	536		-5.90	34.81	
7		**540**	532		-9.90	98.01	
8		**533**	525		-16.90	285.61	
9		**542**	534		-7.90	62.41	
10		**551**	543		1.10	1.21	
11		**577**	569		27.10	734.41	
12		**548**	540		-1.90	3.61	
13		**568**	560		18.10	327.61	
14		**536**	528		-13.90	193.21	
15		**572**	564		22.10	488.41	
16		**542**	534		-7.90	62.41	
17		**509**	501		-40.90	1672.81	
18		**541**	533		-8.90	79.21	
19		**536**	528		-13.90	193.21	
20		**529**	521		-20.90	436.81	
Total		10998	10838		SUM	6745.8	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			542				
Chi Squared Value (C^2):		12.45	10.11 - 30.14	Standard Deviation:	19		
+ 20% Value:	650	- 20% Value:	434		598	- 3 σ Value:	485
Calculations Completed by:			Josefina Matus			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	276990	
Last Calibration Date:		3/20/2018			Background Count Rate:	925	C_B
Detector Model:		43-37			Detector Serial No.:	190620	
Today's Date:		4/3/2018			Data Collected by:	Josefina Matus	
Source ID:	049410	Activity	12,131	betas/min	Efficiency:	39.6 %	
Radionuclide:	Tc-99	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**4271**	3346		-41.45	1718.10	
2		**4291**	3366		-21.45	460.10	
3		**4281**	3356		-31.45	989.10	
4		**4192**	3267		-120.45	14508.20	
5		**4413**	3488		100.55	10110.30	
6		**4302**	3377		-10.45	109.20	
7		**4336**	3411		23.55	554.60	
8		**4310**	3385		-2.45	6.00	
9		**4223**	3298		-89.45	8001.30	
10		**4249**	3324		-63.45	4025.90	
11		**4280**	3355		-32.45	1053.00	
12		**4275**	3350		-37.45	1402.50	
13		**4458**	3533		145.55	21184.80	
14		**4370**	3445		57.55	3312.00	
15		**4371**	3446		58.55	3428.10	
16		**4304**	3379		-8.45	71.40	
17		**4347**	3422		34.55	1193.70	
18		**4372**	3447		59.55	3546.20	
19		**4300**	3375		-12.45	155.00	
20		**4304**	3379		-8.45	71.40	
Total		86249	67749		SUM	75900.95	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			3387				
Chi Squared Value (C^2):		22.41	10.11 - 30.14	Standard Deviation:	63		
+ 20% Value:	4065	- 20% Value:	2710	+ 3 σ Value:	3577	- 3 σ Value:	3198
Calculations Completed by:			Josefina Matus			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	297758	
Last Calibration Date:		2/14/2018			Background Count Rate:	0.5	C_B
Detector Model:		43-93			Detector Serial No.:	299597	
Today's Date:		4/3/2018			Data Collected by:	Thomas Hogan	
Source ID:	039404	Activity	2,869	alphas/min	Efficiency:	44.4 %	
Radionuclide:	Th-230	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**754**	753.5		40.25	1620.06	
2		**729**	728.5		15.25	232.56	
3		**761**	760.5		47.25	2232.56	
4		**671**	670.5		-42.75	1827.56	
5		**692**	691.5		-21.75	473.06	
6		**719**	718.5		5.25	27.56	
7		**715**	714.5		1.25	1.56	
8		**716**	715.5		2.25	5.06	
9		**752**	751.5		38.25	1463.06	
10		**691**	690.5		-22.75	517.56	
11		**709**	708.5		-4.75	22.56	
12		**713**	712.5		-0.75	0.56	
13		**683**	682.5		-30.75	945.56	
14		**680**	679.5		-33.75	1139.06	
15		**678**	677.5		-35.75	1278.06	
16		**761**	760.5		47.25	2232.56	
17		**725**	724.5		11.25	126.56	
18		**685**	684.5		-28.75	826.56	
19		**738**	737.5		24.25	588.06	
20		**703**	702.5		-10.75	115.56	
Total		14275	14265		SUM	15675.75	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			713				
Chi Squared Value (C^2):		21.98	10.11 - 30.14	Standard Deviation:	29		
+ 20% Value:	856	- 20% Value:	571	+ 3 σ Value:	799	- 3 σ Value:	627
Calculations Completed by:			Thomas Hogan			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	297758	
Last Calibration Date:		2/14/2018			Background Count Rate:	172	C_B
Detector Model:		43-93			Detector Serial No.:	299597	
Today's Date:		4/3/2018			Data Collected by:	Thomas Hogan	
Source ID:	049410	Activity	12,131	betas/min	Efficiency:	31.3 %	
Radionuclide:	Tc-99	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**3223**	3051		86.60	7499.56	
2		**3135**	2963		-1.40	1.96	
3		**3198**	3026		61.60	3794.56	
4		**3074**	2902		-62.40	3893.76	
5		**3069**	2897		-67.40	4542.76	
6		**3175**	3003		38.60	1489.96	
7		**3121**	2949		-15.40	237.16	
8		**3228**	3056		91.60	8390.56	
9		**3133**	2961		-3.40	11.56	
10		**3048**	2876		-88.40	7814.56	
11		**3211**	3039		74.60	5565.16	
12		**3194**	3022		57.60	3317.76	
13		**3170**	2998		33.60	1128.96	
14		**3171**	2999		34.60	1197.16	
15		**3164**	2992		27.60	761.76	
16		**3127**	2955		-9.40	88.36	
17		**3134**	2962		-2.40	5.76	
18		**3082**	2910		-54.40	2959.36	
19		**3043**	2871		-93.40	8723.56	
20		**3028**	2856		-108.40	11750.56	
Total		62728	59288		SUM	73174.8	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			2964				
Chi Squared Value (C^2):		24.68	10.11 - 30.14	Standard Deviation:	62		
+ 20% Value:	3557	- 20% Value:	2372	+ 3 σ Value:	3151	- 3 σ Value:	2778
Calculations Completed by:			Thomas Hogan			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	297766	
Last Calibration Date:		12/20/2017			Background Count Rate:	0.09	C_B
Detector Model:		43-93			Detector Serial No.:	323074	
Today's Date:					Data Collected by:		
Source ID:	039404	Activity	2,869	alphas/min	Efficiency:	40.4 %	
Radionuclide:	Th-230	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**612**	611.91		-26.60	707.56	
2		**592**	591.91		-46.60	2171.56	
3		**651**	650.91		12.40	153.76	
4		**647**	646.91		8.40	70.56	
5		**595**	594.91		-43.60	1900.96	
6		**644**	643.91		5.40	29.16	
7		**662**	661.91		23.40	547.56	
8		**638**	637.91		-0.60	0.36	
9		**609**	608.91		-29.60	876.16	
10		**620**	619.91		-18.60	345.96	
11		**686**	685.91		47.40	2246.76	
12		**596**	595.91		-42.60	1814.76	
13		**646**	645.91		7.40	54.76	
14		**679**	678.91		40.40	1632.16	
15		**632**	631.91		-6.60	43.56	
16		**637**	636.91		-1.60	2.56	
17		**669**	668.91		30.40	924.16	
18		**670**	669.91		31.40	985.96	
19		**642**	641.91		3.40	11.56	
20		**645**	644.91		6.40	40.96	
Total		12772	12770.2		SUM	14560.8	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			639				
Chi Squared Value (C^2):		22.80	10.11 - 30.14	Standard Deviation:	28		
+ 20% Value:	766	- 20% Value:	511		722	- 3 σ Value:	555
Calculations Completed by:			Thomas Hogan			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2360			Instrument Serial No.	297766	
Last Calibration Date:		12/20/2017			Background Count Rate:	170	C_B
Detector Model:		43-93			Detector Serial No.:	323074	
Today's Date:		4/3/2018			Data Collected by:	Thomas Hogan	
Source ID:	049410	Activity	12,131	betas/min	Efficiency:	25.4 %	
Radionuclide:	Tc-99	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**2606**	2436		44.55	1984.70	
2		**2580**	2410		18.55	344.10	
3		**2692**	2522		130.55	17043.30	
4		**2543**	2373		-18.45	340.40	
5		**2597**	2427		35.55	1263.80	
6		**2505**	2335		-56.45	3186.60	
7		**2551**	2381		-10.45	109.20	
8		**2601**	2431		39.55	1564.20	
9		**2605**	2435		43.55	1896.60	
10		**2514**	2344		-47.45	2251.50	
11		**2569**	2399		7.55	57.00	
12		**2611**	2441		49.55	2455.20	
13		**2461**	2291		-100.45	10090.20	
14		**2566**	2396		4.55	20.70	
15		**2531**	2361		-30.45	927.20	
16		**2520**	2350		-41.45	1718.10	
17		**2561**	2391		-0.45	0.20	
18		**2474**	2304		-87.45	7647.50	
19		**2591**	2421		29.55	873.20	
20		**2551**	2381		-10.45	109.20	
Total		51229	47829		SUM	53882.95	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			2391				
Chi Squared Value (C^2):		22.53	10.11 - 30.14	Standard Deviation:	53		
+ 20% Value:	2870	- 20% Value:	1913	+ 3 σ Value:	2551	- 3 σ Value:	2232
Calculations Completed by:			Thomas Hogan			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2929			Instrument Serial No.	146780	
Last Calibration Date:		6/17/2017			Background Count Rate:	0.3	C_B
Detector Model:		43-10-1			Detector Serial No.:	151113	
Today's Date:		4/3/2018			Data Collected by:	Thomas Hogan	
Source ID:	011404	Activity	8,278	alphas/min	Efficiency:	71.0 %	
Radionuclide:	Th-230	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**5214**	5213.7		78.90	6225.21	
2		**5249**	5248.7		113.90	12973.21	
3		**5232**	5231.7		96.90	9389.61	
4		**5196**	5195.7		60.90	3708.81	
5		**5085**	5084.7		-50.10	2510.01	
6		**5182**	5181.7		46.90	2199.61	
7		**5125**	5124.7		-10.10	102.01	
8		**5127**	5126.7		-8.10	65.61	
9		**5060**	5059.7		-75.10	5640.01	
10		**5132**	5131.7		-3.10	9.61	
11		**5181**	5180.7		45.90	2106.81	
12		**5143**	5142.7		7.90	62.41	
13		**5051**	5050.7		-84.10	7072.81	
14		**5097**	5096.7		-38.10	1451.61	
15		**5050**	5049.7		-85.10	7242.01	
16		**5105**	5104.7		-30.10	906.01	
17		**5146**	5145.7		10.90	118.81	
18		**5108**	5107.7		-27.10	734.41	
19		**5165**	5164.7		29.90	894.01	
20		**5054**	5053.7		-81.10	6577.21	
Total		102702	102696		SUM	69989.8	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			5135				
Chi Squared Value (C^2):		13.63	10.11 - 30.14	Standard Deviation:	61		
+ 20% Value:	6162	- 20% Value:	4108	+ 3 σ Value:	5317	- 3 σ Value:	4953
Calculations Completed by:			Thomas Hogan			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Aleut World Solutions
Chi-Squared Test of Reliability Data Sheet

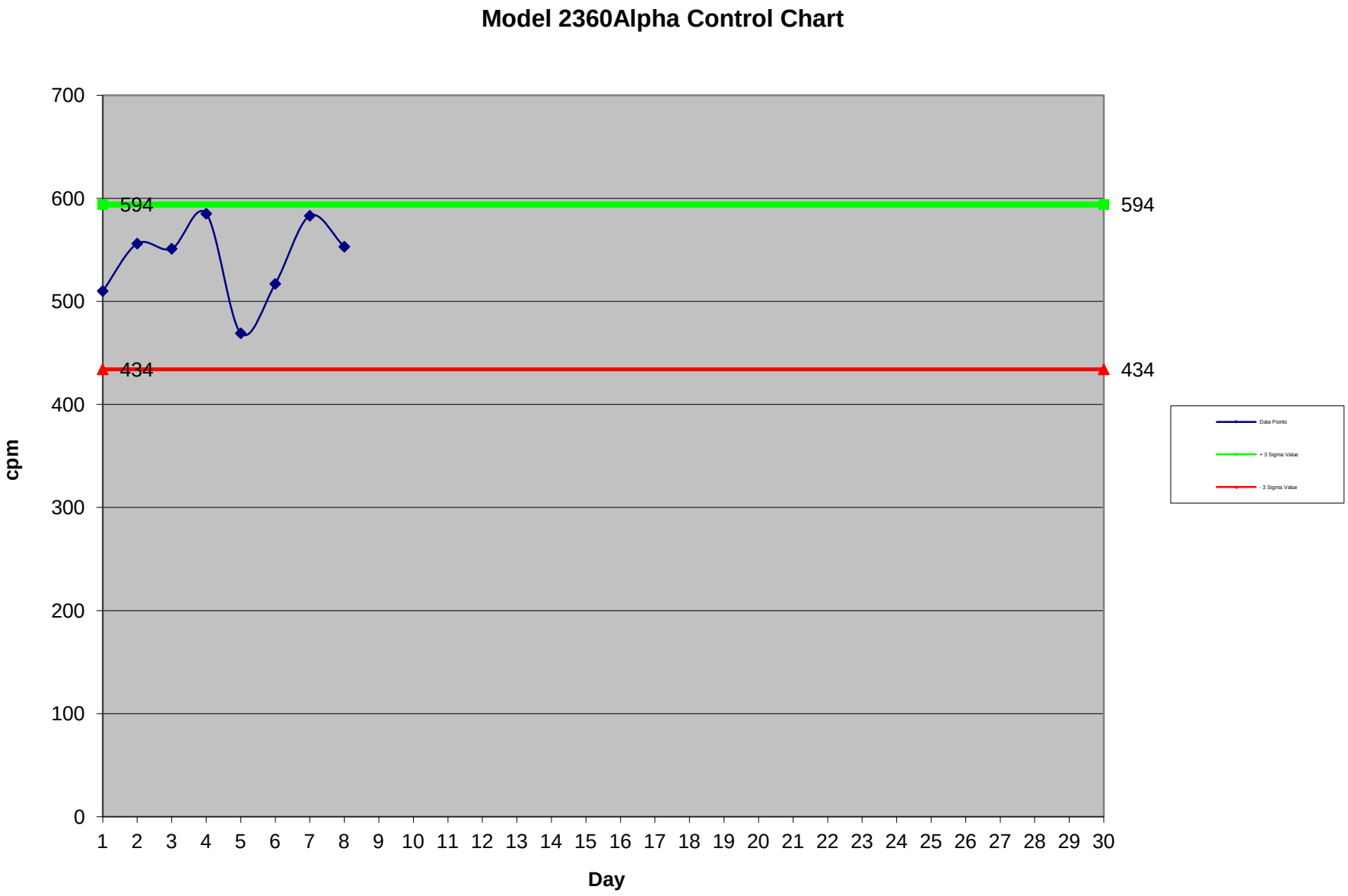
Project/Location:		NRL Chesapeake Building 218					
Instrument Model:		2929			Instrument Serial No.	146780	
Last Calibration Date:		6/17/2017			Background Count Rate:	39.3	C_B
Detector Model:		43-10-1			Detector Serial No.:	151113	
Today's Date:		4/3/2018			Data Collected by:	Thomas Hogan	
Source ID:	011403	Activity	12,040	betas/min	Efficiency:	53.0 %	
Radionuclide:	Tc-99	CPM	CPM				
Count Number		(Gross) C_G	(Net) C_I		$(C_I - \bar{c})$	$(C_I - \bar{c})^2$	
1		**5228**	5188.7		90.35	8163.12	
2		**5210**	5170.7		72.35	5234.52	
3		**5325**	5285.7		187.35	35100.02	
4		**5103**	5063.7		-34.65	1200.62	
5		**5165**	5125.7		27.35	748.02	
6		**5075**	5035.7		-62.65	3925.02	
7		**5078**	5038.7		-59.65	3558.12	
8		**5105**	5065.7		-32.65	1066.02	
9		**5102**	5062.7		-35.65	1270.92	
10		**5158**	5118.7		20.35	414.12	
11		**5139**	5099.7		1.35	1.82	
12		**5013**	4973.7		-124.65	15537.62	
13		**5118**	5078.7		-19.65	386.12	
14		**5220**	5180.7		82.35	6781.52	
15		**5108**	5068.7		-29.65	879.12	
16		**5146**	5106.7		8.35	69.72	
17		**5130**	5090.7		-7.65	58.52	
18		**5117**	5077.7		-20.65	426.42	
19		**5114**	5074.7		-23.65	559.32	
20		**5099**	5059.7		-38.65	1493.82	
Total		102753	101967		SUM	86874.55	$\Sigma(C_I - c)^2$
Mean Count: $\bar{c}$			5098				
Chi Squared Value (C^2):		17.04	10.11 - 30.14	Standard Deviation:	68		
+ 20% Value:	6118	- 20% Value:	4079	+ 3 σ Value:	5301	- 3 σ Value:	4895
Calculations Completed by:			Thomas Hogan			Date:	4/3/2018
Reviewed by:			Daniel Spicuzza			Date:	4/3/2018

Daily Instrument Response Checks

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Th-230	SOURCE ACTIVITY alphas/min	BACKGROUND CPM 1-11	READING CPM	Net CPM 434-594	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/10/2018	2360/43-37	268488/190672	N	10/27/2018	039404	2,869	6	516	510	30.2	P	AM
4/11/2018	2360/43-37	268488/190672	N	10/27/2018	039404	2,869	6	562	556	30.2	P	AM
4/12/2018	2360/43-37	268488/190672	N	10/27/2018	039404	2,869	8	559	551	30.2	P	AM
4/13/2018	2360/43-37	268488/190672	N	10/27/2018	039404	2,869	6	591	585	30.2	P	AM
4/16/2018	2360/43-37	268488/190672	N	10/27/2018	039404	2,869	11	480	469	30.2	P	AM
4/17/2018	2360/43-37	268488/190672	N	10/27/2018	039404	2,869	9	526	517	30.2	P	AM
4/18/2018	2360/43-37	268488/190672	N	10/27/2018	039404	2,869	5	588	583	30.2	P	TH
4/19/2018	2360/43-37	268488/190672	N	10/27/2018	039404	2,869	10	563	553	30.2	P	TH

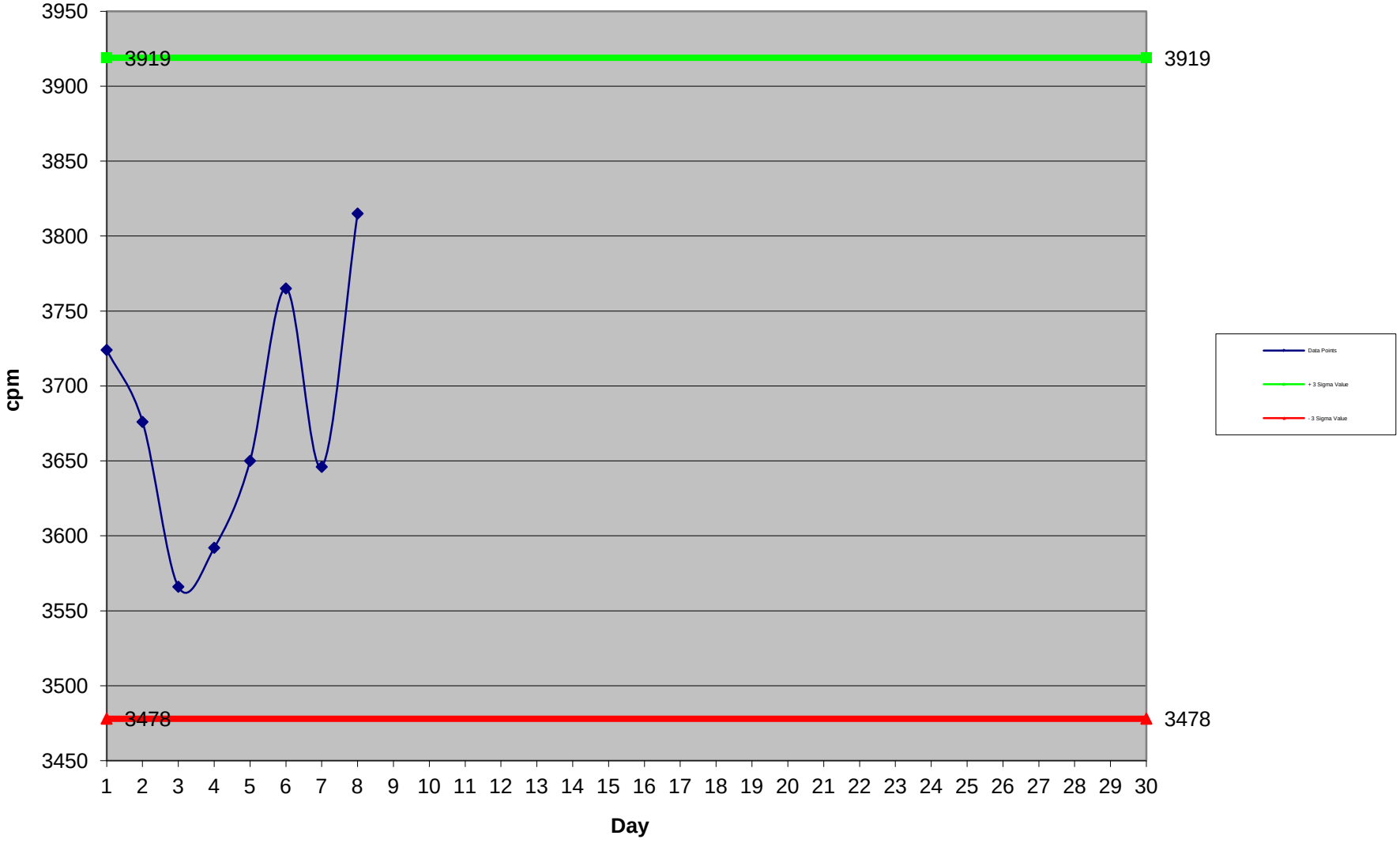

Model 2360Alpha Control Chart
700
600
500
400
300
200
100
0
cpm
594
434
594
434
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day
Data Points
+ 3 Sigma Value
- 3 Sigma Value

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM 714-818	READING CPM	Net CPM 3478-3919	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/10/2018	2360/43-37	268488/190672	N	10/27/2018	049410	12,131	744	4468	3724	37.0	P	AM
4/11/2018	2360/43-37	268488/190672	N	10/27/2018	049410	12,131	808	4484	3676	37.0	P	AM
4/12/2018	2360/43-37	268488/190672	N	10/27/2018	049410	12,131	801	4367	3566	37.0	P	AM
4/13/2018	2360/43-37	268488/190672	N	10/27/2018	049410	12,131	817	4409	3592	37.0	P	AM
4/16/2018	2360/43-37	268488/190672	N	10/27/2018	049410	12,131	758	4408	3650	37.0	P	AM
4/17/2018	2360/43-37	268488/190672	N	10/27/2018	049410	12,131	815	4580	3765	37.0	P	AM
4/18/2018	2360/43-37	268488/190672	N	10/27/2018	049410	12,131	815	4461	3646	37.0	P	TH
4/19/2018	2360/43-37	268488/190672	N	10/27/2018	049410	12,131	751	4566	3815	37.0	P	TH

Model 2360 Beta Control Chart

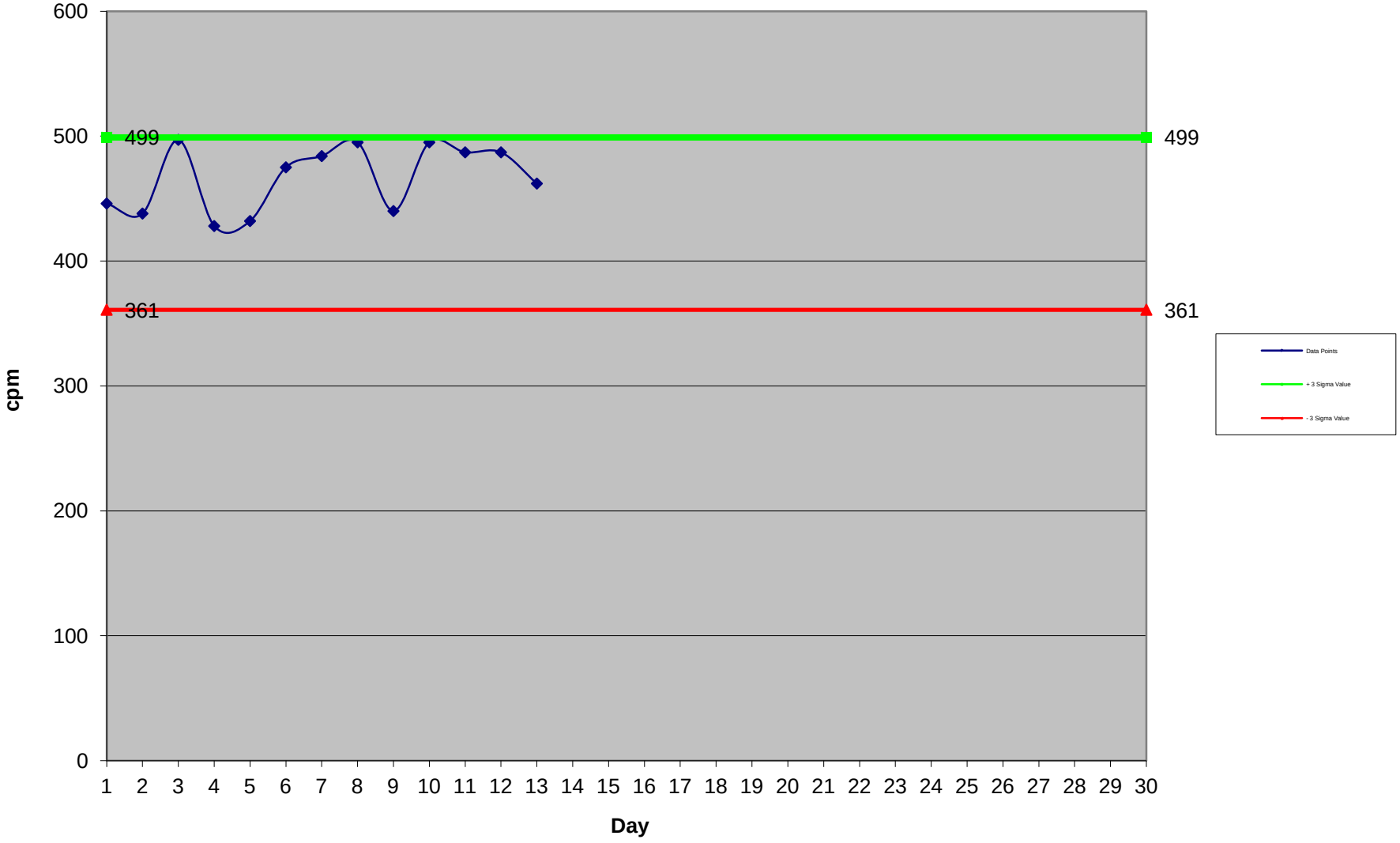


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Th-230	SOURCE ACTIVITY alphas/min	BACKGROUND CPM 0-9	READING CPM	Net CPM 361-499	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	3	449	446	31.0	P	AM
4/5/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	4	442	438	31.0	P	AM
4/6/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	4	501	497	31.0	P	AM
4/9/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	1	429	428	31.0	P	AM
4/10/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	6	438	432	31.0	P	AM
4/11/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	4	479	475	31.0	P	AM
4/12/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	5	489	484	31.0	P	AM
4/13/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	8	503	495	31.0	P	AM
4/16/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	6	446	440	31.0	P	AM
4/17/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	2	497	495	31.0	P	AM
4/18/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	9	496	487	31.0	P	TH
4/19/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	5	492	487	31.0	P	TH
4/20/2018	2360/43-37	268497/093965	N	10/10/2018	039404	2,869	5	467	462	31.0	P	TH

Model 2360Alpha Control Chart

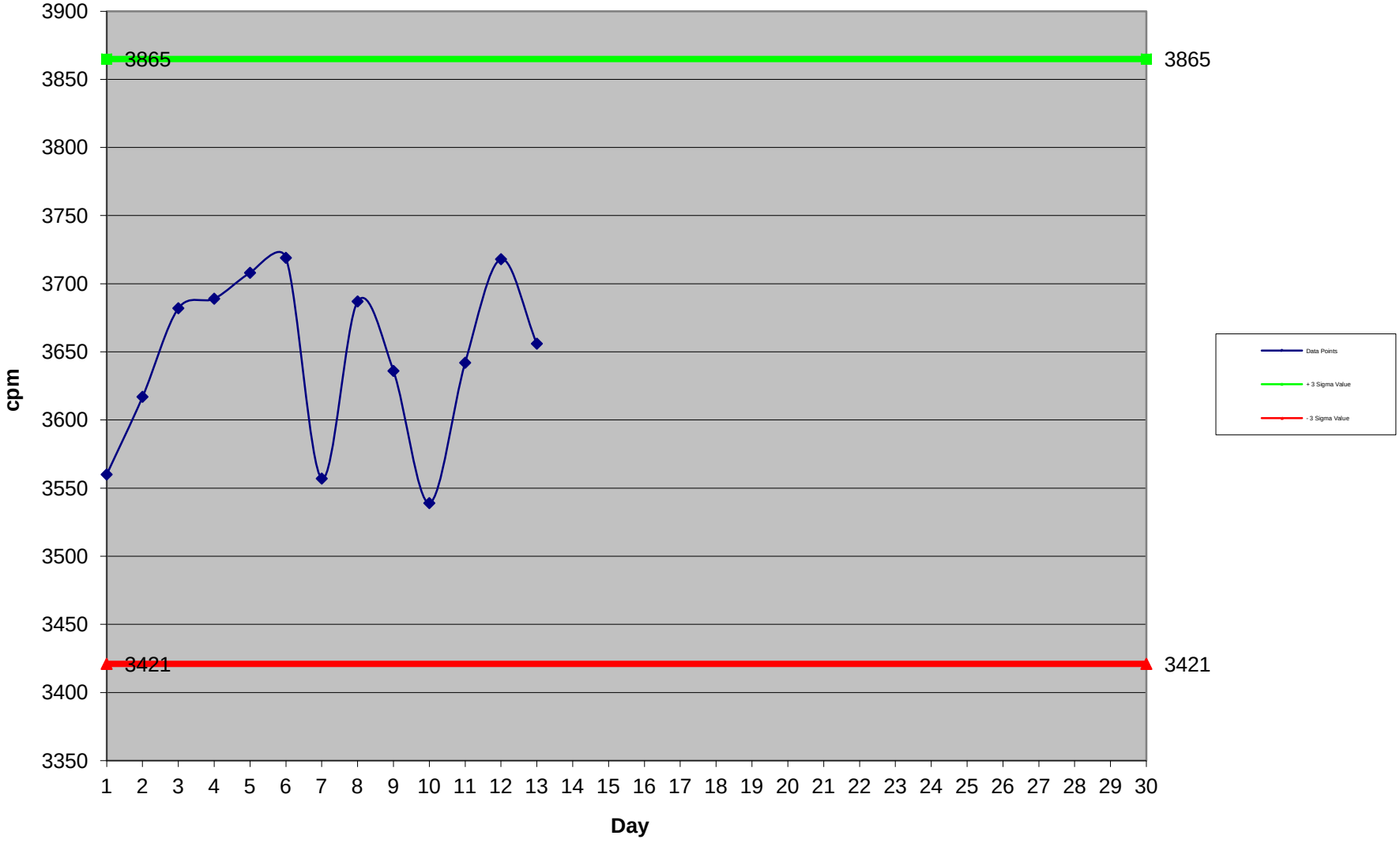


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM 714-817	READING CPM	Net CPM 3421-3865	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	813	4373	3560	35.2	P	AM
4/5/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	738	4355	3617	35.2	P	AM
4/6/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	776	4458	3682	35.2	P	AM
4/9/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	758	4447	3689	35.2	P	AM
4/10/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	782	4490	3708	35.2	P	AM
4/11/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	741	4460	3719	35.2	P	AM
4/12/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	789	4346	3557	35.2	P	AM
4/13/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	771	4458	3687	35.2	P	AM
4/16/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	805	4441	3636	35.2	P	AM
4/17/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	809	4348	3539	35.2	P	AM
4/18/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	777	4419	3642	35.2	P	TH
4/19/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	785	4503	3718	35.2	P	TH
4/20/2018	2360/43-37	268497/093965	N	10/10/2018	049410	12,131	757	4413	3656	35.2	P	TH

Model 2360 Beta Control Chart

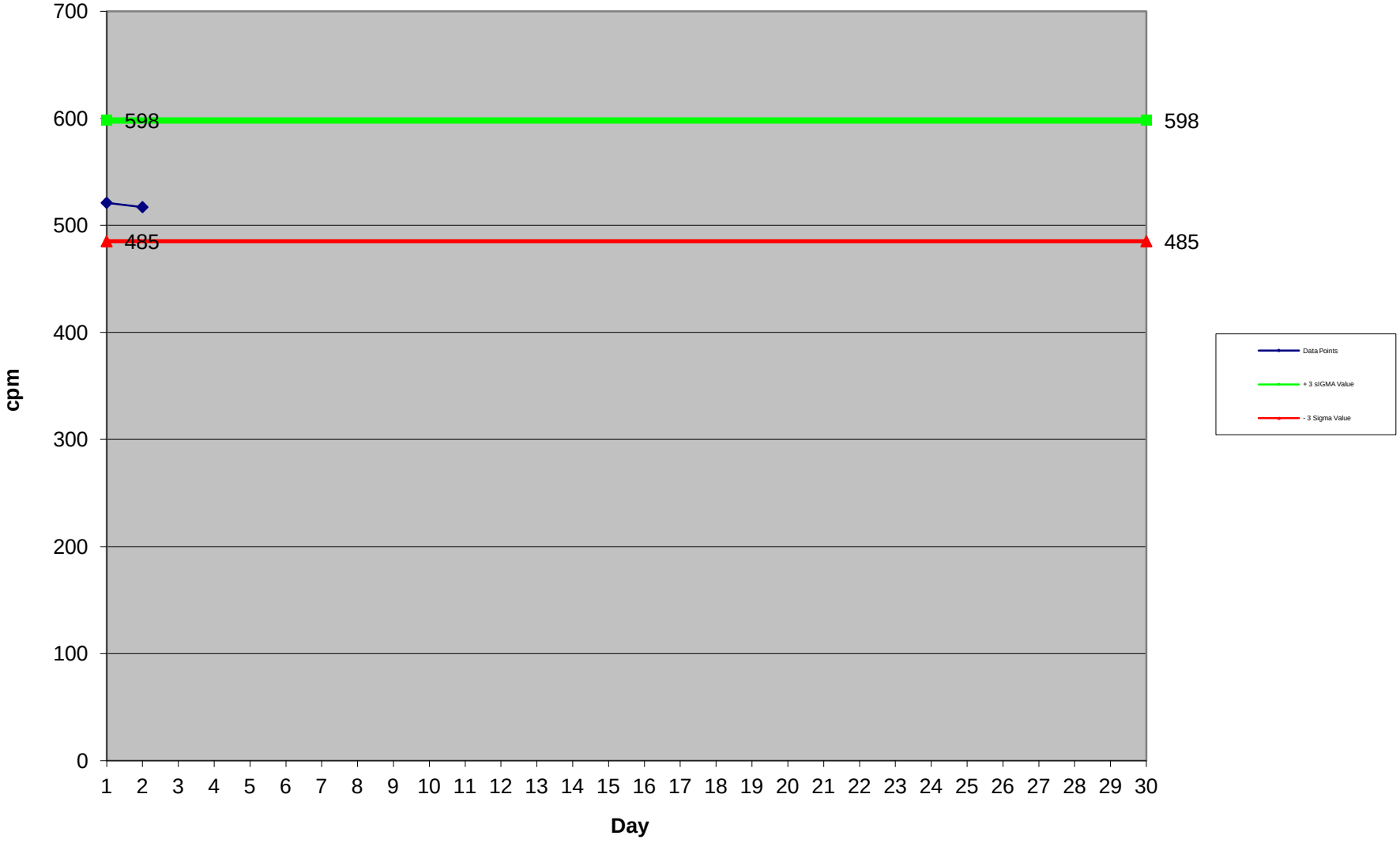


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Th-230	SOURCE ACTIVITY alphas/min	BACKGROUND CPM 2-13	READING CPM	Net CPM 485-598	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-37	276990/190620	N	3/20/2018	039404	2,869	11	532	521	28.7	P	AM
4/5/2018	2360/43-37	276990/190620	N	3/20/2018	039404	2,869	7	524	517	28.7	P	AM

Model 2360 Alpha Control Chart

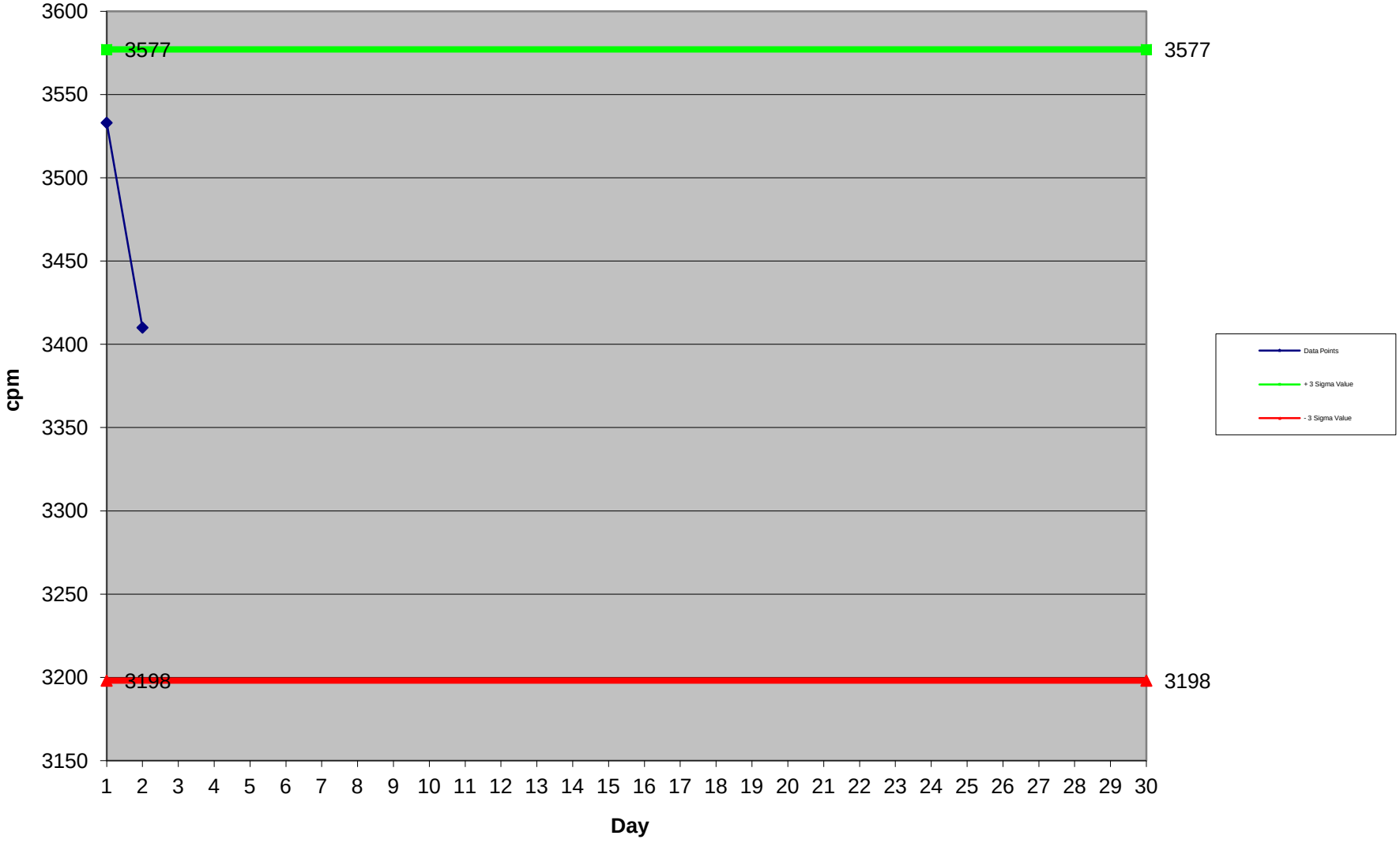


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM 853-998	READING CPM	Net CPM 3198-3577	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-37	276990/190620	N	3/20/2018	049410	12,131	868	4401	3533	39.6	P	AM
4/5/2018	2360/43-37	276990/190620	N	3/20/2018	049410	12,131	927	4337	3410	39.6	P	AM

Model 2360 Beta Control Chart

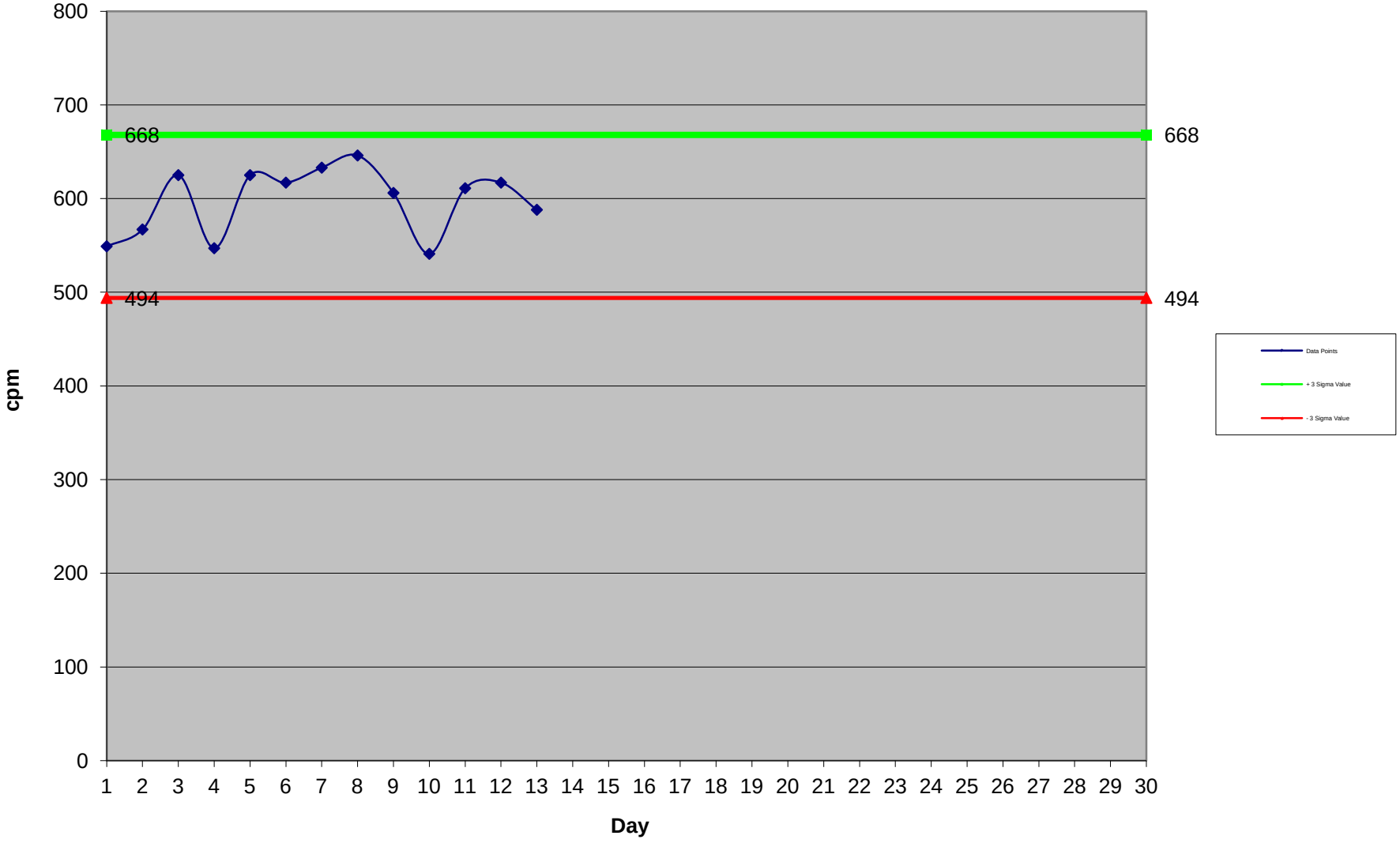


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Th-230	SOURCE ACTIVITY alphas/min	BACKGROUND CPM 1-12	READING CPM	Net CPM 494-668	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	9	558	549	31.9	P	AM
4/5/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	11	578	567	31.9	P	AM
4/6/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	6	631	625	31.9	P	AM
4/9/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	8	555	547	31.9	P	AM
4/10/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	9	634	625	31.9	P	AM
4/11/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	7	624	617	31.9	P	AM
4/12/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	10	643	633	31.9	P	AM
4/13/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	11	657	646	31.9	P	AM
4/16/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	8	614	606	31.9	P	AM
4/17/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	6	547	541	31.9	P	AM
4/18/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	7	618	611	31.9	P	TH
4/19/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	1	618	617	31.9	P	TH
4/20/2018	2360/43-37	297743/302111	N	10/10/2018	039404	2,869	6	594	588	31.9	P	TH

Model 2360Alpha Control Chart

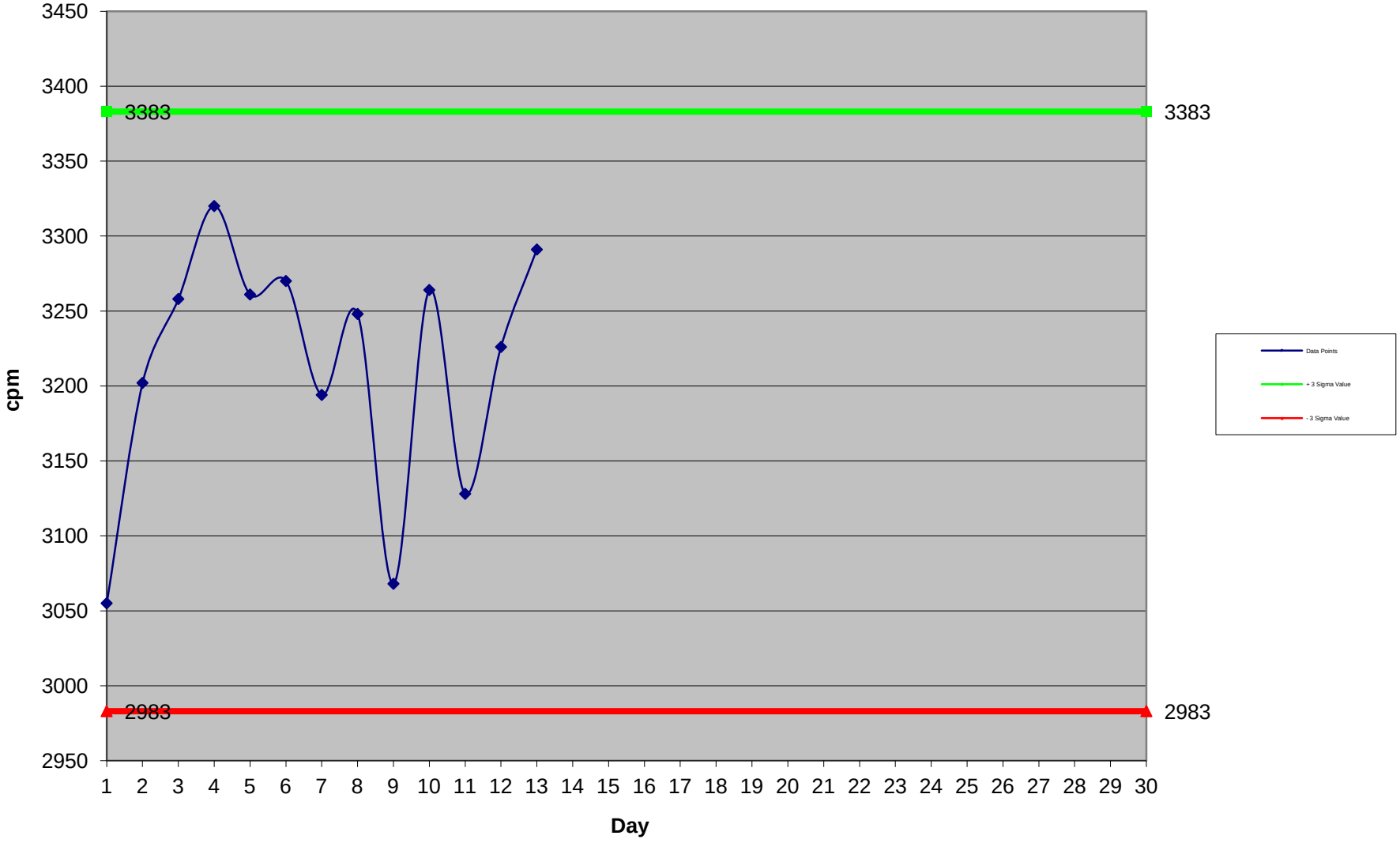


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM 1026-1142	READING CPM	Net CPM 2983-3383	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1132	4187	3055	38.4	P	AM
4/5/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1073	4275	3202	38.4	P	AM
4/6/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1124	4382	3258	38.4	P	AM
4/9/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1056	4376	3320	38.4	P	AM
4/10/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1061	4322	3261	38.4	P	AM
4/11/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1058	4328	3270	38.4	P	AM
4/12/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1085	4279	3194	38.4	P	AM
4/13/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1071	4319	3248	38.4	P	AM
4/16/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1038	4106	3068	38.4	P	AM
4/17/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1100	4364	3264	38.4	P	AM
4/18/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1106	4234	3128	38.4	P	TH
4/19/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1029	4255	3226	38.4	P	TH
4/20/2018	2360/43-37	297743/302111	N	10/10/2018	049410	12,131	1009	4300	3291	38.4	P	TH

Model 2360 Beta Control Chart

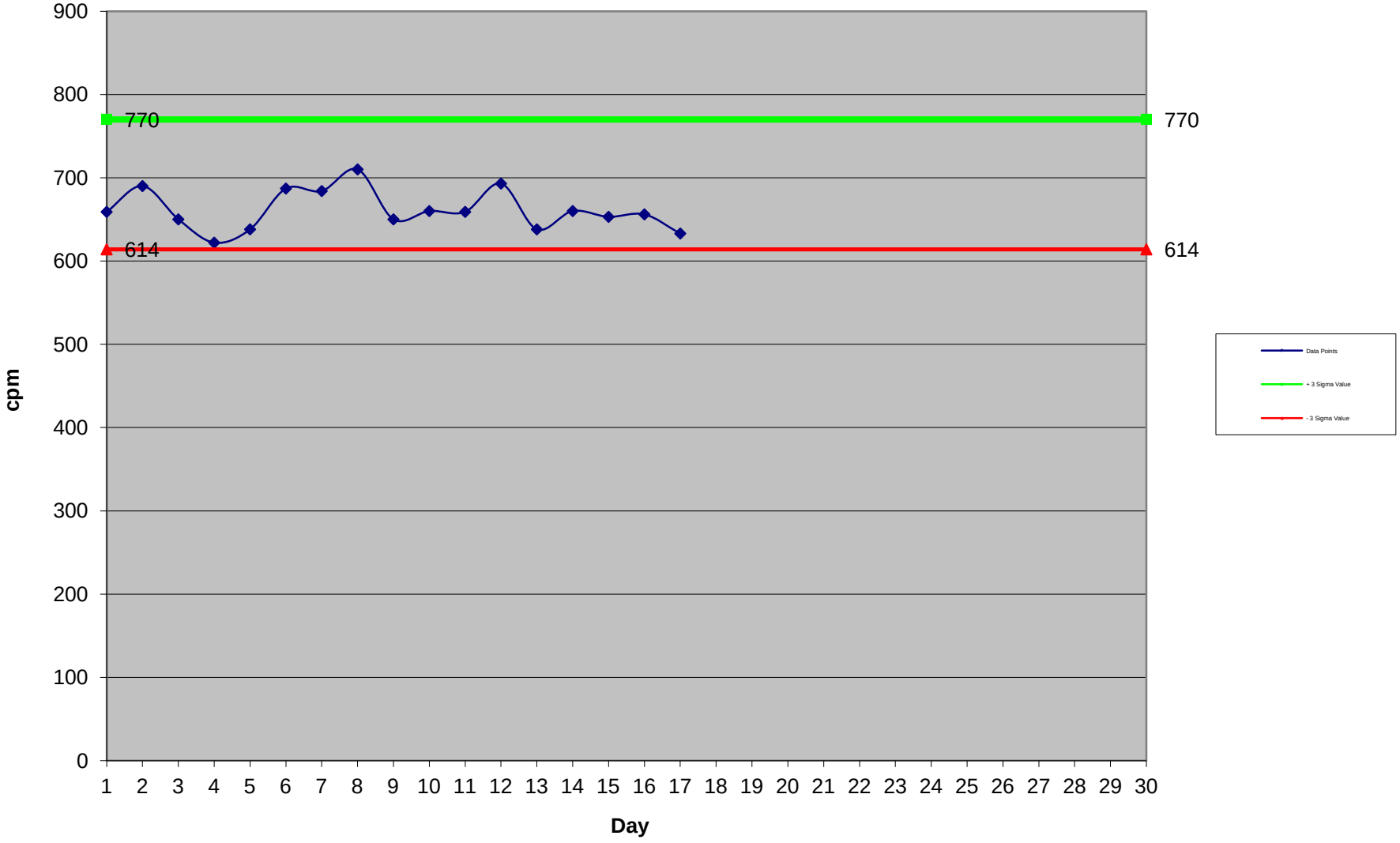


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapake Bldg .218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Th-230	SOURCE ACTIVITY alphas/min	BACKGROUND CPM 0-3	READING CPM	Net CPM 614-770	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	2	661	659	42.3	P	TH
4/5/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	1	691	690	42.3	P	TH
4/6/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	1	651	650	42.3	P	TH
4/9/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	622	622	42.3	P	JC
4/10/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	638	638	42.3	P	TH
4/11/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	1	688	687	42.3	P	TH
4/12/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	1	685	684	42.3	P	TH
4/13/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	710	710	42.3	P	TH
4/16/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	650	650	42.3	P	JC
4/17/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	1	661	660	42.3	P	TH
4/18/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	659	659	42.3	P	TH
4/19/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	693	693	42.3	P	TH
4/20/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	2	640	638	42.3	P	TH
4/23/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	660	660	42.3	P	TH
4/24/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	653	653	42.3	P	TH
4/25/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	656	656	42.3	P	TH
4/26/2018	2360/43-93	184949/268605	N	3/6/2019	039404	2,869	0	633	633	42.3	P	TH

Model 2360 Alpha Control Chart

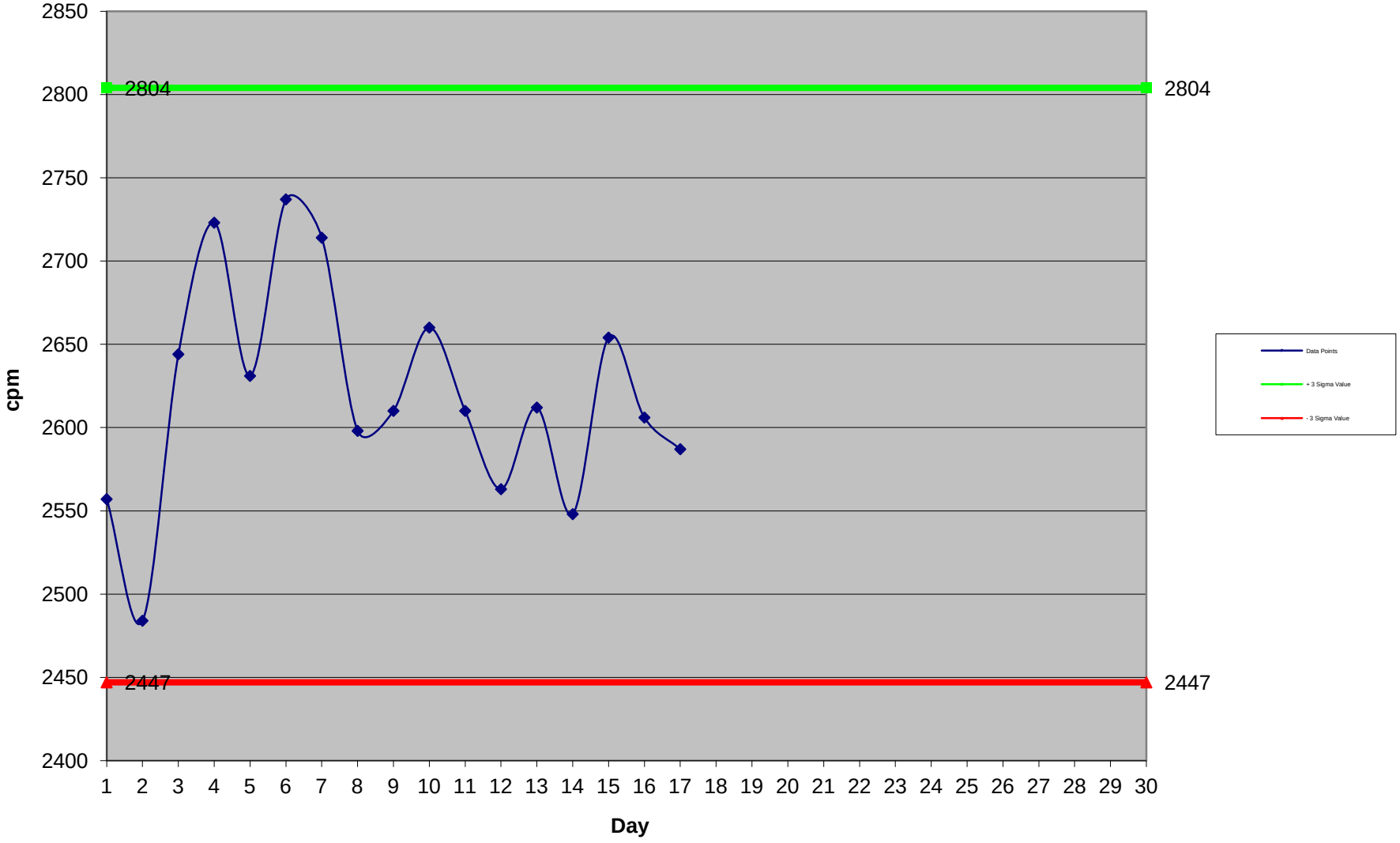


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapake Bldg .218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM 114-163	READING CPM	Net CPM 2447-2804	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	140	2697	2557	26.8	P	TH
4/5/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	160	2644	2484	26.8	P	TH
4/6/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	160	2804	2644	26.8	P	TH
4/9/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	162	2885	2723	26.8	P	JC
4/10/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	160	2791	2631	26.8	P	TH
4/11/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	154	2891	2737	26.8	P	TH
4/12/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	132	2846	2714	26.8	P	TH
4/13/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	160	2758	2598	26.8	P	TH
4/16/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	151	2761	2610	26.8	P	JC
4/17/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	160	2820	2660	26.8	P	TH
4/18/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	142	2752	2610	26.8	P	TH
4/19/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	162	2725	2563	26.8	P	TH
4/20/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	159	2771	2612	26.8	P	TH
4/23/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	150	2698	2548	26.8	P	TH
4/24/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	121	2775	2654	26.8	P	TH
4/25/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	150	2756	2606	26.8	P	TH
4/26/2018	2360/43-93	184949/268605	N	3/6/2019	049410	12,131	133	2720	2587	26.8	P	TH

Model 2360 Beta Control Chart

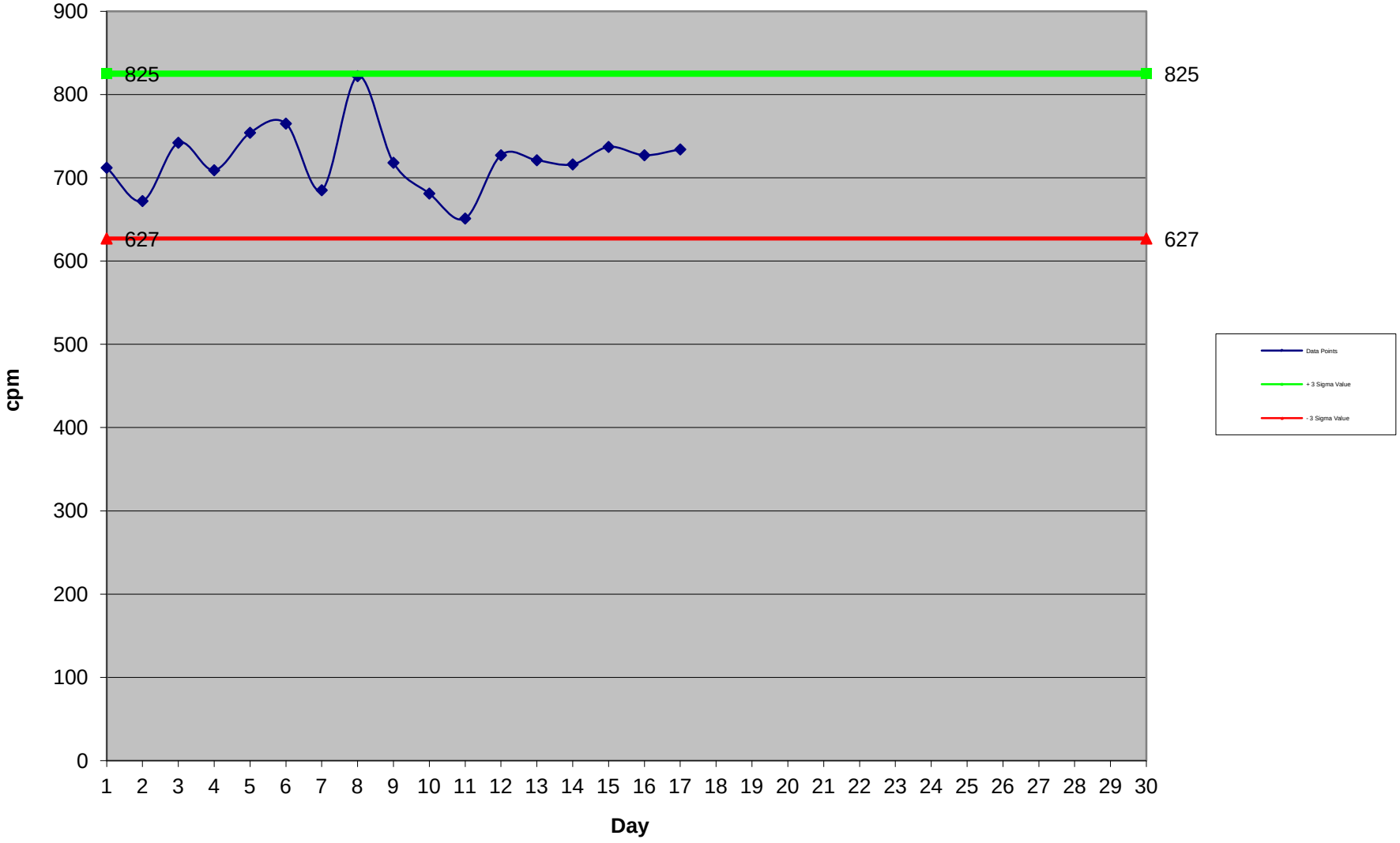


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Th-230	SOURCE ACTIVITY alphas/min	BACKGROUND CPM 0-4	READING CPM	Net CPM 627-825	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	0	712	712	49.7	P	JC
4/5/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	1	673	672	49.7	P	JC
4/6/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	0	742	742	49.7	P	TH
4/9/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	1	710	709	49.7	P	JC
4/10/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	1	755	754	49.7	P	TH
4/11/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	1	766	765	49.7	P	TH
4/12/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	1	686	685	49.7	P	TH
4/13/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	1	823	822	49.7	P	TH
4/16/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	0	718	718	49.7	P	TH
4/17/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	0	681	681	49.7	P	JC
4/18/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	0	651	651	49.7	P	TH
4/19/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	1	728	727	49.7	P	TH
4/20/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	1	722	721	49.7	P	TH
4/23/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	0	716	716	49.7	P	TH
4/24/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	0	737	737	49.7	P	TH
4/25/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	0	727	727	49.7	P	TH
4/26/2018	2360/43-93	193668/326725	N	8/15/2018	039404	2,869	1	735	734	49.7	P	TH

Model 2360 Alpha Control Chart

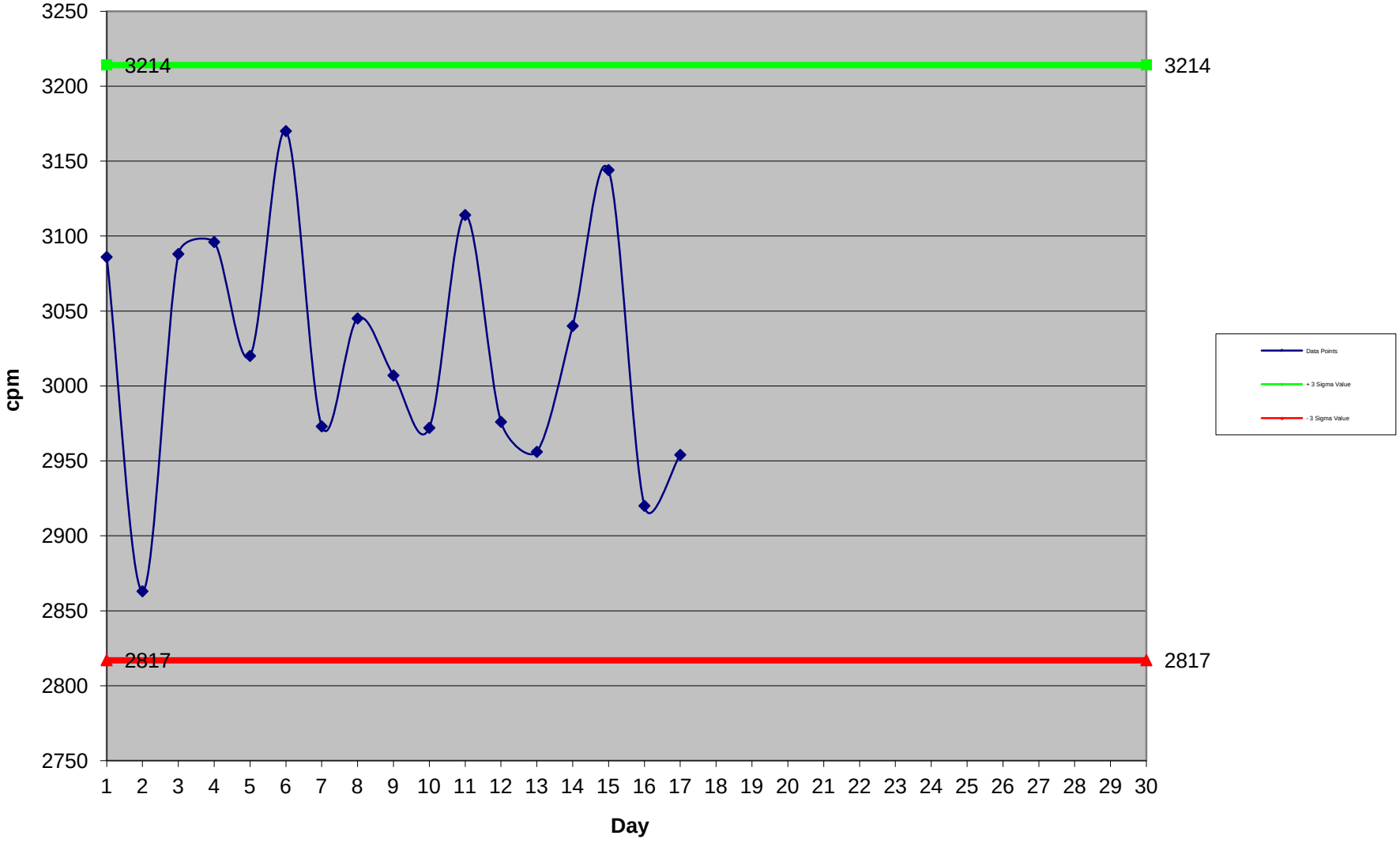


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM 128-172	READING CPM	Net CPM 2817-3214	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	156	3242	3086	32.7	P	JC
4/5/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	160	3023	2863	32.7	P	JC
4/6/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	163	3251	3088	32.7	P	TH
4/9/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	163	3259	3096	32.7	P	JC
4/10/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	168	3188	3020	32.7	P	TH
4/11/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	170	3340	3170	32.7	P	TH
4/12/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	167	3140	2973	32.7	P	TH
4/13/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	161	3206	3045	32.7	P	TH
4/16/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	148	3155	3007	32.7	P	TH
4/17/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	166	3138	2972	32.7	P	JC
4/18/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	170	3284	3114	32.7	P	TH
4/19/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	159	3135	2976	32.7	P	TH
4/20/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	168	3124	2956	32.7	P	TH
4/23/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	166	3206	3040	32.7	P	TH
4/24/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	143	3287	3144	32.7	P	TH
4/25/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	168	3088	2920	32.7	P	TH
4/26/2018	2360/43-93	193668/326725	N	8/15/2018	049410	12,131	169	3123	2954	32.7	P	TH

Model 2360 Beta Control Chart

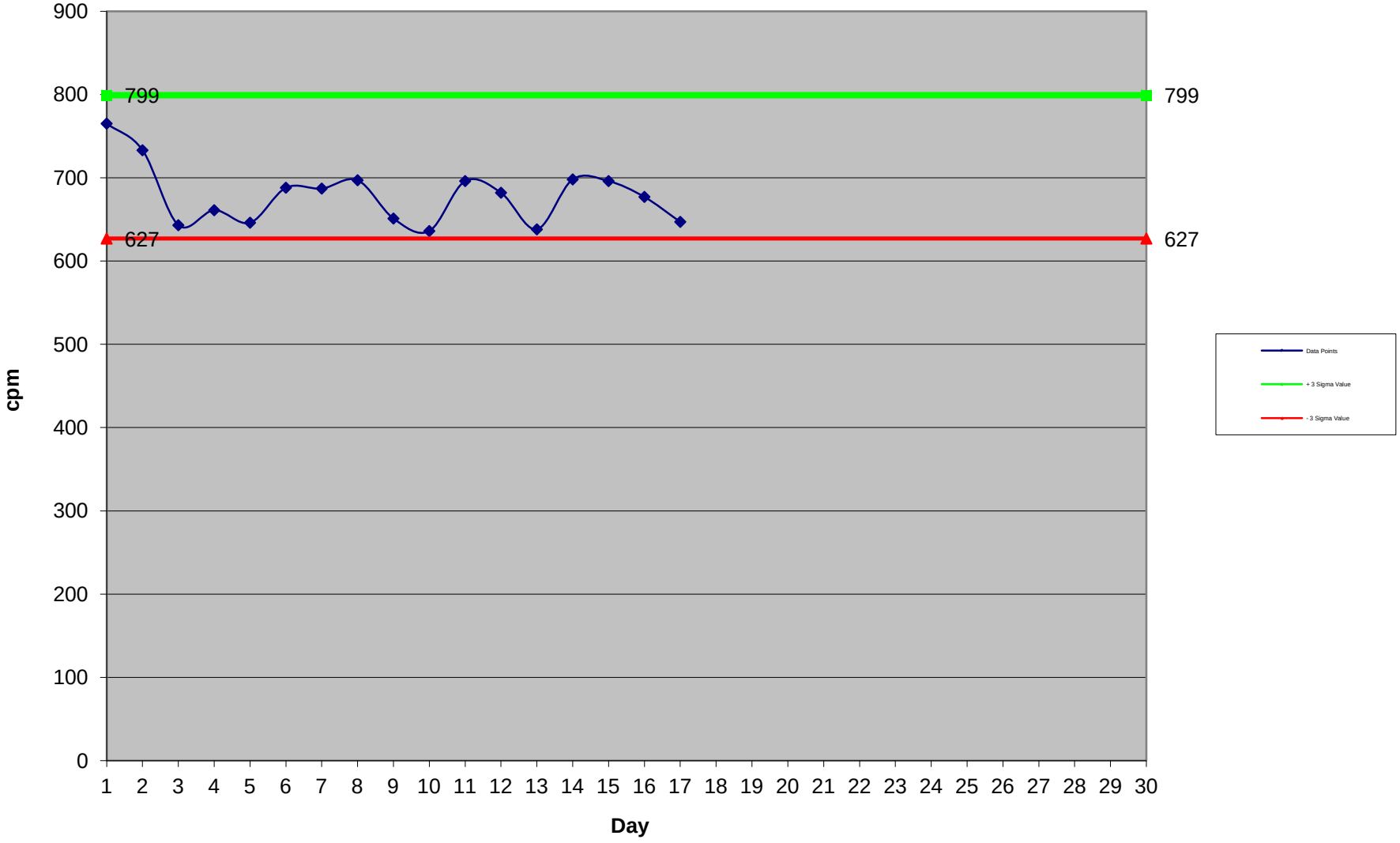


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Th-230	SOURCE ACTIVITY alphas/min	BACKGROUND CPM 0-2	READING CPM	Net CPM 627-799	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	765	765	44.4	P	TH
4/5/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	733	733	44.4	P	TH
4/6/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	2	645	643	44.4	P	TH
4/9/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	1	662	661	44.4	P	TH
4/10/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	646	646	44.4	P	TH
4/11/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	1	689	688	44.4	P	TH
4/12/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	687	687	44.4	P	TH
4/13/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	697	697	44.4	P	TH
4/16/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	1	652	651	44.4	P	TH
4/17/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	636	636	44.4	P	TH
4/18/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	696	696	44.4	P	TH
4/19/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	1	683	682	44.4	P	TH
4/20/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	638	638	44.4	P	TH
4/23/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	698	698	44.4	P	TH
4/24/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	696	696	44.4	P	TH
4/25/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	0	677	677	44.4	P	TH
4/26/2018	2360/43-93	297758/299597	N	2/14/2019	039404	2,869	1	648	647	44.4	P	TH

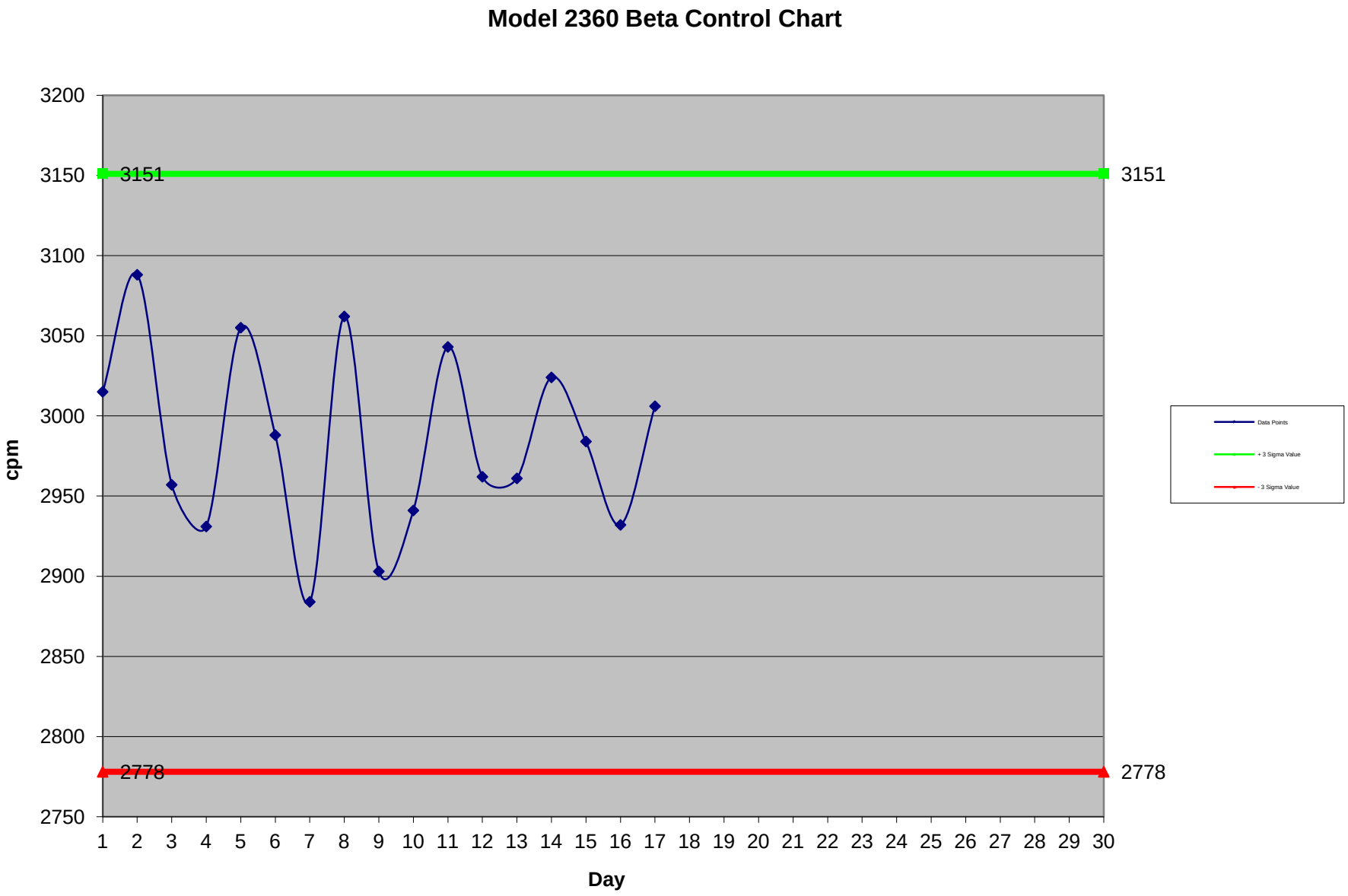
Model 2360 Alpha Control Chart



DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM 144-199	READING CPM	Net CPM 2778-3151	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	197	3212	3015	31.3	P	TH
4/5/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	176	3264	3088	31.3	P	TH
4/6/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	191	3148	2957	31.3	P	TH
4/9/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	194	3125	2931	31.3	P	TH
4/10/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	178	3233	3055	31.3	P	TH
4/11/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	160	3148	2988	31.3	P	TH
4/12/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	194	3078	2884	31.3	P	TH
4/13/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	179	3241	3062	31.3	P	TH
4/16/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	167	3070	2903	31.3	P	TH
4/17/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	196	3137	2941	31.3	P	TH
4/18/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	174	3217	3043	31.3	P	TH
4/19/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	186	3148	2962	31.3	P	TH
4/20/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	197	3158	2961	31.3	P	TH
4/23/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	160	3184	3024	31.3	P	TH
4/24/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	194	3178	2984	31.3	P	TH
4/25/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	178	3110	2932	31.3	P	TH
4/26/2018	2360/43-93	297758/299597	N	2/14/2019	049410	12,131	170	3176	3006	31.3	P	TH

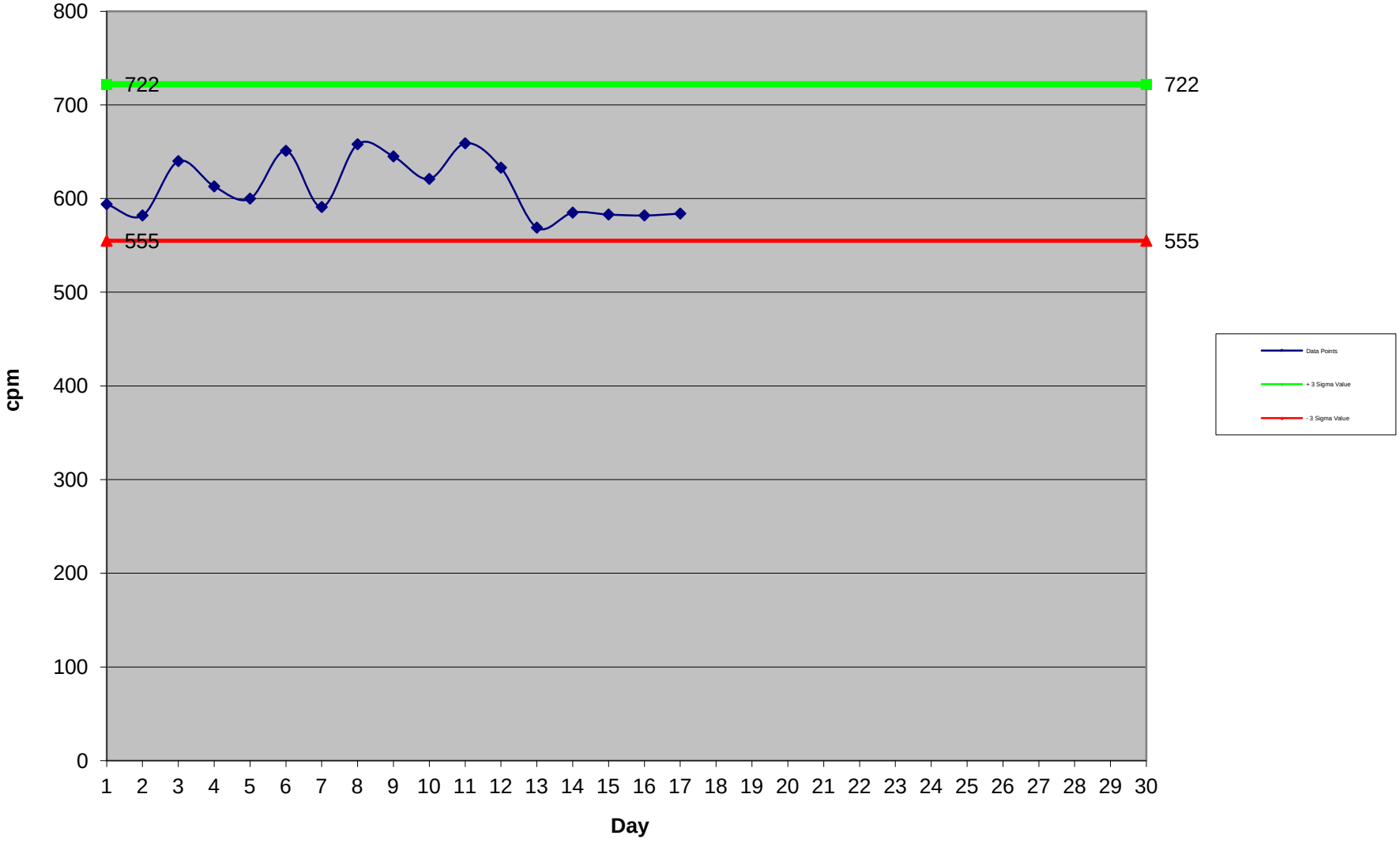

Model 2360 Beta Control Chart
3200
3150
3100
3050
3000
2950
2900
2850
2800
2750
cpm
3151
3151
2778
2778
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day
Data Points
+ 3 Sigma Value
- 3 Sigma Value

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Th-230	SOURCE ACTIVITY alphas/min	BACKGROUND CPM 0-3	READING CPM	Net CPM 555-722	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	594	594	40.4	P	JC
4/5/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	1	583	582	40.4	P	JC
4/6/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	1	641	640	40.4	P	TH
4/9/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	613	613	40.4	P	TH
4/10/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	1	601	600	40.4	P	TH
4/11/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	1	652	651	40.4	P	TH
4/12/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	1	592	591	40.4	P	TH
4/13/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	658	658	40.4	P	TH
4/16/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	645	645	40.4	P	JC
4/17/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	621	621	40.4	P	TH
4/18/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	659	659	40.4	P	TH
4/19/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	633	633	40.4	P	TH
4/20/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	569	569	40.4	P	TH
4/23/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	2	587	585	40.4	P	TH
4/24/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	583	583	40.4	P	TH
4/25/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	582	582	40.4	P	TH
4/26/2018	2360/43-93	297766/323074	N	12/20/2018	039404	2,869	0	584	584	40.4	P	TH

Model 2360 Alpha Control Chart

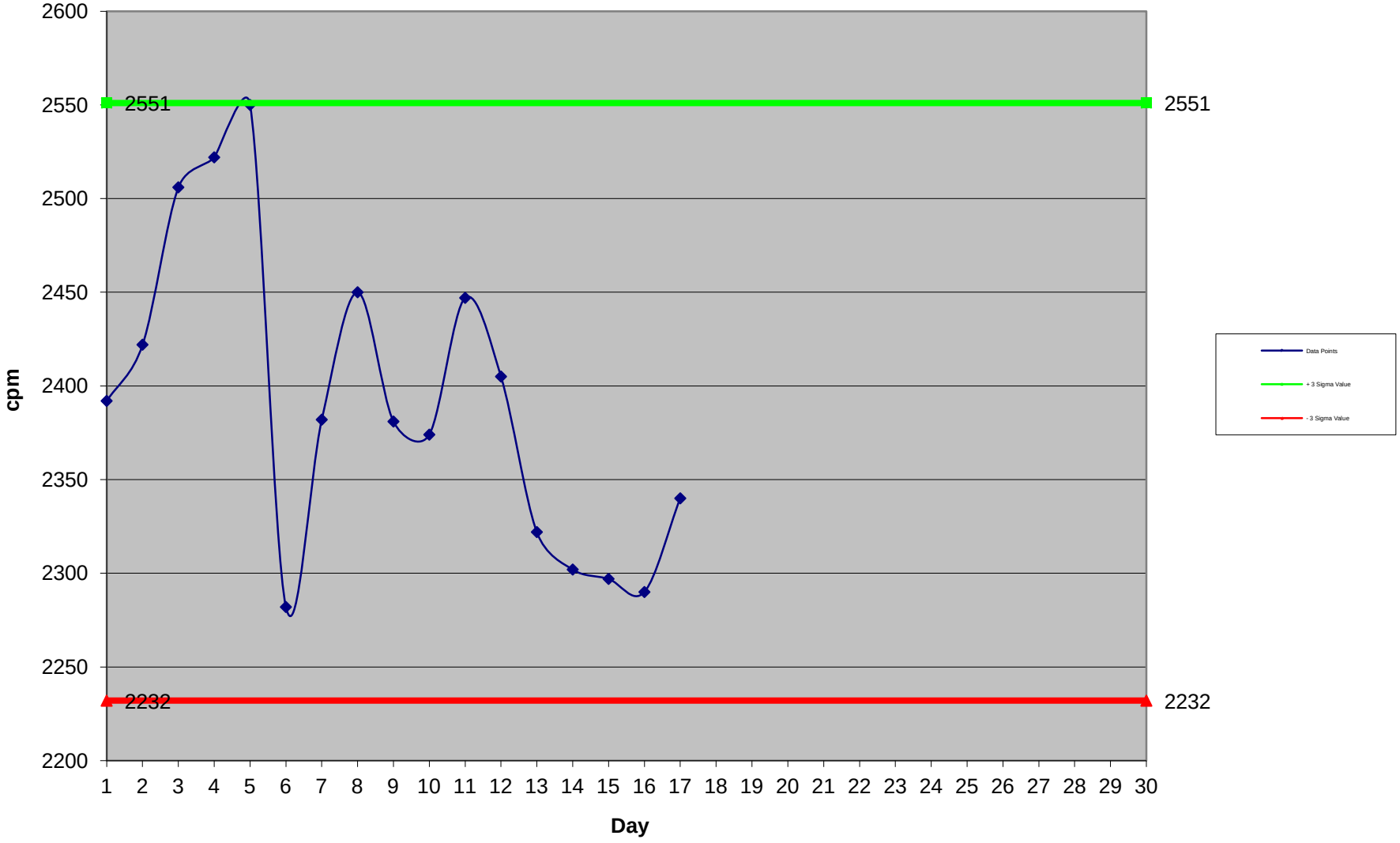


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM 144-196	READING CPM	Net CPM 2232-2551	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	166	2558	2392	25.4	P	JC
4/5/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	173	2595	2422	25.4	P	JC
4/6/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	178	2684	2506	25.4	P	TH
4/9/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	158	2680	2522	25.4	P	TH
4/10/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	172	2722	2550	25.4	P	TH
4/11/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	195	2477	2282	25.4	P	TH
4/12/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	175	2557	2382	25.4	P	TH
4/13/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	178	2628	2450	25.4	P	TH
4/16/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	173	2554	2381	25.4	P	JC
4/17/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	194	2568	2374	25.4	P	TH
4/18/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	187	2634	2447	25.4	P	TH
4/19/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	194	2599	2405	25.4	P	TH
4/20/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	176	2498	2322	25.4	P	TH
4/23/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	167	2469	2302	25.4	P	TH
4/24/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	171	2468	2297	25.4	P	TH
4/25/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	192	2482	2290	25.4	P	TH
4/26/2018	2360/43-93	297766/323074	N	12/20/2018	049410	12,131	178	2518	2340	25.4	P	TH

Model 2360 Beta Control Chart



LUDLUM MODEL 2929
DAILY 30 MINUTE BACKGROUND AND EFFICIENCY

For: NRL Chesapeake Bldg. 218

Instrument ID: 146780
Cal Due Date: 6/17/2018
Detector ID: 151113

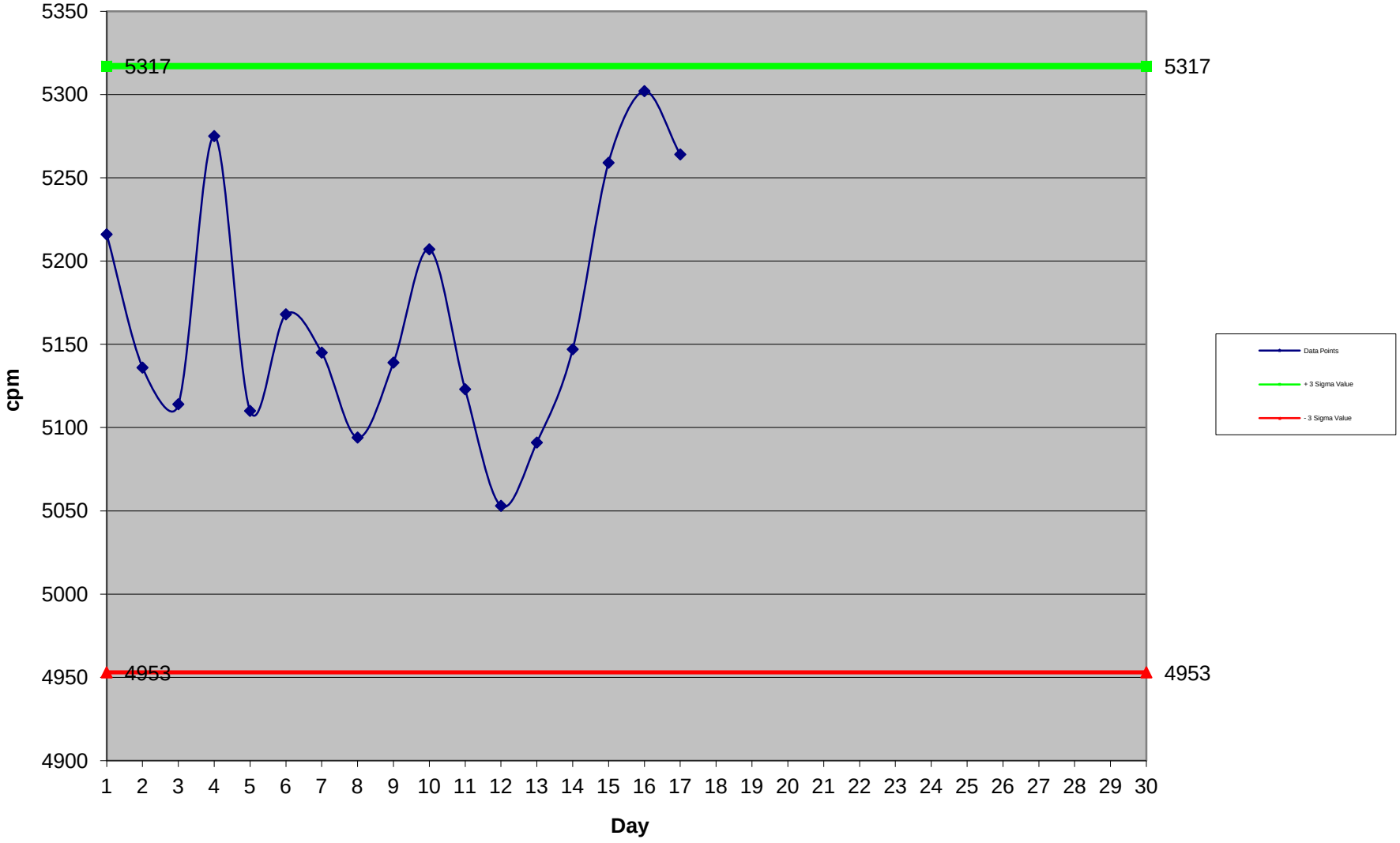
Sources Used:
Alpha S/N: Th-230/011404 Activity: 8,278 alphas/min
Beta S/N: Tc-99/011403 Activity: 12,040 betas/min

Acceptable Range of Background: 0 CPM to 1 CPM α
Background Count Time: 30 Minutes 29 CPM to 45 CPM βγ

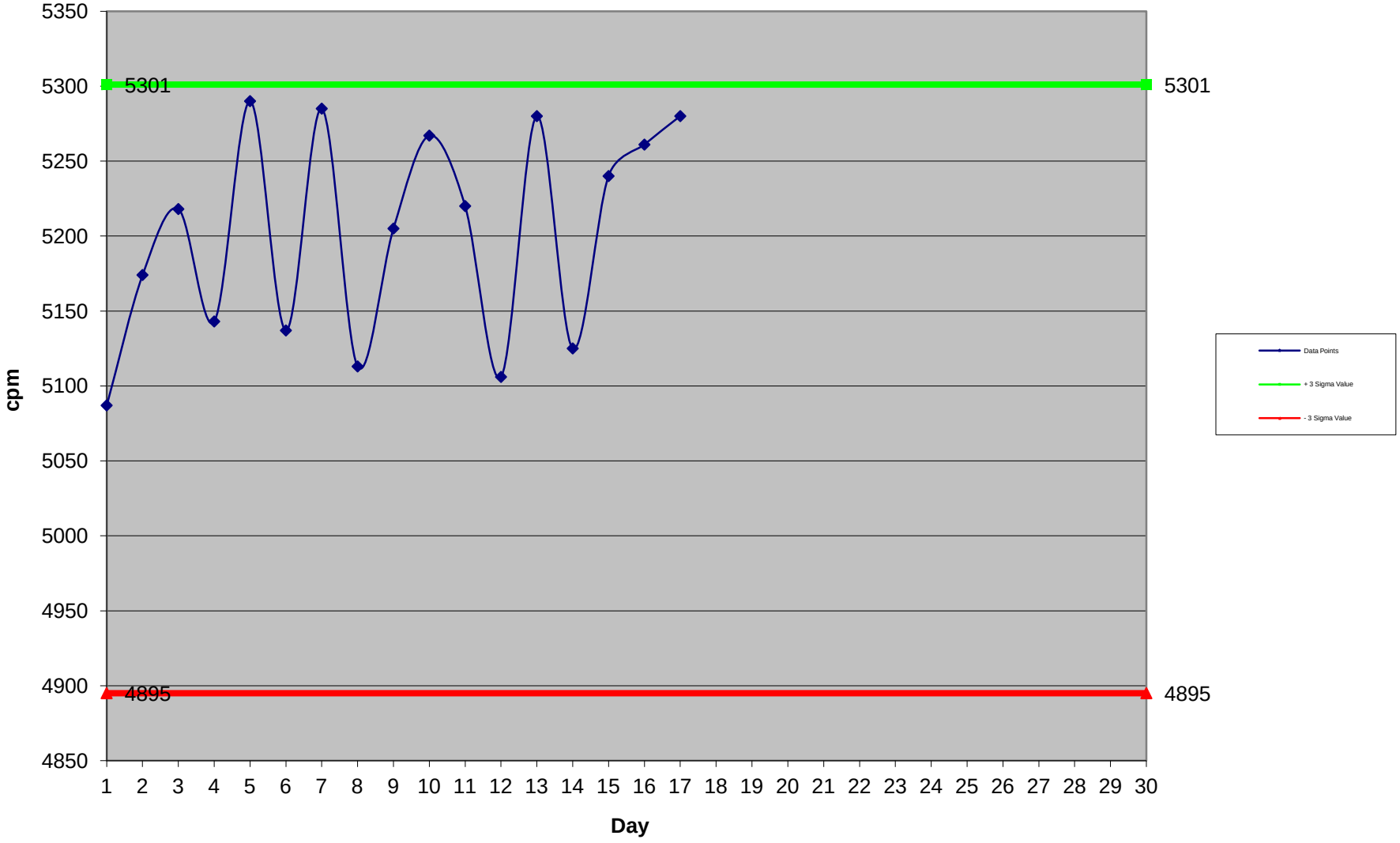
Date	Total Counts α	Total Counts βγ	30-Minute Background (CPM) α 0–1	30-Minute Background (CPM) βγ 29–45	1-min α Source Counts 4953-5317	Eff. α	1- min βγ Source Counts 4895-5301	Eff. βγ	Initials
4/4/2018	1	1288	0.0	42.9	5216	71.0	5087	53.0	JM
4/5/2018	6	1269	0.2	42.3	5136	71.0	5174	53.0	JM
4/6/2018	2	1138	0.1	37.9	5114	71.0	5218	53.0	JM
4/9/2018	5	1147	0.2	38.2	5275	71.0	5143	53.0	JM
4/10/2018	3	1120	0.1	37.3	5110	71.0	5290	53.0	JM
4/11/2018	8	1192	0.3	39.7	5168	71.0	5137	53.0	JM
4/12/2018	4	1157	0.1	38.6	5145	71.0	5285	53.0	JM
4/13/2018	5	1155	0.2	38.5	5094	71.0	5113	53.0	JM
4/16/2018	4	1176	0.1	39.2	5139	71.0	5205	53.0	AM
4/17/2018	7	1153	0.2	38.4	5207	71.0	5267	53.0	AM
4/18/2018	5	1232	0.2	41.1	5123	71.0	5220	53.0	AM
4/19/2018	3	1185	0.1	39.5	5053	71.0	5106	53.0	AM
4/20/2018	3	1142	0.1	38.1	5091	71.0	5280	53.0	JM
4/23/2018	4	1065	0.1	35.5	5147	71.0	5125	53.0	JM
4/24/2018	3	1064	0.1	35.5	5259	71.0	5240	53.0	JM
4/25/2018	4	1187	0.1	39.6	5302	71.0	5261	53.0	JM
4/26/2018	2	1218	0.1	40.6	5264	71.0	5280	53.0	JM

Reviewed by: *Daniel Spicuzza* Date: 4/27/2018

Model 2929 Alpha Control Chart



Model 2929 Beta Control Chart

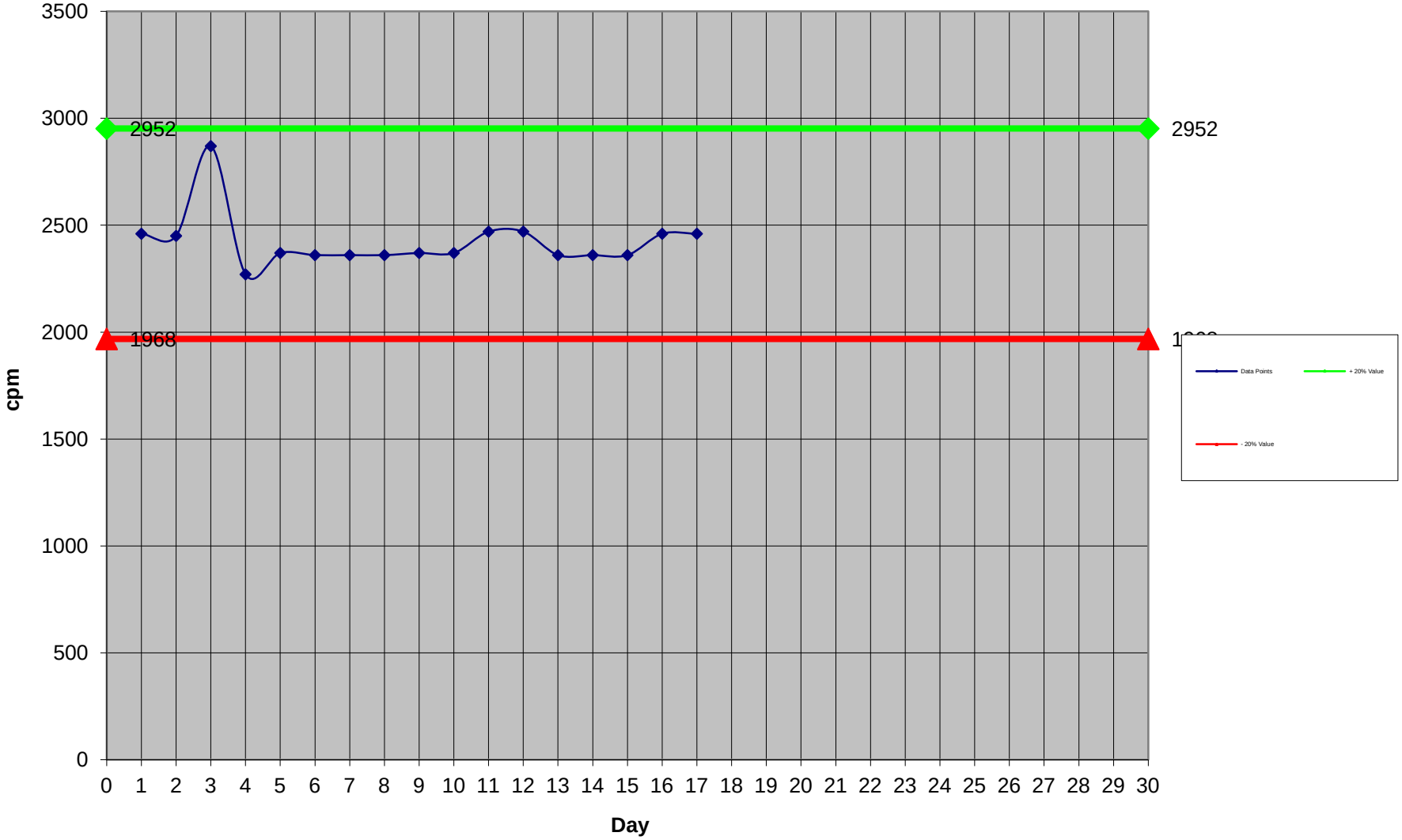


DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM	READING CPM	Net CPM 1968-2952	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	40	2500	2460	20	P	TH
4/5/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	50	2500	2450	20	P	JC
4/6/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	30	2900	2870	24	P	TH
4/9/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	30	2300	2270	19	P	TH
4/10/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	30	2400	2370	20	P	TH
4/11/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	40	2400	2360	20	P	TH
4/12/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	40	2400	2360	20	P	TH
4/13/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	40	2400	2360	20	P	TH
4/16/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	30	2400	2370	20	P	TH
4/17/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	30	2400	2370	20	P	TH
4/18/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	30	2500	2470	21	P	TH
4/19/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	30	2500	2470	21	P	TH
4/20/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	40	2400	2360	20	P	TH
4/23/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	40	2400	2360	20	P	TH
4/24/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	40	2400	2360	20	P	TH
4/25/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	40	2500	2460	20	P	JC
4/26/2018	3/44-9	94347/115746	N	8/14/2018	011403	12,040	40	2500	2460	20	P	JC

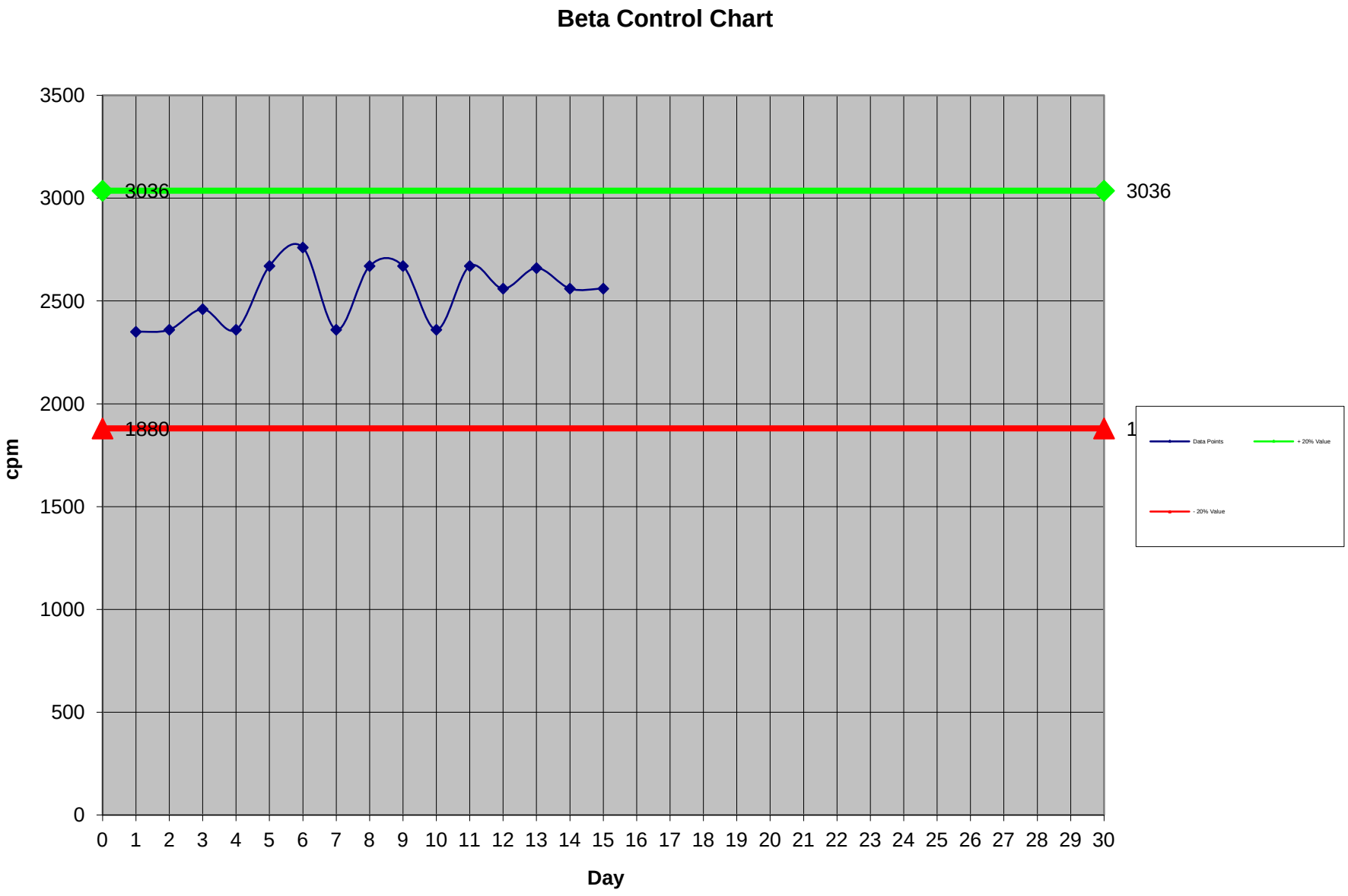
Beta Control Chart



DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: NRL Chesapeake Bldg. 218

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D Tc-99	SOURCE ACTIVITY betas/min	BACKGROUND CPM	READING CPM	Net CPM 1880-3036	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
4/4/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	50	2400	2350	20	P	TH
4/5/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2400	2360	20	P	JC
4/6/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2500	2460	20	P	TH
4/9/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2400	2360	20	P	TH
4/10/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	30	2700	2670	22	P	TH
4/11/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2800	2760	23	P	TH
4/12/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2400	2360	20	P	TH
4/13/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	30	2700	2670	22	P	TH
4/16/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	30	2700	2670	22	P	TH
4/17/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2400	2360	20	P	TH
4/18/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	30	2700	2670	22	P	TH
4/19/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2600	2560	21	P	TH
4/20/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2700	2660	22	P	TH
4/23/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2600	2560	21	P	TH
4/24/2018	3/44-9	294756/210879	N	4/21/2018	011403	12,040	40	2600	2560	21	P	TH


Beta Control Chart
3500
3000
2500
2000
1500
1000
500
0
cpm
3036
3036
1880
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day
Data Points
+ 20% Value
- 20% Value

Appendix F
QA Audit Report

Appendix G

Data Validation Report

Appendix H

Building 218/227 Rooms Scan Survey Data

Room 100 Floor

2360 SN:268497
43-37 SN:093965
Cal Due Date: 10/10/2018
Surveyor: Thomas Hogan
Bldg. 218
Room 100 Floor Grids 1 thru 12
Alpha Efficiency: 0.31
Beta/Gamma Efficiency: 0.352
Alpha Background: 4.9
Beta/Gamma Background: 889

S=Scaler, R=Ratemeter

Sample #	Date	Time	Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/6/2018	12:39:54 PM	0	897	R	0.1	Grid 1	**-11**	**10**
2	4/6/2018	12:40:06 PM	0	889	R	0.1		**-11**	**0**
3	4/6/2018	12:40:18 PM	3	967	R	0.1		**-4**	**102**
4	4/6/2018	12:40:30 PM	0	812	R	0.1		**-11**	**-100**
5	4/6/2018	12:40:41 PM	7	970	R	0.1		**5**	**105**
6	4/6/2018	12:40:53 PM	1	947	R	0.1		**-9**	**75**
7	4/6/2018	12:41:05 PM	18	880	R	0.1		**29**	**-12**
8	4/6/2018	12:41:17 PM	4	864	R	0.1		**-2**	**-33**
9	4/6/2018	12:41:28 PM	1	968	R	0.1		**-9**	**103**
10	4/6/2018	12:43:34 PM	0	855	R	0.1	Grid 2	**-11**	**-44**
11	4/6/2018	12:43:45 PM	0	792	R	0.1		**-11**	**-126**
12	4/6/2018	12:43:57 PM	3	916	R	0.1		**-4**	**35**
13	4/6/2018	12:44:09 PM	0	879	R	0.1		**-11**	**-13**
14	4/6/2018	12:44:21 PM	3	880	R	0.1		**-4**	**-12**
15	4/6/2018	12:44:32 PM	5	749	R	0.1		**0**	**-182**
16	4/6/2018	12:44:44 PM	1	915	R	0.1		**-9**	**34**
17	4/6/2018	12:44:56 PM	14	742	R	0.1		**20**	**-191**
18	4/6/2018	12:45:08 PM	3	902	R	0.1		**-4**	**17**
19	4/6/2018	12:45:19 PM	0	905	R	0.1		**-11**	**21**
20	4/6/2018	12:47:05 PM	0	925	R	0.1	Grid 3	**-11**	**47**
21	4/6/2018	12:47:16 PM	0	819	R	0.1		**-11**	**-91**
22	4/6/2018	12:47:28 PM	9	844	R	0.1		**9**	**-59**
23	4/6/2018	12:47:40 PM	2	908	R	0.1		**-6**	**25**
24	4/6/2018	12:47:52 PM	12	916	R	0.1		**16**	**35**
25	4/6/2018	12:48:03 PM	15	821	R	0.1		**22**	**-89**
26	4/6/2018	12:48:15 PM	4	892	R	0.1		**-2**	**4**
27	4/6/2018	12:48:27 PM	1	888	R	0.1		**-9**	**-1**
28	4/6/2018	12:48:39 PM	0	845	R	0.1		**-11**	**-57**
29	4/6/2018	12:48:50 PM	6	815	R	0.1		**2**	**-96**
30	4/6/2018	12:50:26 PM	0	893	R	0.1	Grid 4	**-11**	**5**
31	4/6/2018	12:50:37 PM	0	781	R	0.1		**-11**	**-141**
32	4/6/2018	12:50:49 PM	9	696	R	0.1		**9**	**-251**
33	4/6/2018	12:51:01 PM	7	870	R	0.1		**5**	**-25**
34	4/6/2018	12:51:13 PM	1	868	R	0.1		**-9**	**-27**
35	4/6/2018	12:51:24 PM	7	853	R	0.1		**5**	**-47**
36	4/6/2018	12:51:36 PM	1	820	R	0.1		**-9**	**-90**
37	4/6/2018	12:51:48 PM	0	847	R	0.1		**-11**	**-55**
38	4/6/2018	12:52:00 PM	11	874	R	0.1		**14**	**-20**
39	4/6/2018	12:52:11 PM	3	900	R	0.1		**-4**	**14**
40	4/6/2018	12:55:03 PM	14	869	R	0.1	Grid 5	**20**	**-26**

41	4/6/2018	12:55:15 PM	12	805	R	0.1		**16**	**-109**
42	4/6/2018	12:55:27 PM	2	875	R	0.1		**-6**	**-18**
43	4/6/2018	12:55:38 PM	0	823	R	0.1		**-11**	**-86**
44	4/6/2018	12:55:50 PM	13	888	R	0.1		**18**	**-1**
45	4/6/2018	12:56:02 PM	3	856	R	0.1		**-4**	**-43**
46	4/6/2018	12:56:14 PM	8	853	R	0.1		**7**	**-47**
47	4/6/2018	12:56:25 PM	13	868	R	0.1		**18**	**-27**
48	4/6/2018	12:56:37 PM	3	846	R	0.1		**-4**	**-56**
49	4/6/2018	12:56:49 PM	0	845	R	0.1		**-11**	**-57**
50	4/6/2018	12:57:55 PM	7	881	R	0.1	Grid 6	**5**	**-10**
51	4/6/2018	12:58:07 PM	1	880	R	0.1		**-9**	**-12**
52	4/6/2018	12:58:18 PM	0	1004	R	0.1		**-11**	**150**
53	4/6/2018	12:58:30 PM	5	882	R	0.1		**0**	**-9**
54	4/6/2018	12:58:42 PM	1	848	R	0.1		**-9**	**-53**
55	4/6/2018	12:58:54 PM	0	840	R	0.1		**-11**	**-64**
56	4/6/2018	12:59:06 PM	10	892	R	0.1		**11**	**4**
57	4/6/2018	12:59:17 PM	5	825	R	0.1		**0**	**-83**
58	4/6/2018	12:59:29 PM	5	908	R	0.1		**0**	**25**
59	4/6/2018	12:59:41 PM	7	815	R	0.1		**5**	**-96**
60	4/6/2018	1:01:33 PM	0	842	R	0.1	Grid 7	**-11**	**-61**
61	4/6/2018	1:01:45 PM	0	821	R	0.1		**-11**	**-89**
62	4/6/2018	1:01:57 PM	5	877	R	0.1		**0**	**-16**
63	4/6/2018	1:02:08 PM	1	806	R	0.1		**-9**	**-108**
64	4/6/2018	1:02:20 PM	4	858	R	0.1		**-2**	**-40**
65	4/6/2018	1:02:32 PM	0	812	R	0.1		**-11**	**-100**
66	4/6/2018	1:02:44 PM	0	818	R	0.1		**-11**	**-92**
67	4/6/2018	1:02:55 PM	5	887	R	0.1		**0**	**-3**
68	4/6/2018	1:03:07 PM	1	857	R	0.1		**-9**	**-42**
69	4/6/2018	1:03:19 PM	8	882	R	0.1		**7**	**-9**
70	4/6/2018	1:07:51 PM	0	920	R	0.1	Grid 8	**-11**	**40**
71	4/6/2018	1:08:03 PM	7	893	R	0.1		**5**	**5**
72	4/6/2018	1:08:14 PM	11	833	R	0.1		**14**	**-73**
73	4/6/2018	1:08:26 PM	2	857	R	0.1		**-6**	**-42**
74	4/6/2018	1:08:38 PM	4	832	R	0.1		**-2**	**-74**
75	4/6/2018	1:08:50 PM	0	913	R	0.1		**-11**	**31**
76	4/6/2018	1:09:01 PM	3	904	R	0.1		**-4**	**20**
77	4/6/2018	1:09:13 PM	0	897	R	0.1		**-11**	**10**
78	4/6/2018	1:09:25 PM	3	910	R	0.1		**-4**	**27**
79	4/6/2018	1:09:37 PM	7	836	R	0.1		**5**	**-69**
80	4/6/2018	1:11:03 PM	10	921	R	0.1	Grid 9	**11**	**42**
81	4/6/2018	1:11:14 PM	2	900	R	0.1		**-6**	**14**
82	4/6/2018	1:11:26 PM	0	841	R	0.1		**-11**	**-62**
83	4/6/2018	1:11:38 PM	4	823	R	0.1		**-2**	**-86**
84	4/6/2018	1:11:50 PM	0	866	R	0.1		**-11**	**-30**
85	4/6/2018	1:12:02 PM	11	851	R	0.1		**14**	**-49**
86	4/6/2018	1:12:13 PM	7	974	R	0.1		**5**	**111**
87	4/6/2018	1:12:25 PM	1	837	R	0.1		**-9**	**-68**
88	4/6/2018	1:12:37 PM	0	899	R	0.1		**-11**	**13**
89	4/6/2018	1:12:49 PM	3	881	R	0.1		**-4**	**-10**
90	4/6/2018	1:14:23 PM	14	900	R	0.1	Grid 10	**20**	**14**
91	4/6/2018	1:14:35 PM	15	910	R	0.1		**22**	**27**
92	4/6/2018	1:14:46 PM	3	834	R	0.1		**-4**	**-72**
93	4/6/2018	1:14:58 PM	0	831	R	0.1		**-11**	**-75**
94	4/6/2018	1:15:10 PM	6	857	R	0.1		**2**	**-42**
95	4/6/2018	1:15:22 PM	3	850	R	0.1		**-4**	**-51**

96	4/6/2018	1:15:33 PM	0	877	R	0.1		**-11**	**-16**
97	4/6/2018	1:15:45 PM	3	867	R	0.1		**-4**	**-29**
98	4/6/2018	1:15:57 PM	4	912	R	0.1		**-2**	**30**
99	4/6/2018	1:16:09 PM	0	882	R	0.1		**-11**	**-9**
100	4/6/2018	1:18:23 PM	0	856	R	0.1	Grid 11	**-11**	**-43**
101	4/6/2018	1:18:34 PM	5	836	R	0.1		**0**	**-69**
102	4/6/2018	1:18:46 PM	0	856	R	0.1		**-11**	**-43**
103	4/6/2018	1:18:58 PM	4	867	R	0.1		**-2**	**-29**
104	4/6/2018	1:19:10 PM	0	847	R	0.1		**-11**	**-55**
105	4/6/2018	1:19:21 PM	6	855	R	0.1		**2**	**-44**
106	4/6/2018	1:19:33 PM	1	862	R	0.1		**-9**	**-35**
107	4/6/2018	1:19:45 PM	7	886	R	0.1		**5**	**-4**
108	4/6/2018	1:19:57 PM	1	879	R	0.1		**-9**	**-13**
109	4/6/2018	1:20:08 PM	0	895	R	0.1		**-11**	**8**
110	4/6/2018	1:22:19 PM	3	885	R	0.1	Grid 12	**-4**	**-5**
111	4/6/2018	1:22:31 PM	0	913	R	0.1		**-11**	**31**
112	4/6/2018	1:22:43 PM	0	960	R	0.1		**-11**	**92**
113	4/6/2018	1:22:54 PM	5	826	R	0.1		**0**	**-82**
114	4/6/2018	1:23:06 PM	1	921	R	0.1		**-9**	**42**
115	4/6/2018	1:23:18 PM	28	902	R	0.1		**51**	**17**
116	4/6/2018	1:23:30 PM	12	950	R	0.1		**16**	**79**
117	4/6/2018	1:23:41 PM	3	1051	R	0.1		**-4**	**211**
118	4/6/2018	1:23:53 PM	11	1128	R	0.1		**14**	**311**
119	4/6/2018	1:24:05 PM	2	1003	R	0.1		**-6**	**148**
		Maximum:	**28**	**1128**				**51**	**311**
		Average:	**4**	**874**				**-2**	**-19**
		StDev:	**5**	**56**				**11**	**73**

Room 100 Lower Walls

2360 SN:268497
43-37# 093965
Cal Due Date: 10/10/2018
Surveyor: Thomas Hogan
Bldg. 218
Room 100 Lower Wall Grids All
Alpha Efficiency: 0.31
Beta/Gamma Efficiency: 0.352 Metal
Alpha Background: 4.8 3.3
Beta/Gamma Background: 1321 484

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2 Alpha	dpm/100cm^2 Beta	
1	4/4/2018	9:58:56	AM	0	1310	R	0.1	Grid 1	**-11**	**-14**	
2	4/4/2018	9:59:07	AM	0	1301	R	0.1		**-11**	**-26**	
3	4/4/2018	9:59:19	AM	15	768	R	0.1		**23**	**370**	Metal
4	4/4/2018	9:59:31	AM	3	637	R	0.1		**-4**	**199**	Metal
5	4/4/2018	9:59:43	AM	0	695	R	0.1		**-11**	**275**	Metal
6	4/4/2018	9:59:54	AM	0	721	R	0.1		**-11**	**308**	Metal
7	4/4/2018	10:00:06	AM	0	593	R	0.1		**-11**	**142**	Metal
8	4/4/2018	10:00:18	AM	16	688	R	0.1		**25**	**266**	Metal
9	4/4/2018	10:00:30	AM	3	1319	R	0.1		**-4**	**-3**	
10	4/4/2018	10:04:27	AM	0	579	R	0.1	Grid 2	**-11**	**124**	Metal
11	4/4/2018	10:04:39	AM	0	604	R	0.1		**-11**	**156**	Metal
12	4/4/2018	10:04:51	AM	4	1318	R	0.1		**-2**	**-4**	
13	4/4/2018	10:05:02	AM	12	1547	R	0.1		**16**	**294**	
14	4/4/2018	10:05:14	AM	3	1437	R	0.1		**-4**	**151**	
15	4/4/2018	10:05:26	AM	4	1392	R	0.1		**-2**	**92**	
16	4/4/2018	10:05:38	AM	0	1410	R	0.1		**-11**	**116**	
17	4/4/2018	10:05:49	AM	3	1285	R	0.1		**-4**	**-47**	
18	4/4/2018	10:06:01	AM	0	1117	R	0.1		**-11**	**-266**	
19	4/4/2018	10:06:13	AM	4	755	R	0.1		**-2**	**353**	Metal
20	4/4/2018	10:09:37	AM	5	1330	R	0.1	Grid 3	**0**	**12**	
21	4/4/2018	10:09:49	AM	8	1388	R	0.1		**7**	**87**	
22	4/4/2018	10:10:01	AM	2	1285	R	0.1		**-6**	**-47**	
23	4/4/2018	10:10:12	AM	12	1547	R	0.1		**16**	**294**	
24	4/4/2018	10:10:24	AM	3	1450	R	0.1		**-4**	**168**	
25	4/4/2018	10:10:36	AM	0	1368	R	0.1		**-11**	**61**	
26	4/4/2018	10:10:48	AM	3	1509	R	0.1		**-4**	**245**	
27	4/4/2018	10:10:59	AM	0	1327	R	0.1		**-11**	**8**	
28	4/4/2018	10:11:11	AM	17	1362	R	0.1		**27**	**53**	
29	4/4/2018	10:11:23	AM	3	1485	R	0.1		**-4**	**213**	
30	4/4/2018	10:14:04	AM	3	1254	R	0.1	Grid 4	**-4**	**-87**	
31	4/4/2018	10:14:15	AM	0	1447	R	0.1		**-11**	**164**	
32	4/4/2018	10:14:27	AM	4	1205	R	0.1		**-2**	**-151**	
33	4/4/2018	10:14:39	AM	4	1223	R	0.1		**-2**	**-128**	
34	4/4/2018	10:14:51	AM	0	1203	R	0.1		**-11**	**-154**	
35	4/4/2018	10:15:02	AM	5	1324	R	0.1		**0**	**4**	
36	4/4/2018	10:15:14	AM	2	1433	R	0.1		**-6**	**146**	
37	4/4/2018	10:15:26	AM	2	1536	R	0.1		**-6**	**280**	
38	4/4/2018	10:15:38	AM	3	1577	R	0.1		**-4**	**333**	
39	4/4/2018	10:15:49	AM	5	1382	R	0.1		**0**	**79**	
40	4/4/2018	10:19:34	AM	4	1341	R	0.1	Grid 5	**-2**	**26**	
41	4/4/2018	10:19:46	AM	3	1522	R	0.1		**-4**	**262**	
42	4/4/2018	10:19:58	AM	0	1589	R	0.1		**-11**	**349**	
43	4/4/2018	10:20:10	AM	4	1452	R	0.1		**-2**	**171**	
44	4/4/2018	10:20:21	AM	10	1466	R	0.1		**12**	**189**	
45	4/4/2018	10:20:33	AM	10	1331	R	0.1		**12**	**13**	
46	4/4/2018	10:20:45	AM	2	1534	R	0.1		**-6**	**277**	

47	4/4/2018	10:20:57 AM	0	1486	R	0.1		**-11**	**215**	
48	4/4/2018	10:21:08 AM	0	1619	R	0.1		**-11**	**388**	
49	4/4/2018	10:21:20 AM	7	1366	R	0.1		**5**	**59**	
50	4/4/2018	10:23:33 AM	2	1306	R	0.1	Grid 6	**-6**	**-20**	
51	4/4/2018	10:23:45 AM	3	1459	R	0.1		**-4**	**180**	
52	4/4/2018	10:23:56 AM	8	1467	R	0.1		**7**	**190**	
53	4/4/2018	10:24:08 AM	7	1494	R	0.1		**5**	**225**	
54	4/4/2018	10:24:20 AM	6	1449	R	0.1		**3**	**167**	
55	4/4/2018	10:24:32 AM	11	1579	R	0.1		**14**	**336**	
56	4/4/2018	10:24:44 AM	2	1379	R	0.1		**-6**	**75**	
57	4/4/2018	10:24:55 AM	5	1343	R	0.1		**0**	**29**	
58	4/4/2018	10:25:07 AM	4	1306	R	0.1		**-2**	**-20**	
59	4/4/2018	10:25:19 AM	0	1459	R	0.1		**-11**	**180**	
60	4/4/2018	10:28:13 AM	3	1287	R	0.1	Grid 7	**-4**	**-44**	
61	4/4/2018	10:28:25 AM	0	1315	R	0.1		**-11**	**-8**	
62	4/4/2018	10:28:36 AM	0	1440	R	0.1		**-11**	**155**	
63	4/4/2018	10:28:48 AM	4	1478	R	0.1		**-2**	**204**	
64	4/4/2018	10:29:00 AM	1	1418	R	0.1		**-8**	**126**	
65	4/4/2018	10:29:12 AM	14	1414	R	0.1		**20**	**121**	
66	4/4/2018	10:29:23 AM	23	1461	R	0.1		**40**	**182**	
67	4/4/2018	10:29:35 AM	5	1650	R	0.1		**0**	**428**	
68	4/4/2018	10:29:47 AM	1	1526	R	0.1		**-8**	**267**	
69	4/4/2018	10:29:59 AM	13	1452	R	0.1		**18**	**171**	
70	4/4/2018	10:35:29 AM	2	1381	R	0.1	Grid 8	**-6**	**78**	
71	4/4/2018	10:35:41 AM	0	1464	R	0.1		**-11**	**186**	
72	4/4/2018	10:35:53 AM	0	1660	R	0.1		**-11**	**441**	
73	4/4/2018	10:36:04 AM	3	1557	R	0.1		**-4**	**307**	
74	4/4/2018	10:36:16 AM	3	1339	R	0.1		**-4**	**23**	
75	4/4/2018	10:36:28 AM	2	1237	R	0.1		**-6**	**-109**	
76	4/4/2018	10:36:40 AM	0	1454	R	0.1		**-11**	**173**	
77	4/4/2018	10:36:51 AM	11	1577	R	0.1		**14**	**333**	
78	4/4/2018	10:37:03 AM	2	1361	R	0.1		**-6**	**52**	
79	4/4/2018	10:37:15 AM	0	1501	R	0.1		**-11**	**234**	
80	4/4/2018	10:40:57 AM	5	1296	R	0.1	Grid 9	**0**	**-33**	
81	4/4/2018	10:41:09 AM	4	1558	R	0.1		**-2**	**308**	
82	4/4/2018	10:41:21 AM	1	1354	R	0.1		**-8**	**43**	
83	4/4/2018	10:41:32 AM	0	1337	R	0.1		**-11**	**21**	
84	4/4/2018	10:41:44 AM	12	1506	R	0.1		**16**	**241**	
85	4/4/2018	10:41:56 AM	3	1270	R	0.1		**-4**	**-66**	
86	4/4/2018	10:42:08 AM	10	1436	R	0.1		**12**	**150**	
87	4/4/2018	10:42:19 AM	2	1293	R	0.1		**-6**	**-36**	
88	4/4/2018	10:42:31 AM	0	1268	R	0.1		**-11**	**-69**	
89	4/4/2018	10:42:43 AM	0	1446	R	0.1		**-11**	**163**	
90	4/4/2018	10:46:01 AM	0	982	R	0.1	Grid 10	**-11**	**-441**	
91	4/4/2018	10:46:12 AM	13	1392	R	0.1		**18**	**92**	
92	4/4/2018	10:46:24 AM	3	1480	R	0.1		**-4**	**207**	
93	4/4/2018	10:46:36 AM	12	1366	R	0.1		**16**	**59**	
94	4/4/2018	10:46:48 AM	3	1368	R	0.1		**-4**	**61**	
95	4/4/2018	10:46:59 AM	0	1841	R	0.1		**-11**	**677**	
96	4/4/2018	10:47:11 AM	7	1514	R	0.1		**5**	**251**	
97	4/4/2018	10:47:23 AM	1	1574	R	0.1		**-8**	**329**	
98	4/4/2018	10:47:35 AM	5	1375	R	0.1		**0**	**70**	
99	4/4/2018	10:47:46 AM	4	1379	R	0.1		**-2**	**75**	
100	4/4/2018	10:54:49 AM	9	598	R	0.1	Grid 11	**9**	**148**	Metal
101	4/4/2018	10:55:01 AM	10	617	R	0.1		**12**	**173**	Metal
102	4/4/2018	10:55:13 AM	11	678	R	0.1		**14**	**253**	Metal
103	4/4/2018	10:55:25 AM	9	605	R	0.1		**9**	**158**	Metal
104	4/4/2018	10:55:36 AM	2	800	R	0.1		**-6**	**411**	Metal
105	4/4/2018	10:55:48 AM	3	1298	R	0.1		**-4**	**-30**	
106	4/4/2018	10:56:00 AM	3	819	R	0.1		**-4**	**436**	Metal
107	4/4/2018	10:56:12 AM	0	604	R	0.1		**-11**	**156**	Metal

108	4/4/2018	10:56:23 AM	2	639	R	0.1		**-6**	**202**	Metal
109	4/4/2018	10:56:35 AM	0	666	R	0.1		**-11**	**237**	Metal
110	4/4/2018	12:16:30 PM	8	1278	R	0.1	Grid 12	**7**	**-56**	
111	4/4/2018	12:16:42 PM	2	1309	R	0.1		**-6**	**-16**	
112	4/4/2018	12:16:54 PM	20	1427	R	0.1		**34**	**138**	
113	4/4/2018	12:17:06 PM	4	1330	R	0.1		**-2**	**12**	
114	4/4/2018	12:17:17 PM	1	1319	R	0.1		**-8**	**-3**	
115	4/4/2018	12:17:29 PM	3	1368	R	0.1		**-4**	**61**	
116	4/4/2018	12:17:41 PM	2	1456	R	0.1		**-6**	**176**	
117	4/4/2018	12:17:53 PM	0	1523	R	0.1		**-11**	**263**	
118	4/4/2018	12:18:04 PM	10	1392	R	0.1		**12**	**92**	
119	4/4/2018	12:18:16 PM	13	1521	R	0.1		**18**	**260**	
120	4/4/2018	12:21:33 PM	0	1276	R	0.1	Grid 13	**-11**	**-59**	
121	4/4/2018	12:21:44 PM	0	1306	R	0.1		**-11**	**-20**	
122	4/4/2018	12:21:56 PM	10	1362	R	0.1		**12**	**53**	
123	4/4/2018	12:22:08 PM	8	1301	R	0.1		**7**	**-26**	
124	4/4/2018	12:22:20 PM	14	1381	R	0.1		**20**	**78**	
125	4/4/2018	12:22:31 PM	12	1263	R	0.1		**16**	**-75**	
126	4/4/2018	12:22:43 PM	7	1300	R	0.1		**5**	**-27**	
127	4/4/2018	12:22:55 PM	10	1279	R	0.1		**12**	**-55**	
128	4/4/2018	12:23:07 PM	2	1271	R	0.1		**-6**	**-65**	
129	4/4/2018	12:23:18 PM	0	1332	R	0.1		**-11**	**14**	
130	4/4/2018	12:27:58 PM	3	1341	R	0.1	Grid 14	**-4**	**26**	
131	4/4/2018	12:28:10 PM	11	1251	R	0.1		**14**	**-91**	
132	4/4/2018	12:28:21 PM	12	1298	R	0.1		**16**	**-30**	
133	4/4/2018	12:28:33 PM	19	1294	R	0.1		**31**	**-35**	
134	4/4/2018	12:28:45 PM	28	1569	R	0.1		**51**	**323**	
135	4/4/2018	12:28:57 PM	12	1466	R	0.1		**16**	**189**	
136	4/4/2018	12:29:08 PM	3	1422	R	0.1		**-4**	**131**	
137	4/4/2018	12:29:20 PM	9	1288	R	0.1		**9**	**-43**	
138	4/4/2018	12:29:32 PM	15	1304	R	0.1		**23**	**-22**	
139	4/4/2018	12:29:44 PM	3	1376	R	0.1		**-4**	**72**	
140	4/4/2018	12:38:40 PM	0	1267	R	0.1	Grid 15	**-11**	**-70**	
141	4/4/2018	12:38:52 PM	0	702	R	0.1		**-11**	**284**	Metal
142	4/4/2018	12:39:03 PM	13	781	R	0.1		**18**	**387**	Metal
143	4/4/2018	12:39:15 PM	3	678	R	0.1		**-4**	**253**	Metal
144	4/4/2018	12:39:27 PM	3	645	R	0.1		**-4**	**210**	Metal
145	4/4/2018	12:39:39 PM	2	701	R	0.1		**-6**	**282**	Metal
146	4/4/2018	12:39:50 PM	6	644	R	0.1		**3**	**208**	Metal
147	4/4/2018	12:40:02 PM	1	657	R	0.1		**-8**	**225**	Metal
148	4/4/2018	12:40:14 PM	12	780	R	0.1		**16**	**385**	Metal
149	4/4/2018	12:40:26 PM	3	1431	R	0.1		**-4**	**143**	
150	4/4/2018	12:48:08 PM	5	592	R	0.1	Grid 16	**0**	**141**	Metal
151	4/4/2018	12:48:20 PM	1	765	R	0.1		**-8**	**366**	Metal
152	4/4/2018	12:48:31 PM	0	733	R	0.1		**-11**	**324**	Metal
153	4/4/2018	12:48:43 PM	4	741	R	0.1		**-2**	**335**	Metal
154	4/4/2018	12:48:55 PM	7	648	R	0.1		**5**	**213**	Metal
155	4/4/2018	12:49:07 PM	1	634	R	0.1		**-8**	**195**	Metal
156	4/4/2018	12:49:18 PM	4	631	R	0.1		**-2**	**191**	Metal
157	4/4/2018	12:49:30 PM	11	766	R	0.1		**14**	**367**	Metal
158	4/4/2018	12:49:42 PM	2	756	R	0.1		**-6**	**354**	Metal
159	4/4/2018	12:49:54 PM	2	665	R	0.1		**-6**	**236**	Metal
160	4/4/2018	12:56:11 PM	3	1321	R	0.1	Grid 17	**-4**	**0**	
161	4/4/2018	12:56:23 PM	3	1216	R	0.1		**-4**	**-137**	
162	4/4/2018	12:56:35 PM	4	1334	R	0.1		**-2**	**17**	
163	4/4/2018	12:56:47 PM	1	1237	R	0.1		**-8**	**-109**	
164	4/4/2018	12:56:58 PM	0	1232	R	0.1		**-11**	**-116**	
165	4/4/2018	12:57:10 PM	10	1250	R	0.1		**12**	**-92**	
166	4/4/2018	12:57:22 PM	2	1522	R	0.1		**-6**	**262**	
167	4/4/2018	12:57:34 PM	9	1422	R	0.1		**9**	**131**	
168	4/4/2018	1:03:56 PM	0	1278	R	0.1	Grid 18	**-11**	**-56**	

169	4/4/2018	1:04:08 PM	5	1645	R	0.1		**0**	**422**
170	4/4/2018	1:04:20 PM	4	1545	R	0.1		**-2**	**292**
171	4/4/2018	1:04:31 PM	3	1143	R	0.1		**-4**	**-232**
172	4/4/2018	1:04:43 PM	10	1140	R	0.1		**12**	**-236**
173	4/4/2018	1:04:55 PM	21	1241	R	0.1		**36**	**-104**
174	4/4/2018	1:05:07 PM	12	1452	R	0.1		**16**	**171**
175	4/4/2018	1:05:18 PM	2	1293	R	0.1		**-6**	**-36**
176	4/4/2018	1:05:30 PM	0	1446	R	0.1		**-11**	**163**
177	4/4/2018	1:05:42 PM	14	1340	R	0.1		**20**	**25**
178	4/4/2018	1:05:54 PM	3	1337	R	0.1		**-4**	**21**
179	4/4/2018	1:06:06 PM	4	1491	R	0.1		**-2**	**221**
180	4/4/2018	1:27:36 PM	13	1309	R	0.1	Grid 19	**18**	**-16**
181	4/4/2018	1:27:48 PM	3	1440	R	0.1		**-4**	**155**
182	4/4/2018	1:27:59 PM	5	1461	R	0.1		**0**	**182**
183	4/4/2018	1:28:11 PM	4	1518	R	0.1		**-2**	**256**
184	4/4/2018	1:28:23 PM	5	1377	R	0.1		**0**	**73**
185	4/4/2018	1:28:35 PM	1	1542	R	0.1		**-8**	**288**
186	4/4/2018	1:28:46 PM	0	1450	R	0.1		**-11**	**168**
187	4/4/2018	1:28:58 PM	6	1359	R	0.1		**3**	**49**
188	4/4/2018	1:29:10 PM	9	1568	R	0.1		**9**	**322**
189	4/4/2018	1:29:22 PM	18	1670	R	0.1		**29**	**454**
190	4/4/2018	1:39:10 PM	0	1312	R	0.1	Grid 20	**-11**	**-12**
191	4/4/2018	1:39:22 PM	12	1444	R	0.1		**16**	**160**
192	4/4/2018	1:39:34 PM	3	1399	R	0.1		**-4**	**102**
193	4/4/2018	1:39:45 PM	7	1490	R	0.1		**5**	**220**
194	4/4/2018	1:39:57 PM	1	1463	R	0.1		**-8**	**185**
195	4/4/2018	1:40:09 PM	4	1388	R	0.1		**-2**	**87**
196	4/4/2018	1:40:21 PM	9	1609	R	0.1		**9**	**375**
197	4/4/2018	1:40:32 PM	8	1488	R	0.1		**7**	**217**
198	4/4/2018	1:40:44 PM	14	1547	R	0.1		**20**	**294**
199	4/4/2018	1:40:56 PM	9	1700	R	0.1		**9**	**493**
200	4/4/2018	1:46:49 PM	5	1296	R	0.1	Grid 21	**0**	**-33**
201	4/4/2018	1:47:01 PM	15	1446	R	0.1		**23**	**163**
202	4/4/2018	1:47:13 PM	3	1461	R	0.1		**-4**	**182**
203	4/4/2018	1:47:24 PM	0	1627	R	0.1		**-11**	**398**
204	4/4/2018	1:47:36 PM	3	1578	R	0.1		**-4**	**335**
205	4/4/2018	1:47:48 PM	0	1595	R	0.1		**-11**	**357**
206	4/4/2018	1:48:00 PM	0	1735	R	0.1		**-11**	**539**
207	4/4/2018	1:48:11 PM	0	1563	R	0.1		**-11**	**315**
208	4/4/2018	1:48:23 PM	3	1456	R	0.1		**-4**	**176**
209	4/4/2018	1:48:35 PM	4	1490	R	0.1		**-2**	**220**
210	4/4/2018	1:52:45 PM	4	1333	R	0.1	Grid 22	**-2**	**16**
211	4/4/2018	1:52:57 PM	0	1578	R	0.1		**-11**	**335**
212	4/4/2018	1:53:09 PM	3	1515	R	0.1		**-4**	**253**
213	4/4/2018	1:53:20 PM	0	1447	R	0.1		**-11**	**164**
214	4/4/2018	1:53:32 PM	3	1641	R	0.1		**-4**	**417**
215	4/4/2018	1:53:44 PM	0	1643	R	0.1		**-11**	**419**
216	4/4/2018	1:53:56 PM	0	1539	R	0.1		**-11**	**284**
217	4/4/2018	1:54:07 PM	12	1631	R	0.1		**16**	**404**
218	4/4/2018	1:54:19 PM	3	1732	R	0.1		**-4**	**535**
219	4/4/2018	1:54:31 PM	4	1453	R	0.1		**-2**	**172**
220	4/4/2018	1:57:38 PM	8	1321	R	0.1	Grid 23	**7**	**0**
221	4/4/2018	1:57:50 PM	5	1543	R	0.1		**0**	**289**
222	4/4/2018	1:58:01 PM	13	1393	R	0.1		**18**	**94**
223	4/4/2018	1:58:13 PM	3	1399	R	0.1		**-4**	**102**
224	4/4/2018	1:58:25 PM	4	1507	R	0.1		**-2**	**242**
225	4/4/2018	1:58:37 PM	0	1601	R	0.1		**-11**	**364**
226	4/4/2018	1:58:48 PM	3	1449	R	0.1		**-4**	**167**
227	4/4/2018	1:59:00 PM	15	1526	R	0.1		**23**	**267**
228	4/4/2018	1:59:12 PM	11	1481	R	0.1		**14**	**208**
229	4/4/2018	1:59:24 PM	9	1515	R	0.1		**9**	**253**

230	4/4/2018	1:59:35 PM	9	1443	R	0.1		**9**	**159**	
231	4/4/2018	2:03:45 PM	6	1256	R	0.1	Grid 24	**3**	**-85**	
232	4/4/2018	2:03:57 PM	1	1265	R	0.1		**-8**	**-73**	
233	4/4/2018	2:04:08 PM	9	310	R	0.1		**9**	**-1316**	
234	4/4/2018	2:04:20 PM	5	1278	R	0.1		**0**	**-56**	
235	4/4/2018	2:04:32 PM	1	1249	R	0.1		**-8**	**-94**	
236	4/4/2018	2:04:44 PM	0	1368	R	0.1		**-11**	**61**	
237	4/4/2018	2:04:55 PM	3	1449	R	0.1		**-4**	**167**	
238	4/4/2018	2:05:07 PM	8	1276	R	0.1		**7**	**-59**	
239	4/4/2018	2:05:19 PM	2	1262	R	0.1		**-6**	**-77**	
240	4/4/2018	2:08:19 PM	18	603	R	0.1	Grid 25	**29**	**155**	Metal
241	4/4/2018	2:08:31 PM	16	720	R	0.1		**25**	**307**	Metal
242	4/4/2018	2:08:43 PM	11	663	R	0.1		**14**	**233**	Metal
243	4/4/2018	2:08:55 PM	12	614	R	0.1		**16**	**169**	Metal
244	4/4/2018	2:09:06 PM	3	1323	R	0.1		**-4**	**3**	
245	4/4/2018	2:09:18 PM	7	1509	R	0.1		**5**	**245**	
246	4/4/2018	2:09:30 PM	1	854	R	0.1		**-8**	**482**	Metal
247	4/4/2018	2:09:42 PM	3	617	R	0.1		**-4**	**173**	Metal
248	4/4/2018	2:09:53 PM	13	628	R	0.1		**18**	**187**	Metal
249	4/4/2018	2:10:05 PM	6	724	R	0.1		**3**	**312**	Metal
250	4/4/2018	2:14:27 PM	3	1239	R	0.1	Grid 26	**-4**	**-107**	
251	4/4/2018	2:14:38 PM	12	1339	R	0.1		**16**	**23**	
252	4/4/2018	2:14:50 PM	10	1321	R	0.1		**12**	**0**	
253	4/4/2018	2:15:02 PM	15	1255	R	0.1		**23**	**-86**	
254	4/4/2018	2:15:14 PM	3	1292	R	0.1		**-4**	**-38**	
255	4/4/2018	2:15:25 PM	0	1282	R	0.1		**-11**	**-51**	
256	4/4/2018	2:15:37 PM	0	1365	R	0.1		**-11**	**57**	
257	4/4/2018	2:15:49 PM	3	1418	R	0.1		**-4**	**126**	
258	4/4/2018	2:16:01 PM	0	1520	R	0.1		**-11**	**259**	
259	4/4/2018	2:16:12 PM	8	1404	R	0.1		**7**	**108**	
260	4/4/2018	2:18:38 PM	3	1204	R	0.1	Grid 27	**-4**	**-152**	
261	4/4/2018	2:18:49 PM	9	1304	R	0.1		**9**	**-22**	
262	4/4/2018	2:19:01 PM	6	1420	R	0.1		**3**	**129**	
263	4/4/2018	2:19:13 PM	21	1484	R	0.1		**36**	**212**	
264	4/4/2018	2:19:25 PM	4	1465	R	0.1		**-2**	**187**	
265	4/4/2018	2:19:36 PM	1	1433	R	0.1		**-8**	**146**	
266	4/4/2018	2:19:48 PM	5	1185	R	0.1		**0**	**-177**	
267	4/4/2018	2:20:00 PM	0	1399	R	0.1		**-11**	**102**	
268	4/4/2018	2:20:12 PM	6	1449	R	0.1		**3**	**167**	
269	4/4/2018	2:20:24 PM	0	1329	R	0.1		**-11**	**10**	
270	4/4/2018	2:23:05 PM	0	1298	R	0.1	Grid 28	**-11**	**-30**	
271	4/4/2018	2:23:16 PM	11	1435	R	0.1		**14**	**148**	
272	4/4/2018	2:23:28 PM	2	1579	R	0.1		**-6**	**336**	
273	4/4/2018	2:23:40 PM	0	1375	R	0.1		**-11**	**70**	
274	4/4/2018	2:23:52 PM	4	1643	R	0.1		**-2**	**419**	
275	4/4/2018	2:24:03 PM	1	1625	R	0.1		**-8**	**396**	
276	4/4/2018	2:24:15 PM	2	1593	R	0.1		**-6**	**354**	
277	4/4/2018	2:24:27 PM	3	1397	R	0.1		**-4**	**99**	
278	4/4/2018	2:24:39 PM	3	1282	R	0.1		**-4**	**-51**	
279	4/4/2018	2:24:50 PM	0	1278	R	0.1		**-11**	**-56**	
		Maximum:	**28**	**1841**				**51**	**677**	
		Average:	**5**	**1291**				**1**	**133**	
		StDev:	**5**	**297**				**11**	**186**	

Room 100 Upper Walls

2360 SN:268497
43-37 SN:093965
Cal Due Date: 10/10/2018
Surveyor: Thomas Hogan
Bldg. 218
Room 100 Upper Walls Grids 1 thru 28

Alpha Efficiency:	0.31		
Beta/Gamma Efficiency:	0.352	Metal	Wood
Alpha Background:	4.8	3.3	2.4
Beta/Gamma Background:	1321	484	701

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2 Alpha	dpm/100cm^2 Beta	
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1	4/5/2018	12:41:49	PM	0	792	R	0.1	Grid 1	**-11**	**118**	Wood
2	4/5/2018	12:42:01	PM	5	915	R	0.1		**0**	**279**	Wood
3	4/5/2018	12:42:13	PM	5	1281	R	0.1		**0**	**-52**	
4	4/5/2018	12:42:24	PM	1	930	R	0.1		**-8**	**298**	Wood
5	4/5/2018	12:42:36	PM	5	778	R	0.1		**0**	**383**	Metal
6	4/5/2018	12:42:48	PM	5	715	R	0.1		**0**	**301**	Metal
7	4/5/2018	12:43:00	PM	4	756	R	0.1		**-2**	**354**	Metal
8	4/5/2018	12:43:11	PM	13	764	R	0.1		**18**	**364**	Metal
9	4/5/2018	12:43:23	PM	3	1298	R	0.1		**-4**	**-30**	
10	4/5/2018	12:50:21	PM	7	1313	R	0.1	Grid 2	**5**	**-10**	
11	4/5/2018	12:50:32	PM	0	1290	R	0.1		**-11**	**-40**	
12	4/5/2018	12:50:44	PM	6	1288	R	0.1		**3**	**-43**	
13	4/5/2018	12:50:56	PM	7	712	R	0.1		**5**	**297**	Metal
14	4/5/2018	12:51:08	PM	4	701	R	0.1		**-2**	**282**	Metal
15	4/5/2018	12:51:19	PM	3	721	R	0.1		**-4**	**308**	Metal
16	4/5/2018	12:51:31	PM	7	1305	R	0.1		**5**	**-21**	
17	4/5/2018	12:51:43	PM	8	1200	R	0.1		**7**	**-158**	
18	4/5/2018	12:51:55	PM	4	784	R	0.1		**-2**	**391**	Metal
19	4/5/2018	12:52:06	PM	9	757	R	0.1		**9**	**355**	Metal
20	4/5/2018	1:02:01	PM	8	1069	R	0.1	Grid 3	**7**	**-328**	
21	4/5/2018	1:02:13	PM	9	1442	R	0.1		**9**	**158**	
22	4/5/2018	1:02:25	PM	8	1486	R	0.1		**7**	**215**	
23	4/5/2018	1:02:36	PM	7	1315	R	0.1		**5**	**-8**	
24	4/5/2018	1:02:48	PM	8	1336	R	0.1		**7**	**20**	
25	4/5/2018	1:03:00	PM	5	1319	R	0.1		**0**	**-3**	
26	4/5/2018	1:03:12	PM	6	1280	R	0.1		**3**	**-53**	
27	4/5/2018	1:03:23	PM	4	1428	R	0.1		**-2**	**139**	
28	4/5/2018	1:03:35	PM	1	1629	R	0.1		**-8**	**401**	
29	4/5/2018	1:03:47	PM	11	1308	R	0.1		**14**	**-17**	
30	4/5/2018	1:09:24	PM	7	1310	R	0.1	Grid 4	**5**	**-14**	
31	4/5/2018	1:09:36	PM	8	1337	R	0.1		**7**	**21**	
32	4/5/2018	1:09:48	PM	4	1281	R	0.1		**-2**	**-52**	
33	4/5/2018	1:10:00	PM	5	821	R	0.1		**0**	**156**	Wood
34	4/5/2018	1:10:11	PM	5	875	R	0.1		**0**	**226**	Wood
35	4/5/2018	1:10:23	PM	7	1156	R	0.1		**5**	**-215**	
36	4/5/2018	1:10:35	PM	4	1122	R	0.1		**-2**	**-259**	
37	4/5/2018	1:10:47	PM	1	1345	R	0.1		**-8**	**31**	
38	4/5/2018	1:10:58	PM	7	1551	R	0.1		**5**	**299**	
39	4/5/2018	1:11:10	PM	6	1356	R	0.1		**3**	**46**	
40	4/5/2018	1:11:22	PM	8	1275	R	0.1		**7**	**-60**	
41	4/5/2018	1:19:50	PM	0	1365	R	0.1	Grid 5	**-11**	**57**	
42	4/5/2018	1:20:02	PM	7	1325	R	0.1		**5**	**5**	
43	4/5/2018	1:20:14	PM	1	1243	R	0.1		**-8**	**-102**	
44	4/5/2018	1:20:25	PM	8	1253	R	0.1		**7**	**-89**	
45	4/5/2018	1:20:37	PM	9	1247	R	0.1		**9**	**-96**	
46	4/5/2018	1:20:49	PM	6	1424	R	0.1		**3**	**134**	

47	4/5/2018	1:21:01 PM	7	1336	R	0.1		**5**	**20**
48	4/5/2018	1:21:12 PM	10	1278	R	0.1		**12**	**-56**
49	4/5/2018	1:21:24 PM	7	1311	R	0.1		**5**	**-13**
50	4/5/2018	1:27:47 PM	0	1234	R	0.1	Grid 6	**-11**	**-113**
51	4/5/2018	1:27:59 PM	0	1187	R	0.1		**-11**	**-174**
52	4/5/2018	1:28:10 PM	5	1312	R	0.1		**0**	**-12**
53	4/5/2018	1:28:22 PM	6	1310	R	0.1		**3**	**-14**
54	4/5/2018	1:28:34 PM	1	1344	R	0.1		**-8**	**30**
55	4/5/2018	1:28:46 PM	5	1295	R	0.1		**0**	**-34**
56	4/5/2018	1:28:57 PM	1	1469	R	0.1		**-8**	**193**
57	4/5/2018	1:29:09 PM	9	1311	R	0.1		**9**	**-13**
58	4/5/2018	1:29:21 PM	5	1305	R	0.1		**0**	**-21**
59	4/5/2018	1:29:33 PM	11	1270	R	0.1		**14**	**-66**
60	4/5/2018	1:32:50 PM	6	1297	R	0.1	Grid 7	**3**	**-31**
61	4/5/2018	1:33:01 PM	4	1298	R	0.1		**-2**	**-30**
62	4/5/2018	1:33:13 PM	8	1280	R	0.1		**7**	**-53**
63	4/5/2018	1:33:25 PM	7	1352	R	0.1		**5**	**40**
64	4/5/2018	1:33:37 PM	1	1461	R	0.1		**-8**	**182**
65	4/5/2018	1:33:48 PM	0	1332	R	0.1		**-11**	**14**
66	4/5/2018	1:34:00 PM	3	1245	R	0.1		**-4**	**-99**
67	4/5/2018	1:34:12 PM	4	1463	R	0.1		**-2**	**185**
68	4/5/2018	1:34:24 PM	4	1278	R	0.1		**-2**	**-56**
69	4/5/2018	1:34:35 PM	11	1316	R	0.1		**14**	**-7**
70	4/5/2018	1:37:26 PM	2	1299	R	0.1	Grid 8	**-6**	**-29**
71	4/5/2018	1:37:38 PM	10	1308	R	0.1		**12**	**-17**
72	4/5/2018	1:37:50 PM	2	1294	R	0.1		**-6**	**-35**
73	4/5/2018	1:38:01 PM	5	1280	R	0.1		**0**	**-53**
74	4/5/2018	1:38:13 PM	1	1303	R	0.1		**-8**	**-23**
75	4/5/2018	1:38:25 PM	4	1242	R	0.1		**-2**	**-103**
76	4/5/2018	1:38:37 PM	0	1206	R	0.1		**-11**	**-150**
77	4/5/2018	1:38:49 PM	0	1394	R	0.1		**-11**	**95**
78	4/5/2018	1:39:00 PM	15	1483	R	0.1		**23**	**211**
79	4/5/2018	1:39:12 PM	3	1399	R	0.1		**-4**	**102**
80	4/5/2018	1:41:35 PM	5	1301	R	0.1	Grid 9	**0**	**-26**
81	4/5/2018	1:41:47 PM	7	1350	R	0.1		**5**	**38**
82	4/5/2018	1:41:59 PM	13	1370	R	0.1		**18**	**64**
83	4/5/2018	1:42:11 PM	3	1334	R	0.1		**-4**	**17**
84	4/5/2018	1:42:22 PM	0	1400	R	0.1		**-11**	**103**
85	4/5/2018	1:42:34 PM	3	1267	R	0.1		**-4**	**-70**
86	4/5/2018	1:42:46 PM	4	1318	R	0.1		**-2**	**-4**
87	4/5/2018	1:42:58 PM	0	1242	R	0.1		**-11**	**-103**
88	4/5/2018	1:43:09 PM	5	1126	R	0.1		**0**	**-254**
89	4/5/2018	1:43:21 PM	6	1371	R	0.1		**3**	**65**
90	4/5/2018	1:43:33 PM	8	1372	R	0.1		**7**	**66**
91	4/5/2018	1:47:39 PM	7	1287	R	0.1	Grid 10	**5**	**-44**
92	4/5/2018	1:47:50 PM	1	1134	R	0.1		**-8**	**-243**
93	4/5/2018	1:48:02 PM	2	1201	R	0.1		**-6**	**-156**
94	4/5/2018	1:48:14 PM	2	1260	R	0.1		**-6**	**-79**
95	4/5/2018	1:48:26 PM	10	1274	R	0.1		**12**	**-61**
96	4/5/2018	1:48:37 PM	11	1249	R	0.1		**14**	**-94**
97	4/5/2018	1:48:49 PM	2	1312	R	0.1		**-6**	**-12**
98	4/5/2018	1:49:01 PM	0	1266	R	0.1		**-11**	**-72**
99	4/5/2018	1:49:13 PM	0	1290	R	0.1		**-11**	**-40**
100	4/5/2018	1:51:30 PM	0	1239	R	0.1	Grid 11	**-11**	**-107**
101	4/5/2018	1:51:41 PM	12	1317	R	0.1		**16**	**-5**
102	4/5/2018	1:51:53 PM	3	1304	R	0.1		**-4**	**-22**
103	4/5/2018	1:52:05 PM	2	1300	R	0.1		**-6**	**-27**
104	4/5/2018	1:52:17 PM	3	1354	R	0.1		**-4**	**43**
105	4/5/2018	1:52:28 PM	0	1281	R	0.1		**-11**	**-52**
106	4/5/2018	1:52:40 PM	8	1213	R	0.1		**7**	**-141**
107	4/5/2018	1:52:52 PM	2	1336	R	0.1		**-6**	**20**

108	4/5/2018	1:53:04 PM	5	1246	R	0.1		**0**	**-98**	
109	4/5/2018	1:53:15 PM	1	1265	R	0.1		**-8**	**-73**	
110	4/5/2018	1:58:46 PM	9	1312	R	0.1	Grid 12	**9**	**-12**	
111	4/5/2018	1:58:58 PM	2	1287	R	0.1		**-6**	**-44**	
112	4/5/2018	1:59:10 PM	12	1318	R	0.1		**16**	**-4**	
113	4/5/2018	1:59:21 PM	3	1361	R	0.1		**-4**	**52**	
114	4/5/2018	1:59:33 PM	0	1276	R	0.1		**-11**	**-59**	
115	4/5/2018	1:59:45 PM	14	1302	R	0.1		**20**	**-25**	
116	4/5/2018	1:59:57 PM	3	1275	R	0.1		**-4**	**-60**	
117	4/5/2018	2:00:08 PM	2	1219	R	0.1		**-6**	**-133**	
118	4/5/2018	2:00:20 PM	5	1279	R	0.1		**0**	**-55**	
119	4/5/2018	2:00:32 PM	3	1213	R	0.1		**-4**	**-141**	
120	4/5/2018	2:03:11 PM	0	1297	R	0.1	Grid 13	**-11**	**-31**	
121	4/5/2018	2:03:23 PM	7	1308	R	0.1		**5**	**-17**	
122	4/5/2018	2:03:34 PM	5	1261	R	0.1		**0**	**-78**	
123	4/5/2018	2:03:46 PM	3	1416	R	0.1		**-4**	**124**	
124	4/5/2018	2:03:58 PM	1	1326	R	0.1		**-8**	**7**	
125	4/5/2018	2:04:10 PM	2	1455	R	0.1		**-6**	**174**	
126	4/5/2018	2:04:21 PM	4	1368	R	0.1		**-2**	**61**	
127	4/5/2018	2:04:33 PM	3	1249	R	0.1		**-4**	**-94**	
128	4/5/2018	2:04:45 PM	5	1335	R	0.1		**0**	**18**	
129	4/5/2018	2:04:57 PM	0	1244	R	0.1		**-11**	**-100**	
130	4/5/2018	2:10:39 PM	3	1312	R	0.1	Grid 14	**-4**	**-12**	
131	4/5/2018	2:10:51 PM	7	1330	R	0.1		**5**	**12**	
132	4/5/2018	2:11:03 PM	10	1331	R	0.1		**12**	**13**	
133	4/5/2018	2:11:14 PM	12	1194	R	0.1		**16**	**-165**	
134	4/5/2018	2:11:26 PM	2	1183	R	0.1		**-6**	**-180**	
135	4/5/2018	2:11:38 PM	0	1385	R	0.1		**-11**	**83**	
136	4/5/2018	2:11:49 PM	4	1342	R	0.1		**-2**	**27**	
137	4/5/2018	2:12:01 PM	5	1436	R	0.1		**0**	**150**	
138	4/5/2018	2:12:13 PM	1	1387	R	0.1		**-8**	**86**	
139	4/5/2018	2:12:25 PM	2	1328	R	0.1		**-6**	**9**	
140	4/5/2018	2:18:08 PM	5	658	R	0.1	Grid 15	**0**	**-56**	Wood
141	4/5/2018	2:18:20 PM	7	734	R	0.1		**5**	**43**	Wood
142	4/5/2018	2:18:31 PM	4	708	R	0.1		**-2**	**9**	Wood
143	4/5/2018	2:18:43 PM	5	686	R	0.1		**0**	**-20**	Wood
144	4/5/2018	2:18:55 PM	0	837	R	0.1		**-11**	**177**	Wood
145	4/5/2018	2:19:06 PM	5	865	R	0.1		**0**	**213**	Wood
146	4/5/2018	2:19:18 PM	3	881	R	0.1		**-4**	**234**	Wood
147	4/5/2018	2:19:30 PM	5	799	R	0.1		**0**	**128**	Wood
148	4/5/2018	2:19:42 PM	7	712	R	0.1		**5**	**14**	Wood
149	4/5/2018	2:19:54 PM	2	669	R	0.1		**-6**	**-42**	Wood
150	4/5/2018	2:23:50 PM	2	1312	R	0.1	Grid 16	**-6**	**-12**	
151	4/5/2018	2:24:02 PM	3	1217	R	0.1		**-4**	**-135**	
152	4/5/2018	2:24:14 PM	7	1138	R	0.1		**5**	**-238**	
153	4/5/2018	2:24:26 PM	4	1200	R	0.1		**-2**	**-158**	
154	4/5/2018	2:24:38 PM	15	1378	R	0.1		**23**	**74**	
155	4/5/2018	2:24:49 PM	9	1212	R	0.1		**9**	**-142**	
156	4/5/2018	2:25:01 PM	2	1412	R	0.1		**-6**	**118**	
157	4/5/2018	2:25:13 PM	2	1199	R	0.1		**-6**	**-159**	
158	4/5/2018	2:25:25 PM	3	1312	R	0.1		**-4**	**-12**	
159	4/5/2018	2:25:36 PM	6	1422	R	0.1		**3**	**131**	
160	4/5/2018	2:30:25 PM	7	1312	R	0.1	Grid 17	**5**	**-12**	
161	4/5/2018	2:30:37 PM	1	1263	R	0.1		**-8**	**-75**	
162	4/5/2018	2:30:48 PM	5	1362	R	0.1		**0**	**53**	
163	4/5/2018	2:31:00 PM	4	1449	R	0.1		**-2**	**167**	
164	4/5/2018	2:31:12 PM	2	1385	R	0.1		**-6**	**83**	
165	4/5/2018	2:31:24 PM	9	1482	R	0.1		**9**	**210**	
166	4/5/2018	2:31:35 PM	6	1271	R	0.1		**3**	**-65**	
167	4/5/2018	2:31:47 PM	6	1539	R	0.1		**3**	**284**	
168	4/5/2018	2:31:59 PM	7	1650	R	0.1		**5**	**428**	

169	4/5/2018	2:32:11 PM	1	1454	R	0.1		**-8**	**173**	
170	4/5/2018	2:37:42 PM	3	1042	R	0.1	Grid 18	**-4**	**-363**	
171	4/5/2018	2:37:54 PM	12	1428	R	0.1		**16**	**139**	
172	4/5/2018	2:38:06 PM	3	1269	R	0.1		**-4**	**-68**	
173	4/5/2018	2:38:18 PM	11	799	R	0.1		**14**	**128**	Wood
174	4/5/2018	2:38:29 PM	2	830	R	0.1		**-6**	**168**	Wood
175	4/5/2018	2:38:41 PM	0	891	R	0.1		**-11**	**247**	Wood
176	4/5/2018	2:38:53 PM	0	743	R	0.1		**-11**	**55**	Wood
177	4/5/2018	2:39:05 PM	0	829	R	0.1		**-11**	**167**	Wood
178	4/5/2018	2:39:16 PM	12	1204	R	0.1		**16**	**-152**	
179	4/5/2018	2:39:28 PM	8	1328	R	0.1		**7**	**9**	
180	4/5/2018	2:42:51 PM	0	1286	R	0.1	Grid 19	**-11**	**-46**	
181	4/5/2018	2:43:02 PM	3	1356	R	0.1		**-4**	**46**	
182	4/5/2018	2:43:14 PM	7	1235	R	0.1		**5**	**-112**	
183	4/5/2018	2:43:26 PM	4	1112	R	0.1		**-2**	**-272**	
184	4/5/2018	2:43:38 PM	5	1267	R	0.1		**0**	**-70**	
185	4/5/2018	2:43:50 PM	3	1305	R	0.1		**-4**	**-21**	
186	4/5/2018	2:44:01 PM	8	1328	R	0.1		**7**	**9**	
187	4/5/2018	2:44:13 PM	11	1476	R	0.1		**14**	**202**	
188	4/5/2018	2:44:25 PM	2	1284	R	0.1		**-6**	**-48**	
189	4/5/2018	2:44:37 PM	0	1342	R	0.1		**-11**	**27**	
190	4/5/2018	2:49:15 PM	4	1310	R	0.1	Grid 20	**-2**	**-14**	
191	4/5/2018	2:49:26 PM	1	1265	R	0.1		**-8**	**-73**	
192	4/5/2018	2:49:38 PM	0	1310	R	0.1		**-11**	**-14**	
193	4/5/2018	2:49:50 PM	4	1256	R	0.1		**-2**	**-85**	
194	4/5/2018	2:50:02 PM	1	1325	R	0.1		**-8**	**5**	
195	4/5/2018	2:50:13 PM	7	1252	R	0.1		**5**	**-90**	
196	4/5/2018	2:50:25 PM	1	1239	R	0.1		**-8**	**-107**	
197	4/5/2018	2:50:37 PM	6	1363	R	0.1		**3**	**55**	
198	4/5/2018	2:50:49 PM	1	1378	R	0.1		**-8**	**74**	
199	4/5/2018	2:51:00 PM	8	1276	R	0.1		**7**	**-59**	
200	4/5/2018	2:52:58 PM	3	1355	R	0.1	Grid 21	**-4**	**44**	
201	4/5/2018	2:53:10 PM	2	1335	R	0.1		**-6**	**18**	
202	4/5/2018	2:53:22 PM	5	1295	R	0.1		**0**	**-34**	
203	4/5/2018	2:53:34 PM	0	1325	R	0.1		**-11**	**5**	
204	4/5/2018	2:53:45 PM	5	1541	R	0.1		**0**	**286**	
205	4/5/2018	2:53:57 PM	1	1466	R	0.1		**-8**	**189**	
206	4/5/2018	2:54:09 PM	0	1336	R	0.1		**-11**	**20**	
207	4/5/2018	2:54:21 PM	5	1482	R	0.1		**0**	**210**	
208	4/5/2018	2:54:32 PM	8	1515	R	0.1		**7**	**253**	
209	4/5/2018	2:54:44 PM	5	1204	R	0.1		**0**	**-152**	
210	4/5/2018	2:57:56 PM	0	1276	R	0.1	Grid 22	**-11**	**-59**	
211	4/5/2018	2:58:08 PM	3	1359	R	0.1		**-4**	**49**	
212	4/5/2018	2:58:19 PM	5	1312	R	0.1		**0**	**-12**	
213	4/5/2018	2:58:31 PM	7	1312	R	0.1		**5**	**-12**	
214	4/5/2018	2:58:43 PM	4	1383	R	0.1		**-2**	**81**	
215	4/5/2018	2:58:55 PM	9	1354	R	0.1		**9**	**43**	
216	4/5/2018	2:59:06 PM	3	1238	R	0.1		**-4**	**-108**	
217	4/5/2018	2:59:18 PM	7	1277	R	0.1		**5**	**-57**	
218	4/5/2018	2:59:30 PM	1	1287	R	0.1		**-8**	**-44**	
219	4/5/2018	2:59:42 PM	7	1315	R	0.1		**5**	**-8**	
220	4/5/2018	2:59:53 PM	9	1530	R	0.1		**9**	**272**	
221	4/5/2018	3:03:18 PM	0	1342	R	0.1	Grid 23	**-11**	**27**	
222	4/5/2018	3:03:29 PM	10	1364	R	0.1		**12**	**56**	
223	4/5/2018	3:03:41 PM	2	1252	R	0.1		**-6**	**-90**	
224	4/5/2018	3:03:53 PM	0	1383	R	0.1		**-11**	**81**	
225	4/5/2018	3:04:05 PM	0	1354	R	0.1		**-11**	**43**	
226	4/5/2018	3:04:16 PM	8	1446	R	0.1		**7**	**163**	
227	4/5/2018	3:04:28 PM	11	1328	R	0.1		**14**	**9**	
228	4/5/2018	3:04:40 PM	2	1317	R	0.1		**-6**	**-5**	
229	4/5/2018	3:04:52 PM	7	1287	R	0.1		**5**	**-44**	

230	4/5/2018	3:08:05 PM	8	1312	R	0.1	Grid 24	**7**	**-12**
231	4/5/2018	3:08:17 PM	4	1378	R	0.1		**-2**	**74**
232	4/5/2018	3:08:29 PM	3	1220	R	0.1		**-4**	**-131**
233	4/5/2018	3:08:40 PM	11	1252	R	0.1		**14**	**-90**
234	4/5/2018	3:08:52 PM	2	1338	R	0.1		**-6**	**22**
235	4/5/2018	3:09:04 PM	2	1190	R	0.1		**-6**	**-171**
236	4/5/2018	3:09:16 PM	3	1256	R	0.1		**-4**	**-85**
237	4/5/2018	3:09:28 PM	9	1458	R	0.1		**9**	**178**
238	4/5/2018	3:09:39 PM	2	1395	R	0.1		**-6**	**96**
239	4/5/2018	3:09:51 PM	6	1333	R	0.1		**3**	**16**
240	4/5/2018	3:11:44 PM	3	1286	R	0.1	Grid 25	**-4**	**-46**
241	4/5/2018	3:11:56 PM	4	1274	R	0.1		**-2**	**-61**
242	4/5/2018	3:12:08 PM	0	1343	R	0.1		**-11**	**29**
243	4/5/2018	3:12:20 PM	0	1394	R	0.1		**-11**	**95**
244	4/5/2018	3:12:31 PM	7	1351	R	0.1		**5**	**39**
245	4/5/2018	3:12:43 PM	1	1444	R	0.1		**-8**	**160**
246	4/5/2018	3:12:55 PM	12	1340	R	0.1		**16**	**25**
247	4/5/2018	3:13:07 PM	8	1401	R	0.1		**7**	**104**
248	4/5/2018	3:13:18 PM	2	1238	R	0.1		**-6**	**-108**
249	4/5/2018	3:13:30 PM	0	1428	R	0.1		**-11**	**139**
250	4/5/2018	3:18:49 PM	3	1310	R	0.1	Grid 26	**-4**	**-14**
251	4/5/2018	3:19:01 PM	0	1309	R	0.1		**-11**	**-16**
252	4/5/2018	3:19:13 PM	9	1296	R	0.1		**9**	**-33**
253	4/5/2018	3:19:25 PM	2	1288	R	0.1		**-6**	**-43**
254	4/5/2018	3:19:36 PM	3	1388	R	0.1		**-4**	**87**
255	4/5/2018	3:19:48 PM	2	1385	R	0.1		**-6**	**83**
256	4/5/2018	3:20:00 PM	4	1388	R	0.1		**-2**	**87**
257	4/5/2018	3:20:12 PM	5	1378	R	0.1		**0**	**74**
258	4/5/2018	3:20:23 PM	0	1300	R	0.1		**-11**	**-27**
259	4/5/2018	3:20:35 PM	10	1382	R	0.1		**12**	**79**
260	4/5/2018	3:26:07 PM	11	1257	R	0.1	Grid 27	**14**	**-83**
261	4/5/2018	3:26:19 PM	2	1313	R	0.1		**-6**	**-10**
262	4/5/2018	3:26:30 PM	4	1419	R	0.1		**-2**	**128**
263	4/5/2018	3:26:42 PM	5	1371	R	0.1		**0**	**65**
264	4/5/2018	3:26:54 PM	5	1348	R	0.1		**0**	**35**
265	4/5/2018	3:27:06 PM	13	1304	R	0.1		**18**	**-22**
266	4/5/2018	3:27:17 PM	3	1285	R	0.1		**-4**	**-47**
267	4/5/2018	3:27:29 PM	2	1389	R	0.1		**-6**	**89**
268	4/5/2018	3:27:41 PM	5	1287	R	0.1		**0**	**-44**
269	4/5/2018	3:27:53 PM	0	1232	R	0.1		**-11**	**-116**
270	4/5/2018	3:30:20 PM	4	1295	R	0.1	Grid 28	**-2**	**-34**
271	4/5/2018	3:30:32 PM	1	1357	R	0.1		**-8**	**47**
272	4/5/2018	3:30:44 PM	0	1535	R	0.1		**-11**	**279**
273	4/5/2018	3:30:56 PM	0	1363	R	0.1		**-11**	**55**
274	4/5/2018	3:31:07 PM	9	1262	R	0.1		**9**	**-77**
275	4/5/2018	3:31:19 PM	2	1255	R	0.1		**-6**	**-86**
276	4/5/2018	3:31:31 PM	2	1276	R	0.1		**-6**	**-59**
277	4/5/2018	3:31:43 PM	3	1267	R	0.1		**-4**	**-70**
278	4/5/2018	3:31:54 PM	4	1469	R	0.1		**-2**	**193**
279	4/5/2018	3:32:06 PM	4	1297	R	0.1		**-2**	**-31**
		Maximum:	**15**	**1650**				**23**	**428**
		Average:	**5**	**1264**				**-1**	**19**
		StDev:	**4**	**186**				**8**	**130**

Room 100 Ceiling/Overhead

2360 SN:268497
43-37 SN:093965
Cal Due Date: 10/10/2018
Surveyor: Thomas Hogan
Bldg. 218
Room 100 Ceiling Grids 5 through 8
Alpha Efficiency: 0.31
Beta/Gamma Efficiency: 0.352
Alpha Background: 3.4
Beta/Gamma Background: 483

S=Scaler, R=Ratemeter

Sample #	Date	Time	Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2 Alpha	dpm/100cm^2 Beta
1	4/6/2018	10:15:08 AM	0	587	R	0.1	Grid 5	**-8**	**135**
2	4/6/2018	10:15:20 AM	3	639	R	0.1		**-1**	**203**
3	4/6/2018	10:15:32 AM	0	609	R	0.1		**-8**	**164**
4	4/6/2018	10:15:44 AM	2	672	R	0.1		**-3**	**246**
5	4/6/2018	10:15:55 AM	5	596	R	0.1		**4**	**147**
6	4/6/2018	10:16:07 AM	3	692	R	0.1		**-1**	**272**
7	4/6/2018	10:16:19 AM	13	660	R	0.1		**21**	**230**
8	4/6/2018	10:16:31 AM	3	600	R	0.1		**-1**	**152**
9	4/6/2018	10:16:42 AM	0	566	R	0.1		**-8**	**108**
10	4/6/2018	10:22:43 AM	0	585	R	0.1	Grid 6	**-8**	**133**
11	4/6/2018	10:22:54 AM	5	630	R	0.1		**4**	**191**
12	4/6/2018	10:23:06 AM	1	701	R	0.1		**-5**	**284**
13	4/6/2018	10:23:18 AM	0	655	R	0.1		**-8**	**224**
14	4/6/2018	10:23:30 AM	4	618	R	0.1		**1**	**176**
15	4/6/2018	10:23:41 AM	0	664	R	0.1		**-8**	**236**
16	4/6/2018	10:23:53 AM	4	662	R	0.1		**1**	**233**
17	4/6/2018	10:24:05 AM	0	641	R	0.1		**-8**	**206**
18	4/6/2018	10:24:17 AM	3	674	R	0.1		**-1**	**249**
19	4/6/2018	10:24:28 AM	0	590	R	0.1		**-8**	**139**
20	4/6/2018	10:29:29 AM	5	567	R	0.1	Grid 7	**4**	**109**
21	4/6/2018	10:29:41 AM	1	600	R	0.1		**-5**	**152**
22	4/6/2018	10:29:53 AM	8	647	R	0.1		**10**	**213**
23	4/6/2018	10:30:05 AM	2	579	R	0.1		**-3**	**125**
24	4/6/2018	10:30:16 AM	17	658	R	0.1		**30**	**228**
25	4/6/2018	10:30:28 AM	12	665	R	0.1		**19**	**237**
26	4/6/2018	10:38:36 AM	0	560	R	0.1	Grid 8	**-8**	**100**
27	4/6/2018	10:38:47 AM	0	552	R	0.1		**-8**	**90**
28	4/6/2018	10:38:59 AM	11	588	R	0.1		**17**	**137**
29	4/6/2018	10:39:11 AM	7	601	R	0.1		**8**	**154**
30	4/6/2018	10:39:23 AM	11	578	R	0.1		**17**	**124**
31	4/6/2018	10:39:34 AM	2	553	R	0.1		**-3**	**91**
32	4/6/2018	10:39:46 AM	0	688	R	0.1		**-8**	**267**
33	4/6/2018	10:39:58 AM	0	667	R	0.1		**-8**	**240**
34	4/6/2018	10:40:10 AM	8	637	R	0.1		**10**	**200**
35	4/6/2018	10:40:21 AM	2	667	R	0.1		**-3**	**240**
36	4/6/2018	10:40:33 AM	0	605	R	0.1		**-8**	**159**
37	4/6/2018	10:40:45 AM	6	570	R	0.1		**6**	**113**
		Maximum:	**17**	**701**				**30**	**284**
		Average:	**4**	**622**				**1**	**181**
		StDev:	**4**	**44**				**10**	**57**

Room 103 Floor

2360 SN:268497
43-37 SN:093
Cal Due Date: 10/10/2018
Surveyor: Thomas Hogan
Bldg. 218
Room 100 Ceiling
Alpha Efficiency: 0.31
Beta/Gamma Efficiency: 0.352
Alpha Background: 4.9
Beta/Gamma Background: 889

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/9/2018	10:39:24	AM	8	719	R	0.1	Grid 1	**7**	**-221**
2	4/9/2018	10:39:35	AM	2	806	R	0.1		**-6**	**-108**
3	4/9/2018	10:39:47	AM	0	920	R	0.1		**-11**	**40**
4	4/9/2018	10:39:59	AM	0	930	R	0.1		**-11**	**53**
5	4/9/2018	10:40:11	AM	4	836	R	0.1		**-2**	**-69**
6	4/9/2018	10:40:22	AM	1	848	R	0.1		**-9**	**-53**
7	4/9/2018	10:40:34	AM	3	820	R	0.1		**-4**	**-90**
8	4/9/2018	10:40:46	AM	0	821	R	0.1		**-11**	**-89**
9	4/9/2018	10:40:58	AM	0	832	R	0.1		**-11**	**-74**
10	4/9/2018	10:51:32	AM	3	785	R	0.1	Grid 2	**-4**	**-135**
11	4/9/2018	10:51:44	AM	0	788	R	0.1		**-11**	**-131**
12	4/9/2018	10:51:56	AM	0	742	R	0.1		**-11**	**-191**
13	4/9/2018	10:52:07	AM	0	958	R	0.1		**-11**	**90**
14	4/9/2018	10:52:19	AM	0	905	R	0.1		**-11**	**21**
15	4/9/2018	10:52:31	AM	0	778	R	0.1		**-11**	**-144**
16	4/9/2018	10:52:43	AM	0	796	R	0.1		**-11**	**-121**
17	4/9/2018	10:52:54	AM	9	832	R	0.1		**9**	**-74**
18	4/9/2018	10:53:06	AM	21	799	R	0.1		**36**	**-117**
19	4/9/2018	10:53:18	AM	4	780	R	0.1		**-2**	**-142**
20	4/9/2018	10:54:25	AM	0	793	R	0.1	Grid 3	**-11**	**-125**
21	4/9/2018	10:54:36	AM	0	773	R	0.1		**-11**	**-151**
22	4/9/2018	10:54:48	AM	7	802	R	0.1		**5**	**-113**
23	4/9/2018	10:55:00	AM	1	865	R	0.1		**-9**	**-31**
24	4/9/2018	10:55:12	AM	0	724	R	0.1		**-11**	**-215**
25	4/9/2018	10:55:23	AM	11	836	R	0.1		**14**	**-69**
26	4/9/2018	10:55:35	AM	2	853	R	0.1		**-6**	**-47**
27	4/9/2018	10:55:47	AM	11	828	R	0.1		**14**	**-79**
28	4/9/2018	10:55:59	AM	11	807	R	0.1		**14**	**-107**
29	4/9/2018	10:56:10	AM	6	870	R	0.1		**2**	**-25**
30	4/9/2018	10:58:07	AM	4	849	R	0.1	Grid 4	**-2**	**-52**
31	4/9/2018	10:58:19	AM	4	785	R	0.1		**-2**	**-135**
32	4/9/2018	10:58:30	AM	13	823	R	0.1		**18**	**-86**
33	4/9/2018	10:58:42	AM	15	958	R	0.1		**22**	**90**
34	4/9/2018	10:58:54	AM	3	895	R	0.1		**-4**	**8**
35	4/9/2018	10:59:06	AM	0	1050	R	0.1		**-11**	**210**
36	4/9/2018	10:59:17	AM	6	994	R	0.1		**2**	**137**
37	4/9/2018	10:59:29	AM	1	841	R	0.1		**-9**	**-62**
38	4/9/2018	10:59:41	AM	0	871	R	0.1		**-11**	**-23**
39	4/9/2018	10:59:53	AM	0	835	R	0.1		**-11**	**-70**

40	4/9/2018	11:02:29 AM	8	816	R	0.1	Grid 5	**7**	**-95**
41	4/9/2018	11:02:41 AM	2	873	R	0.1		**-6**	**-21**
42	4/9/2018	11:02:53 AM	7	834	R	0.1		**5**	**-72**
43	4/9/2018	11:03:04 AM	1	736	R	0.1		**-9**	**-199**
44	4/9/2018	11:03:16 AM	0	1065	R	0.1		**-11**	**229**
45	4/9/2018	11:03:28 AM	0	875	R	0.1		**-11**	**-18**
46	4/9/2018	11:03:40 AM	0	884	R	0.1		**-11**	**-7**
47	4/9/2018	11:03:51 AM	0	884	R	0.1		**-11**	**-7**
48	4/9/2018	11:04:03 AM	11	862	R	0.1		**14**	**-35**
49	4/9/2018	11:04:15 AM	2	808	R	0.1		**-6**	**-105**
50	4/9/2018	12:24:40 PM	0	824	R	0.1	Grid 6	**-11**	**-85**
51	4/9/2018	12:24:51 PM	0	899	R	0.1		**-11**	**13**
52	4/9/2018	12:25:03 PM	4	886	R	0.1		**-2**	**-4**
53	4/9/2018	12:25:15 PM	1	799	R	0.1		**-9**	**-117**
54	4/9/2018	12:25:27 PM	0	851	R	0.1		**-11**	**-49**
55	4/9/2018	12:25:38 PM	0	988	R	0.1		**-11**	**129**
56	4/9/2018	12:25:50 PM	0	908	R	0.1		**-11**	**25**
57	4/9/2018	12:26:02 PM	0	749	R	0.1		**-11**	**-182**
58	4/9/2018	12:26:13 PM	0	787	R	0.1		**-11**	**-133**
59	4/9/2018	12:26:25 PM	8	781	R	0.1		**7**	**-141**
60	4/9/2018	12:27:56 PM	10	864	R	0.1	Grid 7	**11**	**-33**
61	4/9/2018	12:28:07 PM	10	855	R	0.1		**11**	**-44**
62	4/9/2018	12:28:19 PM	2	917	R	0.1		**-6**	**36**
63	4/9/2018	12:28:31 PM	0	874	R	0.1		**-11**	**-20**
64	4/9/2018	12:28:43 PM	0	890	R	0.1		**-11**	**1**
65	4/9/2018	12:28:54 PM	7	994	R	0.1		**5**	**137**
66	4/9/2018	12:29:06 PM	1	953	R	0.1		**-9**	**83**
67	4/9/2018	12:29:18 PM	0	836	R	0.1		**-11**	**-69**
68	4/9/2018	12:29:30 PM	17	798	R	0.1		**27**	**-118**
69	4/9/2018	12:29:41 PM	8	829	R	0.1		**7**	**-78**
70	4/9/2018	12:32:00 PM	6	842	R	0.1	Grid 8	**2**	**-61**
71	4/9/2018	12:32:12 PM	1	902	R	0.1		**-9**	**17**
72	4/9/2018	12:32:24 PM	0	861	R	0.1		**-11**	**-36**
73	4/9/2018	12:32:35 PM	23	801	R	0.1		**40**	**-115**
74	4/9/2018	12:32:47 PM	5	1060	R	0.1		**0**	**223**
75	4/9/2018	12:32:59 PM	5	1029	R	0.1		**0**	**182**
76	4/9/2018	12:33:11 PM	9	935	R	0.1		**9**	**60**
77	4/9/2018	12:33:22 PM	11	806	R	0.1		**14**	**-108**
78	4/9/2018	12:33:34 PM	2	834	R	0.1		**-6**	**-72**
79	4/9/2018	12:33:46 PM	5	807	R	0.1		**0**	**-107**
80	4/9/2018	12:51:15 PM	7	685	R	0.1	Grid 9	**5**	**-266**
81	4/9/2018	12:51:26 PM	7	912	R	0.1		**5**	**30**
82	4/9/2018	12:51:38 PM	4	834	R	0.1		**-2**	**-72**
83	4/9/2018	12:51:50 PM	1	872	R	0.1		**-9**	**-22**
84	4/9/2018	12:52:02 PM	0	885	R	0.1		**-11**	**-5**
85	4/9/2018	12:52:13 PM	0	832	R	0.1		**-11**	**-74**
86	4/9/2018	12:52:25 PM	0	802	R	0.1		**-11**	**-113**
87	4/9/2018	12:52:37 PM	12	894	R	0.1		**16**	**7**
88	4/9/2018	12:52:49 PM	3	952	R	0.1		**-4**	**82**
89	4/9/2018	12:53:00 PM	0	825	R	0.1		**-11**	**-83**
90	4/9/2018	12:56:25 PM	0	896	R	0.1	Grid 10	**-11**	**9**
91	4/9/2018	12:56:37 PM	5	900	R	0.1		**0**	**14**
92	4/9/2018	12:56:48 PM	12	944	R	0.1		**16**	**72**
93	4/9/2018	12:57:00 PM	3	925	R	0.1		**-4**	**47**

94	4/9/2018	12:57:12 PM	0	951	R	0.1		**-11**	**81**
95	4/9/2018	12:57:24 PM	12	997	R	0.1		**16**	**141**
96	4/9/2018	12:57:35 PM	16	980	R	0.1		**25**	**118**
97	4/9/2018	12:57:47 PM	3	1029	R	0.1		**-4**	**182**
98	4/9/2018	12:57:59 PM	15	995	R	0.1		**22**	**138**
99	4/9/2018	12:58:11 PM	3	889	R	0.1		**-4**	**0**
100	4/9/2018	1:01:53 PM	9	834	R	0.1	Grid 11	**9**	**-72**
101	4/9/2018	1:02:05 PM	2	975	R	0.1		**-6**	**112**
102	4/9/2018	1:02:16 PM	22	880	R	0.1		**38**	**-12**
103	4/9/2018	1:02:28 PM	12	882	R	0.1		**16**	**-9**
104	4/9/2018	1:02:40 PM	2	928	R	0.1		**-6**	**51**
105	4/9/2018	1:02:52 PM	5	914	R	0.1		**0**	**33**
106	4/9/2018	1:03:03 PM	29	1012	R	0.1		**53**	**160**
107	4/9/2018	1:03:15 PM	6	1002	R	0.1		**2**	**147**
108	4/9/2018	1:03:27 PM	1	913	R	0.1		**-9**	**31**
109	4/9/2018	1:03:39 PM	7	961	R	0.1		**5**	**94**
110	4/9/2018	1:07:55 PM	0	908	R	0.1	Grid 12	**-11**	**25**
111	4/9/2018	1:08:06 PM	0	853	R	0.1		**-11**	**-47**
112	4/9/2018	1:08:18 PM	0	849	R	0.1		**-11**	**-52**
113	4/9/2018	1:08:30 PM	0	932	R	0.1		**-11**	**56**
114	4/9/2018	1:08:42 PM	11	940	R	0.1		**14**	**66**
115	4/9/2018	1:08:53 PM	2	793	R	0.1		**-6**	**-125**
116	4/9/2018	1:09:05 PM	7	875	R	0.1		**5**	**-18**
117	4/9/2018	1:09:17 PM	1	813	R	0.1		**-9**	**-99**
118	4/9/2018	1:09:29 PM	5	929	R	0.1		**0**	**52**
119	4/9/2018	1:09:40 PM	0	981	R	0.1		**-11**	**120**
120	4/9/2018	1:20:42 PM	6	852	R	0.1	Grid 13	**2**	**-48**
121	4/9/2018	1:20:53 PM	0	834	R	0.1		**-11**	**-72**
122	4/9/2018	1:21:05 PM	18	900	R	0.1		**29**	**14**
123	4/9/2018	1:21:17 PM	4	859	R	0.1		**-2**	**-39**
124	4/9/2018	1:21:29 PM	1	969	R	0.1		**-9**	**104**
125	4/9/2018	1:21:40 PM	0	959	R	0.1		**-11**	**91**
126	4/9/2018	1:21:52 PM	0	1053	R	0.1		**-11**	**213**
127	4/9/2018	1:22:04 PM	12	849	R	0.1		**16**	**-52**
128	4/9/2018	1:22:16 PM	3	858	R	0.1		**-4**	**-40**
129	4/9/2018	1:22:27 PM	0	937	R	0.1		**-11**	**62**
130	4/9/2018	1:26:22 PM	0	832	R	0.1	Grid 14	**-11**	**-74**
131	4/9/2018	1:26:34 PM	9	917	R	0.1		**9**	**36**
132	4/9/2018	1:26:46 PM	7	906	R	0.1		**5**	**22**
133	4/9/2018	1:26:57 PM	9	858	R	0.1		**9**	**-40**
134	4/9/2018	1:27:09 PM	11	1020	R	0.1		**14**	**171**
135	4/9/2018	1:27:21 PM	14	967	R	0.1		**20**	**102**
136	4/9/2018	1:27:33 PM	12	953	R	0.1		**16**	**83**
137	4/9/2018	1:27:44 PM	2	973	R	0.1		**-6**	**109**
138	4/9/2018	1:27:56 PM	3	975	R	0.1		**-4**	**112**
139	4/9/2018	1:28:08 PM	0	845	R	0.1		**-11**	**-57**
140	4/9/2018	1:33:25 PM	6	951	R	0.1	Grid 15	**2**	**81**
141	4/9/2018	1:33:36 PM	13	849	R	0.1		**18**	**-52**
142	4/9/2018	1:33:48 PM	12	846	R	0.1		**16**	**-56**
143	4/9/2018	1:34:00 PM	3	1025	R	0.1		**-4**	**177**
144	4/9/2018	1:34:12 PM	0	1090	R	0.1		**-11**	**262**
145	4/9/2018	1:34:23 PM	0	1099	R	0.1		**-11**	**273**
146	4/9/2018	1:34:35 PM	0	1095	R	0.1		**-11**	**268**
147	4/9/2018	1:34:47 PM	9	949	R	0.1		**9**	**78**

148	4/9/2018	1:34:59 PM	17	932	R	0.1		**27**	**56**
149	4/9/2018	1:35:10 PM	20	909	R	0.1		**33**	**26**
150	4/9/2018	1:37:32 PM	7	860	R	0.1	Grid 16	**5**	**-38**
151	4/9/2018	1:37:44 PM	1	1089	R	0.1		**-9**	**260**
152	4/9/2018	1:37:55 PM	11	891	R	0.1		**14**	**3**
153	4/9/2018	1:38:07 PM	9	969	R	0.1		**9**	**104**
154	4/9/2018	1:38:19 PM	14	1085	R	0.1		**20**	**255**
155	4/9/2018	1:38:31 PM	14	935	R	0.1		**20**	**60**
156	4/9/2018	1:38:42 PM	8	1182	R	0.1		**7**	**381**
157	4/9/2018	1:38:54 PM	9	1179	R	0.1		**9**	**377**
158	4/9/2018	1:39:06 PM	2	1253	R	0.1		**-6**	**474**
159	4/9/2018	1:39:18 PM	0	1132	R	0.1		**-11**	**316**
160	4/9/2018	1:50:53 PM	0	829	R	0.1	Grid 17	**-11**	**-78**
161	4/9/2018	1:51:05 PM	0	971	R	0.1		**-11**	**107**
162	4/9/2018	1:51:17 PM	15	981	R	0.1		**22**	**120**
163	4/9/2018	1:51:28 PM	3	832	R	0.1		**-4**	**-74**
164	4/9/2018	1:51:40 PM	0	844	R	0.1		**-11**	**-59**
165	4/9/2018	1:51:52 PM	4	990	R	0.1		**-2**	**131**
166	4/9/2018	1:52:04 PM	0	978	R	0.1		**-11**	**116**
167	4/9/2018	1:52:15 PM	9	940	R	0.1		**9**	**66**
168	4/9/2018	1:52:27 PM	2	821	R	0.1		**-6**	**-89**
169	4/9/2018	1:52:39 PM	7	973	R	0.1		**5**	**109**
170	4/9/2018	1:54:42 PM	0	889	R	0.1	Grid 18	**-11**	**0**
171	4/9/2018	1:54:54 PM	6	877	R	0.1		**2**	**-16**
172	4/9/2018	1:55:06 PM	1	940	R	0.1		**-9**	**66**
173	4/9/2018	1:55:17 PM	0	1007	R	0.1		**-11**	**154**
174	4/9/2018	1:55:29 PM	18	988	R	0.1		**29**	**129**
175	4/9/2018	1:55:41 PM	4	947	R	0.1		**-2**	**75**
176	4/9/2018	1:55:53 PM	8	974	R	0.1		**7**	**111**
177	4/9/2018	1:56:04 PM	2	962	R	0.1		**-6**	**95**
178	4/9/2018	1:56:16 PM	3	1005	R	0.1		**-4**	**151**
179	4/9/2018	1:56:28 PM	19	953	R	0.1		**31**	**83**
180	4/9/2018	1:56:40 PM	4	1048	R	0.1		**-2**	**207**
181	4/9/2018	1:59:08 PM	0	893	R	0.1	Grid 19	**-11**	**5**
182	4/9/2018	1:59:20 PM	0	974	R	0.1		**-11**	**111**
183	4/9/2018	1:59:32 PM	0	1035	R	0.1		**-11**	**190**
184	4/9/2018	1:59:43 PM	0	919	R	0.1		**-11**	**39**
185	4/9/2018	1:59:55 PM	0	993	R	0.1		**-11**	**135**
186	4/9/2018	2:00:07 PM	15	965	R	0.1		**22**	**99**
187	4/9/2018	2:00:19 PM	27	872	R	0.1		**49**	**-22**
188	4/9/2018	2:00:30 PM	21	861	R	0.1		**36**	**-36**
189	4/9/2018	2:00:42 PM	12	924	R	0.1		**16**	**46**
190	4/9/2018	2:02:21 PM	8	907	R	0.1	Grid 20	**7**	**23**
191	4/9/2018	2:02:33 PM	5	865	R	0.1		**0**	**-31**
192	4/9/2018	2:02:45 PM	1	935	R	0.1		**-9**	**60**
193	4/9/2018	2:02:56 PM	4	997	R	0.1		**-2**	**141**
194	4/9/2018	2:03:08 PM	5	1058	R	0.1		**0**	**220**
195	4/9/2018	2:03:20 PM	11	1046	R	0.1		**14**	**204**
196	4/9/2018	2:03:32 PM	2	952	R	0.1		**-6**	**82**
197	4/9/2018	2:03:43 PM	0	884	R	0.1		**-11**	**-7**
198	4/9/2018	2:03:55 PM	7	958	R	0.1		**5**	**90**
199	4/9/2018	2:04:07 PM	4	999	R	0.1		**-2**	**143**
200	4/9/2018	2:06:17 PM	0	841	R	0.1	Grid 21	**-11**	**-62**
201	4/9/2018	2:06:29 PM	0	1079	R	0.1		**-11**	**247**

202	4/9/2018	2:06:41 PM	5	967	R	0.1		**0**	**102**
203	4/9/2018	2:06:53 PM	1	1031	R	0.1		**-9**	**185**
204	4/9/2018	2:07:04 PM	3	1081	R	0.1		**-4**	**250**
205	4/9/2018	2:07:16 PM	0	1104	R	0.1		**-11**	**280**
206	4/9/2018	2:07:28 PM	3	1015	R	0.1		**-4**	**164**
207	4/9/2018	2:07:40 PM	0	959	R	0.1		**-11**	**91**
208	4/9/2018	2:07:51 PM	7	950	R	0.1		**5**	**79**
209	4/9/2018	2:08:03 PM	1	976	R	0.1		**-9**	**113**
210	4/9/2018	2:09:26 PM	0	818	R	0.1	Grid 22	**-11**	**-92**
211	4/9/2018	2:09:38 PM	0	946	R	0.1		**-11**	**74**
212	4/9/2018	2:09:50 PM	0	884	R	0.1		**-11**	**-7**
213	4/9/2018	2:10:02 PM	0	1023	R	0.1		**-11**	**174**
214	4/9/2018	2:10:13 PM	7	1116	R	0.1		**5**	**295**
215	4/9/2018	2:10:25 PM	1	980	R	0.1		**-9**	**118**
216	4/9/2018	2:10:37 PM	10	1088	R	0.1		**11**	**259**
217	4/9/2018	2:10:49 PM	14	956	R	0.1		**20**	**87**
218	4/9/2018	2:11:00 PM	9	1020	R	0.1		**9**	**171**
219	4/9/2018	2:11:12 PM	2	946	R	0.1		**-6**	**74**
220	4/9/2018	2:12:33 PM	5	886	R	0.1	Grid 23	**0**	**-4**
221	4/9/2018	2:12:45 PM	0	993	R	0.1		**-11**	**135**
222	4/9/2018	2:12:57 PM	4	907	R	0.1		**-2**	**23**
223	4/9/2018	2:13:09 PM	0	885	R	0.1		**-11**	**-5**
224	4/9/2018	2:13:20 PM	0	907	R	0.1		**-11**	**23**
225	4/9/2018	2:13:32 PM	11	978	R	0.1		**14**	**116**
226	4/9/2018	2:13:44 PM	2	942	R	0.1		**-6**	**69**
227	4/9/2018	2:13:56 PM	4	878	R	0.1		**-2**	**-14**
228	4/9/2018	2:14:07 PM	4	948	R	0.1		**-2**	**77**
229	4/9/2018	2:14:19 PM	1	877	R	0.1		**-9**	**-16**
230	4/9/2018	2:16:34 PM	8	843	R	0.1	Grid 24	**7**	**-60**
231	4/9/2018	2:16:46 PM	2	926	R	0.1		**-6**	**48**
232	4/9/2018	2:16:58 PM	6	965	R	0.1		**2**	**99**
233	4/9/2018	2:17:10 PM	1	1089	R	0.1		**-9**	**260**
234	4/9/2018	2:17:21 PM	0	1028	R	0.1		**-11**	**181**
235	4/9/2018	2:17:33 PM	5	1079	R	0.1		**0**	**247**
236	4/9/2018	2:17:45 PM	4	1179	R	0.1		**-2**	**377**
237	4/9/2018	2:17:57 PM	0	1257	R	0.1		**-11**	**479**
238	4/9/2018	2:18:09 PM	10	1119	R	0.1		**11**	**299**
239	4/9/2018	2:18:20 PM	2	1224	R	0.1		**-6**	**436**
240	4/9/2018	2:20:30 PM	8	684	R	0.1	Grid 25	**7**	**-267**
241	4/9/2018	2:20:42 PM	2	889	R	0.1		**-6**	**0**
242	4/9/2018	2:20:53 PM	13	927	R	0.1		**18**	**49**
243	4/9/2018	2:21:05 PM	3	945	R	0.1		**-4**	**73**
244	4/9/2018	2:21:17 PM	0	912	R	0.1		**-11**	**30**
245	4/9/2018	2:21:29 PM	5	882	R	0.1		**0**	**-9**
246	4/9/2018	2:21:40 PM	4	922	R	0.1		**-2**	**43**
247	4/9/2018	2:21:52 PM	0	886	R	0.1		**-11**	**-4**
248	4/9/2018	2:22:04 PM	7	972	R	0.1		**5**	**108**
249	4/9/2018	2:22:16 PM	1	836	R	0.1		**-9**	**-69**
250	4/9/2018	2:23:31 PM	0	936	R	0.1	Grid 26	**-11**	**61**
251	4/9/2018	2:23:43 PM	4	912	R	0.1		**-2**	**30**
252	4/9/2018	2:23:55 PM	1	933	R	0.1		**-9**	**57**
253	4/9/2018	2:24:07 PM	3	851	R	0.1		**-4**	**-49**
254	4/9/2018	2:24:18 PM	0	1112	R	0.1		**-11**	**290**
255	4/9/2018	2:24:30 PM	5	1064	R	0.1		**0**	**228**

256	4/9/2018	2:24:42 PM	1	1008	R	0.1		**-9**	**155**
257	4/9/2018	2:24:54 PM	0	1009	R	0.1		**-11**	**156**
258	4/9/2018	2:25:05 PM	7	964	R	0.1		**5**	**98**
259	4/9/2018	2:25:17 PM	8	1020	R	0.1		**7**	**171**
260	4/9/2018	2:26:18 PM	19	901	R	0.1	Grid 27	**31**	**16**
261	4/9/2018	2:26:29 PM	4	1082	R	0.1		**-2**	**251**
262	4/9/2018	2:26:41 PM	20	999	R	0.1		**33**	**143**
263	4/9/2018	2:26:53 PM	4	948	R	0.1		**-2**	**77**
264	4/9/2018	2:27:05 PM	8	894	R	0.1		**7**	**7**
265	4/9/2018	2:27:16 PM	14	978	R	0.1		**20**	**116**
266	4/9/2018	2:27:28 PM	3	1129	R	0.1		**-4**	**312**
267	4/9/2018	2:27:40 PM	3	1194	R	0.1		**-4**	**397**
268	4/9/2018	2:27:52 PM	0	1104	R	0.1		**-11**	**280**
269	4/9/2018	2:28:03 PM	3	1048	R	0.1		**-4**	**207**
270	4/9/2018	2:30:01 PM	3	928	R	0.1	Grid 28	**-4**	**51**
271	4/9/2018	2:30:13 PM	11	1127	R	0.1		**14**	**310**
272	4/9/2018	2:30:25 PM	2	973	R	0.1		**-6**	**109**
273	4/9/2018	2:30:36 PM	0	1056	R	0.1		**-11**	**217**
274	4/9/2018	2:30:48 PM	4	1038	R	0.1		**-2**	**194**
275	4/9/2018	2:31:00 PM	1	1156	R	0.1		**-9**	**348**
276	4/9/2018	2:31:12 PM	0	1136	R	0.1		**-11**	**322**
277	4/9/2018	2:31:23 PM	0	1123	R	0.1		**-11**	**305**
278	4/9/2018	2:31:35 PM	11	1084	R	0.1		**14**	**254**
279	4/9/2018	2:31:47 PM	2	1115	R	0.1		**-6**	**294**
280	4/9/2018	2:32:57 PM	0	823	R	0.1	Grid 29	**-11**	**-86**
281	4/9/2018	2:33:09 PM	0	1033	R	0.1		**-11**	**187**
282	4/9/2018	2:33:21 PM	0	999	R	0.1		**-11**	**143**
283	4/9/2018	2:33:33 PM	0	1120	R	0.1		**-11**	**301**
284	4/9/2018	2:33:44 PM	7	1039	R	0.1		**5**	**195**
285	4/9/2018	2:33:56 PM	17	1016	R	0.1		**27**	**165**
286	4/9/2018	2:34:08 PM	4	921	R	0.1		**-2**	**42**
287	4/9/2018	2:34:20 PM	0	1133	R	0.1		**-11**	**318**
288	4/9/2018	2:34:31 PM	0	1082	R	0.1		**-11**	**251**
289	4/9/2018	2:34:43 PM	3	1152	R	0.1		**-4**	**342**
290	4/9/2018	2:38:50 PM	5	884	R	0.1	Grid 30	**0**	**-7**
291	4/9/2018	2:39:02 PM	7	1071	R	0.1		**5**	**237**
292	4/9/2018	2:39:14 PM	1	1111	R	0.1		**-9**	**289**
293	4/9/2018	2:39:25 PM	0	994	R	0.1		**-11**	**137**
294	4/9/2018	2:39:37 PM	0	1135	R	0.1		**-11**	**320**
295	4/9/2018	2:39:49 PM	0	993	R	0.1		**-11**	**135**
296	4/9/2018	2:40:01 PM	15	995	R	0.1		**22**	**138**
297	4/9/2018	2:40:12 PM	7	965	R	0.1		**5**	**99**
298	4/9/2018	2:40:24 PM	11	1098	R	0.1		**14**	**272**
299	4/9/2018	2:40:36 PM	2	920	R	0.1		**-6**	**40**
300	4/9/2018	2:42:06 PM	0	989	R	0.1	Grid 31	**-11**	**130**
301	4/9/2018	2:42:17 PM	9	975	R	0.1		**9**	**112**
302	4/9/2018	2:42:29 PM	2	1059	R	0.1		**-6**	**221**
303	4/9/2018	2:42:41 PM	0	1128	R	0.1		**-11**	**311**
304	4/9/2018	2:42:53 PM	0	1059	R	0.1		**-11**	**221**
305	4/9/2018	2:43:04 PM	3	1106	R	0.1		**-4**	**282**
306	4/9/2018	2:43:16 PM	15	1059	R	0.1		**22**	**221**
307	4/9/2018	2:43:28 PM	3	1092	R	0.1		**-4**	**264**
308	4/9/2018	2:43:40 PM	23	1168	R	0.1		**40**	**363**
309	4/9/2018	2:43:51 PM	5	1152	R	0.1		**0**	**342**

310	4/9/2018	2:45:09 PM	0	799	R	0.1	Grid 32	**-11**	**-117**
311	4/9/2018	2:45:21 PM	7	969	R	0.1		**5**	**104**
312	4/9/2018	2:45:32 PM	7	1051	R	0.1		**5**	**211**
313	4/9/2018	2:45:44 PM	7	965	R	0.1		**5**	**99**
314	4/9/2018	2:45:56 PM	4	960	R	0.1		**-2**	**92**
315	4/9/2018	2:46:08 PM	6	1018	R	0.1		**2**	**168**
316	4/9/2018	2:46:19 PM	1	1136	R	0.1		**-9**	**322**
317	4/9/2018	2:46:31 PM	0	1255	R	0.1		**-11**	**476**
318	4/9/2018	2:46:43 PM	0	1149	R	0.1		**-11**	**338**
319	4/9/2018	2:46:55 PM	0	1209	R	0.1		**-11**	**417**
320	4/9/2018	2:53:42 PM	11	834	R	0.1	Grid 33	**14**	**-72**
321	4/9/2018	2:53:54 PM	2	896	R	0.1		**-6**	**9**
322	4/9/2018	2:54:05 PM	10	875	R	0.1		**11**	**-18**
323	4/9/2018	2:54:17 PM	5	930	R	0.1		**0**	**53**
324	4/9/2018	2:54:29 PM	1	984	R	0.1		**-9**	**124**
325	4/9/2018	2:54:41 PM	0	951	R	0.1		**-11**	**81**
326	4/9/2018	2:54:52 PM	0	912	R	0.1		**-11**	**30**
327	4/9/2018	2:55:04 PM	0	849	R	0.1		**-11**	**-52**
328	4/9/2018	2:55:16 PM	0	904	R	0.1		**-11**	**20**
329	4/9/2018	2:55:28 PM	0	978	R	0.1		**-11**	**116**
330	4/9/2018	2:56:42 PM	0	918	R	0.1	Grid 34	**-11**	**38**
331	4/9/2018	2:56:53 PM	12	980	R	0.1		**16**	**118**
332	4/9/2018	2:57:05 PM	2	1027	R	0.1		**-6**	**180**
333	4/9/2018	2:57:17 PM	0	939	R	0.1		**-11**	**65**
334	4/9/2018	2:57:29 PM	0	869	R	0.1		**-11**	**-26**
335	4/9/2018	2:57:45 PM	0	963	R	0.1		**-11**	**96**
336	4/9/2018	2:57:57 PM	0	1039	R	0.1		**-11**	**195**
337	4/9/2018	2:58:08 PM	3	918	R	0.1		**-4**	**38**
338	4/9/2018	2:58:20 PM	0	938	R	0.1		**-11**	**64**
339	4/9/2018	2:58:32 PM	14	998	R	0.1		**20**	**142**
340	4/9/2018	3:00:10 PM	5	900	R	0.1	Grid 35	**0**	**14**
341	4/9/2018	3:00:22 PM	1	1018	R	0.1		**-9**	**168**
342	4/9/2018	3:00:34 PM	9	972	R	0.1		**9**	**108**
343	4/9/2018	3:00:46 PM	2	894	R	0.1		**-6**	**7**
344	4/9/2018	3:00:57 PM	9	943	R	0.1		**9**	**70**
345	4/9/2018	3:01:09 PM	2	991	R	0.1		**-6**	**133**
346	4/9/2018	3:01:21 PM	4	1008	R	0.1		**-2**	**155**
347	4/9/2018	3:01:33 PM	1	1048	R	0.1		**-9**	**207**
348	4/9/2018	3:01:44 PM	8	1073	R	0.1		**7**	**240**
349	4/9/2018	3:01:56 PM	8	1078	R	0.1		**7**	**246**
350	4/9/2018	3:03:03 PM	0	882	R	0.1	Grid 36	**-11**	**-9**
351	4/9/2018	3:03:14 PM	0	903	R	0.1		**-11**	**18**
352	4/9/2018	3:03:26 PM	0	1099	R	0.1		**-11**	**273**
353	4/9/2018	3:03:38 PM	0	925	R	0.1		**-11**	**47**
354	4/9/2018	3:03:50 PM	3	883	R	0.1		**-4**	**-8**
355	4/9/2018	3:04:01 PM	21	874	R	0.1		**36**	**-20**
356	4/9/2018	3:04:13 PM	4	919	R	0.1		**-2**	**39**
357	4/9/2018	3:04:25 PM	1	873	R	0.1		**-9**	**-21**
358	4/9/2018	3:04:37 PM	18	933	R	0.1		**29**	**57**
359	4/9/2018	3:04:48 PM	4	966	R	0.1		**-2**	**100**
360	4/9/2018	3:05:47 PM	22	882	R	0.1	Grid 37	**38**	**-9**
361	4/9/2018	3:05:59 PM	19	986	R	0.1		**31**	**126**
362	4/9/2018	3:06:11 PM	4	990	R	0.1		**-2**	**131**
363	4/9/2018	3:06:23 PM	4	894	R	0.1		**-2**	**7**

364	4/9/2018	3:06:34 PM	1	1046	R	0.1		**-9**	**204**
365	4/9/2018	3:06:46 PM	0	967	R	0.1		**-11**	**102**
366	4/9/2018	3:06:58 PM	0	970	R	0.1		**-11**	**105**
367	4/9/2018	3:07:10 PM	0	840	R	0.1		**-11**	**-64**
368	4/9/2018	3:07:21 PM	3	958	R	0.1		**-4**	**90**
369	4/9/2018	3:07:33 PM	0	944	R	0.1		**-11**	**72**
370	4/9/2018	3:08:56 PM	10	941	R	0.1	Grid 38	**11**	**68**
371	4/9/2018	3:09:08 PM	2	1051	R	0.1		**-6**	**211**
372	4/9/2018	3:09:20 PM	5	878	R	0.1		**0**	**-14**
373	4/9/2018	3:09:32 PM	1	1026	R	0.1		**-9**	**178**
374	4/9/2018	3:09:43 PM	9	941	R	0.1		**9**	**68**
375	4/9/2018	3:09:55 PM	18	959	R	0.1		**29**	**91**
376	4/9/2018	3:10:07 PM	4	1066	R	0.1		**-2**	**230**
377	4/9/2018	3:10:19 PM	1	973	R	0.1		**-9**	**109**
378	4/9/2018	3:10:30 PM	0	1130	R	0.1		**-11**	**314**
379	4/9/2018	3:10:42 PM	0	925	R	0.1		**-11**	**47**
380	4/9/2018	3:11:54 PM	0	820	R	0.1	Grid 39	**-11**	**-90**
381	4/9/2018	3:12:06 PM	0	969	R	0.1		**-11**	**104**
382	4/9/2018	3:12:17 PM	15	967	R	0.1		**22**	**102**
383	4/9/2018	3:12:29 PM	13	1142	R	0.1		**18**	**329**
384	4/9/2018	3:12:41 PM	8	1068	R	0.1		**7**	**233**
385	4/9/2018	3:12:53 PM	2	1002	R	0.1		**-6**	**147**
386	4/9/2018	3:13:04 PM	8	975	R	0.1		**7**	**112**
387	4/9/2018	3:13:16 PM	8	849	R	0.1		**7**	**-52**
388	4/9/2018	3:13:28 PM	16	902	R	0.1		**25**	**17**
389	4/9/2018	3:13:40 PM	3	1026	R	0.1		**-4**	**178**
390	4/9/2018	3:14:40 PM	0	930	R	0.1	Grid 40	**-11**	**53**
391	4/9/2018	3:14:52 PM	3	964	R	0.1		**-4**	**98**
392	4/9/2018	3:15:04 PM	5	1052	R	0.1		**0**	**212**
393	4/9/2018	3:15:16 PM	1	949	R	0.1		**-9**	**78**
394	4/9/2018	3:15:27 PM	17	1065	R	0.1		**27**	**229**
395	4/9/2018	3:15:39 PM	3	1069	R	0.1		**-4**	**234**
396	4/9/2018	3:15:51 PM	0	1080	R	0.1		**-11**	**249**
397	4/9/2018	3:16:03 PM	0	1200	R	0.1		**-11**	**405**
398	4/9/2018	3:16:14 PM	0	1079	R	0.1		**-11**	**247**
399	4/9/2018	3:16:26 PM	0	1235	R	0.1		**-11**	**450**
400	4/9/2018	3:19:00 PM	4	833	R	0.1	Grid 41	**-2**	**-73**
401	4/9/2018	3:19:11 PM	1	987	R	0.1		**-9**	**128**
402	4/9/2018	3:19:23 PM	0	954	R	0.1		**-11**	**85**
403	4/9/2018	3:19:35 PM	0	966	R	0.1		**-11**	**100**
404	4/9/2018	3:19:47 PM	0	1056	R	0.1		**-11**	**217**
405	4/9/2018	3:19:58 PM	3	904	R	0.1		**-4**	**20**
406	4/9/2018	3:20:10 PM	12	1005	R	0.1		**16**	**151**
407	4/9/2018	3:20:22 PM	3	925	R	0.1		**-4**	**47**
408	4/9/2018	3:20:34 PM	16	906	R	0.1		**25**	**22**
409	4/9/2018	3:20:45 PM	11	1010	R	0.1		**14**	**158**
410	4/9/2018	3:21:55 PM	0	823	R	0.1	Grid 42	**-11**	**-86**
411	4/9/2018	3:22:07 PM	0	883	R	0.1		**-11**	**-8**
412	4/9/2018	3:22:19 PM	0	967	R	0.1		**-11**	**102**
413	4/9/2018	3:22:30 PM	4	982	R	0.1		**-2**	**121**
414	4/9/2018	3:22:42 PM	1	912	R	0.1		**-9**	**30**
415	4/9/2018	3:22:54 PM	4	844	R	0.1		**-2**	**-59**
416	4/9/2018	3:23:06 PM	6	977	R	0.1		**2**	**115**
417	4/9/2018	3:23:17 PM	1	940	R	0.1		**-9**	**66**

418	4/9/2018	3:23:29 PM	0	957	R	0.1		**-11**	**89**
419	4/9/2018	3:23:41 PM	0	880	R	0.1		**-11**	**-12**
420	4/9/2018	3:24:53 PM	0	840	R	0.1	Grid 43	**-11**	**-64**
421	4/9/2018	3:25:05 PM	0	931	R	0.1		**-11**	**55**
422	4/9/2018	3:25:16 PM	0	952	R	0.1		**-11**	**82**
423	4/9/2018	3:25:28 PM	0	947	R	0.1		**-11**	**75**
424	4/9/2018	3:25:40 PM	4	967	R	0.1		**-2**	**102**
425	4/9/2018	3:25:52 PM	1	880	R	0.1		**-9**	**-12**
426	4/9/2018	3:26:03 PM	0	897	R	0.1		**-11**	**10**
427	4/9/2018	3:26:15 PM	0	899	R	0.1		**-11**	**13**
428	4/9/2018	3:26:27 PM	8	930	R	0.1		**7**	**53**
429	4/9/2018	3:26:39 PM	2	950	R	0.1		**-6**	**79**
430	4/9/2018	3:28:22 PM	0	827	R	0.1	Grid 44	**-11**	**-81**
431	4/9/2018	3:28:34 PM	7	854	R	0.1		**5**	**-46**
432	4/9/2018	3:28:45 PM	1	921	R	0.1		**-9**	**42**
433	4/9/2018	3:28:57 PM	15	903	R	0.1		**22**	**18**
434	4/9/2018	3:29:09 PM	10	877	R	0.1		**11**	**-16**
435	4/9/2018	3:29:21 PM	15	988	R	0.1		**22**	**129**
436	4/9/2018	3:29:33 PM	10	946	R	0.1		**11**	**74**
437	4/9/2018	3:29:44 PM	6	936	R	0.1		**2**	**61**
438	4/9/2018	3:29:56 PM	13	908	R	0.1		**18**	**25**
439	4/9/2018	3:30:08 PM	3	1061	R	0.1		**-4**	**224**
440	4/9/2018	3:31:06 PM	4	861	R	0.1	Grid 45	**-2**	**-36**
441	4/9/2018	3:31:17 PM	1	1050	R	0.1		**-9**	**210**
442	4/9/2018	3:31:29 PM	19	937	R	0.1		**31**	**62**
443	4/9/2018	3:31:41 PM	4	935	R	0.1		**-2**	**60**
444	4/9/2018	3:31:53 PM	6	976	R	0.1		**2**	**113**
445	4/9/2018	3:32:04 PM	6	903	R	0.1		**2**	**18**
446	4/9/2018	3:32:16 PM	10	1019	R	0.1		**11**	**169**
447	4/9/2018	3:32:28 PM	10	904	R	0.1		**11**	**20**
448	4/9/2018	3:32:40 PM	2	876	R	0.1		**-6**	**-17**
449	4/9/2018	3:32:51 PM	0	885	R	0.1		**-11**	**-5**
450	4/9/2018	3:33:36 PM	3	836	R	0.1	Grid 46	**-4**	**-69**
451	4/9/2018	3:33:48 PM	19	1013	R	0.1		**31**	**161**
452	4/9/2018	3:34:00 PM	16	1002	R	0.1		**25**	**147**
453	4/9/2018	3:34:11 PM	9	916	R	0.1		**9**	**35**
454	4/9/2018	3:34:23 PM	8	852	R	0.1		**7**	**-48**
455	4/9/2018	3:34:35 PM	22	1066	R	0.1		**38**	**230**
456	4/9/2018	3:34:47 PM	11	1024	R	0.1		**14**	**176**
457	4/9/2018	3:34:58 PM	20	970	R	0.1		**33**	**105**
458	4/9/2018	3:35:10 PM	14	1053	R	0.1		**20**	**213**
459	4/9/2018	3:35:22 PM	3	871	R	0.1		**-4**	**-23**
460	4/9/2018	3:36:27 PM	0	936	R	0.1	Grid 47	**-11**	**61**
461	4/9/2018	3:36:38 PM	6	1066	R	0.1		**2**	**230**
462	4/9/2018	3:36:50 PM	1	970	R	0.1		**-9**	**105**
463	4/9/2018	3:37:02 PM	4	1006	R	0.1		**-2**	**152**
464	4/9/2018	3:37:14 PM	4	978	R	0.1		**-2**	**116**
465	4/9/2018	3:37:25 PM	11	1040	R	0.1		**14**	**197**
466	4/9/2018	3:37:37 PM	2	1063	R	0.1		**-6**	**226**
467	4/9/2018	3:37:49 PM	0	1029	R	0.1		**-11**	**182**
468	4/9/2018	3:38:01 PM	0	965	R	0.1		**-11**	**99**
469	4/9/2018	3:38:12 PM	11	971	R	0.1		**14**	**107**
470	4/9/2018	3:39:44 PM	0	934	R	0.1	Grid 48	**-11**	**59**
471	4/9/2018	3:39:55 PM	0	1046	R	0.1		**-11**	**204**

472	4/9/2018	3:40:07 PM	3	1035	R	0.1	**-4**	**190**
473	4/9/2018	3:40:19 PM	0	1176	R	0.1	**-11**	**374**
474	4/9/2018	3:40:31 PM	11	1036	R	0.1	**14**	**191**
475	4/9/2018	3:40:42 PM	9	1118	R	0.1	**9**	**298**
476	4/9/2018	3:40:54 PM	2	1123	R	0.1	**-6**	**305**
477	4/9/2018	3:41:06 PM	0	1121	R	0.1	**-11**	**302**
478	4/9/2018	3:41:18 PM	3	1175	R	0.1	**-4**	**372**
479	4/9/2018	3:41:30 PM	0	1182	R	0.1	**-11**	**381**
		Maximum:	**29**	**1257**			**53**	**479**
		Average:	**5**	**952**			**0**	**82**
		StDev:	**6**	**102**			**13**	**133**

2360 SN:268497
43-37 SN:093965
Cal Due Date: 10/10/2018
Surveyor: Thomas Hogan
Bldg. 218
Room 103 Floor Grids 49 thru 56
Alpha Efficiency: 0.31
Beta/Gamma Efficiency: 0.352
Alpha Background: 4.9
Beta/Gamma Background: 899

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/10/2018	9:09:46	AM	0	920	R	0.1	Grid 49	**-11**	**27**
2	4/10/2018	9:09:57	AM	0	879	R	0.1		**-11**	**-26**
3	4/10/2018	9:10:09	AM	15	844	R	0.1		**22**	**-72**
4	4/10/2018	9:10:21	AM	3	900	R	0.1		**-4**	**1**
5	4/10/2018	9:10:33	AM	0	891	R	0.1		**-11**	**-10**
6	4/10/2018	9:11:56	AM	3	846	R	0.1	Grid 50	**-4**	**-69**
7	4/10/2018	9:12:08	AM	0	904	R	0.1		**-11**	**7**
8	4/10/2018	9:12:19	AM	6	889	R	0.1		**2**	**-13**
9	4/10/2018	9:12:31	AM	1	870	R	0.1		**-9**	**-38**
10	4/10/2018	9:12:43	AM	7	854	R	0.1		**5**	**-59**
11	4/10/2018	9:12:55	AM	12	888	R	0.1		**16**	**-14**
12	4/10/2018	9:14:05	AM	0	855	R	0.1	Grid 51	**-11**	**-57**
13	4/10/2018	9:14:16	AM	0	904	R	0.1		**-11**	**7**
14	4/10/2018	9:14:28	AM	0	893	R	0.1		**-11**	**-8**
15	4/10/2018	9:14:40	AM	0	893	R	0.1		**-11**	**-8**
16	4/10/2018	9:14:52	AM	0	834	R	0.1		**-11**	**-85**
17	4/10/2018	9:15:03	AM	0	862	R	0.1		**-11**	**-48**
18	4/10/2018	9:16:50	AM	15	822	R	0.1	Grid 52	**22**	**-100**
19	4/10/2018	9:17:02	AM	3	870	R	0.1		**-4**	**-38**
20	4/10/2018	9:17:14	AM	0	853	R	0.1		**-11**	**-60**
21	4/10/2018	9:17:26	AM	7	854	R	0.1		**5**	**-59**
22	4/10/2018	9:17:37	AM	1	913	R	0.1		**-9**	**18**
23	4/10/2018	9:17:49	AM	10	812	R	0.1		**11**	**-113**
24	4/10/2018	9:19:22	AM	0	869	R	0.1	Grid 53	**-11**	**-39**
25	4/10/2018	9:19:34	AM	0	802	R	0.1		**-11**	**-126**
26	4/10/2018	9:19:45	AM	0	825	R	0.1		**-11**	**-96**
27	4/10/2018	9:19:57	AM	0	961	R	0.1		**-11**	**81**
28	4/10/2018	9:20:09	AM	3	897	R	0.1		**-4**	**-3**
29	4/10/2018	9:20:21	AM	5	931	R	0.1		**0**	**42**
30	4/10/2018	9:21:42	AM	0	825	R	0.1	Grid 54	**-11**	**-96**
31	4/10/2018	9:21:54	AM	3	883	R	0.1		**-4**	**-21**
32	4/10/2018	9:22:06	AM	0	862	R	0.1		**-11**	**-48**
33	4/10/2018	9:22:17	AM	3	962	R	0.1		**-4**	**82**
34	4/10/2018	9:22:29	AM	0	854	R	0.1		**-11**	**-59**
35	4/10/2018	9:22:41	AM	3	964	R	0.1		**-4**	**85**
36	4/10/2018	9:23:51	AM	0	845	R	0.1	Grid 55	**-11**	**-70**
37	4/10/2018	9:24:02	AM	0	941	R	0.1		**-11**	**55**
38	4/10/2018	9:24:14	AM	0	982	R	0.1		**-11**	**108**
39	4/10/2018	9:24:26	AM	0	1040	R	0.1		**-11**	**184**
40	4/10/2018	9:24:38	AM	0	995	R	0.1		**-11**	**125**

41	4/10/2018	9:24:49 AM	0	1052	R	0.1		**-11**	**199**
42	4/10/2018	9:25:01 AM	0	1008	R	0.1		**-11**	**142**
43	4/10/2018	9:25:52 AM	18	803	R	0.1	Grid 56	**29**	**-125**
44	4/10/2018	9:26:04 AM	12	1036	R	0.1		**16**	**178**
45	4/10/2018	9:26:16 AM	6	1167	R	0.1		**2**	**349**
46	4/10/2018	9:26:28 AM	1	1134	R	0.1		**-9**	**306**
47	4/10/2018	9:26:39 AM	0	1099	R	0.1		**-11**	**260**
48	4/10/2018	9:26:51 AM	10	1103	R	0.1		**11**	**266**
49	4/10/2018	9:27:03 AM	2	1130	R	0.1		**-6**	**301**
		Maximum:	**18**	**1167**				**29**	**349**
		Average:	**3**	**919**				**-4**	**26**
		StDev:	**5**	**94**				**10**	**122**

Room 103 Lower Wall

2360# 297743
43-37 #302111
Cal Due Date: 10/10/2018
Surveyor: Adolfo Matus/ Josefina Matus
Bldg. 218
Room 103 Lower North and East Wall
Alpha Efficiency: 0.319
Beta/Gamma Efficiency: 0.384 Metal
Alpha Background: 8.3 4.1
Beta/Gamma Background: 1511 539

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2 Alpha	Beta	
1	4/4/2018	2:04:20	PM	0	639	R	0.1	Grid 1	**-18**	**119**	Metal
2	4/4/2018	2:04:32	PM	0	600	R	0.1		**-18**	**73**	Metal
3	4/4/2018	2:04:43	PM	3	591	R	0.1		**-11**	**62**	Metal
4	4/4/2018	2:04:55	PM	0	411	R	0.1		**-18**	**-153**	Metal
5	4/4/2018	2:05:07	PM	13	581	R	0.1		**10**	**50**	Metal
6	4/4/2018	2:05:18	PM	3	556	R	0.1		**-11**	**20**	Metal
7	4/4/2018	2:05:30	PM	11	584	R	0.1		**6**	**54**	Metal
8	4/4/2018	2:05:41	PM	2	583	R	0.1		**-14**	**53**	Metal
9	4/4/2018	2:05:53	PM	0	570	R	0.1		**-18**	**37**	Metal
10	4/4/2018	2:06:15	PM	4	544	R	0.1		**-9**	**6**	Metal
11	4/4/2018	2:08:03	PM	5	487	R	0.1	Grid 2	**-7**	**-62**	Metal
12	4/4/2018	2:08:14	PM	1	562	R	0.1		**-16**	**27**	Metal
13	4/4/2018	2:08:26	PM	6	484	R	0.1		**-5**	**-66**	Metal
14	4/4/2018	2:08:38	PM	9	505	R	0.1		**2**	**-41**	Metal
15	4/4/2018	2:08:49	PM	13	499	R	0.1		**10**	**-48**	Metal
16	4/4/2018	2:09:01	PM	3	507	R	0.1		**-11**	**-38**	Metal
17	4/4/2018	2:09:13	PM	0	503	R	0.1		**-18**	**-43**	Metal
18	4/4/2018	2:09:24	PM	0	519	R	0.1		**-18**	**-24**	Metal
19	4/4/2018	2:09:36	PM	4	483	R	0.1		**-9**	**-67**	Metal
20	4/4/2018	2:09:48	PM	4	535	R	0.1		**-9**	**-5**	Metal
21	4/4/2018	2:11:06	PM	11	513	R	0.1	Grid 3	**6**	**-31**	Metal
22	4/4/2018	2:11:17	PM	21	474	R	0.1		**27**	**-78**	Metal
23	4/4/2018	2:11:29	PM	4	518	R	0.1		**-9**	**-25**	Metal
24	4/4/2018	2:11:41	PM	4	499	R	0.1		**-9**	**-48**	Metal
25	4/4/2018	2:11:52	PM	1	549	R	0.1		**-16**	**12**	Metal
26	4/4/2018	2:12:04	PM	13	480	R	0.1		**10**	**-70**	Metal
27	4/4/2018	2:12:16	PM	7	462	R	0.1		**-3**	**-92**	Metal
28	4/4/2018	2:12:27	PM	1	503	R	0.1		**-16**	**-43**	Metal
29	4/4/2018	2:12:39	PM	0	510	R	0.1		**-18**	**-35**	Metal
30	4/4/2018	2:12:51	PM	0	589	R	0.1		**-18**	**60**	Metal
31	4/4/2018	2:14:38	PM	0	529	R	0.1	Grid 4	**-18**	**-12**	Metal
32	4/4/2018	2:14:50	PM	3	491	R	0.1		**-11**	**-57**	Metal
33	4/4/2018	2:15:01	PM	0	545	R	0.1		**-18**	**7**	Metal
34	4/4/2018	2:15:13	PM	15	468	R	0.1		**14**	**-85**	Metal
35	4/4/2018	2:15:25	PM	15	400	R	0.1		**14**	**-166**	Metal
36	4/4/2018	2:15:36	PM	13	408	R	0.1		**10**	**-156**	Metal
37	4/4/2018	2:15:48	PM	3	514	R	0.1		**-11**	**-30**	Metal
38	4/4/2018	2:16:00	PM	10	540	R	0.1		**4**	**1**	Metal
39	4/4/2018	2:16:11	PM	2	515	R	0.1		**-14**	**-29**	Metal
40	4/4/2018	2:16:23	PM	7	459	R	0.1		**-3**	**-95**	Metal
41	4/4/2018	2:17:37	PM	0	515	R	0.1	Grid 5	**-18**	**-29**	Metal
42	4/4/2018	2:17:49	PM	7	498	R	0.1		**-3**	**-49**	Metal
43	4/4/2018	2:18:00	PM	1	510	R	0.1		**-16**	**-35**	Metal
44	4/4/2018	2:18:12	PM	5	508	R	0.1		**-7**	**-37**	Metal

45	4/4/2018	2:18:24 PM	1	492	R	0.1		**-16**	**-56**	Metal
46	4/4/2018	2:18:35 PM	6	475	R	0.1		**-5**	**-76**	Metal
47	4/4/2018	2:18:47 PM	11	508	R	0.1		**6**	**-37**	Metal
48	4/4/2018	2:18:59 PM	6	520	R	0.1		**-5**	**-23**	Metal
49	4/4/2018	2:19:10 PM	1	530	R	0.1		**-16**	**-11**	Metal
50	4/4/2018	2:19:22 PM	0	507	R	0.1		**-18**	**-38**	Metal
51	4/4/2018	2:20:22 PM	9	500	R	0.1	Grid 6	**2**	**-47**	Metal
52	4/4/2018	2:20:34 PM	20	486	R	0.1		**25**	**-63**	Metal
53	4/4/2018	2:20:45 PM	4	541	R	0.1		**-9**	**2**	Metal
54	4/4/2018	2:20:57 PM	4	499	R	0.1		**-9**	**-48**	Metal
55	4/4/2018	2:21:09 PM	1	553	R	0.1		**-16**	**17**	Metal
56	4/4/2018	2:21:20 PM	0	508	R	0.1		**-18**	**-37**	Metal
57	4/4/2018	2:21:32 PM	3	568	R	0.1		**-11**	**35**	Metal
58	4/4/2018	2:21:44 PM	4	518	R	0.1		**-9**	**-25**	Metal
59	4/4/2018	2:21:55 PM	10	502	R	0.1		**4**	**-44**	Metal
60	4/4/2018	2:22:07 PM	11	518	R	0.1		**6**	**-25**	Metal
61	4/4/2018	2:23:32 PM	0	523	R	0.1	Grid 7	**-18**	**-19**	Metal
62	4/4/2018	2:23:43 PM	0	580	R	0.1		**-18**	**49**	Metal
63	4/4/2018	2:23:55 PM	9	543	R	0.1		**2**	**5**	Metal
64	4/4/2018	2:24:07 PM	22	541	R	0.1		**30**	**2**	Metal
65	4/4/2018	2:24:18 PM	5	543	R	0.1		**-7**	**5**	Metal
66	4/4/2018	2:24:30 PM	1	585	R	0.1		**-16**	**55**	Metal
67	4/4/2018	2:24:42 PM	0	516	R	0.1		**-18**	**-27**	Metal
68	4/4/2018	2:24:53 PM	6	509	R	0.1		**-5**	**-36**	Metal
69	4/4/2018	2:25:05 PM	1	499	R	0.1		**-16**	**-48**	Metal
70	4/4/2018	2:25:16 PM	5	479	R	0.1		**-7**	**-72**	Metal
71	4/4/2018	2:26:13 PM	0	498	R	0.1	Grid 8	**-18**	**-1209**	
72	4/4/2018	2:26:25 PM	2	631	R	0.1		**-14**	**-1050**	
73	4/4/2018	2:26:37 PM	0	799	R	0.1		**-18**	**-850**	
74	4/4/2018	2:26:48 PM	5	981	R	0.1		**-7**	**-632**	
75	4/4/2018	2:27:00 PM	1	1205	R	0.1		**-16**	**-365**	
76	4/4/2018	2:27:11 PM	0	1095	R	0.1		**-18**	**-496**	
77	4/4/2018	2:27:23 PM	10	1060	R	0.1		**4**	**-538**	
78	4/4/2018	2:27:35 PM	7	750	R	0.1		**-3**	**-908**	
79	4/4/2018	2:27:46 PM	11	634	R	0.1		**6**	**-1046**	
80	4/4/2018	2:27:58 PM	14	569	R	0.1		**12**	**-1124**	
81	4/4/2018	2:31:30 PM	8	1399	R	0.1	Grid 9	**-1**	**-134**	
82	4/4/2018	2:31:42 PM	8	1454	R	0.1		**-1**	**-68**	
83	4/4/2018	2:31:54 PM	6	1531	R	0.1		**-5**	**24**	
84	4/4/2018	2:32:05 PM	1	1491	R	0.1		**-16**	**-24**	
85	4/4/2018	2:32:17 PM	7	1770	R	0.1		**-3**	**309**	
86	4/4/2018	2:32:28 PM	1	1716	R	0.1		**-16**	**245**	
87	4/4/2018	2:32:40 PM	11	1690	R	0.1		**6**	**214**	
88	4/4/2018	2:32:52 PM	9	1564	R	0.1		**2**	**63**	
89	4/4/2018	2:33:03 PM	2	1723	R	0.1		**-14**	**253**	
90	4/4/2018	2:33:15 PM	3	1579	R	0.1		**-11**	**81**	
91	4/4/2018	2:35:39 PM	4	1505	R	0.1	Grid 10	**-9**	**-7**	
92	4/4/2018	2:35:51 PM	1	1503	R	0.1		**-16**	**-10**	
93	4/4/2018	2:36:02 PM	0	1728	R	0.1		**-18**	**259**	
94	4/4/2018	2:36:14 PM	13	1444	R	0.1		**10**	**-80**	
95	4/4/2018	2:36:26 PM	3	1441	R	0.1		**-11**	**-84**	
96	4/4/2018	2:36:37 PM	9	1593	R	0.1		**2**	**98**	
97	4/4/2018	2:36:49 PM	2	1548	R	0.1		**-14**	**44**	
98	4/4/2018	2:37:01 PM	17	1691	R	0.1		**19**	**215**	
99	4/4/2018	2:37:12 PM	4	2110	R	0.1		**-9**	**715**	
100	4/4/2018	2:37:24 PM	20	1914	R	0.1		**25**	**481**	
101	4/4/2018	2:40:49 PM	6	1498	R	0.1	Grid 11	**-5**	**-16**	
102	4/4/2018	2:41:00 PM	9	1513	R	0.1		**2**	**2**	
103	4/4/2018	2:41:12 PM	2	1474	R	0.1		**-14**	**-44**	

104	4/4/2018	2:41:24 PM	0	1468	R	0.1		**-18**	**-51**	
105	4/4/2018	2:41:35 PM	6	1453	R	0.1		**-5**	**-69**	
106	4/4/2018	2:41:47 PM	1	1498	R	0.1		**-16**	**-16**	
107	4/4/2018	2:41:59 PM	0	1504	R	0.1		**-18**	**-8**	
108	4/4/2018	2:42:10 PM	0	1478	R	0.1		**-18**	**-39**	
109	4/4/2018	2:42:22 PM	0	1451	R	0.1		**-18**	**-72**	
110	4/4/2018	2:42:34 PM	0	1487	R	0.1		**-18**	**-29**	
111	4/4/2018	2:44:52 PM	11	1485	R	0.1	Grid 12	**6**	**-31**	
112	4/4/2018	2:45:04 PM	2	1504	R	0.1		**-14**	**-8**	
113	4/4/2018	2:45:15 PM	3	1499	R	0.1		**-11**	**-14**	
114	4/4/2018	2:45:27 PM	0	1501	R	0.1		**-18**	**-12**	
115	4/4/2018	2:45:39 PM	36	1454	R	0.1		**60**	**-68**	
116	4/4/2018	2:45:50 PM	11	1454	R	0.1		**6**	**-68**	
117	4/4/2018	2:46:02 PM	14	1498	R	0.1		**12**	**-16**	
118	4/4/2018	2:46:14 PM	8	1465	R	0.1		**-1**	**-55**	
119	4/4/2018	2:46:25 PM	2	1504	R	0.1		**-14**	**-8**	
120	4/4/2018	2:46:37 PM	14	1456	R	0.1		**12**	**-66**	
121	4/4/2018	2:48:02 PM	0	1555	R	0.1	Grid 13	**-18**	**53**	
122	4/4/2018	2:48:14 PM	8	1455	R	0.1		**-1**	**-67**	
123	4/4/2018	2:48:26 PM	9	1523	R	0.1		**2**	**14**	
124	4/4/2018	2:48:37 PM	11	1498	R	0.1		**6**	**-16**	
125	4/4/2018	2:48:49 PM	5	1460	R	0.1		**-7**	**-61**	
126	4/4/2018	2:49:01 PM	7	1477	R	0.1		**-3**	**-41**	
127	4/4/2018	2:49:12 PM	1	1453	R	0.1		**-16**	**-69**	
128	4/4/2018	2:49:24 PM	0	1499	R	0.1		**-18**	**-14**	
129	4/4/2018	2:49:36 PM	8	1465	R	0.1		**-1**	**-55**	
130	4/4/2018	2:49:47 PM	5	1512	R	0.1		**-7**	**1**	
131	4/4/2018	2:51:06 PM	16	1455	R	0.1	Grid 14	**17**	**-67**	
132	4/4/2018	2:51:18 PM	11	1518	R	0.1		**6**	**8**	
133	4/4/2018	2:51:29 PM	2	1553	R	0.1		**-14**	**50**	
134	4/4/2018	2:51:41 PM	5	1497	R	0.1		**-7**	**-17**	
135	4/4/2018	2:51:53 PM	1	1485	R	0.1		**-16**	**-31**	
136	4/4/2018	2:52:04 PM	13	1455	R	0.1		**10**	**-67**	
137	4/4/2018	2:52:16 PM	7	1486	R	0.1		**-3**	**-30**	
138	4/4/2018	2:52:28 PM	12	1146	R	0.1		**8**	**-436**	
139	4/4/2018	2:52:39 PM	3	1502	R	0.1		**-11**	**-11**	
140	4/4/2018	2:52:51 PM	9	1486	R	0.1		**2**	**-30**	
141	4/4/2018	2:53:58 PM	8	1476	R	0.1	Grid 15	**-1**	**-42**	
142	4/4/2018	2:54:09 PM	6	1459	R	0.1		**-5**	**-62**	
143	4/4/2018	2:54:21 PM	1	1506	R	0.1		**-16**	**-6**	
144	4/4/2018	2:54:33 PM	6	1508	R	0.1		**-5**	**-4**	
145	4/4/2018	2:54:44 PM	12	1487	R	0.1		**8**	**-29**	
146	4/4/2018	2:54:56 PM	3	1499	R	0.1		**-11**	**-14**	
147	4/4/2018	2:55:08 PM	13	1487	R	0.1		**10**	**-29**	
148	4/4/2018	2:55:19 PM	3	1477	R	0.1		**-11**	**-41**	
149	4/4/2018	2:55:31 PM	0	1512	R	0.1		**-18**	**1**	
150	4/4/2018	2:55:42 PM	3	1642	R	0.1		**-11**	**156**	
151	4/4/2018	3:02:27 PM	11	518	R	0.1	Grid 31	**6**	**-25**	Metal
152	4/4/2018	3:02:39 PM	8	652	R	0.1		**-1**	**135**	Metal
153	4/4/2018	3:02:50 PM	2	603	R	0.1		**-14**	**76**	Metal
154	4/4/2018	3:03:02 PM	9	543	R	0.1		**2**	**5**	Metal
155	4/4/2018	3:03:14 PM	2	621	R	0.1		**-14**	**98**	Metal
156	4/4/2018	3:03:25 PM	0	583	R	0.1		**-18**	**53**	Metal
157	4/4/2018	3:03:37 PM	0	603	R	0.1		**-18**	**76**	Metal
158	4/4/2018	3:03:49 PM	0	627	R	0.1		**-18**	**105**	Metal
159	4/4/2018	3:04:00 PM	0	696	R	0.1		**-18**	**187**	Metal
160	4/4/2018	3:04:12 PM	0	705	R	0.1		**-18**	**198**	Metal
161	4/4/2018	3:04:44 PM	13	522	R	0.1	Grid 32	**10**	**-20**	Metal
162	4/4/2018	3:04:55 PM	18	502	R	0.1		**21**	**-44**	Metal

163	4/4/2018	3:05:07 PM	21	458	R	0.1		**27**	**-97**	Metal
164	4/4/2018	3:05:19 PM	5	524	R	0.1		**-7**	**-18**	Metal
165	4/4/2018	3:05:30 PM	16	523	R	0.1		**17**	**-19**	Metal
166	4/4/2018	3:05:42 PM	3	525	R	0.1		**-11**	**-17**	Metal
167	4/4/2018	3:05:54 PM	0	536	R	0.1		**-18**	**-4**	Metal
168	4/4/2018	3:06:05 PM	9	521	R	0.1		**2**	**-21**	Metal
169	4/4/2018	3:06:17 PM	5	551	R	0.1		**-7**	**14**	Metal
170	4/4/2018	3:06:29 PM	1	495	R	0.1		**-16**	**-53**	Metal
171	4/4/2018	3:08:45 PM	0	501	R	0.1	Grid 33	**-18**	**-45**	Metal
172	4/4/2018	3:08:57 PM	0	523	R	0.1		**-18**	**-19**	Metal
173	4/4/2018	3:09:08 PM	16	533	R	0.1		**17**	**-7**	Metal
174	4/4/2018	3:09:20 PM	9	560	R	0.1		**2**	**25**	Metal
175	4/4/2018	3:09:32 PM	2	528	R	0.1		**-14**	**-13**	Metal
176	4/4/2018	3:09:43 PM	7	511	R	0.1		**-3**	**-33**	Metal
177	4/4/2018	3:09:55 PM	1	523	R	0.1		**-16**	**-19**	Metal
178	4/4/2018	3:10:07 PM	10	499	R	0.1		**4**	**-48**	Metal
179	4/4/2018	3:10:18 PM	2	577	R	0.1		**-14**	**45**	Metal
180	4/4/2018	3:10:30 PM	0	555	R	0.1		**-18**	**19**	Metal
181	4/4/2018	3:11:18 PM	7	554	R	0.1	Grid 34	**-3**	**18**	Metal
182	4/4/2018	3:11:30 PM	1	512	R	0.1		**-16**	**-32**	Metal
183	4/4/2018	3:11:42 PM	5	519	R	0.1		**-7**	**-24**	Metal
184	4/4/2018	3:11:53 PM	1	548	R	0.1		**-16**	**11**	Metal
185	4/4/2018	3:12:05 PM	0	521	R	0.1		**-18**	**-21**	Metal
186	4/4/2018	3:12:16 PM	0	577	R	0.1		**-18**	**45**	Metal
187	4/4/2018	3:12:28 PM	13	497	R	0.1		**10**	**-50**	Metal
188	4/4/2018	3:12:40 PM	6	493	R	0.1		**-5**	**-55**	Metal
189	4/4/2018	3:12:51 PM	1	497	R	0.1		**-16**	**-50**	Metal
190	4/4/2018	3:13:03 PM	0	496	R	0.1		**-18**	**-51**	Metal
191	4/4/2018	3:14:15 PM	11	501	R	0.1	Grid 35	**6**	**-45**	Metal
192	4/4/2018	3:14:27 PM	21	520	R	0.1		**27**	**-23**	Metal
193	4/4/2018	3:14:38 PM	4	476	R	0.1		**-9**	**-75**	Metal
194	4/4/2018	3:14:50 PM	17	484	R	0.1		**19**	**-66**	Metal
195	4/4/2018	3:15:02 PM	4	549	R	0.1		**-9**	**12**	Metal
196	4/4/2018	3:15:13 PM	0	499	R	0.1		**-18**	**-48**	Metal
197	4/4/2018	3:15:25 PM	0	487	R	0.1		**-18**	**-62**	Metal
198	4/4/2018	3:15:37 PM	3	480	R	0.1		**-11**	**-70**	Metal
199	4/4/2018	3:15:48 PM	7	537	R	0.1		**-3**	**-2**	Metal
200	4/4/2018	3:16:00 PM	1	470	R	0.1		**-16**	**-82**	Metal
201	4/4/2018	3:16:57 PM	0	543	R	0.1	Grid 36	**-18**	**5**	Metal
202	4/4/2018	3:17:09 PM	18	517	R	0.1		**21**	**-26**	Metal
203	4/4/2018	3:17:21 PM	4	563	R	0.1		**-9**	**29**	Metal
204	4/4/2018	3:17:32 PM	13	499	R	0.1		**10**	**-48**	Metal
205	4/4/2018	3:17:44 PM	15	463	R	0.1		**14**	**-91**	Metal
206	4/4/2018	3:17:55 PM	3	466	R	0.1		**-11**	**-87**	Metal
207	4/4/2018	3:18:07 PM	12	521	R	0.1		**8**	**-21**	Metal
208	4/4/2018	3:18:19 PM	18	497	R	0.1		**21**	**-50**	Metal
209	4/4/2018	3:18:30 PM	4	498	R	0.1		**-9**	**-49**	Metal
210	4/4/2018	3:18:42 PM	1	506	R	0.1		**-16**	**-39**	Metal
211	4/4/2018	3:18:54 PM	10	664	R	0.1		**4**	**149**	Metal
212	4/4/2018	3:19:05 PM	2	723	R	0.1		**-14**	**220**	Metal
213	4/4/2018	3:19:17 PM	4	645	R	0.1		**-9**	**126**	Metal
214	4/4/2018	3:20:06 PM	6	504	R	0.1	Grid 37	**-5**	**-42**	Metal
215	4/4/2018	3:20:18 PM	4	503	R	0.1		**-9**	**-43**	Metal
216	4/4/2018	3:20:29 PM	10	458	R	0.1		**4**	**-97**	Metal
217	4/4/2018	3:20:41 PM	10	542	R	0.1		**4**	**4**	Metal
218	4/4/2018	3:20:53 PM	25	547	R	0.1		**36**	**10**	Metal
219	4/4/2018	3:21:04 PM	14	506	R	0.1		**12**	**-39**	Metal
220	4/4/2018	3:21:16 PM	3	423	R	0.1		**-11**	**-138**	Metal
221	4/4/2018	3:22:20 PM	0	473	R	0.1	Grid 38	**-18**	**-79**	Metal

222	4/4/2018	3:22:32 PM	3	615	R	0.1		**-11**	**91**	Metal
223	4/4/2018	3:22:44 PM	11	920	R	0.1		**6**	**455**	Metal
224	4/4/2018	3:22:55 PM	5	1238	R	0.1		**-7**	**834**	Metal
225	4/4/2018	3:23:07 PM	17	1541	R	0.1		**19**	**1196**	Metal
226	4/4/2018	3:23:19 PM	4	995	R	0.1		**-9**	**544**	Metal
227	4/4/2018	3:23:30 PM	0	732	R	0.1		**-18**	**230**	Metal
228	4/4/2018	3:23:42 PM	0	652	R	0.1		**-18**	**135**	Metal
229	4/4/2018	3:23:54 PM	0	589	R	0.1		**-18**	**60**	Metal
230	4/4/2018	3:24:05 PM	0	512	R	0.1		**-18**	**-32**	Metal
231	4/4/2018	3:28:25 PM	3	1467	R	0.1	Grid 39	**-11**	**-53**	
232	4/4/2018	3:28:37 PM	7	1431	R	0.1		**-3**	**-95**	
233	4/4/2018	3:28:49 PM	4	1705	R	0.1		**-9**	**231**	
234	4/4/2018	3:29:00 PM	1	1716	R	0.1		**-16**	**245**	
235	4/4/2018	3:29:12 PM	7	1505	R	0.1		**-3**	**-7**	
236	4/4/2018	3:29:24 PM	19	1933	R	0.1		**23**	**504**	
237	4/4/2018	3:29:35 PM	10	1735	R	0.1		**4**	**267**	
238	4/4/2018	3:29:47 PM	9	1614	R	0.1		**2**	**123**	
239	4/4/2018	3:29:59 PM	2	1738	R	0.1		**-14**	**271**	
240	4/4/2018	3:30:10 PM	0	1833	R	0.1		**-18**	**384**	
241	4/4/2018	3:31:19 PM	0	1654	R	0.1	Grid 40	**-18**	**171**	
242	4/4/2018	3:31:31 PM	7	1713	R	0.1		**-3**	**241**	
243	4/4/2018	3:31:42 PM	1	1525	R	0.1		**-16**	**17**	
244	4/4/2018	3:31:54 PM	0	1472	R	0.1		**-18**	**-47**	
245	4/4/2018	3:32:06 PM	4	1499	R	0.1		**-9**	**-14**	
246	4/4/2018	3:32:17 PM	10	1559	R	0.1		**4**	**57**	
247	4/4/2018	3:32:29 PM	8	1779	R	0.1		**-1**	**320**	
248	4/4/2018	3:32:41 PM	10	1705	R	0.1		**4**	**231**	
249	4/4/2018	3:32:52 PM	2	1652	R	0.1		**-14**	**168**	
250	4/4/2018	3:33:04 PM	11	1642	R	0.1		**6**	**156**	
251	4/4/2018	3:33:49 PM	4	1517	R	0.1	Grid 41	**-9**	**7**	
252	4/4/2018	3:34:01 PM	10	1480	R	0.1		**4**	**-37**	
253	4/4/2018	3:34:12 PM	2	1512	R	0.1		**-14**	**1**	
254	4/4/2018	3:34:24 PM	12	1602	R	0.1		**8**	**109**	
255	4/4/2018	3:34:36 PM	19	1505	R	0.1		**23**	**-7**	
256	4/4/2018	3:34:47 PM	14	1579	R	0.1		**12**	**81**	
257	4/4/2018	3:34:59 PM	15	1729	R	0.1		**14**	**260**	
258	4/4/2018	3:35:11 PM	10	1499	R	0.1		**4**	**-14**	
259	4/4/2018	3:35:22 PM	19	1489	R	0.1		**23**	**-26**	
260	4/4/2018	3:35:34 PM	9	1447	R	0.1		**2**	**-76**	
261	4/4/2018	3:36:21 PM	0	1489	R	0.1	Grid 42	**-18**	**-26**	
262	4/4/2018	3:36:33 PM	0	1502	R	0.1		**-18**	**-11**	
263	4/4/2018	3:36:44 PM	10	1467	R	0.1		**4**	**-53**	
264	4/4/2018	3:36:56 PM	10	1647	R	0.1		**4**	**162**	
265	4/4/2018	3:37:08 PM	6	1493	R	0.1		**-5**	**-21**	
266	4/4/2018	3:37:19 PM	1	1476	R	0.1		**-16**	**-42**	
267	4/4/2018	3:37:31 PM	3	1503	R	0.1		**-11**	**-10**	
268	4/4/2018	3:37:43 PM	11	1440	R	0.1		**6**	**-85**	
269	4/4/2018	3:37:54 PM	2	1517	R	0.1		**-14**	**7**	
270	4/4/2018	3:38:06 PM	0	1573	R	0.1		**-18**	**74**	
271	4/4/2018	3:39:16 PM	17	1477	R	0.1	Grid 43	**19**	**-41**	
272	4/4/2018	3:39:27 PM	4	1504	R	0.1		**-9**	**-8**	
273	4/4/2018	3:39:39 PM	0	1428	R	0.1		**-18**	**-99**	
274	4/4/2018	3:39:51 PM	10	1486	R	0.1		**4**	**-30**	
275	4/4/2018	3:40:02 PM	17	1487	R	0.1		**19**	**-29**	
276	4/4/2018	3:40:14 PM	4	1432	R	0.1		**-9**	**-94**	
277	4/4/2018	3:40:26 PM	0	1503	R	0.1		**-18**	**-10**	
278	4/4/2018	3:40:37 PM	0	1499	R	0.1		**-18**	**-14**	
279	4/4/2018	3:40:54 PM	0	1512	R	0.1		**-18**	**1**	
280	4/4/2018	3:41:06 PM	8	1513	R	0.1		**-1**	**2**	

281	4/4/2018	3:42:03 PM	0	1499	R	0.1	Grid 44	**-18**	**-14**
282	4/4/2018	3:42:14 PM	3	1504	R	0.1		**-11**	**-8**
283	4/4/2018	3:42:26 PM	0	1512	R	0.1		**-18**	**1**
284	4/4/2018	3:42:38 PM	15	1522	R	0.1		**14**	**13**
285	4/4/2018	3:42:49 PM	24	1561	R	0.1		**34**	**60**
286	4/4/2018	3:43:01 PM	23	1497	R	0.1		**32**	**-17**
287	4/4/2018	3:43:13 PM	28	1593	R	0.1		**42**	**98**
288	4/4/2018	3:43:24 PM	9	1472	R	0.1		**2**	**-47**
289	4/4/2018	3:43:36 PM	16	1583	R	0.1		**17**	**86**
290	4/4/2018	3:43:48 PM	14	1497	R	0.1		**12**	**-17**
291	4/4/2018	3:45:22 PM	0	1504	R	0.1	Grid 45	**-18**	**-8**
292	4/4/2018	3:45:33 PM	8	1541	R	0.1		**-1**	**36**
293	4/4/2018	3:45:45 PM	8	1493	R	0.1		**-1**	**-21**
294	4/4/2018	3:45:57 PM	15	1486	R	0.1		**14**	**-30**
295	4/4/2018	3:46:08 PM	3	1445	R	0.1		**-11**	**-79**
296	4/4/2018	3:46:20 PM	0	1578	R	0.1		**-18**	**80**
297	4/4/2018	3:46:32 PM	14	1463	R	0.1		**12**	**-57**
298	4/4/2018	3:46:43 PM	19	1608	R	0.1		**23**	**116**
299	4/4/2018	3:46:55 PM	13	1523	R	0.1		**10**	**14**
300	4/4/2018	3:47:07 PM	3	1700	R	0.1		**-11**	**226**
		Maximum:	**36**	**2110**				**60**	**1196**
		Average:	**6**	**1018**				**-4**	**-8**
		StDev:	**6**	**505**				**13**	**213**

2360# 297743
43-37 #302111
Cal Due Date: 10/10/2018
Surveyor: Josefina Matus
Bldg. 218
Room 103 Lower South&West Walls Grids 16 thru 30 46 thru 60

Alpha Efficiency:	0.319	
Beta/Gamma Efficiency:	0.384	Metal
Alpha Background:	8.3	4.1
Beta/Gamma Background:	1511	539

S=Scaler, R=Ratemeter

Sample #	Date	Time	Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2 Alpha	dpm/100cm^2 Beta	
1	4/4/2018	10:01:15 AM	0	1527	R	0.1	Grid 16	**-18**	**19**	
2	4/4/2018	10:01:27 AM	2	1499	R	0.1		**-14**	**-14**	
3	4/4/2018	10:01:38 AM	0	1512	R	0.1		**-18**	**1**	
4	4/4/2018	10:01:50 AM	3	1523	R	0.1		**-11**	**14**	
5	4/4/2018	10:02:01 AM	2	1503	R	0.1		**-14**	**-10**	
6	4/4/2018	10:02:13 AM	4	1519	R	0.1		**-9**	**10**	
7	4/4/2018	10:02:25 AM	10	1487	R	0.1		**4**	**-29**	
8	4/4/2018	10:02:36 AM	2	1632	R	0.1		**-14**	**144**	
9	4/4/2018	10:02:48 AM	10	1557	R	0.1		**4**	**55**	
10	4/4/2018	10:05:06 AM	0	1578	R	0.1	Grid 17	**-18**	**80**	
11	4/4/2018	10:05:17 AM	0	1510	R	0.1		**-18**	**-1**	
12	4/4/2018	10:05:29 AM	7	1446	R	0.1		**-3**	**-78**	
13	4/4/2018	10:05:41 AM	1	1512	R	0.1		**-16**	**1**	
14	4/4/2018	10:05:52 AM	3	1592	R	0.1		**-11**	**97**	
15	4/4/2018	10:06:04 AM	0	1451	R	0.1		**-18**	**-72**	
16	4/4/2018	10:06:16 AM	12	1490	R	0.1		**8**	**-25**	
17	4/4/2018	10:06:27 AM	3	1530	R	0.1		**-11**	**23**	
18	4/4/2018	10:06:39 AM	4	1524	R	0.1		**-9**	**16**	
19	4/4/2018	10:06:51 AM	3	1494	R	0.1		**-11**	**-20**	
20	4/4/2018	10:08:22 AM	4	1543	R	0.1	Grid 18	**-9**	**38**	
21	4/4/2018	10:08:34 AM	0	1476	R	0.1		**-18**	**-42**	
22	4/4/2018	10:08:45 AM	5	1482	R	0.1		**-7**	**-35**	
23	4/4/2018	10:08:57 AM	2	1510	R	0.1		**-14**	**-1**	
24	4/4/2018	10:09:08 AM	0	887	R	0.1		**-18**	**415**	Metal
25	4/4/2018	10:09:20 AM	11	698	R	0.1		**6**	**190**	Metal
26	4/4/2018	10:09:32 AM	2	618	R	0.1		**-14**	**94**	Metal
27	4/4/2018	10:09:43 AM	0	824	R	0.1		**-18**	**340**	Metal
28	4/4/2018	10:09:55 AM	19	1452	R	0.1		**23**	**-70**	
29	4/4/2018	10:10:07 AM	8	1534	R	0.1		**-1**	**27**	
30	4/4/2018	10:13:43 AM	0	606	R	0.1	Grid 19	**-18**	**80**	Metal
31	4/4/2018	10:13:54 AM	11	639	R	0.1		**6**	**119**	Metal
32	4/4/2018	10:14:06 AM	15	641	R	0.1		**14**	**122**	Metal
33	4/4/2018	10:14:18 AM	3	587	R	0.1		**-11**	**57**	Metal
34	4/4/2018	10:14:29 AM	0	641	R	0.1		**-18**	**122**	Metal
35	4/4/2018	10:14:41 AM	0	610	R	0.1		**-18**	**85**	Metal
36	4/4/2018	10:14:53 AM	11	658	R	0.1		**6**	**142**	Metal
37	4/4/2018	10:15:04 AM	9	606	R	0.1		**2**	**80**	Metal
38	4/4/2018	10:15:16 AM	11	580	R	0.1		**6**	**49**	Metal
39	4/4/2018	10:15:27 AM	6	869	R	0.1		**-5**	**394**	Metal
40	4/4/2018	10:19:59 AM	0	452	R	0.1	Grid 20	**-18**	**-104**	Metal
41	4/4/2018	10:20:10 AM	0	662	R	0.1		**-18**	**147**	Metal
42	4/4/2018	10:20:22 AM	6	626	R	0.1		**-5**	**104**	Metal
43	4/4/2018	10:20:34 AM	1	582	R	0.1		**-16**	**51**	Metal
44	4/4/2018	10:20:45 AM	7	685	R	0.1		**-3**	**174**	Metal
45	4/4/2018	10:20:57 AM	4	663	R	0.1		**-9**	**148**	Metal
46	4/4/2018	10:21:09 AM	10	775	R	0.1		**4**	**282**	Metal
47	4/4/2018	10:21:20 AM	2	630	R	0.1		**-14**	**109**	Metal

48	4/4/2018	10:21:32 AM	0	579	R	0.1		**-18**	**48**	Metal
49	4/4/2018	10:21:44 AM	6	615	R	0.1		**-5**	**91**	Metal
50	4/4/2018	10:23:20 AM	4	552	R	0.1	Grid 21	**-9**	**16**	Metal
51	4/4/2018	10:23:32 AM	3	583	R	0.1		**-11**	**53**	Metal
52	4/4/2018	10:23:43 AM	5	715	R	0.1		**-7**	**210**	Metal
53	4/4/2018	10:23:55 AM	3	659	R	0.1		**-11**	**143**	Metal
54	4/4/2018	10:24:07 AM	2	534	R	0.1		**-14**	**-6**	Metal
55	4/4/2018	10:24:18 AM	2	564	R	0.1		**-14**	**30**	Metal
56	4/4/2018	10:24:30 AM	1	637	R	0.1		**-16**	**117**	Metal
57	4/4/2018	10:24:41 AM	0	692	R	0.1		**-18**	**183**	Metal
58	4/4/2018	10:24:53 AM	3	709	R	0.1		**-11**	**203**	Metal
59	4/4/2018	10:25:05 AM	7	628	R	0.1		**-3**	**106**	Metal
60	4/4/2018	10:28:58 AM	4	537	R	0.1	Grid 22	**-9**	**-2**	Metal
61	4/4/2018	10:29:09 AM	1	563	R	0.1		**-16**	**29**	Metal
62	4/4/2018	10:29:21 AM	18	680	R	0.1		**21**	**168**	Metal
63	4/4/2018	10:29:33 AM	4	685	R	0.1		**-9**	**174**	Metal
64	4/4/2018	10:29:44 AM	5	689	R	0.1		**-7**	**179**	Metal
65	4/4/2018	10:29:56 AM	1	704	R	0.1		**-16**	**197**	Metal
66	4/4/2018	10:30:08 AM	5	627	R	0.1		**-7**	**105**	Metal
67	4/4/2018	10:30:19 AM	10	700	R	0.1		**4**	**192**	Metal
68	4/4/2018	10:30:31 AM	5	652	R	0.1		**-7**	**135**	Metal
69	4/4/2018	10:30:43 AM	13	544	R	0.1		**10**	**6**	Metal
70	4/4/2018	10:30:54 AM	7	627	R	0.1		**-3**	**105**	Metal
71	4/4/2018	10:33:28 AM	0	450	R	0.1	Grid 23	**-18**	**-106**	Metal
72	4/4/2018	10:33:39 AM	0	561	R	0.1		**-18**	**26**	Metal
73	4/4/2018	10:33:51 AM	5	618	R	0.1		**-7**	**94**	Metal
74	4/4/2018	10:34:03 AM	6	701	R	0.1		**-5**	**193**	Metal
75	4/4/2018	10:34:14 AM	1	685	R	0.1		**-16**	**174**	Metal
76	4/4/2018	10:34:26 AM	0	577	R	0.1		**-18**	**45**	Metal
77	4/4/2018	10:34:37 AM	19	518	R	0.1		**23**	**-25**	Metal
78	4/4/2018	10:34:49 AM	4	882	R	0.1		**-9**	**409**	Metal
79	4/4/2018	10:35:01 AM	7	836	R	0.1		**-3**	**354**	Metal
80	4/4/2018	10:46:05 AM	3	1451	R	0.1	Grid 24	**-11**	**-72**	
81	4/4/2018	10:46:16 AM	5	1511	R	0.1		**-7**	**0**	
82	4/4/2018	10:46:28 AM	0	1434	R	0.1		**-18**	**-92**	
83	4/4/2018	10:46:40 AM	7	1490	R	0.1		**-3**	**-25**	
84	4/4/2018	10:46:51 AM	8	1487	R	0.1		**-1**	**-29**	
85	4/4/2018	10:47:03 AM	2	1510	R	0.1		**-14**	**-1**	
86	4/4/2018	10:47:15 AM	0	1543	R	0.1		**-18**	**38**	
87	4/4/2018	10:47:26 AM	5	1467	R	0.1		**-7**	**-53**	
88	4/4/2018	10:47:38 AM	1	1508	R	0.1		**-16**	**-4**	
89	4/4/2018	10:47:49 AM	6	1499	R	0.1		**-5**	**-14**	
90	4/4/2018	10:51:36 AM	5	1487	R	0.1	Grid 25	**-7**	**-29**	
91	4/4/2018	10:51:47 AM	6	1482	R	0.1		**-5**	**-35**	
92	4/4/2018	10:51:59 AM	3	1461	R	0.1		**-11**	**-60**	
93	4/4/2018	10:52:11 AM	4	1444	R	0.1		**-9**	**-80**	
94	4/4/2018	10:52:22 AM	9	1590	R	0.1		**2**	**94**	
95	4/4/2018	10:52:34 AM	2	1503	R	0.1		**-14**	**-10**	
96	4/4/2018	10:52:46 AM	8	1510	R	0.1		**-1**	**-1**	
97	4/4/2018	10:52:57 AM	21	1503	R	0.1		**27**	**-10**	
98	4/4/2018	10:53:09 AM	5	1449	R	0.1		**-7**	**-74**	
99	4/4/2018	10:53:21 AM	13	1501	R	0.1		**10**	**-12**	
100	4/4/2018	10:55:17 AM	0	1467	R	0.1	Grid 26	**-18**	**-53**	
101	4/4/2018	10:55:28 AM	4	1488	R	0.1		**-9**	**-27**	
102	4/4/2018	10:55:40 AM	16	1496	R	0.1		**17**	**-18**	
103	4/4/2018	10:55:51 AM	9	1501	R	0.1		**2**	**-12**	
104	4/4/2018	10:56:03 AM	5	1502	R	0.1		**-7**	**-11**	
105	4/4/2018	10:56:15 AM	14	1432	R	0.1		**12**	**-94**	
106	4/4/2018	10:56:26 AM	14	1488	R	0.1		**12**	**-27**	
107	4/4/2018	10:56:38 AM	6	1499	R	0.1		**-5**	**-14**	
108	4/4/2018	10:56:50 AM	11	1522	R	0.1		**6**	**13**	
109	4/4/2018	10:57:01 AM	17	1537	R	0.1		**19**	**31**	

110	4/4/2018	11:01:13 AM	7	1500	R	0.1	Grid 27	**-3**	**-13**
111	4/4/2018	11:01:25 AM	1	1527	R	0.1		**-16**	**19**
112	4/4/2018	11:01:36 AM	0	1496	R	0.1		**-18**	**-18**
113	4/4/2018	11:01:48 AM	3	1441	R	0.1		**-11**	**-84**
114	4/4/2018	11:02:00 AM	3	1442	R	0.1		**-11**	**-82**
115	4/4/2018	11:02:11 AM	25	1418	R	0.1		**36**	**-111**
116	4/4/2018	11:02:23 AM	21	1487	R	0.1		**27**	**-29**
117	4/4/2018	11:02:35 AM	20	1409	R	0.1		**25**	**-122**
118	4/4/2018	11:02:46 AM	4	1497	R	0.1		**-9**	**-17**
119	4/4/2018	11:02:58 AM	1	1489	R	0.1		**-16**	**-26**
120	4/4/2018	12:08:20 PM	20	1488	R	0.1	Grid 28	**25**	**-27**
121	4/4/2018	12:08:31 PM	4	1500	R	0.1		**-9**	**-13**
122	4/4/2018	12:08:43 PM	1	1467	R	0.1		**-16**	**-53**
123	4/4/2018	12:08:55 PM	0	1524	R	0.1		**-18**	**16**
124	4/4/2018	12:09:06 PM	4	1515	R	0.1		**-9**	**5**
125	4/4/2018	12:09:18 PM	1	1529	R	0.1		**-16**	**21**
126	4/4/2018	12:09:30 PM	4	1499	R	0.1		**-9**	**-14**
127	4/4/2018	12:09:41 PM	1	1529	R	0.1		**-16**	**21**
128	4/4/2018	12:09:53 PM	0	1563	R	0.1		**-18**	**62**
129	4/4/2018	12:10:04 PM	6	1477	R	0.1		**-5**	**-41**
130	4/4/2018	12:12:20 PM	9	1497	R	0.1	Grid 29	**2**	**-17**
131	4/4/2018	12:12:31 PM	18	1521	R	0.1		**21**	**12**
132	4/4/2018	12:12:43 PM	10	1584	R	0.1		**4**	**87**
133	4/4/2018	12:12:55 PM	2	1488	R	0.1		**-14**	**-27**
134	4/4/2018	12:13:06 PM	5	1467	R	0.1		**-7**	**-53**
135	4/4/2018	12:13:18 PM	16	1562	R	0.1		**17**	**61**
136	4/4/2018	12:13:30 PM	3	1501	R	0.1		**-11**	**-12**
137	4/4/2018	12:13:41 PM	0	1457	R	0.1		**-18**	**-64**
138	4/4/2018	12:13:53 PM	23	1487	R	0.1		**32**	**-29**
139	4/4/2018	12:14:05 PM	5	1600	R	0.1		**-7**	**106**
140	4/4/2018	12:17:37 PM	0	1456	R	0.1	Grid 30	**-18**	**-66**
141	4/4/2018	12:17:48 PM	5	1521	R	0.1		**-7**	**12**
142	4/4/2018	12:18:00 PM	4	1456	R	0.1		**-9**	**-66**
143	4/4/2018	12:18:12 PM	8	1431	R	0.1		**-1**	**-95**
144	4/4/2018	12:18:23 PM	2	1513	R	0.1		**-14**	**2**
145	4/4/2018	12:23:50 PM	4	1506	R	0.1	Grid 46	**-9**	**-6**
146	4/4/2018	12:24:02 PM	8	1470	R	0.1		**-1**	**-49**
147	4/4/2018	12:24:14 PM	11	1613	R	0.1		**6**	**122**
148	4/4/2018	12:24:25 PM	9	1619	R	0.1		**2**	**129**
149	4/4/2018	12:24:37 PM	11	1479	R	0.1		**6**	**-38**
150	4/4/2018	12:24:49 PM	12	1500	R	0.1		**8**	**-13**
151	4/4/2018	12:25:00 PM	9	1476	R	0.1		**2**	**-42**
152	4/4/2018	12:25:12 PM	11	1490	R	0.1		**6**	**-25**
153	4/4/2018	12:25:23 PM	2	1445	R	0.1		**-14**	**-79**
154	4/4/2018	12:25:35 PM	9	1535	R	0.1		**2**	**29**
155	4/4/2018	12:29:58 PM	11	1487	R	0.1	Grid 47	**6**	**-29**
156	4/4/2018	12:30:09 PM	9	1523	R	0.1		**2**	**14**
157	4/4/2018	12:30:21 PM	2	1648	R	0.1		**-14**	**163**
158	4/4/2018	12:30:32 PM	11	1530	R	0.1		**6**	**23**
159	4/4/2018	12:30:44 PM	13	1505	R	0.1		**10**	**-7**
160	4/4/2018	12:30:56 PM	8	1491	R	0.1		**-1**	**-24**
161	4/4/2018	12:31:07 PM	2	1502	R	0.1		**-14**	**-11**
162	4/4/2018	12:31:19 PM	0	1498	R	0.1		**-18**	**-16**
163	4/4/2018	12:31:31 PM	0	1432	R	0.1		**-18**	**-94**
164	4/4/2018	12:31:42 PM	0	1464	R	0.1		**-18**	**-56**
165	4/4/2018	12:33:15 PM	0	1499	R	0.1	Grid 48	**-18**	**-14**
166	4/4/2018	12:33:27 PM	0	1476	R	0.1		**-18**	**-42**
167	4/4/2018	12:33:39 PM	8	1513	R	0.1		**-1**	**2**
168	4/4/2018	12:33:50 PM	2	1448	R	0.1		**-14**	**-75**
169	4/4/2018	12:34:02 PM	0	1637	R	0.1		**-18**	**150**
170	4/4/2018	12:34:13 PM	0	1523	R	0.1		**-18**	**14**
171	4/4/2018	12:34:25 PM	11	1500	R	0.1		**6**	**-13**

172	4/4/2018	12:34:37 PM	2	1508	R	0.1		**-14**	**-4**	
173	4/4/2018	12:34:48 PM	0	1614	R	0.1		**-18**	**123**	
174	4/4/2018	12:35:00 PM	3	1487	R	0.1		**-11**	**-29**	
175	4/4/2018	12:35:12 PM	0	1487	R	0.1		**-18**	**-29**	
176	4/4/2018	12:38:53 PM	0	519	R	0.1	Grid 49	**-18**	**-24**	Metal
177	4/4/2018	12:39:05 PM	0	766	R	0.1		**-18**	**271**	Metal
178	4/4/2018	12:39:16 PM	11	801	R	0.1		**6**	**313**	Metal
179	4/4/2018	12:39:28 PM	7	859	R	0.1		**-3**	**382**	Metal
180	4/4/2018	12:39:40 PM	10	771	R	0.1		**4**	**277**	Metal
181	4/4/2018	12:39:51 PM	17	774	R	0.1		**19**	**280**	Metal
182	4/4/2018	12:40:03 PM	11	575	R	0.1		**6**	**43**	Metal
183	4/4/2018	12:40:15 PM	25	658	R	0.1		**36**	**142**	Metal
184	4/4/2018	12:40:26 PM	6	741	R	0.1		**-5**	**241**	Metal
185	4/4/2018	12:40:38 PM	1	635	R	0.1		**-16**	**115**	Metal
186	4/4/2018	12:43:19 PM	0	565	R	0.1	Grid 50	**-18**	**31**	Metal
187	4/4/2018	12:43:30 PM	8	616	R	0.1		**-1**	**92**	Metal
188	4/4/2018	12:43:42 PM	15	684	R	0.1		**14**	**173**	Metal
189	4/4/2018	12:43:54 PM	3	663	R	0.1		**-11**	**148**	Metal
190	4/4/2018	12:44:05 PM	14	673	R	0.1		**12**	**160**	Metal
191	4/4/2018	12:44:17 PM	6	738	R	0.1		**-5**	**237**	Metal
192	4/4/2018	12:44:29 PM	1	524	R	0.1		**-16**	**-18**	Metal
193	4/4/2018	12:44:40 PM	6	712	R	0.1		**-5**	**206**	Metal
194	4/4/2018	12:44:52 PM	13	725	R	0.1		**10**	**222**	Metal
195	4/4/2018	12:45:03 PM	3	696	R	0.1		**-11**	**187**	Metal
196	4/4/2018	12:47:44 PM	7	526	R	0.1	Grid 51	**-3**	**-16**	Metal
197	4/4/2018	12:47:55 PM	1	492	R	0.1		**-16**	**-56**	Metal
198	4/4/2018	12:48:07 PM	0	577	R	0.1		**-18**	**45**	Metal
199	4/4/2018	12:48:19 PM	29	589	R	0.1		**45**	**60**	Metal
200	4/4/2018	12:48:30 PM	6	563	R	0.1		**-5**	**29**	Metal
201	4/4/2018	12:48:42 PM	1	595	R	0.1		**-16**	**67**	Metal
202	4/4/2018	12:48:53 PM	0	786	R	0.1		**-18**	**295**	Metal
203	4/4/2018	12:49:05 PM	15	605	R	0.1		**14**	**79**	Metal
204	4/4/2018	12:49:17 PM	11	676	R	0.1		**6**	**163**	Metal
205	4/4/2018	12:49:28 PM	2	744	R	0.1		**-14**	**245**	Metal
206	4/4/2018	12:53:47 PM	0	497	R	0.1	Grid 52	**-18**	**-50**	Metal
207	4/4/2018	12:53:58 PM	0	615	R	0.1		**-18**	**91**	Metal
208	4/4/2018	12:54:10 PM	11	580	R	0.1		**6**	**49**	Metal
209	4/4/2018	12:54:22 PM	2	738	R	0.1		**-14**	**237**	Metal
210	4/4/2018	12:54:33 PM	14	647	R	0.1		**12**	**129**	Metal
211	4/4/2018	12:54:45 PM	3	672	R	0.1		**-11**	**159**	Metal
212	4/4/2018	12:54:57 PM	9	605	R	0.1		**2**	**79**	Metal
213	4/4/2018	12:55:08 PM	2	736	R	0.1		**-14**	**235**	Metal
214	4/4/2018	12:55:20 PM	0	642	R	0.1		**-18**	**123**	Metal
215	4/4/2018	12:55:32 PM	0	683	R	0.1		**-18**	**172**	Metal
216	4/4/2018	12:57:22 PM	3	593	R	0.1	Grid 53	**-11**	**64**	Metal
217	4/4/2018	12:57:34 PM	0	623	R	0.1		**-18**	**100**	Metal
218	4/4/2018	12:57:45 PM	0	715	R	0.1		**-18**	**210**	Metal
219	4/4/2018	12:57:57 PM	0	720	R	0.1		**-18**	**216**	Metal
220	4/4/2018	12:58:09 PM	12	689	R	0.1		**8**	**179**	Metal
221	4/4/2018	12:58:20 PM	3	772	R	0.1		**-11**	**278**	Metal
222	4/4/2018	12:58:32 PM	0	568	R	0.1		**-18**	**35**	Metal
223	4/4/2018	12:58:44 PM	0	524	R	0.1		**-18**	**-18**	Metal
224	4/4/2018	12:58:55 PM	16	626	R	0.1		**17**	**104**	Metal
225	4/4/2018	12:59:07 PM	21	576	R	0.1		**27**	**44**	Metal
226	4/4/2018	1:01:38 PM	8	1456	R	0.1	Grid 54	**-1**	**-66**	
227	4/4/2018	1:01:50 PM	12	1575	R	0.1		**8**	**76**	
228	4/4/2018	1:02:01 PM	3	1512	R	0.1		**-11**	**1**	
229	4/4/2018	1:02:13 PM	20	1498	R	0.1		**25**	**-16**	
230	4/4/2018	1:02:24 PM	4	1434	R	0.1		**-9**	**-92**	
231	4/4/2018	1:02:36 PM	11	1476	R	0.1		**6**	**-42**	
232	4/4/2018	1:02:48 PM	2	1469	R	0.1		**-14**	**-50**	
233	4/4/2018	1:02:59 PM	6	1505	R	0.1		**-5**	**-7**	

234	4/4/2018	1:03:11 PM	1	1431	R	0.1		**-16**	**-95**
235	4/4/2018	1:03:23 PM	0	1515	R	0.1		**-18**	**5**
236	4/4/2018	1:05:52 PM	0	1498	R	0.1	Grid 55	**-18**	**-16**
237	4/4/2018	1:06:04 PM	27	1512	R	0.1		**40**	**1**
238	4/4/2018	1:06:15 PM	6	1447	R	0.1		**-5**	**-76**
239	4/4/2018	1:06:27 PM	1	1531	R	0.1		**-16**	**24**
240	4/4/2018	1:06:39 PM	12	1489	R	0.1		**8**	**-26**
241	4/4/2018	1:06:50 PM	12	1487	R	0.1		**8**	**-29**
242	4/4/2018	1:07:02 PM	7	1456	R	0.1		**-3**	**-66**
243	4/4/2018	1:07:14 PM	6	1552	R	0.1		**-5**	**49**
244	4/4/2018	1:07:25 PM	1	1481	R	0.1		**-16**	**-36**
245	4/4/2018	1:07:37 PM	3	1541	R	0.1		**-11**	**36**
246	4/4/2018	1:10:33 PM	23	1509	R	0.1	Grid 56	**32**	**-2**
247	4/4/2018	1:10:44 PM	19	1503	R	0.1		**23**	**-10**
248	4/4/2018	1:10:56 PM	13	1545	R	0.1		**10**	**41**
249	4/4/2018	1:11:08 PM	13	1489	R	0.1		**10**	**-26**
250	4/4/2018	1:11:19 PM	3	1514	R	0.1		**-11**	**4**
251	4/4/2018	1:11:31 PM	3	1527	R	0.1		**-11**	**19**
252	4/4/2018	1:11:43 PM	17	1486	R	0.1		**19**	**-30**
253	4/4/2018	1:11:54 PM	39	1436	R	0.1		**66**	**-89**
254	4/4/2018	1:12:06 PM	20	1488	R	0.1		**25**	**-27**
255	4/4/2018	1:12:18 PM	4	1567	R	0.1		**-9**	**67**
256	4/4/2018	1:14:39 PM	0	1567	R	0.1	Grid 57	**-18**	**67**
257	4/4/2018	1:14:50 PM	0	1442	R	0.1		**-18**	**-82**
258	4/4/2018	1:15:02 PM	10	1532	R	0.1		**4**	**25**
259	4/4/2018	1:15:14 PM	6	1516	R	0.1		**-5**	**6**
260	4/4/2018	1:15:25 PM	1	1521	R	0.1		**-16**	**12**
261	4/4/2018	1:15:37 PM	0	1455	R	0.1		**-18**	**-67**
262	4/4/2018	1:15:49 PM	0	1498	R	0.1		**-18**	**-16**
263	4/4/2018	1:16:00 PM	0	1484	R	0.1		**-18**	**-32**
264	4/4/2018	1:16:12 PM	7	1470	R	0.1		**-3**	**-49**
265	4/4/2018	1:16:24 PM	1	1504	R	0.1		**-16**	**-8**
266	4/4/2018	1:18:22 PM	3	1532	R	0.1	Grid 58	**-11**	**25**
267	4/4/2018	1:18:34 PM	6	1498	R	0.1		**-5**	**-16**
268	4/4/2018	1:18:45 PM	1	1493	R	0.1		**-16**	**-21**
269	4/4/2018	1:18:57 PM	0	1517	R	0.1		**-18**	**7**
270	4/4/2018	1:19:09 PM	0	1504	R	0.1		**-18**	**-8**
271	4/4/2018	1:19:20 PM	5	1489	R	0.1		**-7**	**-26**
272	4/4/2018	1:19:32 PM	4	1440	R	0.1		**-9**	**-85**
273	4/4/2018	1:19:44 PM	13	1409	R	0.1		**10**	**-122**
274	4/4/2018	1:19:55 PM	6	1478	R	0.1		**-5**	**-39**
275	4/4/2018	1:20:07 PM	12	1492	R	0.1		**8**	**-23**
276	4/4/2018	1:20:55 PM	0	1431	R	0.1	Grid 59	**-18**	**-95**
277	4/4/2018	1:21:07 PM	0	1453	R	0.1		**-18**	**-69**
278	4/4/2018	1:21:19 PM	10	1453	R	0.1		**4**	**-69**
279	4/4/2018	1:21:30 PM	2	1454	R	0.1		**-14**	**-68**
280	4/4/2018	1:21:42 PM	5	1543	R	0.1		**-7**	**38**
281	4/4/2018	1:21:54 PM	13	1499	R	0.1		**10**	**-14**
282	4/4/2018	1:22:05 PM	6	1513	R	0.1		**-5**	**2**
283	4/4/2018	1:22:17 PM	11	1535	R	0.1		**6**	**29**
284	4/4/2018	1:22:29 PM	2	1497	R	0.1		**-14**	**-17**
285	4/4/2018	1:22:40 PM	8	1492	R	0.1		**-1**	**-23**
286	4/4/2018	1:23:30 PM	3	1572	R	0.1	Grid 60	**-11**	**73**
287	4/4/2018	1:23:42 PM	0	1499	R	0.1		**-18**	**-14**
288	4/4/2018	1:23:53 PM	3	1512	R	0.1		**-11**	**1**
289	4/4/2018	1:24:05 PM	18	1459	R	0.1		**21**	**-62**
290	4/4/2018	1:24:17 PM	4	1514	R	0.1		**-9**	**4**
291	4/4/2018	1:24:28 PM	1	1534	R	0.1		**-16**	**27**
292	4/4/2018	1:24:40 PM	0	1518	R	0.1		**-18**	**8**
293	4/4/2018	1:24:52 PM	29	1548	R	0.1		**45**	**44**
294	4/4/2018	1:25:03 PM	18	1511	R	0.1		**21**	**0**
295	4/4/2018	1:25:15 PM	36	1458	R	0.1		**60**	**-63**

Maximum:	**39**	**1648**	**66**	**415**
Average:	**6**	**1201**	**-4**	**38**
StDev:	**7**	**413**	**14**	**103**

Room 103 Upper Wall

2360# 297743
43-37 #302111
Cal Due Date: 10/10/2018
Surveyor: Adolfo Matus
Bldg 218
Room 103 Upper Wall Grids 9 thru 30 39 thru 60
Alpha Efficiency: 0.319
Beta/Gamma Efficiency: 0.384 Metal
Alpha Background: 8.3 4.1
Beta/Gamma Background: 1511 539

S=Scaler, R=Ratemeter

Sample #	Date	Time	Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2 Alpha	dpm/100cm^2 Beta
1	4/5/2018	12:35:38 PM	3	1543	R	0.1	Grid 9	**-11**	**38**
2	4/5/2018	12:35:50 PM	4	1747	R	0.1		**-9**	**282**
3	4/5/2018	12:36:02 PM	3	1689	R	0.1		**-11**	**212**
4	4/5/2018	12:36:13 PM	5	1562	R	0.1		**-7**	**61**
5	4/5/2018	12:36:25 PM	6	1631	R	0.1		**-5**	**143**
6	4/5/2018	12:36:37 PM	1	1504	R	0.1		**-16**	**-8**
7	4/5/2018	12:36:48 PM	4	1495	R	0.1		**-9**	**-19**
8	4/5/2018	12:37:00 PM	1	1565	R	0.1		**-16**	**64**
9	4/5/2018	12:37:12 PM	6	1528	R	0.1		**-5**	**20**
10	4/5/2018	12:38:02 PM	8	1455	R	0.1	Grid 10	**-1**	**-67**
11	4/5/2018	12:38:13 PM	2	1456	R	0.1		**-14**	**-66**
12	4/5/2018	12:38:25 PM	4	1505	R	0.1		**-9**	**-7**
13	4/5/2018	12:38:37 PM	5	1543	R	0.1		**-7**	**38**
14	4/5/2018	12:38:48 PM	0	1498	R	0.1		**-18**	**-16**
15	4/5/2018	12:39:00 PM	4	1553	R	0.1		**-9**	**50**
16	4/5/2018	12:39:12 PM	6	1606	R	0.1		**-5**	**113**
17	4/5/2018	12:39:23 PM	1	1595	R	0.1		**-16**	**100**
18	4/5/2018	12:39:35 PM	4	1452	R	0.1		**-9**	**-70**
19	4/5/2018	12:39:47 PM	1	1543	R	0.1		**-16**	**38**
20	4/5/2018	12:40:33 PM	18	1455	R	0.1	Grid 11	**21**	**-67**
21	4/5/2018	12:40:45 PM	4	1476	R	0.1		**-9**	**-42**
22	4/5/2018	12:40:56 PM	1	1512	R	0.1		**-16**	**1**
23	4/5/2018	12:41:08 PM	4	1437	R	0.1		**-9**	**-88**
24	4/5/2018	12:41:20 PM	7	1454	R	0.1		**-3**	**-68**
25	4/5/2018	12:41:31 PM	13	1499	R	0.1		**10**	**-14**
26	4/5/2018	12:41:43 PM	11	1545	R	0.1		**6**	**41**
27	4/5/2018	12:41:55 PM	6	1538	R	0.1		**-5**	**32**
28	4/5/2018	12:42:06 PM	12	1510	R	0.1		**8**	**-1**
29	4/5/2018	12:42:18 PM	11	1455	R	0.1		**6**	**-67**
30	4/5/2018	12:43:16 PM	0	1543	R	0.1	Grid 12	**-18**	**38**
31	4/5/2018	12:43:27 PM	3	1376	R	0.1		**-11**	**-161**
32	4/5/2018	12:43:39 PM	0	1454	R	0.1		**-18**	**-68**
33	4/5/2018	12:43:50 PM	3	1523	R	0.1		**-11**	**14**
34	4/5/2018	12:44:02 PM	5	1516	R	0.1		**-7**	**6**
35	4/5/2018	12:44:14 PM	7	1499	R	0.1		**-3**	**-14**
36	4/5/2018	12:44:25 PM	4	1478	R	0.1		**-9**	**-39**
37	4/5/2018	12:44:37 PM	5	1450	R	0.1		**-7**	**-73**
38	4/5/2018	12:44:49 PM	13	1453	R	0.1		**10**	**-69**
39	4/5/2018	12:45:00 PM	3	1455	R	0.1		**-11**	**-67**
40	4/5/2018	12:45:51 PM	0	1526	R	0.1	Grid 13	**-18**	**18**
41	4/5/2018	12:46:03 PM	11	1455	R	0.1		**6**	**-67**
42	4/5/2018	12:46:14 PM	2	1434	R	0.1		**-14**	**-92**
43	4/5/2018	12:46:26 PM	6	1577	R	0.1		**-5**	**79**
44	4/5/2018	12:46:38 PM	10	1439	R	0.1		**4**	**-86**
45	4/5/2018	12:46:49 PM	2	1469	R	0.1		**-14**	**-50**

46	4/5/2018	12:47:01 PM	0	1460	R	0.1		**-18**	**-61**
47	4/5/2018	12:47:12 PM	0	1499	R	0.1		**-18**	**-14**
48	4/5/2018	12:47:24 PM	15	1456	R	0.1		**14**	**-66**
49	4/5/2018	12:47:36 PM	8	1476	R	0.1		**-1**	**-42**
50	4/5/2018	12:48:36 PM	3	1544	R	0.1	Grid 14	**-11**	**39**
51	4/5/2018	12:48:48 PM	4	1435	R	0.1		**-9**	**-91**
52	4/5/2018	12:49:00 PM	9	1625	R	0.1		**2**	**136**
53	4/5/2018	12:49:11 PM	7	1541	R	0.1		**-3**	**36**
54	4/5/2018	12:49:23 PM	1	1675	R	0.1		**-16**	**196**
55	4/5/2018	12:49:35 PM	0	1486	R	0.1		**-18**	**-30**
56	4/5/2018	12:49:46 PM	0	1655	R	0.1		**-18**	**172**
57	4/5/2018	12:49:58 PM	12	1544	R	0.1		**8**	**39**
58	4/5/2018	12:50:10 PM	6	1463	R	0.1		**-5**	**-57**
59	4/5/2018	12:50:21 PM	8	1608	R	0.1		**-1**	**116**
60	4/5/2018	12:51:00 PM	0	1513	R	0.1	Grid 15	**-18**	**2**
61	4/5/2018	12:51:11 PM	0	1477	R	0.1		**-18**	**-41**
62	4/5/2018	12:51:23 PM	0	1598	R	0.1		**-18**	**104**
63	4/5/2018	12:51:35 PM	5	1455	R	0.1		**-7**	**-67**
64	4/5/2018	12:51:46 PM	1	1512	R	0.1		**-16**	**1**
65	4/5/2018	12:51:58 PM	0	1582	R	0.1		**-18**	**85**
66	4/5/2018	12:52:10 PM	0	1519	R	0.1		**-18**	**10**
67	4/5/2018	12:52:21 PM	6	1671	R	0.1		**-5**	**191**
68	4/5/2018	12:52:33 PM	1	1686	R	0.1		**-16**	**209**
69	4/5/2018	12:52:45 PM	4	1535	R	0.1		**-9**	**29**
70	4/5/2018	12:55:53 PM	11	1533	R	0.1	Grid 16	**6**	**26**
71	4/5/2018	12:56:05 PM	2	1488	R	0.1		**-14**	**-27**
72	4/5/2018	12:56:16 PM	5	1626	R	0.1		**-7**	**137**
73	4/5/2018	12:56:28 PM	7	1593	R	0.1		**-3**	**98**
74	4/5/2018	12:56:39 PM	1	1553	R	0.1		**-16**	**50**
75	4/5/2018	12:56:51 PM	0	1734	R	0.1		**-18**	**266**
76	4/5/2018	12:57:03 PM	9	1667	R	0.1		**2**	**186**
77	4/5/2018	12:57:14 PM	6	1622	R	0.1		**-5**	**132**
78	4/5/2018	12:57:26 PM	1	1589	R	0.1		**-16**	**93**
79	4/5/2018	12:57:38 PM	0	1872	R	0.1		**-18**	**431**
80	4/5/2018	12:58:16 PM	3	1497	R	0.1	Grid 17	**-11**	**-17**
81	4/5/2018	12:58:28 PM	0	1724	R	0.1		**-18**	**254**
82	4/5/2018	12:58:39 PM	0	1770	R	0.1		**-18**	**309**
83	4/5/2018	12:58:51 PM	6	1764	R	0.1		**-5**	**302**
84	4/5/2018	12:59:03 PM	1	1653	R	0.1		**-16**	**169**
85	4/5/2018	12:59:14 PM	9	1764	R	0.1		**2**	**302**
86	4/5/2018	12:59:26 PM	2	1779	R	0.1		**-14**	**320**
87	4/5/2018	12:59:38 PM	8	1702	R	0.1		**-1**	**228**
88	4/5/2018	12:59:49 PM	5	1803	R	0.1		**-7**	**348**
89	4/5/2018	1:00:01 PM	7	1660	R	0.1		**-3**	**178**
90	4/5/2018	1:01:08 PM	0	1512	R	0.1	Grid 18	**-18**	**1**
91	4/5/2018	1:01:20 PM	0	1534	R	0.1		**-18**	**27**
92	4/5/2018	1:01:32 PM	9	1467	R	0.1		**2**	**-53**
93	4/5/2018	1:01:43 PM	5	1842	R	0.1		**-7**	**395**
94	4/5/2018	1:01:55 PM	12	1758	R	0.1		**8**	**295**
95	4/5/2018	1:02:07 PM	11	1648	R	0.1		**6**	**163**
96	4/5/2018	1:02:18 PM	2	1444	R	0.1		**-14**	**-80**
97	4/5/2018	1:02:30 PM	0	1517	R	0.1		**-18**	**7**
98	4/5/2018	1:02:42 PM	12	1456	R	0.1		**8**	**-66**
99	4/5/2018	1:02:53 PM	9	1655	R	0.1		**2**	**172**
100	4/5/2018	1:04:13 PM	0	1457	R	0.1	Grid 19	**-18**	**-64**
101	4/5/2018	1:04:25 PM	11	1541	R	0.1		**6**	**36**
102	4/5/2018	1:04:36 PM	2	1508	R	0.1		**-14**	**-4**
103	4/5/2018	1:04:48 PM	0	1456	R	0.1		**-18**	**-66**
104	4/5/2018	1:04:59 PM	0	1498	R	0.1		**-18**	**-16**
105	4/5/2018	1:05:11 PM	8	1508	R	0.1		**-1**	**-4**

106	4/5/2018	1:05:23 PM	6	1467	R	0.1		**-5**	**-53**	
107	4/5/2018	1:05:34 PM	1	1587	R	0.1		**-16**	**91**	
108	4/5/2018	1:05:46 PM	17	1522	R	0.1		**19**	**13**	
109	4/5/2018	1:05:58 PM	11	1518	R	0.1		**6**	**8**	
110	4/5/2018	1:08:06 PM	3	660	R	0.1	Grid 20	**-11**	**144**	Metal
111	4/5/2018	1:08:17 PM	3	903	R	0.1		**-11**	**434**	Metal
112	4/5/2018	1:08:29 PM	0	817	R	0.1		**-18**	**332**	Metal
113	4/5/2018	1:08:41 PM	5	837	R	0.1		**-7**	**356**	Metal
114	4/5/2018	1:08:52 PM	1	757	R	0.1		**-16**	**260**	Metal
115	4/5/2018	1:09:04 PM	9	715	R	0.1		**2**	**210**	Metal
116	4/5/2018	1:09:16 PM	2	761	R	0.1		**-14**	**265**	Metal
117	4/5/2018	1:09:27 PM	3	771	R	0.1		**-11**	**277**	Metal
118	4/5/2018	1:09:39 PM	4	936	R	0.1		**-9**	**474**	Metal
119	4/5/2018	1:09:51 PM	9	921	R	0.1		**2**	**456**	Metal
120	4/5/2018	1:10:21 PM	0	649	R	0.1	Grid 21	**-18**	**131**	Metal
121	4/5/2018	1:10:33 PM	0	922	R	0.1		**-18**	**457**	Metal
122	4/5/2018	1:10:45 PM	0	782	R	0.1		**-18**	**290**	Metal
123	4/5/2018	1:10:56 PM	10	749	R	0.1		**4**	**251**	Metal
124	4/5/2018	1:11:08 PM	13	724	R	0.1		**10**	**221**	Metal
125	4/5/2018	1:11:20 PM	3	770	R	0.1		**-11**	**276**	Metal
126	4/5/2018	1:11:31 PM	4	785	R	0.1		**-9**	**294**	Metal
127	4/5/2018	1:11:43 PM	1	854	R	0.1		**-16**	**376**	Metal
128	4/5/2018	1:11:55 PM	0	815	R	0.1		**-18**	**329**	Metal
129	4/5/2018	1:12:06 PM	6	808	R	0.1		**-5**	**321**	Metal
130	4/5/2018	1:13:52 PM	3	587	R	0.1	Grid 22	**-11**	**57**	Metal
131	4/5/2018	1:14:04 PM	4	834	R	0.1		**-9**	**352**	Metal
132	4/5/2018	1:14:16 PM	2	798	R	0.1		**-14**	**309**	Metal
133	4/5/2018	1:14:27 PM	3	737	R	0.1		**-11**	**236**	Metal
134	4/5/2018	1:14:39 PM	5	782	R	0.1		**-7**	**290**	Metal
135	4/5/2018	1:14:50 PM	4	824	R	0.1		**-9**	**340**	Metal
136	4/5/2018	1:15:02 PM	1	855	R	0.1		**-16**	**377**	Metal
137	4/5/2018	1:15:14 PM	0	846	R	0.1		**-18**	**366**	Metal
138	4/5/2018	1:15:25 PM	3	762	R	0.1		**-11**	**266**	Metal
139	4/5/2018	1:15:37 PM	3	858	R	0.1		**-11**	**381**	Metal
140	4/5/2018	1:16:26 PM	4	680	R	0.1	Grid 23	**-9**	**168**	Metal
141	4/5/2018	1:16:38 PM	9	742	R	0.1		**2**	**242**	Metal
142	4/5/2018	1:16:49 PM	2	820	R	0.1		**-14**	**335**	Metal
143	4/5/2018	1:17:01 PM	4	788	R	0.1		**-9**	**297**	Metal
144	4/5/2018	1:17:13 PM	6	599	R	0.1		**-5**	**72**	Metal
145	4/5/2018	1:17:24 PM	9	764	R	0.1		**2**	**268**	Metal
146	4/5/2018	1:17:36 PM	2	745	R	0.1		**-14**	**246**	Metal
147	4/5/2018	1:17:48 PM	3	808	R	0.1		**-11**	**321**	Metal
148	4/5/2018	1:17:59 PM	4	702	R	0.1		**-9**	**194**	Metal
149	4/5/2018	1:18:11 PM	2	770	R	0.1		**-14**	**276**	Metal
150	4/5/2018	1:18:48 PM	5	1455	R	0.1	Grid 24	**-7**	**-67**	
151	4/5/2018	1:19:00 PM	1	1521	R	0.1		**-16**	**12**	
152	4/5/2018	1:19:12 PM	21	1709	R	0.1		**27**	**236**	
153	4/5/2018	1:19:23 PM	5	1609	R	0.1		**-7**	**117**	
154	4/5/2018	1:19:35 PM	20	1721	R	0.1		**25**	**251**	
155	4/5/2018	1:19:47 PM	4	1658	R	0.1		**-9**	**175**	
156	4/5/2018	1:19:58 PM	4	1566	R	0.1		**-9**	**66**	
157	4/5/2018	1:20:10 PM	1	1609	R	0.1		**-16**	**117**	
158	4/5/2018	1:20:22 PM	0	1606	R	0.1		**-18**	**113**	
159	4/5/2018	1:20:33 PM	4	1501	R	0.1		**-9**	**-12**	
160	4/5/2018	1:23:32 PM	6	1551	R	0.1	Grid 25	**-5**	**48**	
161	4/5/2018	1:23:44 PM	10	1444	R	0.1		**4**	**-80**	
162	4/5/2018	1:23:55 PM	2	1542	R	0.1		**-14**	**37**	
163	4/5/2018	1:24:07 PM	17	1512	R	0.1		**19**	**1**	
164	4/5/2018	1:24:18 PM	4	1618	R	0.1		**-9**	**128**	
165	4/5/2018	1:24:30 PM	10	1513	R	0.1		**4**	**2**	

166	4/5/2018	1:24:42 PM	2	1573	R	0.1		**-14**	**74**
167	4/5/2018	1:24:53 PM	3	1565	R	0.1		**-11**	**64**
168	4/5/2018	1:25:05 PM	6	1487	R	0.1		**-5**	**-29**
169	4/5/2018	1:25:17 PM	6	1630	R	0.1		**-5**	**142**
170	4/5/2018	1:26:19 PM	0	1512	R	0.1	Grid 26	**-18**	**1**
171	4/5/2018	1:26:31 PM	7	1499	R	0.1		**-3**	**-14**
172	4/5/2018	1:26:42 PM	1	1519	R	0.1		**-16**	**10**
173	4/5/2018	1:26:54 PM	0	1512	R	0.1		**-18**	**1**
174	4/5/2018	1:27:06 PM	4	1584	R	0.1		**-9**	**87**
175	4/5/2018	1:27:17 PM	7	1632	R	0.1		**-3**	**144**
176	4/5/2018	1:27:29 PM	1	1467	R	0.1		**-16**	**-53**
177	4/5/2018	1:27:41 PM	0	1488	R	0.1		**-18**	**-27**
178	4/5/2018	1:27:52 PM	0	1442	R	0.1		**-18**	**-82**
179	4/5/2018	1:28:04 PM	20	1506	R	0.1		**25**	**-6**
180	4/5/2018	1:30:51 PM	7	1502	R	0.1	Grid 27	**-3**	**-11**
181	4/5/2018	1:31:03 PM	1	1448	R	0.1		**-16**	**-75**
182	4/5/2018	1:31:14 PM	4	1455	R	0.1		**-9**	**-67**
183	4/5/2018	1:31:26 PM	5	1512	R	0.1		**-7**	**1**
184	4/5/2018	1:31:38 PM	15	1487	R	0.1		**14**	**-29**
185	4/5/2018	1:31:49 PM	3	1452	R	0.1		**-11**	**-70**
186	4/5/2018	1:32:01 PM	15	1513	R	0.1		**14**	**2**
187	4/5/2018	1:32:13 PM	21	1534	R	0.1		**27**	**27**
188	4/5/2018	1:32:24 PM	24	1523	R	0.1		**34**	**14**
189	4/5/2018	1:32:36 PM	5	1710	R	0.1		**-7**	**237**
190	4/5/2018	1:32:48 PM	1	1490	R	0.1		**-16**	**-25**
191	4/5/2018	1:33:08 PM	0	1481	R	0.1	Grid 28	**-18**	**-36**
192	4/5/2018	1:33:19 PM	9	1501	R	0.1		**2**	**-12**
193	4/5/2018	1:33:31 PM	25	1579	R	0.1		**36**	**81**
194	4/5/2018	1:33:43 PM	5	1541	R	0.1		**-7**	**36**
195	4/5/2018	1:33:54 PM	1	1507	R	0.1		**-16**	**-5**
196	4/5/2018	1:34:06 PM	5	1468	R	0.1		**-7**	**-51**
197	4/5/2018	1:34:17 PM	1	1532	R	0.1		**-16**	**25**
198	4/5/2018	1:34:29 PM	3	1524	R	0.1		**-11**	**16**
199	4/5/2018	1:34:41 PM	6	1512	R	0.1		**-5**	**1**
200	4/5/2018	1:36:14 PM	4	1487	R	0.1	Grid 29	**-9**	**-29**
201	4/5/2018	1:36:26 PM	5	1666	R	0.1		**-7**	**185**
202	4/5/2018	1:36:37 PM	15	1691	R	0.1		**14**	**215**
203	4/5/2018	1:36:49 PM	3	1648	R	0.1		**-11**	**163**
204	4/5/2018	1:37:01 PM	0	1440	R	0.1		**-18**	**-85**
205	4/5/2018	1:37:12 PM	3	1556	R	0.1		**-11**	**54**
206	4/5/2018	1:37:24 PM	7	1706	R	0.1		**-3**	**233**
207	4/5/2018	1:37:36 PM	4	1638	R	0.1		**-9**	**152**
208	4/5/2018	1:37:47 PM	1	1542	R	0.1		**-16**	**37**
209	4/5/2018	1:37:59 PM	0	1599	R	0.1		**-18**	**105**
210	4/5/2018	1:38:28 PM	0	1488	R	0.1	Grid 30	**-18**	**-27**
211	4/5/2018	1:38:40 PM	0	1510	R	0.1		**-18**	**-1**
212	4/5/2018	1:38:52 PM	11	1478	R	0.1		**6**	**-39**
213	4/5/2018	1:39:03 PM	14	1481	R	0.1		**12**	**-36**
214	4/5/2018	1:39:15 PM	14	1487	R	0.1		**12**	**-29**
215	4/5/2018	1:39:27 PM	13	1504	R	0.1		**10**	**-8**
216	4/5/2018	1:39:38 PM	3	1624	R	0.1		**-11**	**135**
217	4/5/2018	1:39:50 PM	4	1475	R	0.1		**-9**	**-43**
218	4/5/2018	1:40:02 PM	3	1577	R	0.1		**-11**	**79**
219	4/5/2018	1:40:13 PM	4	1545	R	0.1		**-9**	**41**
220	4/5/2018	1:46:20 PM	3	1438	R	0.1	Grid 39	**-11**	**-87**
221	4/5/2018	1:46:32 PM	11	1646	R	0.1		**6**	**161**
222	4/5/2018	1:46:43 PM	2	1733	R	0.1		**-14**	**265**
223	4/5/2018	1:46:55 PM	0	1502	R	0.1		**-18**	**-11**
224	4/5/2018	1:47:06 PM	13	1557	R	0.1		**10**	**55**
225	4/5/2018	1:47:18 PM	6	1483	R	0.1		**-5**	**-33**

226	4/5/2018	1:47:30 PM	1	1695	R	0.1		**-16**	**220**
227	4/5/2018	1:47:41 PM	8	1633	R	0.1		**-1**	**146**
228	4/5/2018	1:47:53 PM	2	1565	R	0.1		**-14**	**64**
229	4/5/2018	1:48:05 PM	0	1784	R	0.1		**-18**	**326**
230	4/5/2018	1:49:04 PM	3	1487	R	0.1	Grid 40	**-11**	**-29**
231	4/5/2018	1:49:15 PM	4	1446	R	0.1		**-9**	**-78**
232	4/5/2018	1:49:27 PM	11	1475	R	0.1		**6**	**-43**
233	4/5/2018	1:49:39 PM	8	1592	R	0.1		**-1**	**97**
234	4/5/2018	1:49:50 PM	2	1604	R	0.1		**-14**	**111**
235	4/5/2018	1:50:02 PM	12	1496	R	0.1		**8**	**-18**
236	4/5/2018	1:50:13 PM	2	1530	R	0.1		**-14**	**23**
237	4/5/2018	1:50:25 PM	0	1487	R	0.1		**-18**	**-29**
238	4/5/2018	1:50:37 PM	0	1675	R	0.1		**-18**	**196**
239	4/5/2018	1:50:48 PM	3	1549	R	0.1		**-11**	**45**
240	4/5/2018	1:52:50 PM	11	1465	R	0.1	Grid 41	**6**	**-55**
241	4/5/2018	1:53:01 PM	2	1549	R	0.1		**-14**	**45**
242	4/5/2018	1:53:13 PM	0	1601	R	0.1		**-18**	**107**
243	4/5/2018	1:53:25 PM	0	1744	R	0.1		**-18**	**278**
244	4/5/2018	1:53:36 PM	14	1845	R	0.1		**12**	**399**
245	4/5/2018	1:53:48 PM	11	1565	R	0.1		**6**	**64**
246	4/5/2018	1:54:00 PM	11	1491	R	0.1		**6**	**-24**
247	4/5/2018	1:54:11 PM	2	1499	R	0.1		**-14**	**-14**
248	4/5/2018	1:54:23 PM	4	1532	R	0.1		**-9**	**25**
249	4/5/2018	1:54:35 PM	0	1494	R	0.1		**-18**	**-20**
250	4/5/2018	1:55:14 PM	4	1486	R	0.1	Grid 42	**-9**	**-30**
251	4/5/2018	1:55:25 PM	1	1733	R	0.1		**-16**	**265**
252	4/5/2018	1:55:37 PM	16	1515	R	0.1		**17**	**5**
253	4/5/2018	1:55:48 PM	3	1545	R	0.1		**-11**	**41**
254	4/5/2018	1:56:00 PM	11	1588	R	0.1		**6**	**92**
255	4/5/2018	1:56:12 PM	2	1483	R	0.1		**-14**	**-33**
256	4/5/2018	1:56:23 PM	0	1647	R	0.1		**-18**	**162**
257	4/5/2018	1:56:35 PM	0	1595	R	0.1		**-18**	**100**
258	4/5/2018	1:56:47 PM	0	1448	R	0.1		**-18**	**-75**
259	4/5/2018	1:56:58 PM	0	1479	R	0.1		**-18**	**-38**
260	4/5/2018	2:01:05 PM	11	1476	R	0.1	Grid 43	**6**	**-42**
261	4/5/2018	2:01:16 PM	2	1576	R	0.1		**-14**	**78**
262	4/5/2018	2:01:28 PM	10	1763	R	0.1		**4**	**301**
263	4/5/2018	2:01:40 PM	2	1790	R	0.1		**-14**	**333**
264	4/5/2018	2:01:51 PM	42	1840	R	0.1		**73**	**393**
265	4/5/2018	2:02:03 PM	14	1513	R	0.1		**12**	**2**
266	4/5/2018	2:02:15 PM	3	1490	R	0.1		**-11**	**-25**
267	4/5/2018	2:02:26 PM	11	1431	R	0.1		**6**	**-95**
268	4/5/2018	2:02:38 PM	2	1503	R	0.1		**-14**	**-10**
269	4/5/2018	2:02:50 PM	0	1472	R	0.1		**-18**	**-47**
270	4/5/2018	2:03:35 PM	0	1503	R	0.1	Grid 44	**-18**	**-10**
271	4/5/2018	2:03:47 PM	0	1482	R	0.1		**-18**	**-35**
272	4/5/2018	2:03:59 PM	33	1451	R	0.1		**53**	**-72**
273	4/5/2018	2:04:10 PM	7	1481	R	0.1		**-3**	**-36**
274	4/5/2018	2:04:22 PM	11	1594	R	0.1		**6**	**99**
275	4/5/2018	2:04:34 PM	12	1849	R	0.1		**8**	**403**
276	4/5/2018	2:04:45 PM	7	1611	R	0.1		**-3**	**119**
277	4/5/2018	2:04:57 PM	1	1745	R	0.1		**-16**	**279**
278	4/5/2018	2:05:08 PM	11	1576	R	0.1		**6**	**78**
279	4/5/2018	2:05:20 PM	2	1658	R	0.1		**-14**	**175**
280	4/5/2018	2:06:41 PM	0	1487	R	0.1	Grid 45	**-18**	**-29**
281	4/5/2018	2:06:53 PM	11	1587	R	0.1		**6**	**91**
282	4/5/2018	2:07:05 PM	15	1455	R	0.1		**14**	**-67**
283	4/5/2018	2:07:16 PM	3	1456	R	0.1		**-11**	**-66**
284	4/5/2018	2:07:28 PM	3	1496	R	0.1		**-11**	**-18**
285	4/5/2018	2:07:40 PM	4	1434	R	0.1		**-9**	**-92**

286	4/5/2018	2:07:51 PM	4	1454	R	0.1		**-9**	**-68**	
287	4/5/2018	2:08:03 PM	7	1498	R	0.1		**-3**	**-16**	
288	4/5/2018	2:08:15 PM	1	1728	R	0.1		**-16**	**259**	
289	4/5/2018	2:08:26 PM	0	1500	R	0.1		**-18**	**-13**	
290	4/5/2018	2:09:10 PM	15	1499	R	0.1	Grid 46	**14**	**-14**	
291	4/5/2018	2:09:22 PM	11	1498	R	0.1		**6**	**-16**	
292	4/5/2018	2:09:33 PM	17	1731	R	0.1		**19**	**263**	
293	4/5/2018	2:09:45 PM	4	1657	R	0.1		**-9**	**174**	
294	4/5/2018	2:09:57 PM	0	1639	R	0.1		**-18**	**153**	
295	4/5/2018	2:10:08 PM	4	1751	R	0.1		**-9**	**286**	
296	4/5/2018	2:10:20 PM	1	1620	R	0.1		**-16**	**130**	
297	4/5/2018	2:10:32 PM	3	1498	R	0.1		**-11**	**-16**	
298	4/5/2018	2:10:43 PM	0	1489	R	0.1		**-18**	**-26**	
299	4/5/2018	2:10:55 PM	3	1501	R	0.1		**-11**	**-12**	
300	4/5/2018	2:13:23 PM	4	1486	R	0.1	Grid 47	**-9**	**-30**	
301	4/5/2018	2:13:34 PM	3	1778	R	0.1		**-11**	**319**	
302	4/5/2018	2:13:46 PM	0	1680	R	0.1		**-18**	**202**	
303	4/5/2018	2:13:57 PM	3	1525	R	0.1		**-11**	**17**	
304	4/5/2018	2:14:09 PM	3	1668	R	0.1		**-11**	**187**	
305	4/5/2018	2:14:21 PM	7	1846	R	0.1		**-3**	**400**	
306	4/5/2018	2:14:32 PM	1	1787	R	0.1		**-16**	**329**	
307	4/5/2018	2:14:44 PM	12	1855	R	0.1		**8**	**410**	
308	4/5/2018	2:14:56 PM	3	1769	R	0.1		**-11**	**308**	
309	4/5/2018	2:15:07 PM	7	1690	R	0.1		**-3**	**214**	
310	4/5/2018	2:15:56 PM	10	1487	R	0.1	Grid 48	**4**	**-29**	
311	4/5/2018	2:16:08 PM	19	1635	R	0.1		**23**	**148**	
312	4/5/2018	2:16:19 PM	7	1597	R	0.1		**-3**	**103**	
313	4/5/2018	2:16:31 PM	14	1586	R	0.1		**12**	**89**	
314	4/5/2018	2:16:43 PM	14	1586	R	0.1		**12**	**89**	
315	4/5/2018	2:16:54 PM	7	1677	R	0.1		**-3**	**198**	
316	4/5/2018	2:17:06 PM	15	1614	R	0.1		**14**	**123**	
317	4/5/2018	2:17:18 PM	3	1844	R	0.1		**-11**	**397**	
318	4/5/2018	2:17:29 PM	0	1510	R	0.1		**-18**	**-1**	
319	4/5/2018	2:17:41 PM	14	1610	R	0.1		**12**	**118**	
320	4/5/2018	2:18:55 PM	0	669	R	0.1	Grid 49	**-18**	**155**	Metal
321	4/5/2018	2:19:07 PM	0	862	R	0.1		**-18**	**385**	Metal
322	4/5/2018	2:19:19 PM	10	866	R	0.1		**4**	**390**	Metal
323	4/5/2018	2:19:30 PM	6	802	R	0.1		**-5**	**314**	Metal
324	4/5/2018	2:19:47 PM	0	862	R	0.1		**-18**	**385**	Metal
325	4/5/2018	2:19:59 PM	0	786	R	0.1		**-18**	**295**	Metal
326	4/5/2018	2:20:10 PM	20	819	R	0.1		**25**	**334**	Metal
327	4/5/2018	2:20:22 PM	20	822	R	0.1		**25**	**338**	Metal
328	4/5/2018	2:20:34 PM	4	870	R	0.1		**-9**	**395**	Metal
329	4/5/2018	2:20:50 PM	7	828	R	0.1		**-3**	**345**	Metal
330	4/5/2018	2:22:03 PM	5	1505	R	0.1	Grid 50	**-7**	**-7**	
331	4/5/2018	2:22:15 PM	1	1516	R	0.1		**-16**	**6**	
332	4/5/2018	2:22:27 PM	0	1550	R	0.1		**-18**	**47**	
333	4/5/2018	2:22:38 PM	0	1619	R	0.1		**-18**	**129**	
334	4/5/2018	2:22:50 PM	7	1467	R	0.1		**-3**	**-53**	
335	4/5/2018	2:23:01 PM	1	1433	R	0.1		**-16**	**-93**	
336	4/5/2018	2:23:13 PM	0	823	R	0.1		**-18**	**339**	Metal
337	4/5/2018	2:23:25 PM	6	842	R	0.1		**-5**	**362**	Metal
338	4/5/2018	2:23:36 PM	1	815	R	0.1		**-16**	**329**	Metal
339	4/5/2018	2:23:48 PM	0	860	R	0.1		**-18**	**383**	Metal
340	4/5/2018	2:27:35 PM	0	1465	R	0.1	Grid 51	**-18**	**-55**	
341	4/5/2018	2:27:46 PM	0	1593	R	0.1		**-18**	**98**	
342	4/5/2018	2:27:58 PM	0	1558	R	0.1		**-18**	**56**	
343	4/5/2018	2:28:10 PM	7	1452	R	0.1		**-3**	**-70**	
344	4/5/2018	2:28:21 PM	1	1531	R	0.1		**-16**	**24**	
345	4/5/2018	2:28:33 PM	0	1455	R	0.1		**-18**	**-67**	

346	4/5/2018	2:28:45 PM	0	786	R	0.1		**-18**	**295**	Metal
347	4/5/2018	2:28:56 PM	8	812	R	0.1		**-1**	**326**	Metal
348	4/5/2018	2:29:08 PM	8	736	R	0.1		**-1**	**235**	Metal
349	4/5/2018	2:29:19 PM	5	823	R	0.1		**-7**	**339**	Metal
350	4/5/2018	2:30:57 PM	4	1497	R	0.1	Grid 52	**-9**	**-17**	
351	4/5/2018	2:31:09 PM	1	1550	R	0.1		**-16**	**47**	
352	4/5/2018	2:31:21 PM	12	1582	R	0.1		**8**	**85**	
353	4/5/2018	2:31:32 PM	3	1668	R	0.1		**-11**	**187**	
354	4/5/2018	2:31:44 PM	0	1529	R	0.1		**-18**	**21**	
355	4/5/2018	2:31:56 PM	0	1578	R	0.1		**-18**	**80**	
356	4/5/2018	2:32:07 PM	0	1437	R	0.1		**-18**	**-88**	
357	4/5/2018	2:32:19 PM	6	864	R	0.1		**-5**	**388**	Metal
358	4/5/2018	2:32:31 PM	6	837	R	0.1		**-5**	**356**	Metal
359	4/5/2018	2:32:42 PM	7	688	R	0.1		**-3**	**178**	Metal
360	4/5/2018	2:32:54 PM	9	820	R	0.1		**2**	**335**	Metal
361	4/5/2018	2:33:30 PM	0	1232	R	0.1	Grid 53	**-18**	**-333**	
362	4/5/2018	2:33:42 PM	0	1435	R	0.1		**-18**	**-91**	
363	4/5/2018	2:33:53 PM	7	1662	R	0.1		**-3**	**180**	
364	4/5/2018	2:34:05 PM	16	1684	R	0.1		**17**	**206**	
365	4/5/2018	2:34:17 PM	14	1694	R	0.1		**12**	**218**	
366	4/5/2018	2:34:28 PM	12	855	R	0.1		**8**	**377**	Metal
367	4/5/2018	2:34:40 PM	9	828	R	0.1		**2**	**345**	Metal
368	4/5/2018	2:34:52 PM	7	786	R	0.1		**-3**	**295**	Metal
369	4/5/2018	2:35:03 PM	9	732	R	0.1		**2**	**230**	Metal
370	4/5/2018	2:36:22 PM	0	1545	R	0.1	Grid 54	**-18**	**41**	
371	4/5/2018	2:36:33 PM	0	1661	R	0.1		**-18**	**179**	
372	4/5/2018	2:36:45 PM	0	1472	R	0.1		**-18**	**-47**	
373	4/5/2018	2:36:57 PM	0	1758	R	0.1		**-18**	**295**	
374	4/5/2018	2:37:08 PM	0	1739	R	0.1		**-18**	**272**	
375	4/5/2018	2:37:20 PM	0	1673	R	0.1		**-18**	**193**	
376	4/5/2018	2:37:32 PM	6	1500	R	0.1		**-5**	**-13**	
377	4/5/2018	2:37:43 PM	30	1767	R	0.1		**47**	**305**	
378	4/5/2018	2:37:55 PM	7	1571	R	0.1		**-3**	**72**	
379	4/5/2018	2:38:06 PM	1	1681	R	0.1		**-16**	**203**	
380	4/5/2018	2:42:09 PM	7	1513	R	0.1	Grid 55	**-3**	**2**	
381	4/5/2018	2:42:27 PM	0	1639	R	0.1		**-18**	**153**	
382	4/5/2018	2:42:39 PM	0	1591	R	0.1		**-18**	**95**	
383	4/5/2018	2:42:51 PM	4	1649	R	0.1		**-9**	**165**	
384	4/5/2018	2:43:02 PM	1	1576	R	0.1		**-16**	**78**	
385	4/5/2018	2:43:14 PM	0	1609	R	0.1		**-18**	**117**	
386	4/5/2018	2:43:26 PM	16	1457	R	0.1		**17**	**-64**	
387	4/5/2018	2:43:37 PM	7	1482	R	0.1		**-3**	**-35**	
388	4/5/2018	2:43:49 PM	1	1556	R	0.1		**-16**	**54**	
389	4/5/2018	2:44:01 PM	0	1574	R	0.1		**-18**	**75**	
390	4/5/2018	2:45:13 PM	6	1476	R	0.1	Grid 56	**-5**	**-42**	
391	4/5/2018	2:45:25 PM	12	1645	R	0.1		**8**	**160**	
392	4/5/2018	2:45:36 PM	3	1689	R	0.1		**-11**	**212**	
393	4/5/2018	2:45:48 PM	0	1684	R	0.1		**-18**	**206**	
394	4/5/2018	2:46:00 PM	0	1538	R	0.1		**-18**	**32**	
395	4/5/2018	2:46:11 PM	12	1626	R	0.1		**8**	**137**	
396	4/5/2018	2:46:23 PM	3	1527	R	0.1		**-11**	**19**	
397	4/5/2018	2:46:35 PM	0	1703	R	0.1		**-18**	**229**	
398	4/5/2018	2:46:46 PM	0	1608	R	0.1		**-18**	**116**	
399	4/5/2018	2:46:58 PM	7	1652	R	0.1		**-3**	**168**	
400	4/5/2018	2:48:12 PM	6	1545	R	0.1	Grid 57	**-5**	**41**	
401	4/5/2018	2:48:24 PM	1	1460	R	0.1		**-16**	**-61**	
402	4/5/2018	2:48:35 PM	0	1486	R	0.1		**-18**	**-30**	
403	4/5/2018	2:48:47 PM	9	1480	R	0.1		**2**	**-37**	
404	4/5/2018	2:48:59 PM	2	1614	R	0.1		**-14**	**123**	
405	4/5/2018	2:49:10 PM	0	1633	R	0.1		**-18**	**146**	

406	4/5/2018	2:49:22 PM	10	1610	R	0.1		**4**	**118**
407	4/5/2018	2:49:34 PM	2	1586	R	0.1		**-14**	**89**
408	4/5/2018	2:49:45 PM	12	1572	R	0.1		**8**	**73**
409	4/5/2018	2:49:57 PM	17	1595	R	0.1		**19**	**100**
410	4/5/2018	2:50:37 PM	17	1541	R	0.1	Grid 58	**19**	**36**
411	4/5/2018	2:50:49 PM	9	1607	R	0.1		**2**	**115**
412	4/5/2018	2:51:00 PM	7	1512	R	0.1		**-3**	**1**
413	4/5/2018	2:51:12 PM	4	1521	R	0.1		**-9**	**12**
414	4/5/2018	2:51:24 PM	5	1655	R	0.1		**-7**	**172**
415	4/5/2018	2:51:35 PM	7	1496	R	0.1		**-3**	**-18**
416	4/5/2018	2:51:47 PM	1	1522	R	0.1		**-16**	**13**
417	4/5/2018	2:51:59 PM	0	1524	R	0.1		**-18**	**16**
418	4/5/2018	2:52:10 PM	4	1449	R	0.1		**-9**	**-74**
419	4/5/2018	2:52:22 PM	1	1498	R	0.1		**-16**	**-16**
420	4/5/2018	2:53:19 PM	0	1533	R	0.1	Grid 59	**-18**	**26**
421	4/5/2018	2:53:31 PM	9	1445	R	0.1		**2**	**-79**
422	4/5/2018	2:53:42 PM	2	1498	R	0.1		**-14**	**-16**
423	4/5/2018	2:53:54 PM	4	1751	R	0.1		**-9**	**286**
424	4/5/2018	2:54:06 PM	1	1647	R	0.1		**-16**	**162**
425	4/5/2018	2:54:17 PM	10	1858	R	0.1		**4**	**414**
426	4/5/2018	2:54:29 PM	2	1726	R	0.1		**-14**	**257**
427	4/5/2018	2:54:41 PM	13	1650	R	0.1		**10**	**166**
428	4/5/2018	2:54:52 PM	12	1642	R	0.1		**8**	**156**
429	4/5/2018	2:55:04 PM	8	1511	R	0.1		**-1**	**0**
430	4/5/2018	2:55:55 PM	6	1565	R	0.1	Grid 60	**-5**	**64**
431	4/5/2018	2:56:07 PM	1	1690	R	0.1		**-16**	**214**
432	4/5/2018	2:56:19 PM	10	1554	R	0.1		**4**	**51**
433	4/5/2018	2:56:30 PM	18	1531	R	0.1		**21**	**24**
434	4/5/2018	2:56:42 PM	4	1433	R	0.1		**-9**	**-93**
435	4/5/2018	2:56:54 PM	1	1501	R	0.1		**-16**	**-12**
436	4/5/2018	2:57:05 PM	7	1463	R	0.1		**-3**	**-57**
437	4/5/2018	2:57:17 PM	1	1468	R	0.1		**-16**	**-51**
438	4/5/2018	2:57:29 PM	19	1677	R	0.1		**23**	**198**
439	4/5/2018	2:57:40 PM	4	1497	R	0.1		**-9**	**-17**
		Maximum:	**42**	**1872**				**73**	**474**
		Average:	**5**	**1448**				**-6**	**99**
		StDev:	**6**	**293**				**12**	**145**

Room 103 Ceiling/Overhead

2360 SN:297743
43-37 #302111
Cal Due Date: 10/10/2018
Surveyor: Adolfo Matus
Bldg. 218
Room 103 Ceiling Grids 1 thru 8 25 thru 32 49 thru 56
Alpha Efficiency: 0.31
Beta/Gamma Efficiency: 0.352
Alpha Background: 4.1
Beta/Gamma Background: 539

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/6/2018	10:16:27	AM	14	600	R	0.1	Grid 1	**22**	**79**
2	4/6/2018	10:16:39	AM	3	735	R	0.1		**-2**	**255**
3	4/6/2018	10:16:51	AM	0	666	R	0.1		**-9**	**165**
4	4/6/2018	10:17:02	AM	0	667	R	0.1		**-9**	**167**
5	4/6/2018	10:17:14	AM	0	812	R	0.1		**-9**	**355**
6	4/6/2018	10:17:26	AM	0	744	R	0.1		**-9**	**267**
7	4/6/2018	10:17:37	AM	6	846	R	0.1		**4**	**400**
8	4/6/2018	10:17:49	AM	1	839	R	0.1		**-7**	**391**
9	4/6/2018	10:18:00	AM	6	792	R	0.1		**4**	**329**
10	4/6/2018	10:19:39	AM	6	569	R	0.1	Grid 2	**4**	**39**
11	4/6/2018	10:19:51	AM	5	677	R	0.1		**2**	**180**
12	4/6/2018	10:20:02	AM	10	609	R	0.1		**13**	**91**
13	4/6/2018	10:20:14	AM	2	782	R	0.1		**-5**	**316**
14	4/6/2018	10:20:26	AM	0	746	R	0.1		**-9**	**269**
15	4/6/2018	10:20:37	AM	5	817	R	0.1		**2**	**362**
16	4/6/2018	10:20:49	AM	1	809	R	0.1		**-7**	**351**
17	4/6/2018	10:21:01	AM	18	657	R	0.1		**31**	**154**
18	4/6/2018	10:21:12	AM	12	817	R	0.1		**18**	**362**
19	4/6/2018	10:21:24	AM	12	745	R	0.1		**18**	**268**
20	4/6/2018	10:25:34	AM	11	634	R	0.1	Grid 3	**15**	**124**
21	4/6/2018	10:25:46	AM	5	743	R	0.1		**2**	**266**
22	4/6/2018	10:25:58	AM	7	767	R	0.1		**6**	**297**
23	4/6/2018	10:26:09	AM	13	753	R	0.1		**20**	**279**
24	4/6/2018	10:26:21	AM	8	841	R	0.1		**9**	**393**
25	4/6/2018	10:26:33	AM	14	789	R	0.1		**22**	**325**
26	4/6/2018	10:26:44	AM	3	797	R	0.1		**-2**	**336**
27	4/6/2018	10:26:56	AM	0	724	R	0.1		**-9**	**241**
28	4/6/2018	10:27:07	AM	0	874	R	0.1		**-9**	**436**
29	4/6/2018	10:27:19	AM	0	767	R	0.1		**-9**	**297**
30	4/6/2018	10:29:21	AM	0	701	R	0.1	Grid 4	**-9**	**211**
31	4/6/2018	10:29:33	AM	4	1016	R	0.1		**0**	**621**
32	4/6/2018	10:29:44	AM	1	1054	R	0.1		**-7**	**670**
33	4/6/2018	10:29:56	AM	0	1050	R	0.1		**-9**	**665**
34	4/6/2018	10:30:07	AM	0	928	R	0.1		**-9**	**506**
35	4/6/2018	10:30:19	AM	0	899	R	0.1		**-9**	**469**
36	4/6/2018	10:30:31	AM	10	842	R	0.1		**13**	**394**
37	4/6/2018	10:30:42	AM	2	871	R	0.1		**-5**	**432**
38	4/6/2018	10:30:54	AM	22	1019	R	0.1		**40**	**625**
39	4/6/2018	10:31:06	AM	5	891	R	0.1		**2**	**458**

40	4/6/2018	10:35:55 AM	4	910	R	0.1	Grid 5	**0**	**483**
41	4/6/2018	10:36:07 AM	1	1171	R	0.1		**-7**	**823**
42	4/6/2018	10:36:19 AM	0	1250	R	0.1		**-9**	**925**
43	4/6/2018	10:36:30 AM	6	1628	R	0.1		**4**	**1418**
44	4/6/2018	10:36:42 AM	1	1502	R	0.1		**-7**	**1254**
45	4/6/2018	10:36:54 AM	8	1365	R	0.1		**9**	**1075**
46	4/6/2018	10:37:05 AM	5	1322	R	0.1		**2**	**1019**
47	4/6/2018	10:37:17 AM	1	1313	R	0.1		**-7**	**1007**
48	4/6/2018	10:37:29 AM	0	924	R	0.1		**-9**	**501**
49	4/6/2018	10:37:40 AM	3	1093	R	0.1		**-2**	**721**
50	4/6/2018	10:46:55 AM	0	1104	R	0.1	Grid 6	**-9**	**735**
51	4/6/2018	10:47:06 AM	0	1253	R	0.1		**-9**	**929**
52	4/6/2018	10:47:18 AM	0	1255	R	0.1		**-9**	**932**
53	4/6/2018	10:47:30 AM	0	1141	R	0.1		**-9**	**784**
54	4/6/2018	10:47:41 AM	0	1102	R	0.1		**-9**	**733**
55	4/6/2018	10:47:53 AM	11	1207	R	0.1		**15**	**870**
56	4/6/2018	10:48:05 AM	2	1190	R	0.1		**-5**	**847**
57	4/6/2018	10:48:16 AM	0	1031	R	0.1		**-9**	**640**
58	4/6/2018	10:48:28 AM	0	1159	R	0.1		**-9**	**807**
59	4/6/2018	10:48:40 AM	6	1288	R	0.1		**4**	**975**
60	4/6/2018	10:48:51 AM	5	1413	R	0.1		**2**	**1138**
61	4/6/2018	10:56:05 AM	15	842	R	0.1	Grid 7	**24**	**394**
62	4/6/2018	10:56:17 AM	3	1176	R	0.1		**-2**	**829**
63	4/6/2018	10:56:29 AM	0	1015	R	0.1		**-9**	**620**
64	4/6/2018	10:56:40 AM	3	1096	R	0.1		**-2**	**725**
65	4/6/2018	10:56:52 AM	0	1037	R	0.1		**-9**	**648**
66	4/6/2018	10:57:04 AM	0	1023	R	0.1		**-9**	**630**
67	4/6/2018	10:57:15 AM	0	1006	R	0.1		**-9**	**608**
68	4/6/2018	10:57:27 AM	0	1021	R	0.1		**-9**	**627**
69	4/6/2018	10:57:39 AM	0	958	R	0.1		**-9**	**545**
70	4/6/2018	10:58:38 AM	4	918	R	0.1	Grid 8	**0**	**493**
71	4/6/2018	10:58:49 AM	14	940	R	0.1		**22**	**522**
72	4/6/2018	10:59:01 AM	3	918	R	0.1		**-2**	**493**
73	4/6/2018	10:59:13 AM	18	797	R	0.1		**31**	**336**
74	4/6/2018	10:59:24 AM	4	994	R	0.1		**0**	**592**
75	4/6/2018	10:59:36 AM	4	767	R	0.1		**0**	**297**
76	4/6/2018	10:59:48 AM	1	784	R	0.1		**-7**	**319**
77	4/6/2018	10:59:59 AM	0	880	R	0.1		**-9**	**444**
78	4/6/2018	11:00:11 AM	0	862	R	0.1		**-9**	**420**
79	4/6/2018	11:00:23 AM	0	845	R	0.1		**-9**	**398**
80	4/6/2018	12:35:22 PM	0	752	R	0.1	Grid 25	**-9**	**277**
81	4/6/2018	12:35:34 PM	5	814	R	0.1		**2**	**358**
82	4/6/2018	12:35:45 PM	1	853	R	0.1		**-7**	**409**
83	4/6/2018	12:35:57 PM	0	869	R	0.1		**-9**	**430**
84	4/6/2018	12:36:09 PM	0	947	R	0.1		**-9**	**531**
85	4/6/2018	12:36:20 PM	4	917	R	0.1		**0**	**492**
86	4/6/2018	12:36:32 PM	1	794	R	0.1		**-7**	**332**
87	4/6/2018	12:36:44 PM	0	805	R	0.1		**-9**	**346**
88	4/6/2018	12:36:55 PM	0	714	R	0.1		**-9**	**228**
89	4/6/2018	12:37:07 PM	0	780	R	0.1		**-9**	**314**
90	4/6/2018	12:38:40 PM	3	626	R	0.1	Grid 26	**-2**	**113**
91	4/6/2018	12:38:52 PM	7	647	R	0.1		**6**	**141**
92	4/6/2018	12:39:04 PM	13	764	R	0.1		**20**	**293**
93	4/6/2018	12:39:15 PM	7	838	R	0.1		**6**	**389**

94	4/6/2018	12:39:27 PM	6	861	R	0.1		**4**	**419**
95	4/6/2018	12:39:38 PM	12	715	R	0.1		**18**	**229**
96	4/6/2018	12:39:50 PM	3	910	R	0.1		**-2**	**483**
97	4/6/2018	12:40:02 PM	0	785	R	0.1		**-9**	**320**
98	4/6/2018	12:40:13 PM	0	815	R	0.1		**-9**	**359**
99	4/6/2018	12:40:25 PM	0	915	R	0.1		**-9**	**489**
100	4/6/2018	12:42:35 PM	4	736	R	0.1	Grid 27	**0**	**256**
101	4/6/2018	12:42:46 PM	8	824	R	0.1		**9**	**371**
102	4/6/2018	12:42:58 PM	2	765	R	0.1		**-5**	**294**
103	4/6/2018	12:43:10 PM	10	644	R	0.1		**13**	**137**
104	4/6/2018	12:43:21 PM	20	845	R	0.1		**35**	**398**
105	4/6/2018	12:43:33 PM	4	760	R	0.1		**0**	**288**
106	4/6/2018	12:43:45 PM	1	765	R	0.1		**-7**	**294**
107	4/6/2018	12:43:56 PM	3	730	R	0.1		**-2**	**249**
108	4/6/2018	12:44:08 PM	5	976	R	0.1		**2**	**569**
109	4/6/2018	12:44:20 PM	4	828	R	0.1		**0**	**376**
110	4/6/2018	12:48:10 PM	3	507	R	0.1	Grid 28	**-2**	**-42**
111	4/6/2018	12:48:22 PM	4	754	R	0.1		**0**	**280**
112	4/6/2018	12:48:33 PM	1	777	R	0.1		**-7**	**310**
113	4/6/2018	12:48:45 PM	0	823	R	0.1		**-9**	**370**
114	4/6/2018	12:48:57 PM	0	747	R	0.1		**-9**	**271**
115	4/6/2018	12:49:08 PM	0	830	R	0.1		**-9**	**379**
116	4/6/2018	12:49:20 PM	5	825	R	0.1		**2**	**372**
117	4/6/2018	12:49:32 PM	1	861	R	0.1		**-7**	**419**
118	4/6/2018	12:49:43 PM	6	761	R	0.1		**4**	**289**
119	4/6/2018	12:49:55 PM	5	697	R	0.1		**2**	**206**
120	4/6/2018	12:52:06 PM	3	753	R	0.1	Grid 29	**-2**	**279**
121	4/6/2018	12:52:17 PM	0	697	R	0.1		**-9**	**206**
122	4/6/2018	12:52:29 PM	9	713	R	0.1		**11**	**226**
123	4/6/2018	12:52:41 PM	5	853	R	0.1		**2**	**409**
124	4/6/2018	12:52:52 PM	10	911	R	0.1		**13**	**484**
125	4/6/2018	12:53:04 PM	2	942	R	0.1		**-5**	**525**
126	4/6/2018	12:53:16 PM	5	885	R	0.1		**2**	**450**
127	4/6/2018	12:53:27 PM	1	907	R	0.1		**-7**	**479**
128	4/6/2018	12:53:39 PM	3	870	R	0.1		**-2**	**431**
129	4/6/2018	12:53:50 PM	0	751	R	0.1		**-9**	**276**
130	4/6/2018	12:54:58 PM	3	611	R	0.1	Grid 30	**-2**	**94**
131	4/6/2018	12:55:09 PM	0	716	R	0.1		**-9**	**230**
132	4/6/2018	12:55:21 PM	4	830	R	0.1		**0**	**379**
133	4/6/2018	12:55:33 PM	1	846	R	0.1		**-7**	**400**
134	4/6/2018	12:55:44 PM	0	742	R	0.1		**-9**	**264**
135	4/6/2018	12:55:56 PM	3	812	R	0.1		**-2**	**355**
136	4/6/2018	12:56:07 PM	4	764	R	0.1		**0**	**293**
137	4/6/2018	12:56:19 PM	2	708	R	0.1		**-5**	**220**
138	4/6/2018	12:56:31 PM	0	830	R	0.1		**-9**	**379**
139	4/6/2018	12:56:42 PM	4	854	R	0.1		**0**	**410**
140	4/6/2018	12:57:58 PM	0	666	R	0.1	Grid 31	**-9**	**165**
141	4/6/2018	12:58:10 PM	0	786	R	0.1		**-9**	**322**
142	4/6/2018	12:58:21 PM	6	753	R	0.1		**4**	**279**
143	4/6/2018	12:58:33 PM	1	882	R	0.1		**-7**	**446**
144	4/6/2018	12:58:45 PM	4	823	R	0.1		**0**	**370**
145	4/6/2018	12:58:56 PM	5	797	R	0.1		**2**	**336**
146	4/6/2018	12:59:08 PM	3	882	R	0.1		**-2**	**446**
147	4/6/2018	12:59:20 PM	6	779	R	0.1		**4**	**312**

148	4/6/2018	12:59:31 PM	6	860	R	0.1		**4**	**418**
149	4/6/2018	12:59:43 PM	1	862	R	0.1		**-7**	**420**
150	4/6/2018	1:02:32 PM	0	651	R	0.1	Grid 32	**-9**	**146**
151	4/6/2018	1:02:44 PM	0	754	R	0.1		**-9**	**280**
152	4/6/2018	1:02:56 PM	0	785	R	0.1		**-9**	**320**
153	4/6/2018	1:03:07 PM	0	740	R	0.1		**-9**	**262**
154	4/6/2018	1:03:19 PM	8	812	R	0.1		**9**	**355**
155	4/6/2018	1:03:31 PM	6	802	R	0.1		**4**	**342**
156	4/6/2018	1:03:42 PM	1	802	R	0.1		**-7**	**342**
157	4/6/2018	1:03:54 PM	0	805	R	0.1		**-9**	**346**
158	4/6/2018	1:04:06 PM	5	802	R	0.1		**2**	**342**
159	4/6/2018	1:04:17 PM	5	870	R	0.1		**2**	**431**
160	4/6/2018	1:07:58 PM	4	698	R	0.1	Grid 49	**0**	**207**
161	4/6/2018	1:08:09 PM	1	753	R	0.1		**-7**	**279**
162	4/6/2018	1:08:21 PM	12	811	R	0.1		**18**	**354**
163	4/6/2018	1:08:33 PM	3	882	R	0.1		**-2**	**446**
164	4/6/2018	1:08:44 PM	11	620	R	0.1		**15**	**105**
165	4/6/2018	1:11:06 PM	9	679	R	0.1	Grid 50	**11**	**182**
166	4/6/2018	1:11:17 PM	2	823	R	0.1		**-5**	**370**
167	4/6/2018	1:11:29 PM	0	754	R	0.1		**-9**	**280**
168	4/6/2018	1:11:41 PM	0	783	R	0.1		**-9**	**318**
169	4/6/2018	1:11:52 PM	0	802	R	0.1		**-9**	**342**
170	4/6/2018	1:13:30 PM	3	735	R	0.1	Grid 51	**-2**	**255**
171	4/6/2018	1:13:42 PM	0	812	R	0.1		**-9**	**355**
172	4/6/2018	1:13:53 PM	0	814	R	0.1		**-9**	**358**
173	4/6/2018	1:14:05 PM	6	856	R	0.1		**4**	**413**
174	4/6/2018	1:14:17 PM	1	955	R	0.1		**-7**	**541**
175	4/6/2018	1:16:26 PM	0	710	R	0.1	Grid 52	**-9**	**223**
176	4/6/2018	1:16:37 PM	0	775	R	0.1		**-9**	**307**
177	4/6/2018	1:16:49 PM	7	915	R	0.1		**6**	**489**
178	4/6/2018	1:17:01 PM	1	866	R	0.1		**-7**	**426**
179	4/6/2018	1:17:12 PM	0	915	R	0.1		**-9**	**489**
180	4/6/2018	1:18:35 PM	0	731	R	0.1	Grid 53	**-9**	**250**
181	4/6/2018	1:18:47 PM	0	796	R	0.1		**-9**	**335**
182	4/6/2018	1:18:58 PM	0	963	R	0.1		**-9**	**552**
183	4/6/2018	1:19:10 PM	0	908	R	0.1		**-9**	**480**
184	4/6/2018	1:19:22 PM	0	992	R	0.1		**-9**	**590**
185	4/6/2018	1:20:32 PM	8	766	R	0.1	Grid 54	**9**	**295**
186	4/6/2018	1:20:44 PM	7	837	R	0.1		**6**	**388**
187	4/6/2018	1:20:56 PM	1	1028	R	0.1		**-7**	**637**
188	4/6/2018	1:21:07 PM	9	1010	R	0.1		**11**	**613**
189	4/6/2018	1:21:19 PM	2	918	R	0.1		**-5**	**493**
190	4/6/2018	1:25:30 PM	6	706	R	0.1	Grid 55	**4**	**217**
191	4/6/2018	1:25:41 PM	16	808	R	0.1		**26**	**350**
192	4/6/2018	1:25:53 PM	8	830	R	0.1		**9**	**379**
193	4/6/2018	1:26:05 PM	5	963	R	0.1		**2**	**552**
194	4/6/2018	1:26:16 PM	8	900	R	0.1		**9**	**470**
195	4/6/2018	1:27:17 PM	5	780	R	0.1	Grid 56	**2**	**314**
196	4/6/2018	1:27:29 PM	0	836	R	0.1		**-9**	**387**
197	4/6/2018	1:27:41 PM	3	1308	R	0.1		**-2**	**1001**
198	4/6/2018	1:27:52 PM	8	1093	R	0.1		**9**	**721**
199	4/6/2018	1:28:04 PM	2	1016	R	0.1		**-5**	**621**
		Maximum:	**22**	**1628**				**40**	**1418**
		Average:	**4**	**864**				**-1**	**424**

StDev:	**4**	**173**	**10**	**226**

Room 103A Floor

2360 SN:268497
43-37 SN:093965
Cal Due Date: 10/10/2018
Surveyor: Thomas Hogan
Bldg 218
Room 103A Floor Grids 1 thru 45
Alpha Efficiency: 0.31
Beta/Gamma Efficiency: 0.352
Alpha Background: 3.3
Beta/Gamma Background: 484

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/10/2018	10:33:15	AM	0	502	R	0.1	Grid 1	**-7**	**23**
2	4/10/2018	10:33:27	AM	11	569	R	0.1		**17**	**111**
3	4/10/2018	10:33:39	AM	2	582	R	0.1		**-3**	**128**
4	4/10/2018	10:33:50	AM	2	789	R	0.1		**-3**	**397**
5	4/10/2018	10:34:02	AM	0	781	R	0.1		**-7**	**387**
6	4/10/2018	10:34:14	AM	3	632	R	0.1		**-1**	**193**
7	4/10/2018	10:34:26	AM	9	643	R	0.1		**13**	**207**
8	4/10/2018	10:34:37	AM	2	502	R	0.1		**-3**	**23**
9	4/10/2018	10:34:49	AM	7	513	R	0.1		**8**	**38**
10	4/10/2018	10:36:02	AM	5	484	R	0.1	Grid 2	**4**	**0**
11	4/10/2018	10:36:14	AM	1	487	R	0.1		**-5**	**4**
12	4/10/2018	10:36:26	AM	3	537	R	0.1		**-1**	**69**
13	4/10/2018	10:36:37	AM	5	506	R	0.1		**4**	**29**
14	4/10/2018	10:36:49	AM	4	431	R	0.1		**2**	**-69**
15	4/10/2018	10:37:01	AM	3	468	R	0.1		**-1**	**-21**
16	4/10/2018	10:37:13	AM	4	551	R	0.1		**2**	**87**
17	4/10/2018	10:37:24	AM	4	537	R	0.1		**2**	**69**
18	4/10/2018	10:37:36	AM	7	511	R	0.1		**8**	**35**
19	4/10/2018	10:37:48	AM	3	690	R	0.1		**-1**	**268**
20	4/10/2018	10:39:33	AM	0	1187	R	0.1	Grid 3	**-7**	**915**
21	4/10/2018	10:39:45	AM	5	915	R	0.1		**4**	**561**
22	4/10/2018	10:39:57	AM	1	844	R	0.1		**-5**	**469**
23	4/10/2018	10:40:09	AM	4	879	R	0.1		**2**	**514**
24	4/10/2018	10:40:20	AM	3	866	R	0.1		**-1**	**497**
25	4/10/2018	10:40:32	AM	3	871	R	0.1		**-1**	**504**
26	4/10/2018	10:40:44	AM	2	527	R	0.1		**-3**	**56**
27	4/10/2018	10:40:56	AM	8	455	R	0.1		**10**	**-38**
28	4/10/2018	10:41:07	AM	2	473	R	0.1		**-3**	**-14**
29	4/10/2018	10:41:19	AM	7	565	R	0.1		**8**	**105**
30	4/10/2018	10:42:30	AM	6	740	R	0.1	Grid 4	**6**	**333**
31	4/10/2018	10:42:42	AM	1	668	R	0.1		**-5**	**240**
32	4/10/2018	10:42:53	AM	6	702	R	0.1		**6**	**284**
33	4/10/2018	10:43:05	AM	9	874	R	0.1		**13**	**508**
34	4/10/2018	10:43:17	AM	2	866	R	0.1		**-3**	**497**
35	4/10/2018	10:43:29	AM	3	799	R	0.1		**-1**	**410**
36	4/10/2018	10:43:40	AM	0	856	R	0.1		**-7**	**484**
37	4/10/2018	10:43:52	AM	4	821	R	0.1		**2**	**439**
38	4/10/2018	10:44:04	AM	1	625	R	0.1		**-5**	**184**
39	4/10/2018	10:44:16	AM	4	1065	R	0.1		**2**	**756**
40	4/10/2018	10:46:17	AM	3	568	R	0.1	Grid 5	**-1**	**109**

41	4/10/2018	10:46:29 AM	8	683	R	0.1		**10**	**259**
42	4/10/2018	10:46:40 AM	9	795	R	0.1		**13**	**405**
43	4/10/2018	10:46:52 AM	9	807	R	0.1		**13**	**420**
44	4/10/2018	10:47:04 AM	26	856	R	0.1		**50**	**484**
45	4/10/2018	10:47:16 AM	15	982	R	0.1		**26**	**648**
46	4/10/2018	10:47:28 AM	3	1060	R	0.1		**-1**	**750**
47	4/10/2018	10:47:39 AM	0	860	R	0.1		**-7**	**489**
48	4/10/2018	10:47:51 AM	12	660	R	0.1		**19**	**229**
49	4/10/2018	10:48:03 AM	3	1077	R	0.1		**-1**	**772**
50	4/10/2018	10:49:59 AM	0	764	R	0.1	Grid 6	**-7**	**364**
51	4/10/2018	10:50:11 AM	9	971	R	0.1		**13**	**634**
52	4/10/2018	10:50:23 AM	2	888	R	0.1		**-3**	**526**
53	4/10/2018	10:50:34 AM	0	1199	R	0.1		**-7**	**931**
54	4/10/2018	10:50:46 AM	0	1390	R	0.1		**-7**	**1179**
55	4/10/2018	10:50:58 AM	0	1100	R	0.1		**-7**	**802**
56	4/10/2018	10:51:10 AM	0	1027	R	0.1		**-7**	**707**
57	4/10/2018	10:51:21 AM	11	956	R	0.1		**17**	**614**
58	4/10/2018	10:51:33 AM	8	951	R	0.1		**10**	**608**
59	4/10/2018	10:51:45 AM	2	921	R	0.1		**-3**	**569**
60	4/10/2018	10:55:07 AM	0	864	R	0.1	Grid 7	**-7**	**495**
61	4/10/2018	10:55:19 AM	0	912	R	0.1		**-7**	**557**
62	4/10/2018	10:55:31 AM	7	921	R	0.1		**8**	**569**
63	4/10/2018	10:55:43 AM	1	916	R	0.1		**-5**	**562**
64	4/10/2018	10:55:54 AM	6	1011	R	0.1		**6**	**686**
65	4/10/2018	10:56:06 AM	1	816	R	0.1		**-5**	**432**
66	4/10/2018	10:56:18 AM	4	843	R	0.1		**2**	**467**
67	4/10/2018	10:56:30 AM	3	798	R	0.1		**-1**	**409**
68	4/10/2018	10:56:41 AM	4	610	R	0.1		**2**	**164**
69	4/10/2018	10:56:53 AM	0	963	R	0.1		**-7**	**624**
70	4/10/2018	10:59:34 AM	11	739	R	0.1	Grid 8	**17**	**332**
71	4/10/2018	10:59:46 AM	2	700	R	0.1		**-3**	**281**
72	4/10/2018	10:59:58 AM	7	675	R	0.1		**8**	**249**
73	4/10/2018	11:00:10 AM	1	558	R	0.1		**-5**	**96**
74	4/10/2018	11:00:21 AM	15	656	R	0.1		**26**	**224**
75	4/10/2018	11:00:33 AM	7	774	R	0.1		**8**	**377**
76	4/10/2018	11:00:45 AM	18	687	R	0.1		**33**	**264**
77	4/10/2018	11:00:57 AM	6	717	R	0.1		**6**	**303**
78	4/10/2018	11:01:08 AM	15	907	R	0.1		**26**	**551**
79	4/10/2018	11:01:20 AM	9	1031	R	0.1		**13**	**712**
80	4/10/2018	11:03:27 AM	8	1203	R	0.1	Grid 9	**10**	**936**
81	4/10/2018	11:03:39 AM	2	1032	R	0.1		**-3**	**713**
82	4/10/2018	11:03:51 AM	4	1060	R	0.1		**2**	**750**
83	4/10/2018	11:04:02 AM	3	1237	R	0.1		**-1**	**980**
84	4/10/2018	11:04:14 AM	5	1206	R	0.1		**4**	**940**
85	4/10/2018	12:48:16 PM	0	697	R	0.1	Grid 10	**-7**	**277**
86	4/10/2018	12:48:27 PM	3	798	R	0.1		**-1**	**409**
87	4/10/2018	12:48:39 PM	4	598	R	0.1		**2**	**148**
88	4/10/2018	12:48:51 PM	3	550	R	0.1		**-1**	**86**
89	4/10/2018	12:49:03 PM	0	589	R	0.1		**-7**	**137**
90	4/10/2018	12:49:14 PM	12	626	R	0.1		**19**	**185**
91	4/10/2018	12:49:26 PM	3	612	R	0.1		**-1**	**167**
92	4/10/2018	12:49:38 PM	0	583	R	0.1		**-7**	**129**
93	4/10/2018	12:49:50 PM	7	725	R	0.1		**8**	**314**
94	4/10/2018	12:50:01 PM	1	727	R	0.1		**-5**	**316**
95	4/10/2018	12:51:24 PM	4	550	R	0.1	Grid 11	**2**	**86**

96	4/10/2018	12:51:36 PM	1	553	R	0.1		**-5**	**90**
97	4/10/2018	12:51:48 PM	4	562	R	0.1		**2**	**102**
98	4/10/2018	12:52:00 PM	5	539	R	0.1		**4**	**72**
99	4/10/2018	12:52:11 PM	3	617	R	0.1		**-1**	**173**
100	4/10/2018	12:52:23 PM	4	757	R	0.1		**2**	**355**
101	4/10/2018	12:52:35 PM	10	712	R	0.1		**15**	**297**
102	4/10/2018	12:52:47 PM	2	761	R	0.1		**-3**	**361**
103	4/10/2018	12:52:58 PM	0	679	R	0.1		**-7**	**254**
104	4/10/2018	12:53:10 PM	16	632	R	0.1		**28**	**193**
105	4/10/2018	12:54:31 PM	11	687	R	0.1	Grid 12	**17**	**264**
106	4/10/2018	12:54:43 PM	2	908	R	0.1		**-3**	**552**
107	4/10/2018	12:54:54 PM	0	875	R	0.1		**-7**	**509**
108	4/10/2018	12:55:06 PM	6	793	R	0.1		**6**	**402**
109	4/10/2018	12:55:18 PM	1	811	R	0.1		**-5**	**426**
110	4/10/2018	12:55:30 PM	0	681	R	0.1		**-7**	**256**
111	4/10/2018	12:55:41 PM	0	671	R	0.1		**-7**	**243**
112	4/10/2018	12:55:53 PM	18	798	R	0.1		**33**	**409**
113	4/10/2018	12:56:05 PM	4	842	R	0.1		**2**	**466**
114	4/10/2018	12:56:17 PM	1	611	R	0.1		**-5**	**165**
115	4/10/2018	12:57:32 PM	12	728	R	0.1	Grid 13	**19**	**318**
116	4/10/2018	12:57:44 PM	2	630	R	0.1		**-3**	**190**
117	4/10/2018	12:57:55 PM	0	679	R	0.1		**-7**	**254**
118	4/10/2018	12:58:07 PM	0	752	R	0.1		**-7**	**349**
119	4/10/2018	12:58:19 PM	0	938	R	0.1		**-7**	**591**
120	4/10/2018	12:58:31 PM	14	906	R	0.1		**24**	**549**
121	4/10/2018	12:58:42 PM	10	1318	R	0.1		**15**	**1086**
122	4/10/2018	12:58:54 PM	6	1453	R	0.1		**6**	**1261**
123	4/10/2018	12:59:06 PM	1	1503	R	0.1		**-5**	**1326**
124	4/10/2018	12:59:18 PM	7	1216	R	0.1		**8**	**953**
125	4/10/2018	1:02:53 PM	13	800	R	0.1	Grid 14	**22**	**411**
126	4/10/2018	1:03:04 PM	3	1222	R	0.1		**-1**	**961**
127	4/10/2018	1:03:16 PM	0	1472	R	0.1		**-7**	**1286**
128	4/10/2018	1:03:28 PM	5	1448	R	0.1		**4**	**1255**
129	4/10/2018	1:03:40 PM	5	1541	R	0.1		**4**	**1376**
130	4/10/2018	1:03:51 PM	1	1124	R	0.1		**-5**	**833**
131	4/10/2018	1:04:03 PM	3	731	R	0.1		**-1**	**322**
132	4/10/2018	1:04:15 PM	2	523	R	0.1		**-3**	**51**
133	4/10/2018	1:04:27 PM	1	794	R	0.1		**-5**	**404**
134	4/10/2018	1:04:38 PM	3	795	R	0.1		**-1**	**405**
135	4/10/2018	1:08:58 PM	3	682	R	0.1	Grid 15	**-1**	**258**
136	4/10/2018	1:09:10 PM	8	1107	R	0.1		**10**	**811**
137	4/10/2018	1:09:21 PM	2	1079	R	0.1		**-3**	**774**
138	4/10/2018	1:09:33 PM	0	856	R	0.1		**-7**	**484**
139	4/10/2018	1:09:45 PM	8	863	R	0.1		**10**	**493**
140	4/10/2018	1:13:08 PM	0	1037	R	0.1	Grid 16	**-7**	**720**
141	4/10/2018	1:13:20 PM	11	919	R	0.1		**17**	**566**
142	4/10/2018	1:13:32 PM	22	834	R	0.1		**41**	**456**
143	4/10/2018	1:13:43 PM	5	721	R	0.1		**4**	**308**
144	4/10/2018	1:13:55 PM	5	590	R	0.1		**4**	**138**
145	4/10/2018	1:14:07 PM	1	578	R	0.1		**-5**	**122**
146	4/10/2018	1:14:19 PM	0	592	R	0.1		**-7**	**141**
147	4/10/2018	1:14:30 PM	3	677	R	0.1		**-1**	**251**
148	4/10/2018	1:14:42 PM	0	607	R	0.1		**-7**	**160**
149	4/10/2018	1:14:54 PM	11	607	R	0.1		**17**	**160**
150	4/10/2018	1:16:31 PM	0	589	R	0.1	Grid 17	**-7**	**137**

151	4/10/2018	1:16:43 PM	0	585	R	0.1		**-7**	**131**
152	4/10/2018	1:16:54 PM	2	603	R	0.1		**-3**	**155**
153	4/10/2018	1:17:06 PM	0	762	R	0.1		**-7**	**362**
154	4/10/2018	1:17:18 PM	1	1023	R	0.1		**-5**	**702**
155	4/10/2018	1:17:30 PM	2	830	R	0.1		**-3**	**450**
156	4/10/2018	1:17:41 PM	2	852	R	0.1		**-3**	**479**
157	4/10/2018	1:17:53 PM	0	816	R	0.1		**-7**	**432**
158	4/10/2018	1:18:05 PM	7	762	R	0.1		**8**	**362**
159	4/10/2018	1:18:17 PM	1	707	R	0.1		**-5**	**290**
160	4/10/2018	1:19:27 PM	2	916	R	0.1	Grid 18	**-3**	**562**
161	4/10/2018	1:19:38 PM	5	1277	R	0.1		**4**	**1032**
162	4/10/2018	1:19:50 PM	3	1363	R	0.1		**-1**	**1144**
163	4/10/2018	1:20:02 PM	3	956	R	0.1		**-1**	**614**
164	4/10/2018	1:20:14 PM	2	737	R	0.1		**-3**	**329**
165	4/10/2018	1:32:26 PM	3	560	R	0.1	Grid 19	**-1**	**99**
166	4/10/2018	1:32:38 PM	0	551	R	0.1		**-7**	**87**
167	4/10/2018	1:32:49 PM	3	603	R	0.1		**-1**	**155**
168	4/10/2018	1:33:01 PM	7	613	R	0.1		**8**	**168**
169	4/10/2018	1:33:13 PM	1	807	R	0.1		**-5**	**420**
170	4/10/2018	1:33:25 PM	3	734	R	0.1		**-1**	**325**
171	4/10/2018	1:33:36 PM	3	802	R	0.1		**-1**	**414**
172	4/10/2018	1:33:48 PM	3	629	R	0.1		**-1**	**189**
173	4/10/2018	1:34:00 PM	6	551	R	0.1		**6**	**87**
174	4/10/2018	1:34:12 PM	0	620	R	0.1		**-7**	**177**
175	4/10/2018	1:36:58 PM	7	620	R	0.1	Grid 20	**8**	**177**
176	4/10/2018	1:37:10 PM	5	572	R	0.1		**4**	**115**
177	4/10/2018	1:37:21 PM	3	701	R	0.1		**-1**	**282**
178	4/10/2018	1:37:33 PM	2	838	R	0.1		**-3**	**461**
179	4/10/2018	1:37:45 PM	2	717	R	0.1		**-3**	**303**
180	4/10/2018	1:37:57 PM	1	704	R	0.1		**-5**	**286**
181	4/10/2018	1:38:08 PM	7	852	R	0.1		**8**	**479**
182	4/10/2018	1:38:20 PM	1	801	R	0.1		**-5**	**413**
183	4/10/2018	1:38:32 PM	13	676	R	0.1		**22**	**250**
184	4/10/2018	1:38:44 PM	24	730	R	0.1		**46**	**320**
185	4/10/2018	1:42:44 PM	4	609	R	0.1	Grid 21	**2**	**163**
186	4/10/2018	1:42:55 PM	11	652	R	0.1		**17**	**219**
187	4/10/2018	1:43:07 PM	6	855	R	0.1		**6**	**483**
188	4/10/2018	1:43:19 PM	9	718	R	0.1		**13**	**305**
189	4/10/2018	1:43:31 PM	2	779	R	0.1		**-3**	**384**
190	4/10/2018	1:43:42 PM	0	926	R	0.1		**-7**	**575**
191	4/10/2018	1:43:54 PM	0	769	R	0.1		**-7**	**371**
192	4/10/2018	1:44:06 PM	6	1222	R	0.1		**6**	**961**
193	4/10/2018	1:44:18 PM	1	1021	R	0.1		**-5**	**699**
194	4/10/2018	1:44:29 PM	0	813	R	0.1		**-7**	**428**
195	4/10/2018	1:48:50 PM	4	692	R	0.1	Grid 22	**2**	**271**
196	4/10/2018	1:49:01 PM	0	756	R	0.1		**-7**	**354**
197	4/10/2018	1:49:13 PM	10	847	R	0.1		**15**	**473**
198	4/10/2018	1:49:25 PM	2	929	R	0.1		**-3**	**579**
199	4/10/2018	1:49:37 PM	4	1116	R	0.1		**2**	**823**
200	4/10/2018	1:49:48 PM	0	700	R	0.1		**-7**	**281**
201	4/10/2018	1:50:00 PM	3	924	R	0.1		**-1**	**573**
202	4/10/2018	1:50:12 PM	3	604	R	0.1		**-1**	**156**
203	4/10/2018	1:50:24 PM	1	617	R	0.1		**-5**	**173**
204	4/10/2018	1:50:35 PM	6	887	R	0.1		**6**	**525**
205	4/10/2018	1:52:43 PM	0	1106	R	0.1	Grid 23	**-7**	**810**

206	4/10/2018	1:52:55 PM	4	991	R	0.1		**2**	**660**
207	4/10/2018	1:53:06 PM	5	797	R	0.1		**4**	**407**
208	4/10/2018	1:53:18 PM	4	691	R	0.1		**2**	**269**
209	4/10/2018	1:53:30 PM	3	710	R	0.1		**-1**	**294**
210	4/10/2018	1:58:07 PM	4	697	R	0.1	Grid 25	**2**	**277**
211	4/10/2018	1:58:19 PM	6	874	R	0.1		**6**	**508**
212	4/10/2018	1:58:31 PM	1	1106	R	0.1		**-5**	**810**
213	4/10/2018	1:58:42 PM	0	1061	R	0.1		**-7**	**751**
214	4/10/2018	1:58:54 PM	9	974	R	0.1		**13**	**638**
215	4/10/2018	2:02:11 PM	0	727	R	0.1	Grid 26	**-7**	**316**
216	4/10/2018	2:02:23 PM	6	831	R	0.1		**6**	**452**
217	4/10/2018	2:02:35 PM	12	881	R	0.1		**19**	**517**
218	4/10/2018	2:02:47 PM	3	1040	R	0.1		**-1**	**724**
219	4/10/2018	2:02:58 PM	3	1192	R	0.1		**-1**	**922**
220	4/10/2018	2:03:10 PM	0	720	R	0.1		**-7**	**307**
221	4/10/2018	2:03:22 PM	4	788	R	0.1		**2**	**396**
222	4/10/2018	2:03:34 PM	5	1268	R	0.1		**4**	**1021**
223	4/10/2018	2:03:45 PM	0	699	R	0.1		**-7**	**280**
224	4/10/2018	2:03:57 PM	8	833	R	0.1		**10**	**454**
225	4/10/2018	2:17:06 PM	0	504	R	0.1	Grid 27	**-7**	**26**
226	4/10/2018	2:17:18 PM	0	464	R	0.1		**-7**	**-26**
227	4/10/2018	2:17:29 PM	3	528	R	0.1		**-1**	**57**
228	4/10/2018	2:17:41 PM	0	711	R	0.1		**-7**	**295**
229	4/10/2018	2:17:53 PM	3	749	R	0.1		**-1**	**345**
230	4/10/2018	2:43:54 PM	5	754	R	0.1	Grid 28	**4**	**351**
231	4/10/2018	2:44:05 PM	0	864	R	0.1		**-7**	**495**
232	4/10/2018	2:44:17 PM	5	865	R	0.1		**4**	**496**
233	4/10/2018	2:44:29 PM	3	881	R	0.1		**-1**	**517**
234	4/10/2018	2:44:41 PM	0	739	R	0.1		**-7**	**332**
235	4/10/2018	2:44:52 PM	6	766	R	0.1		**6**	**367**
236	4/10/2018	2:45:04 PM	7	779	R	0.1		**8**	**384**
237	4/10/2018	2:45:16 PM	4	829	R	0.1		**2**	**449**
238	4/10/2018	2:45:28 PM	0	885	R	0.1		**-7**	**522**
239	4/10/2018	2:45:39 PM	3	1026	R	0.1		**-1**	**706**
240	4/10/2018	2:47:25 PM	11	506	R	0.1	Grid 29	**17**	**29**
241	4/10/2018	2:47:37 PM	2	556	R	0.1		**-3**	**94**
242	4/10/2018	2:47:48 PM	5	792	R	0.1		**4**	**401**
243	4/10/2018	2:48:00 PM	3	807	R	0.1		**-1**	**420**
244	4/10/2018	2:48:12 PM	4	772	R	0.1		**2**	**375**
245	4/10/2018	2:48:24 PM	8	690	R	0.1		**10**	**268**
246	4/10/2018	2:48:35 PM	10	657	R	0.1		**15**	**225**
247	4/10/2018	2:48:47 PM	2	715	R	0.1		**-3**	**301**
248	4/10/2018	2:48:59 PM	0	638	R	0.1		**-7**	**200**
249	4/10/2018	2:49:11 PM	12	602	R	0.1		**19**	**154**
250	4/10/2018	2:50:38 PM	0	517	R	0.1	Grid 30	**-7**	**43**
251	4/10/2018	2:50:50 PM	8	662	R	0.1		**10**	**232**
252	4/10/2018	2:51:02 PM	2	624	R	0.1		**-3**	**182**
253	4/10/2018	2:51:13 PM	0	584	R	0.1		**-7**	**130**
254	4/10/2018	2:51:25 PM	0	589	R	0.1		**-7**	**137**
255	4/10/2018	2:51:37 PM	3	656	R	0.1		**-1**	**224**
256	4/10/2018	2:51:49 PM	5	630	R	0.1		**4**	**190**
257	4/10/2018	2:52:00 PM	4	635	R	0.1		**2**	**197**
258	4/10/2018	2:52:12 PM	0	729	R	0.1		**-7**	**319**
259	4/10/2018	2:52:24 PM	3	950	R	0.1		**-1**	**607**
260	4/10/2018	2:55:09 PM	4	949	R	0.1	Grid 31	**2**	**605**

261	4/10/2018	2:55:20 PM	4	1177	R	0.1		**2**	**902**
262	4/10/2018	2:55:32 PM	6	811	R	0.1		**6**	**426**
263	4/10/2018	2:55:44 PM	0	713	R	0.1		**-7**	**298**
264	4/10/2018	2:55:56 PM	3	667	R	0.1		**-1**	**238**
265	4/10/2018	2:56:07 PM	3	668	R	0.1		**-1**	**240**
266	4/10/2018	2:56:19 PM	6	588	R	0.1		**6**	**135**
267	4/10/2018	2:56:31 PM	2	630	R	0.1		**-3**	**190**
268	4/10/2018	2:56:43 PM	8	691	R	0.1		**10**	**269**
269	4/10/2018	2:56:54 PM	2	778	R	0.1		**-3**	**383**
270	4/10/2018	3:00:01 PM	15	622	R	0.1	Grid 32	**26**	**180**
271	4/10/2018	3:00:13 PM	3	890	R	0.1		**-1**	**528**
272	4/10/2018	3:00:25 PM	7	887	R	0.1		**8**	**525**
273	4/10/2018	3:00:36 PM	1	675	R	0.1		**-5**	**249**
274	4/10/2018	3:00:48 PM	0	947	R	0.1		**-7**	**603**
275	4/10/2018	3:01:00 PM	0	1014	R	0.1		**-7**	**690**
276	4/10/2018	3:01:12 PM	11	754	R	0.1		**17**	**351**
277	4/10/2018	3:01:24 PM	14	701	R	0.1		**24**	**282**
278	4/10/2018	3:01:35 PM	3	721	R	0.1		**-1**	**308**
279	4/10/2018	3:01:47 PM	0	896	R	0.1		**-7**	**536**
280	4/10/2018	3:05:58 PM	0	590	R	0.1	Grid 33	**-7**	**138**
281	4/10/2018	3:06:09 PM	6	611	R	0.1		**6**	**165**
282	4/10/2018	3:06:21 PM	1	655	R	0.1		**-5**	**223**
283	4/10/2018	3:06:33 PM	0	571	R	0.1		**-7**	**113**
284	4/10/2018	3:06:45 PM	0	651	R	0.1		**-7**	**217**
285	4/10/2018	3:10:14 PM	3	512	R	0.1	Grid 34	**-1**	**36**
286	4/10/2018	3:10:26 PM	5	615	R	0.1		**4**	**171**
287	4/10/2018	3:10:37 PM	4	630	R	0.1		**2**	**190**
288	4/10/2018	3:10:49 PM	0	767	R	0.1		**-7**	**368**
289	4/10/2018	3:11:01 PM	4	752	R	0.1		**2**	**349**
290	4/10/2018	3:11:13 PM	3	596	R	0.1		**-1**	**146**
291	4/10/2018	3:11:24 PM	0	590	R	0.1		**-7**	**138**
292	4/10/2018	3:11:36 PM	6	894	R	0.1		**6**	**534**
293	4/10/2018	3:11:48 PM	1	901	R	0.1		**-5**	**543**
294	4/10/2018	3:12:00 PM	0	719	R	0.1		**-7**	**306**
295	4/10/2018	3:16:21 PM	3	507	R	0.1	Grid 35	**-1**	**30**
296	4/10/2018	3:16:33 PM	0	721	R	0.1		**-7**	**308**
297	4/10/2018	3:16:45 PM	0	521	R	0.1		**-7**	**48**
298	4/10/2018	3:16:56 PM	8	587	R	0.1		**10**	**134**
299	4/10/2018	3:17:08 PM	2	716	R	0.1		**-3**	**302**
300	4/10/2018	3:17:20 PM	0	691	R	0.1		**-7**	**269**
301	4/10/2018	3:17:32 PM	4	712	R	0.1		**2**	**297**
302	4/10/2018	3:17:43 PM	1	726	R	0.1		**-5**	**315**
303	4/10/2018	3:17:55 PM	5	597	R	0.1		**4**	**147**
304	4/10/2018	3:18:07 PM	4	542	R	0.1		**2**	**75**
305	4/11/2018	8:55:24 AM	5	521	R	0.1	Grid 36	**4**	**48**
306	4/11/2018	8:55:36 AM	0	651	R	0.1		**-7**	**217**
307	4/11/2018	8:55:47 AM	10	633	R	0.1		**15**	**194**
308	4/11/2018	8:55:59 AM	2	585	R	0.1		**-3**	**131**
309	4/11/2018	8:56:11 AM	0	783	R	0.1		**-7**	**389**
310	4/11/2018	8:59:13 AM	3	748	R	0.1	Grid 37	**-1**	**344**
311	4/11/2018	8:59:25 AM	4	618	R	0.1		**2**	**174**
312	4/11/2018	8:59:36 AM	0	559	R	0.1		**-7**	**98**
313	4/11/2018	8:59:48 AM	5	521	R	0.1		**4**	**48**
314	4/11/2018	9:00:00 AM	4	495	R	0.1		**2**	**14**
315	4/11/2018	9:00:12 AM	13	614	R	0.1		**22**	**169**

316	4/11/2018	9:00:23 AM	15	540	R	0.1		**26**	**73**
317	4/11/2018	9:00:35 AM	3	632	R	0.1		**-1**	**193**
318	4/11/2018	9:00:47 AM	4	682	R	0.1		**2**	**258**
319	4/11/2018	9:00:59 AM	5	689	R	0.1		**4**	**267**
320	4/11/2018	9:06:07 AM	4	532	R	0.1	Grid 38	**2**	**62**
321	4/11/2018	9:06:19 AM	0	595	R	0.1		**-7**	**144**
322	4/11/2018	9:06:31 AM	3	587	R	0.1		**-1**	**134**
323	4/11/2018	9:06:43 AM	0	681	R	0.1		**-7**	**256**
324	4/11/2018	9:06:54 AM	0	543	R	0.1		**-7**	**77**
325	4/11/2018	9:07:06 AM	0	512	R	0.1		**-7**	**36**
326	4/11/2018	9:07:18 AM	3	577	R	0.1		**-1**	**121**
327	4/11/2018	9:07:30 AM	7	510	R	0.1		**8**	**34**
328	4/11/2018	9:07:41 AM	6	615	R	0.1		**6**	**171**
329	4/11/2018	9:07:53 AM	1	551	R	0.1		**-5**	**87**
330	4/11/2018	9:10:10 AM	0	544	R	0.1	Grid 39	**-7**	**78**
331	4/11/2018	9:10:22 AM	5	528	R	0.1		**4**	**57**
332	4/11/2018	9:10:34 AM	7	662	R	0.1		**8**	**232**
333	4/11/2018	9:10:45 AM	1	521	R	0.1		**-5**	**48**
334	4/11/2018	9:10:57 AM	0	613	R	0.1		**-7**	**168**
335	4/11/2018	9:11:09 AM	4	565	R	0.1		**2**	**105**
336	4/11/2018	9:11:21 AM	8	471	R	0.1		**10**	**-17**
337	4/11/2018	9:11:32 AM	2	644	R	0.1		**-3**	**208**
338	4/11/2018	9:11:44 AM	0	671	R	0.1		**-7**	**243**
339	4/11/2018	9:11:56 AM	0	680	R	0.1		**-7**	**255**
340	4/11/2018	9:14:50 AM	3	562	R	0.1	Grid 40	**-1**	**102**
341	4/11/2018	9:15:02 AM	5	593	R	0.1		**4**	**142**
342	4/11/2018	9:15:14 AM	0	587	R	0.1		**-7**	**134**
343	4/11/2018	9:15:25 AM	4	550	R	0.1		**2**	**86**
344	4/11/2018	9:15:37 AM	3	608	R	0.1		**-1**	**161**
345	4/11/2018	9:15:49 AM	4	546	R	0.1		**2**	**81**
346	4/11/2018	9:16:01 AM	3	553	R	0.1		**-1**	**90**
347	4/11/2018	9:16:12 AM	0	719	R	0.1		**-7**	**306**
348	4/11/2018	9:16:24 AM	0	636	R	0.1		**-7**	**198**
349	4/11/2018	9:16:36 AM	10	630	R	0.1		**15**	**190**
350	4/11/2018	9:18:52 AM	3	693	R	0.1	Grid 41	**-1**	**272**
351	4/11/2018	9:19:03 AM	0	618	R	0.1		**-7**	**174**
352	4/11/2018	9:19:15 AM	0	663	R	0.1		**-7**	**233**
353	4/11/2018	9:19:27 AM	14	600	R	0.1		**24**	**151**
354	4/11/2018	9:19:39 AM	11	575	R	0.1		**17**	**118**
355	4/11/2018	9:19:50 AM	2	660	R	0.1		**-3**	**229**
356	4/11/2018	9:20:02 AM	10	699	R	0.1		**15**	**280**
357	4/11/2018	9:20:14 AM	2	735	R	0.1		**-3**	**327**
358	4/11/2018	9:20:26 AM	0	850	R	0.1		**-7**	**476**
359	4/11/2018	9:20:37 AM	8	1075	R	0.1		**10**	**769**
360	4/11/2018	9:25:17 AM	7	590	R	0.1	Grid 42	**8**	**138**
361	4/11/2018	9:25:28 AM	5	592	R	0.1		**4**	**141**
362	4/11/2018	9:25:40 AM	18	857	R	0.1		**33**	**486**
363	4/11/2018	9:25:52 AM	4	852	R	0.1		**2**	**479**
364	4/11/2018	9:26:04 AM	13	759	R	0.1		**22**	**358**
365	4/11/2018	9:26:15 AM	11	689	R	0.1		**17**	**267**
366	4/11/2018	9:26:27 AM	2	728	R	0.1		**-3**	**318**
367	4/11/2018	9:26:39 AM	16	703	R	0.1		**28**	**285**
368	4/11/2018	9:26:51 AM	9	694	R	0.1		**13**	**273**
369	4/11/2018	9:27:02 AM	2	665	R	0.1		**-3**	**236**
370	4/11/2018	9:29:59 AM	0	666	R	0.1	Grid 43	**-7**	**237**

371	4/11/2018	9:30:11 AM	10	661	R	0.1		**15**	**230**
372	4/11/2018	9:30:23 AM	2	640	R	0.1		**-3**	**203**
373	4/11/2018	9:30:35 AM	0	653	R	0.1		**-7**	**220**
374	4/11/2018	9:30:47 AM	3	537	R	0.1		**-1**	**69**
375	4/11/2018	9:30:58 AM	0	501	R	0.1		**-7**	**22**
376	4/11/2018	9:31:10 AM	5	557	R	0.1		**4**	**95**
377	4/11/2018	9:31:22 AM	1	609	R	0.1		**-5**	**163**
378	4/11/2018	9:31:34 AM	6	517	R	0.1		**6**	**43**
379	4/11/2018	9:31:45 AM	35	617	R	0.1		**70**	**173**
380	4/11/2018	9:33:18 AM	5	553	R	0.1	Grid 44	**4**	**90**
381	4/11/2018	9:33:30 AM	7	597	R	0.1		**8**	**147**
382	4/11/2018	9:33:41 AM	1	545	R	0.1		**-5**	**79**
383	4/11/2018	9:33:53 AM	9	667	R	0.1		**13**	**238**
384	4/11/2018	9:34:05 AM	14	533	R	0.1		**24**	**64**
385	4/11/2018	9:34:17 AM	3	583	R	0.1		**-1**	**129**
386	4/11/2018	9:34:28 AM	7	525	R	0.1		**8**	**53**
387	4/11/2018	9:34:40 AM	1	642	R	0.1		**-5**	**206**
388	4/11/2018	9:34:52 AM	0	633	R	0.1		**-7**	**194**
389	4/11/2018	9:35:04 AM	0	649	R	0.1		**-7**	**215**
390	4/11/2018	9:41:23 AM	0	613	R	0.1	Grid 45	**-7**	**168**
391	4/11/2018	9:41:34 AM	5	989	R	0.1		**4**	**657**
392	4/11/2018	9:41:46 AM	1	807	R	0.1		**-5**	**420**
393	4/11/2018	9:41:58 AM	0	919	R	0.1		**-7**	**566**
394	4/11/2018	9:42:10 AM	0	812	R	0.1		**-7**	**427**
		Maximum:	**35**	**1541**				**70**	**1376**
		Average:	**4**	**747**				**2**	**343**
		StDev:	**5**	**199**				**10**	**259**

Room 103A Lower Wall

2360 SN:297743
43-37# 302111
Cal Due Date: 10/10/2018
Surveyor: Josefina Matus/ Joan Cosgrove
Bldg 218
Room 103A Lower Wall Grids 1 thru 52
Alpha Efficiency: 0.319
Beta/Gamma Efficiency: 0.384
Alpha Background: 4.1
Beta/Gamma Background: 539

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/9/2018	9:37:59	AM	0	490	R	0.1	Grid 1	**-9**	**-58**
2	4/9/2018	9:38:10	AM	4	634	R	0.1		**0**	**113**
3	4/9/2018	9:38:22	AM	1	532	R	0.1		**-7**	**-8**
4	4/9/2018	9:38:34	AM	3	560	R	0.1		**-2**	**25**
5	4/9/2018	9:38:45	AM	0	586	R	0.1		**-9**	**56**
6	4/9/2018	9:38:57	AM	2	466	R	0.1		**-5**	**-87**
7	4/9/2018	9:39:09	AM	0	584	R	0.1		**-9**	**54**
8	4/9/2018	9:39:20	AM	2	653	R	0.1		**-5**	**136**
9	4/9/2018	9:39:32	AM	0	569	R	0.1		**-9**	**36**
10	4/9/2018	9:39:44	AM	6	478	R	0.1		**4**	**-73**
11	4/9/2018	9:41:10	AM	0	499	R	0.1	Grid 2	**-9**	**-48**
12	4/9/2018	9:41:22	AM	5	556	R	0.1		**2**	**20**
13	4/9/2018	9:41:33	AM	1	518	R	0.1		**-7**	**-25**
14	4/9/2018	9:41:45	AM	4	583	R	0.1		**0**	**53**
15	4/9/2018	9:41:56	AM	1	563	R	0.1		**-7**	**29**
16	4/9/2018	9:42:08	AM	0	656	R	0.1		**-9**	**140**
17	4/9/2018	9:42:20	AM	7	590	R	0.1		**6**	**61**
18	4/9/2018	9:42:31	AM	1	504	R	0.1		**-7**	**-42**
19	4/9/2018	9:42:43	AM	8	548	R	0.1		**8**	**11**
20	4/9/2018	9:43:36	AM	4	512	R	0.1	Grid 3	**0**	**-32**
21	4/9/2018	9:43:48	AM	1	692	R	0.1		**-7**	**183**
22	4/9/2018	9:43:59	AM	0	644	R	0.1		**-9**	**125**
23	4/9/2018	9:44:11	AM	8	713	R	0.1		**8**	**208**
24	4/9/2018	9:44:23	AM	14	786	R	0.1		**21**	**295**
25	4/9/2018	9:44:34	AM	3	719	R	0.1		**-2**	**215**
26	4/9/2018	9:44:46	AM	0	800	R	0.1		**-9**	**311**
27	4/9/2018	9:44:57	AM	0	650	R	0.1		**-9**	**132**
28	4/9/2018	9:45:09	AM	15	495	R	0.1		**23**	**-53**
29	4/9/2018	9:45:21	AM	3	612	R	0.1		**-2**	**87**
30	4/9/2018	9:45:47	AM	10	904	R	0.1	Grid 4	**13**	**436**
31	4/9/2018	9:45:59	AM	2	1266	R	0.1		**-5**	**867**
32	4/9/2018	9:46:10	AM	4	1235	R	0.1		**0**	**830**
33	4/9/2018	9:46:22	AM	3	1288	R	0.1		**-2**	**894**
34	4/9/2018	9:46:34	AM	10	1428	R	0.1		**13**	**1061**
35	4/9/2018	9:46:45	AM	10	1309	R	0.1		**13**	**919**
36	4/9/2018	9:46:57	AM	7	1184	R	0.1		**6**	**770**
37	4/9/2018	9:47:08	AM	7	1196	R	0.1		**6**	**784**
38	4/9/2018	9:47:20	AM	1	979	R	0.1		**-7**	**525**

39	4/9/2018	9:47:32 AM	0	736	R	0.1		**-9**	**235**
40	4/9/2018	9:49:40 AM	5	1308	R	0.1	Grid 5	**2**	**918**
41	4/9/2018	9:49:51 AM	1	1332	R	0.1		**-7**	**946**
42	4/9/2018	9:50:03 AM	3	1220	R	0.1		**-2**	**813**
43	4/9/2018	9:50:15 AM	0	1042	R	0.1		**-9**	**600**
44	4/9/2018	9:50:26 AM	4	2053	R	0.1		**0**	**1807**
45	4/9/2018	9:50:38 AM	3	2244	R	0.1		**-2**	**2034**
46	4/9/2018	9:50:50 AM	2	1650	R	0.1		**-5**	**1326**
47	4/9/2018	9:51:01 AM	7	1599	R	0.1		**6**	**1265**
48	4/9/2018	9:51:13 AM	1	1936	R	0.1		**-7**	**1667**
49	4/9/2018	9:51:25 AM	0	1864	R	0.1		**-9**	**1581**
50	4/9/2018	9:53:14 AM	0	1468	R	0.1	Grid 6	**-9**	**1108**
51	4/9/2018	9:53:26 AM	15	1470	R	0.1		**23**	**1111**
52	4/9/2018	9:53:37 AM	17	1543	R	0.1		**28**	**1198**
53	4/9/2018	9:53:49 AM	3	1593	R	0.1		**-2**	**1258**
54	4/9/2018	9:54:01 AM	3	1466	R	0.1		**-2**	**1106**
55	4/9/2018	9:54:12 AM	4	1466	R	0.1		**0**	**1106**
56	4/9/2018	9:54:24 AM	4	1421	R	0.1		**0**	**1052**
57	4/9/2018	9:54:36 AM	0	1817	R	0.1		**-9**	**1525**
58	4/9/2018	9:54:47 AM	7	1491	R	0.1		**6**	**1136**
59	4/9/2018	9:54:59 AM	1	1439	R	0.1		**-7**	**1074**
60	4/9/2018	9:57:36 AM	0	1050	R	0.1	Grid 7	**-9**	**610**
61	4/9/2018	9:57:47 AM	0	1193	R	0.1		**-9**	**780**
62	4/9/2018	9:57:59 AM	0	1067	R	0.1		**-9**	**630**
63	4/9/2018	9:58:11 AM	3	930	R	0.1		**-2**	**467**
64	4/9/2018	9:58:22 AM	0	936	R	0.1		**-9**	**474**
65	4/9/2018	9:58:34 AM	15	1268	R	0.1		**23**	**870**
66	4/9/2018	9:58:46 AM	3	1167	R	0.1		**-2**	**749**
67	4/9/2018	9:58:57 AM	0	1136	R	0.1		**-9**	**712**
68	4/9/2018	9:59:09 AM	0	1156	R	0.1		**-9**	**736**
69	4/9/2018	9:59:21 AM	12	1636	R	0.1		**17**	**1309**
70	4/9/2018	9:59:56 AM	3	715	R	0.1	Grid 8	**-2**	**210**
71	4/9/2018	10:00:07 AM	0	716	R	0.1		**-9**	**211**
72	4/9/2018	10:00:19 AM	14	720	R	0.1		**21**	**216**
73	4/9/2018	10:00:31 AM	3	748	R	0.1		**-2**	**249**
74	4/9/2018	10:00:42 AM	12	899	R	0.1		**17**	**430**
75	4/9/2018	10:00:54 AM	3	827	R	0.1		**-2**	**344**
76	4/9/2018	10:01:06 AM	0	782	R	0.1		**-9**	**290**
77	4/9/2018	10:01:17 AM	0	739	R	0.1		**-9**	**239**
78	4/9/2018	10:01:29 AM	4	879	R	0.1		**0**	**406**
79	4/9/2018	10:01:41 AM	1	658	R	0.1		**-7**	**142**
80	4/9/2018	10:01:52 AM	6	791	R	0.1		**4**	**301**
81	4/9/2018	12:27:26 PM	0	738	R	0.1	Grid 9	**-9**	**237**
82	4/9/2018	12:27:38 PM	3	840	R	0.1		**-2**	**359**
83	4/9/2018	12:27:49 PM	0	883	R	0.1		**-9**	**410**
84	4/9/2018	12:28:01 PM	0	992	R	0.1		**-9**	**541**
85	4/9/2018	12:28:12 PM	9	901	R	0.1		**11**	**432**
86	4/9/2018	12:28:24 PM	2	906	R	0.1		**-5**	**438**
87	4/9/2018	12:28:36 PM	12	1045	R	0.1		**17**	**604**
88	4/9/2018	12:28:47 PM	3	899	R	0.1		**-2**	**430**
89	4/9/2018	12:28:59 PM	0	962	R	0.1		**-9**	**505**
90	4/9/2018	12:29:11 PM	0	812	R	0.1		**-9**	**326**
91	4/9/2018	12:31:34 PM	0	838	R	0.1	Grid 10	**-9**	**357**

92	4/9/2018	12:31:46 PM	4	1026	R	0.1		**0**	**581**
93	4/9/2018	12:31:57 PM	1	933	R	0.1		**-7**	**470**
94	4/9/2018	12:32:09 PM	0	789	R	0.1		**-9**	**298**
95	4/9/2018	12:32:21 PM	6	907	R	0.1		**4**	**439**
96	4/9/2018	12:32:32 PM	9	933	R	0.1		**11**	**470**
97	4/9/2018	12:32:44 PM	2	881	R	0.1		**-5**	**408**
98	4/9/2018	12:32:56 PM	3	686	R	0.1		**-2**	**175**
99	4/9/2018	12:33:07 PM	13	756	R	0.1		**19**	**259**
100	4/9/2018	12:33:19 PM	3	718	R	0.1		**-2**	**214**
101	4/9/2018	12:33:30 PM	0	946	R	0.1		**-9**	**486**
102	4/9/2018	12:35:24 PM	0	519	R	0.1	Grid 11	**-9**	**-24**
103	4/9/2018	12:35:36 PM	3	490	R	0.1		**-2**	**-58**
104	4/9/2018	12:35:47 PM	0	477	R	0.1		**-9**	**-74**
105	4/9/2018	12:35:59 PM	4	534	R	0.1		**0**	**-6**
106	4/9/2018	12:36:10 PM	1	506	R	0.1		**-7**	**-39**
107	4/9/2018	12:36:22 PM	3	518	R	0.1		**-2**	**-25**
108	4/9/2018	12:36:34 PM	8	562	R	0.1		**8**	**27**
109	4/9/2018	12:36:45 PM	8	547	R	0.1		**8**	**10**
110	4/9/2018	12:36:57 PM	2	558	R	0.1		**-5**	**23**
111	4/9/2018	12:37:09 PM	0	577	R	0.1		**-9**	**45**
112	4/9/2018	12:39:11 PM	12	643	R	0.1	Grid 12	**17**	**124**
113	4/9/2018	12:39:22 PM	3	821	R	0.1		**-2**	**336**
114	4/9/2018	12:39:34 PM	2	917	R	0.1		**-5**	**451**
115	4/9/2018	12:39:46 PM	3	726	R	0.1		**-2**	**223**
116	4/9/2018	12:39:57 PM	4	699	R	0.1		**0**	**191**
117	4/9/2018	12:40:09 PM	2	737	R	0.1		**-5**	**236**
118	4/9/2018	12:40:21 PM	4	811	R	0.1		**0**	**325**
119	4/9/2018	12:40:32 PM	7	703	R	0.1		**6**	**196**
120	4/9/2018	12:40:44 PM	6	664	R	0.1		**4**	**149**
121	4/9/2018	12:40:55 PM	9	613	R	0.1		**11**	**88**
122	4/9/2018	12:44:00 PM	7	651	R	0.1	Grid 13	**6**	**134**
123	4/9/2018	12:44:11 PM	9	778	R	0.1		**11**	**285**
124	4/9/2018	12:44:23 PM	2	747	R	0.1		**-5**	**248**
125	4/9/2018	12:44:34 PM	4	821	R	0.1		**0**	**336**
126	4/9/2018	12:44:46 PM	1	653	R	0.1		**-7**	**136**
127	4/9/2018	12:44:58 PM	21	804	R	0.1		**36**	**316**
128	4/9/2018	12:45:09 PM	5	1039	R	0.1		**2**	**597**
129	4/9/2018	12:45:21 PM	4	942	R	0.1		**0**	**481**
130	4/9/2018	12:45:33 PM	1	1010	R	0.1		**-7**	**562**
131	4/9/2018	12:45:44 PM	5	712	R	0.1		**2**	**206**
132	4/9/2018	1:05:55 PM	8	1108	R	0.1	Grid 14	**8**	**679**
133	4/9/2018	1:06:07 PM	7	1237	R	0.1		**6**	**833**
134	4/9/2018	1:06:19 PM	4	1229	R	0.1		**0**	**823**
135	4/9/2018	1:06:30 PM	5	1214	R	0.1		**2**	**805**
136	4/9/2018	1:06:42 PM	6	1181	R	0.1		**4**	**766**
137	4/9/2018	1:06:54 PM	8	1327	R	0.1		**8**	**940**
138	4/9/2018	1:07:05 PM	7	1340	R	0.1		**6**	**956**
139	4/9/2018	1:07:17 PM	0	1254	R	0.1		**-9**	**853**
140	4/9/2018	1:07:29 PM	11	1432	R	0.1		**15**	**1066**
141	4/9/2018	1:07:40 PM	10	1510	R	0.1		**13**	**1159**
142	4/9/2018	1:07:52 PM	2	998	R	0.1		**-5**	**548**
143	4/9/2018	1:38:05 PM	3	1009	R	0.1	Grid 15	**-2**	**561**
144	4/9/2018	1:38:17 PM	13	1106	R	0.1		**19**	**677**

145	4/9/2018	1:38:28 PM	3	1061	R	0.1		**-2**	**623**
146	4/9/2018	1:38:40 PM	8	951	R	0.1		**8**	**492**
147	4/9/2018	1:38:52 PM	7	1090	R	0.1		**6**	**657**
148	4/9/2018	1:39:03 PM	6	818	R	0.1		**4**	**333**
149	4/9/2018	1:39:15 PM	1	632	R	0.1		**-7**	**111**
150	4/9/2018	1:39:27 PM	8	1267	R	0.1		**8**	**869**
151	4/9/2018	1:39:38 PM	7	1204	R	0.1		**6**	**793**
152	4/9/2018	1:39:50 PM	9	1080	R	0.1		**11**	**646**
153	4/9/2018	1:44:10 PM	7	577	R	0.1	Grid 16	**6**	**45**
154	4/9/2018	1:44:21 PM	8	652	R	0.1		**8**	**135**
155	4/9/2018	1:44:33 PM	5	686	R	0.1		**2**	**175**
156	4/9/2018	1:44:45 PM	7	624	R	0.1		**6**	**101**
157	4/9/2018	1:44:56 PM	9	606	R	0.1		**11**	**80**
158	4/9/2018	1:45:08 PM	5	562	R	0.1		**2**	**27**
159	4/9/2018	1:45:19 PM	6	857	R	0.1		**4**	**379**
160	4/9/2018	1:45:31 PM	5	828	R	0.1		**2**	**345**
161	4/9/2018	1:45:43 PM	5	539	R	0.1		**2**	**0**
162	4/9/2018	1:45:54 PM	8	589	R	0.1		**8**	**60**
163	4/9/2018	1:51:26 PM	4	558	R	0.1	Grid 17	**0**	**23**
164	4/9/2018	1:51:38 PM	13	542	R	0.1		**19**	**4**
165	4/9/2018	1:51:50 PM	3	454	R	0.1		**-2**	**-101**
166	4/9/2018	1:52:01 PM	0	668	R	0.1		**-9**	**154**
167	4/9/2018	1:52:13 PM	0	761	R	0.1		**-9**	**265**
168	4/9/2018	1:52:25 PM	6	844	R	0.1		**4**	**364**
169	4/9/2018	1:52:36 PM	7	762	R	0.1		**6**	**266**
170	4/9/2018	1:52:48 PM	1	525	R	0.1		**-7**	**-17**
171	4/9/2018	1:53:00 PM	7	750	R	0.1		**6**	**252**
172	4/9/2018	1:53:11 PM	6	632	R	0.1		**4**	**111**
173	4/9/2018	2:02:04 PM	4	572	R	0.1	Grid 18	**0**	**39**
174	4/9/2018	2:02:16 PM	8	584	R	0.1		**8**	**54**
175	4/9/2018	2:02:28 PM	3	434	R	0.1		**-2**	**-125**
176	4/9/2018	2:02:39 PM	7	516	R	0.1		**6**	**-27**
177	4/9/2018	2:02:51 PM	0	592	R	0.1		**-9**	**63**
178	4/9/2018	2:03:03 PM	15	661	R	0.1		**23**	**146**
179	4/9/2018	2:03:14 PM	3	611	R	0.1		**-2**	**86**
180	4/9/2018	2:03:26 PM	14	562	R	0.1		**21**	**27**
181	4/9/2018	2:03:38 PM	12	709	R	0.1		**17**	**203**
182	4/9/2018	2:03:49 PM	2	837	R	0.1		**-5**	**356**
183	4/9/2018	2:08:44 PM	7	612	R	0.1	Grid 19	**6**	**87**
184	4/9/2018	2:08:56 PM	6	531	R	0.1		**4**	**-10**
185	4/9/2018	2:09:07 PM	5	520	R	0.1		**2**	**-23**
186	4/9/2018	2:09:19 PM	4	597	R	0.1		**0**	**69**
187	4/9/2018	2:09:30 PM	19	602	R	0.1		**32**	**75**
188	4/9/2018	2:09:42 PM	7	546	R	0.1		**6**	**8**
189	4/9/2018	2:09:54 PM	10	536	R	0.1		**13**	**-4**
190	4/9/2018	2:10:05 PM	6	481	R	0.1		**4**	**-69**
191	4/9/2018	2:10:17 PM	15	623	R	0.1		**23**	**100**
192	4/9/2018	2:10:29 PM	3	728	R	0.1		**-2**	**226**
193	4/9/2018	2:13:19 PM	0	560	R	0.1	Grid 20	**-9**	**25**
194	4/9/2018	2:13:31 PM	0	572	R	0.1		**-9**	**39**
195	4/9/2018	2:13:42 PM	3	491	R	0.1		**-2**	**-57**
196	4/9/2018	2:13:54 PM	0	530	R	0.1		**-9**	**-11**
197	4/9/2018	2:14:06 PM	11	724	R	0.1		**15**	**221**

198	4/9/2018	2:14:17 PM	2	553	R	0.1		**-5**	**17**
199	4/9/2018	2:14:29 PM	16	680	R	0.1		**26**	**168**
200	4/9/2018	2:14:40 PM	3	666	R	0.1		**-2**	**152**
201	4/9/2018	2:14:52 PM	6	628	R	0.1		**4**	**106**
202	4/9/2018	2:15:04 PM	5	705	R	0.1		**2**	**198**
203	4/9/2018	2:18:13 PM	8	506	R	0.1	Grid 21	**8**	**-39**
204	4/9/2018	2:18:25 PM	3	525	R	0.1		**-2**	**-17**
205	4/9/2018	2:18:36 PM	6	562	R	0.1		**4**	**27**
206	4/9/2018	2:18:48 PM	1	560	R	0.1		**-7**	**25**
207	4/9/2018	2:19:00 PM	0	672	R	0.1		**-9**	**159**
208	4/9/2018	2:19:11 PM	3	697	R	0.1		**-2**	**189**
209	4/9/2018	2:19:23 PM	7	729	R	0.1		**6**	**227**
210	4/9/2018	2:19:35 PM	1	729	R	0.1		**-7**	**227**
211	4/9/2018	2:19:46 PM	9	525	R	0.1		**11**	**-17**
212	4/9/2018	2:19:58 PM	13	671	R	0.1		**19**	**158**
213	4/9/2018	2:21:19 PM	23	616	R	0.1	Grid 22	**41**	**92**
214	4/9/2018	2:21:30 PM	15	676	R	0.1		**23**	**163**
215	4/9/2018	2:21:42 PM	3	684	R	0.1		**-2**	**173**
216	4/9/2018	2:21:54 PM	9	604	R	0.1		**11**	**78**
217	4/9/2018	2:22:05 PM	10	671	R	0.1		**13**	**158**
218	4/9/2018	2:22:17 PM	7	678	R	0.1		**6**	**166**
219	4/9/2018	2:22:29 PM	1	519	R	0.1		**-7**	**-24**
220	4/9/2018	2:22:40 PM	5	682	R	0.1		**2**	**171**
221	4/9/2018	2:22:52 PM	4	558	R	0.1		**0**	**23**
222	4/9/2018	2:23:04 PM	7	588	R	0.1		**6**	**58**
223	4/9/2018	2:37:54 PM	0	563	R	0.1	Grid 23	**-9**	**29**
224	4/9/2018	2:38:05 PM	0	573	R	0.1		**-9**	**41**
225	4/9/2018	2:38:17 PM	0	622	R	0.1		**-9**	**99**
226	4/9/2018	2:38:29 PM	11	767	R	0.1		**15**	**272**
227	4/9/2018	2:38:40 PM	2	806	R	0.1		**-5**	**319**
228	4/9/2018	2:38:52 PM	7	911	R	0.1		**6**	**444**
229	4/9/2018	2:39:04 PM	6	919	R	0.1		**4**	**453**
230	4/9/2018	2:39:15 PM	0	640	R	0.1		**-9**	**121**
231	4/9/2018	2:39:27 PM	10	619	R	0.1		**13**	**95**
232	4/9/2018	2:39:39 PM	2	584	R	0.1		**-5**	**54**
233	4/9/2018	2:43:23 PM	0	514	R	0.1	Grid 24	**-9**	**-30**
234	4/9/2018	2:43:35 PM	9	582	R	0.1		**11**	**51**
235	4/9/2018	2:43:46 PM	2	614	R	0.1		**-5**	**89**
236	4/9/2018	2:43:58 PM	0	681	R	0.1		**-9**	**169**
237	4/9/2018	2:44:09 PM	0	578	R	0.1		**-9**	**47**
238	4/9/2018	2:44:21 PM	0	677	R	0.1		**-9**	**165**
239	4/9/2018	2:44:33 PM	16	575	R	0.1		**26**	**43**
240	4/9/2018	2:44:44 PM	3	588	R	0.1		**-2**	**58**
241	4/9/2018	2:44:56 PM	5	679	R	0.1		**2**	**167**
242	4/9/2018	2:45:08 PM	6	758	R	0.1		**4**	**261**
243	4/9/2018	2:47:30 PM	3	582	R	0.1	Grid 25	**-2**	**51**
244	4/9/2018	2:47:42 PM	4	517	R	0.1		**0**	**-26**
245	4/9/2018	2:47:53 PM	5	616	R	0.1		**2**	**92**
246	4/9/2018	2:48:05 PM	9	589	R	0.1		**11**	**60**
247	4/9/2018	2:48:16 PM	2	485	R	0.1		**-5**	**-64**
248	4/9/2018	2:48:28 PM	12	417	R	0.1		**17**	**-146**
249	4/9/2018	2:48:40 PM	3	561	R	0.1		**-2**	**26**
250	4/9/2018	2:48:51 PM	10	631	R	0.1		**13**	**110**

251	4/9/2018	2:49:03 PM	2	701	R	0.1		**-5**	**193**
252	4/9/2018	2:49:15 PM	10	738	R	0.1		**13**	**237**
253	4/9/2018	2:51:13 PM	0	523	R	0.1	Grid 26	**-9**	**-19**
254	4/9/2018	2:51:24 PM	0	465	R	0.1		**-9**	**-88**
255	4/9/2018	2:51:36 PM	0	663	R	0.1		**-9**	**148**
256	4/9/2018	2:51:48 PM	8	750	R	0.1		**8**	**252**
257	4/9/2018	2:51:59 PM	7	589	R	0.1		**6**	**60**
258	4/9/2018	2:52:11 PM	1	573	R	0.1		**-7**	**41**
259	4/9/2018	2:52:23 PM	10	506	R	0.1		**13**	**-39**
260	4/9/2018	2:52:34 PM	7	652	R	0.1		**6**	**135**
261	4/9/2018	2:52:46 PM	7	512	R	0.1		**6**	**-32**
262	4/9/2018	2:52:58 PM	1	501	R	0.1		**-7**	**-45**
263	4/9/2018	2:55:46 PM	0	532	R	0.1	Grid 27	**-9**	**-8**
264	4/9/2018	2:55:58 PM	20	491	R	0.1		**34**	**-57**
265	4/9/2018	2:56:10 PM	14	632	R	0.1		**21**	**111**
266	4/9/2018	2:56:21 PM	9	625	R	0.1		**11**	**103**
267	4/9/2018	2:56:33 PM	2	590	R	0.1		**-5**	**61**
268	4/9/2018	2:56:45 PM	0	693	R	0.1		**-9**	**184**
269	4/9/2018	2:56:56 PM	9	616	R	0.1		**11**	**92**
270	4/9/2018	2:57:08 PM	13	740	R	0.1		**19**	**240**
271	4/9/2018	2:57:20 PM	3	593	R	0.1		**-2**	**64**
272	4/9/2018	2:57:31 PM	4	578	R	0.1		**0**	**47**
273	4/9/2018	2:59:40 PM	4	508	R	0.1	Grid 28	**0**	**-37**
274	4/9/2018	2:59:52 PM	5	567	R	0.1		**2**	**33**
275	4/9/2018	3:00:03 PM	8	557	R	0.1		**8**	**21**
276	4/9/2018	3:00:15 PM	9	543	R	0.1		**11**	**5**
277	4/9/2018	3:00:27 PM	8	534	R	0.1		**8**	**-6**
278	4/9/2018	3:00:38 PM	8	615	R	0.1		**8**	**91**
279	4/9/2018	3:00:50 PM	7	581	R	0.1		**6**	**50**
280	4/9/2018	3:01:01 PM	6	538	R	0.1		**4**	**-1**
281	4/9/2018	3:01:13 PM	4	538	R	0.1		**0**	**-1**
282	4/9/2018	3:01:25 PM	8	687	R	0.1		**8**	**177**
283	4/9/2018	3:03:24 PM	7	649	R	0.1	Grid 29	**6**	**131**
284	4/9/2018	3:03:35 PM	0	869	R	0.1		**-9**	**394**
285	4/9/2018	3:03:47 PM	6	965	R	0.1		**4**	**508**
286	4/9/2018	3:03:59 PM	5	1097	R	0.1		**2**	**666**
287	4/9/2018	3:04:10 PM	6	1093	R	0.1		**4**	**661**
288	4/9/2018	3:04:22 PM	5	1218	R	0.1		**2**	**810**
289	4/9/2018	3:04:34 PM	4	1117	R	0.1		**0**	**690**
290	4/9/2018	3:04:45 PM	55	781	R	0.1		**110**	**289**
291	4/9/2018	3:04:57 PM	0	685	R	0.1		**-9**	**174**
292	4/9/2018	3:05:08 PM	8	617	R	0.1		**8**	**93**
293	4/9/2018	3:07:33 PM	10	907	R	0.1	Grid 30	**13**	**439**
294	4/9/2018	3:07:45 PM	2	1375	R	0.1		**-5**	**998**
295	4/9/2018	3:07:57 PM	3	1343	R	0.1		**-2**	**959**
296	4/9/2018	3:08:08 PM	0	853	R	0.1		**-9**	**375**
297	4/9/2018	3:08:20 PM	9	998	R	0.1		**11**	**548**
298	4/9/2018	3:08:32 PM	8	546	R	0.1		**8**	**8**
299	4/9/2018	3:08:43 PM	9	402	R	0.1		**11**	**-163**
300	4/9/2018	3:08:55 PM	2	1132	R	0.1		**-5**	**708**
301	4/9/2018	3:09:07 PM	0	1318	R	0.1		**-9**	**930**
302	4/9/2018	3:09:18 PM	4	1200	R	0.1		**0**	**789**
303	4/9/2018	3:10:12 PM	5	973	R	0.1	Grid 31	**2**	**518**

304	4/9/2018	3:10:24 PM	0	845	R	0.1		**-9**	**365**
305	4/9/2018	3:10:35 PM	6	1082	R	0.1		**4**	**648**
306	4/9/2018	3:10:47 PM	18	1470	R	0.1		**30**	**1111**
307	4/9/2018	3:10:59 PM	10	2418	R	0.1		**13**	**2242**
308	4/9/2018	3:11:10 PM	2	2094	R	0.1		**-5**	**1855**
309	4/9/2018	3:11:22 PM	0	1831	R	0.1		**-9**	**1542**
310	4/9/2018	3:11:34 PM	13	766	R	0.1		**19**	**271**
311	4/9/2018	3:11:45 PM	3	498	R	0.1		**-2**	**-49**
312	4/9/2018	3:11:57 PM	7	577	R	0.1		**6**	**45**
313	4/9/2018	3:13:02 PM	6	1183	R	0.1	Grid 32	**4**	**768**
314	4/9/2018	3:13:14 PM	9	1710	R	0.1		**11**	**1397**
315	4/9/2018	3:13:25 PM	7	1758	R	0.1		**6**	**1455**
316	4/9/2018	3:13:37 PM	8	1667	R	0.1		**8**	**1346**
317	4/9/2018	3:13:49 PM	4	1688	R	0.1		**0**	**1371**
318	4/9/2018	3:14:00 PM	7	1274	R	0.1		**6**	**877**
319	4/9/2018	3:14:12 PM	8	1224	R	0.1		**8**	**817**
320	4/9/2018	3:14:24 PM	6	1439	R	0.1		**4**	**1074**
321	4/9/2018	3:14:35 PM	6	1645	R	0.1		**4**	**1320**
322	4/9/2018	3:14:47 PM	1	1683	R	0.1		**-7**	**1365**
323	4/9/2018	3:16:19 PM	10	1282	R	0.1	Grid 33	**13**	**887**
324	4/9/2018	3:16:30 PM	7	1567	R	0.1		**6**	**1227**
325	4/9/2018	3:16:42 PM	6	1438	R	0.1		**4**	**1073**
326	4/9/2018	3:16:54 PM	9	1243	R	0.1		**11**	**840**
327	4/9/2018	3:17:05 PM	5	1160	R	0.1		**2**	**741**
328	4/9/2018	3:17:17 PM	1	1092	R	0.1		**-7**	**660**
329	4/9/2018	3:17:29 PM	0	1013	R	0.1		**-9**	**566**
330	4/9/2018	3:17:40 PM	0	1123	R	0.1		**-9**	**697**
331	4/9/2018	3:17:52 PM	11	1256	R	0.1		**15**	**856**
332	4/9/2018	3:18:04 PM	2	1251	R	0.1		**-5**	**850**
333	4/9/2018	3:19:36 PM	11	875	R	0.1	Grid 34	**15**	**401**
334	4/9/2018	3:19:48 PM	14	867	R	0.1		**21**	**391**
335	4/9/2018	3:19:59 PM	6	938	R	0.1		**4**	**476**
336	4/9/2018	3:20:11 PM	1	905	R	0.1		**-7**	**437**
337	4/9/2018	3:20:23 PM	11	904	R	0.1		**15**	**436**
338	4/9/2018	3:20:34 PM	2	766	R	0.1		**-5**	**271**
339	4/9/2018	3:20:46 PM	7	695	R	0.1		**6**	**186**
340	4/9/2018	3:20:58 PM	1	886	R	0.1		**-7**	**414**
341	4/9/2018	3:21:09 PM	8	843	R	0.1		**8**	**363**
342	4/9/2018	3:21:21 PM	7	1068	R	0.1		**6**	**631**
343	4/9/2018	3:25:27 PM	5	987	R	0.1	Grid 35	**2**	**535**
344	4/9/2018	3:25:39 PM	5	1163	R	0.1		**2**	**745**
345	4/9/2018	3:25:51 PM	6	1021	R	0.1		**4**	**575**
346	4/9/2018	3:26:02 PM	19	1186	R	0.1		**32**	**772**
347	4/9/2018	3:26:14 PM	8	1077	R	0.1		**8**	**642**
348	4/9/2018	3:26:26 PM	21	912	R	0.1		**36**	**445**
349	4/9/2018	3:26:37 PM	12	816	R	0.1		**17**	**331**
350	4/9/2018	3:26:49 PM	19	1050	R	0.1		**32**	**610**
351	4/9/2018	3:27:01 PM	15	881	R	0.1		**23**	**408**
352	4/9/2018	3:27:12 PM	3	1039	R	0.1		**-2**	**597**
353	4/9/2018	3:28:21 PM	3	929	R	0.1	Grid 36	**-2**	**465**
354	4/9/2018	3:28:33 PM	2	988	R	0.1		**-5**	**536**
355	4/9/2018	3:28:45 PM	8	1154	R	0.1		**8**	**734**
356	4/9/2018	3:28:56 PM	9	1172	R	0.1		**11**	**755**

357	4/9/2018	3:29:08 PM	7	1136	R	0.1		**6**	**712**
358	4/9/2018	3:29:20 PM	5	1053	R	0.1		**2**	**613**
359	4/9/2018	3:29:31 PM	7	915	R	0.1		**6**	**449**
360	4/9/2018	3:29:43 PM	4	898	R	0.1		**0**	**428**
361	4/9/2018	3:29:55 PM	1	946	R	0.1		**-7**	**486**
362	4/9/2018	3:30:06 PM	4	830	R	0.1		**0**	**347**
363	4/9/2018	3:31:03 PM	11	970	R	0.1	Grid 37	**15**	**514**
364	4/9/2018	3:31:15 PM	2	1170	R	0.1		**-5**	**753**
365	4/9/2018	3:31:26 PM	0	1230	R	0.1		**-9**	**825**
366	4/9/2018	3:31:38 PM	0	1056	R	0.1		**-9**	**617**
367	4/9/2018	3:31:50 PM	9	1269	R	0.1		**11**	**871**
368	4/9/2018	3:32:01 PM	8	904	R	0.1		**8**	**436**
369	4/9/2018	3:32:13 PM	2	649	R	0.1		**-5**	**131**
370	4/9/2018	3:32:25 PM	0	652	R	0.1		**-9**	**135**
371	4/9/2018	3:32:36 PM	10	777	R	0.1		**13**	**284**
372	4/9/2018	3:32:48 PM	2	772	R	0.1		**-5**	**278**
373	4/9/2018	3:34:20 PM	3	649	R	0.1	Grid 38	**-2**	**131**
374	4/9/2018	3:34:32 PM	11	888	R	0.1		**15**	**416**
375	4/9/2018	3:34:44 PM	2	956	R	0.1		**-5**	**498**
376	4/9/2018	3:34:55 PM	0	1175	R	0.1		**-9**	**759**
377	4/9/2018	3:35:07 PM	4	1248	R	0.1		**0**	**846**
378	4/9/2018	3:35:19 PM	3	890	R	0.1		**-2**	**419**
379	4/9/2018	3:35:30 PM	0	941	R	0.1		**-9**	**480**
380	4/9/2018	3:35:42 PM	4	934	R	0.1		**0**	**471**
381	4/9/2018	3:35:54 PM	1	855	R	0.1		**-7**	**377**
382	4/9/2018	3:36:05 PM	13	730	R	0.1		**19**	**228**
383	4/9/2018	3:38:34 PM	8	1047	R	0.1	Grid 39	**8**	**606**
384	4/9/2018	3:38:46 PM	2	1540	R	0.1		**-5**	**1194**
385	4/9/2018	3:38:58 PM	4	1760	R	0.1		**0**	**1457**
386	4/9/2018	3:39:09 PM	1	1559	R	0.1		**-7**	**1217**
387	4/9/2018	3:39:21 PM	6	1219	R	0.1		**4**	**811**
388	4/9/2018	3:39:33 PM	3	842	R	0.1		**-2**	**362**
389	4/9/2018	3:39:44 PM	6	932	R	0.1		**4**	**469**
390	4/9/2018	3:39:56 PM	7	808	R	0.1		**6**	**321**
391	4/9/2018	3:40:08 PM	5	852	R	0.1		**2**	**373**
392	4/9/2018	3:40:19 PM	1	798	R	0.1		**-7**	**309**
393	4/9/2018	3:44:36 PM	0	497	R	0.1	Grid 49	**-9**	**-50**
394	4/9/2018	3:44:48 PM	3	554	R	0.1		**-2**	**18**
395	4/9/2018	3:44:59 PM	5	596	R	0.1		**2**	**68**
396	4/9/2018	3:45:11 PM	1	720	R	0.1		**-7**	**216**
397	4/9/2018	3:45:23 PM	3	772	R	0.1		**-2**	**278**
398	4/9/2018	3:45:34 PM	6	732	R	0.1		**4**	**230**
399	4/9/2018	3:45:46 PM	6	704	R	0.1		**4**	**197**
400	4/9/2018	3:45:58 PM	7	500	R	0.1		**6**	**-47**
401	4/9/2018	3:46:09 PM	3	522	R	0.1		**-2**	**-20**
402	4/9/2018	3:46:21 PM	4	437	R	0.1		**0**	**-122**
403	4/9/2018	3:47:58 PM	2	354	R	0.1	Grid 50	**-5**	**-221**
404	4/9/2018	3:48:10 PM	3	438	R	0.1		**-2**	**-121**
405	4/9/2018	3:48:22 PM	2	626	R	0.1		**-5**	**104**
406	4/9/2018	3:48:33 PM	7	626	R	0.1		**6**	**104**
407	4/9/2018	3:48:45 PM	3	550	R	0.1		**-2**	**13**
408	4/9/2018	3:48:57 PM	7	567	R	0.1		**6**	**33**
409	4/9/2018	3:49:08 PM	5	499	R	0.1		**2**	**-48**

410	4/9/2018	3:49:20 PM	4	761	R	0.1		**0**	**265**
411	4/9/2018	3:49:31 PM	3	561	R	0.1		**-2**	**26**
412	4/9/2018	3:49:43 PM	4	544	R	0.1		**0**	**6**
413	4/9/2018	3:52:09 PM	6	555	R	0.1	Grid 51	**4**	**19**
414	4/9/2018	3:52:21 PM	3	413	R	0.1		**-2**	**-150**
415	4/9/2018	3:52:32 PM	8	367	R	0.1		**8**	**-205**
416	4/9/2018	3:52:44 PM	6	340	R	0.1		**4**	**-237**
417	4/9/2018	3:52:56 PM	4	402	R	0.1		**0**	**-163**
418	4/9/2018	3:53:07 PM	3	497	R	0.1		**-2**	**-50**
419	4/9/2018	3:54:17 PM	9	506	R	0.1	Grid 52	**11**	**-39**
420	4/9/2018	3:54:29 PM	3	521	R	0.1		**-2**	**-21**
421	4/9/2018	3:54:41 PM	3	624	R	0.1		**-2**	**101**
422	4/9/2018	3:54:52 PM	2	466	R	0.1		**-5**	**-87**
423	4/9/2018	3:55:04 PM	5	498	R	0.1		**2**	**-49**
424	4/9/2018	3:55:16 PM	4	650	R	0.1		**0**	**132**
		Maximum:	**55**	**2418**				**110**	**2242**
		Average:	**5**	**847**				**2**	**368**
		StDev:	**5**	**347**				**11**	**414**

Room 103A Upper Wall

2360 SN:297743
43-37 #302111
Cal Due Date: 10/10/2018
Surveyor: Josefina Matus
Bldg 218
Room 103A Upper Wall Grids 1 thru 32
Alpha Efficiency: 0.319
Beta/Gamma Efficiency: 0.384
Alpha Background: 4.1
Beta/Gamma Background: 539

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/10/2018	9:30:12	AM	13	595	R	0.1	Grid 1	**19**	**67**
2	4/10/2018	9:30:24	AM	3	704	R	0.1		**-2**	**197**
3	4/10/2018	9:30:35	AM	0	832	R	0.1		**-9**	**350**
4	4/10/2018	9:30:47	AM	0	585	R	0.1		**-9**	**55**
5	4/10/2018	9:30:59	AM	16	602	R	0.1		**26**	**75**
6	4/10/2018	9:31:10	AM	3	540	R	0.1		**-2**	**1**
7	4/10/2018	9:31:22	AM	3	632	R	0.1		**-2**	**111**
8	4/10/2018	9:31:34	AM	4	468	R	0.1		**0**	**-85**
9	4/10/2018	9:31:45	AM	7	509	R	0.1		**6**	**-36**
10	4/10/2018	9:31:57	AM	1	530	R	0.1		**-7**	**-11**
11	4/10/2018	9:35:41	AM	7	553	R	0.1	Grid 2	**6**	**17**
12	4/10/2018	9:35:53	AM	5	621	R	0.1		**2**	**98**
13	4/10/2018	9:36:05	AM	1	566	R	0.1		**-7**	**32**
14	4/10/2018	9:36:16	AM	0	498	R	0.1		**-9**	**-49**
15	4/10/2018	9:36:28	AM	4	449	R	0.1		**0**	**-107**
16	4/10/2018	9:36:40	AM	3	499	R	0.1		**-2**	**-48**
17	4/10/2018	9:36:51	AM	11	553	R	0.1		**15**	**17**
18	4/10/2018	9:37:03	AM	2	567	R	0.1		**-5**	**33**
19	4/10/2018	9:37:15	AM	0	543	R	0.1		**-9**	**5**
20	4/10/2018	9:38:59	AM	7	579	R	0.1	Grid 3	**6**	**48**
21	4/10/2018	9:39:10	AM	1	629	R	0.1		**-7**	**107**
22	4/10/2018	9:39:22	AM	11	713	R	0.1		**15**	**208**
23	4/10/2018	9:39:34	AM	2	834	R	0.1		**-5**	**352**
24	4/10/2018	9:39:45	AM	7	682	R	0.1		**6**	**171**
25	4/10/2018	9:39:57	AM	1	929	R	0.1		**-7**	**465**
26	4/10/2018	9:40:08	AM	0	817	R	0.1		**-9**	**332**
27	4/10/2018	9:40:20	AM	3	539	R	0.1		**-2**	**0**
28	4/10/2018	9:40:32	AM	0	570	R	0.1		**-9**	**37**
29	4/10/2018	9:40:43	AM	0	478	R	0.1		**-9**	**-73**
30	4/10/2018	9:48:46	AM	0	756	R	0.1	Grid 4	**-9**	**259**
31	4/10/2018	9:48:58	AM	0	1008	R	0.1		**-9**	**560**
32	4/10/2018	9:49:09	AM	17	1214	R	0.1		**28**	**805**
33	4/10/2018	9:49:21	AM	3	1127	R	0.1		**-2**	**702**
34	4/10/2018	9:49:32	AM	0	1188	R	0.1		**-9**	**774**
35	4/10/2018	9:49:44	AM	6	1027	R	0.1		**4**	**582**
36	4/10/2018	9:49:56	AM	1	1195	R	0.1		**-7**	**783**
37	4/10/2018	9:50:07	AM	0	1398	R	0.1		**-9**	**1025**
38	4/10/2018	9:50:19	AM	3	1628	R	0.1		**-2**	**1299**
39	4/10/2018	9:50:31	AM	0	1844	R	0.1		**-9**	**1557**
40	4/10/2018	9:53:34	AM	4	883	R	0.1	Grid 5	**0**	**410**
41	4/10/2018	9:53:46	AM	5	1651	R	0.1		**2**	**1327**

42	4/10/2018	9:53:58 AM	4	2010	R	0.1		**0**	**1755**
43	4/10/2018	9:54:09 AM	5	1991	R	0.1		**2**	**1733**
44	4/10/2018	9:54:21 AM	13	1954	R	0.1		**19**	**1688**
45	4/10/2018	9:54:33 AM	13	2063	R	0.1		**19**	**1818**
46	4/10/2018	9:54:44 AM	3	1746	R	0.1		**-2**	**1440**
47	4/10/2018	9:54:56 AM	0	2030	R	0.1		**-9**	**1779**
48	4/10/2018	9:55:08 AM	11	2219	R	0.1		**15**	**2005**
49	4/10/2018	9:55:19 AM	14	2229	R	0.1		**21**	**2017**
50	4/10/2018	10:00:42 AM	11	1553	R	0.1	Grid 6	**15**	**1210**
51	4/10/2018	10:00:53 AM	9	1785	R	0.1		**11**	**1487**
52	4/10/2018	10:01:05 AM	2	1774	R	0.1		**-5**	**1474**
53	4/10/2018	10:01:17 AM	0	1648	R	0.1		**-9**	**1323**
54	4/10/2018	10:01:28 AM	4	1584	R	0.1		**0**	**1247**
55	4/10/2018	10:01:40 AM	1	1519	R	0.1		**-7**	**1169**
56	4/10/2018	10:01:52 AM	3	1620	R	0.1		**-2**	**1290**
57	4/10/2018	10:02:03 AM	4	1782	R	0.1		**0**	**1483**
58	4/10/2018	10:02:15 AM	2	1885	R	0.1		**-5**	**1606**
59	4/10/2018	10:02:27 AM	3	1890	R	0.1		**-2**	**1612**
60	4/10/2018	10:08:24 AM	3	1148	R	0.1	Grid 7	**-2**	**727**
61	4/10/2018	10:08:35 AM	3	1412	R	0.1		**-2**	**1042**
62	4/10/2018	10:08:47 AM	7	1372	R	0.1		**6**	**994**
63	4/10/2018	10:08:58 AM	1	1319	R	0.1		**-7**	**931**
64	4/10/2018	10:09:10 AM	6	1442	R	0.1		**4**	**1077**
65	4/10/2018	10:09:22 AM	1	1395	R	0.1		**-7**	**1021**
66	4/10/2018	10:09:33 AM	3	1415	R	0.1		**-2**	**1045**
67	4/10/2018	10:09:45 AM	6	1350	R	0.1		**4**	**968**
68	4/10/2018	10:09:57 AM	0	1530	R	0.1		**-9**	**1182**
69	4/10/2018	10:10:08 AM	5	1285	R	0.1		**2**	**890**
70	4/10/2018	10:12:23 AM	0	719	R	0.1	Grid 8	**-9**	**215**
71	4/10/2018	10:12:35 AM	19	1043	R	0.1		**32**	**601**
72	4/10/2018	10:12:47 AM	10	955	R	0.1		**13**	**496**
73	4/10/2018	10:12:58 AM	2	1116	R	0.1		**-5**	**688**
74	4/10/2018	10:13:10 AM	0	960	R	0.1		**-9**	**502**
75	4/10/2018	10:13:22 AM	4	1211	R	0.1		**0**	**802**
76	4/10/2018	10:13:33 AM	11	1082	R	0.1		**15**	**648**
77	4/10/2018	10:13:45 AM	2	1054	R	0.1		**-5**	**614**
78	4/10/2018	10:13:56 AM	5	899	R	0.1		**2**	**430**
79	4/10/2018	10:14:08 AM	4	1000	R	0.1		**0**	**550**
80	4/10/2018	10:15:48 AM	3	888	R	0.1	Grid 9	**-2**	**416**
81	4/10/2018	10:16:00 AM	0	961	R	0.1		**-9**	**504**
82	4/10/2018	10:16:12 AM	12	1086	R	0.1		**17**	**653**
83	4/10/2018	10:16:23 AM	14	934	R	0.1		**21**	**471**
84	4/10/2018	10:16:35 AM	3	1021	R	0.1		**-2**	**575**
85	4/10/2018	10:16:47 AM	0	983	R	0.1		**-9**	**530**
86	4/10/2018	10:16:58 AM	0	1078	R	0.1		**-9**	**643**
87	4/10/2018	10:17:10 AM	0	1041	R	0.1		**-9**	**599**
88	4/10/2018	10:17:21 AM	3	843	R	0.1		**-2**	**363**
89	4/10/2018	10:17:33 AM	10	941	R	0.1		**13**	**480**
90	4/10/2018	10:18:57 AM	6	776	R	0.1	Grid 10	**4**	**283**
91	4/10/2018	10:19:09 AM	12	1042	R	0.1		**17**	**600**
92	4/10/2018	10:19:20 AM	18	1001	R	0.1		**30**	**551**
93	4/10/2018	10:19:32 AM	29	1076	R	0.1		**54**	**641**
94	4/10/2018	10:19:43 AM	22	1062	R	0.1		**39**	**624**
95	4/10/2018	10:19:55 AM	16	1019	R	0.1		**26**	**573**
96	4/10/2018	10:20:07 AM	11	842	R	0.1		**15**	**362**
97	4/10/2018	10:20:18 AM	2	1043	R	0.1		**-5**	**601**

98	4/10/2018	10:20:30 AM	12	1065	R	0.1		**17**	**628**
99	4/10/2018	10:20:42 AM	15	1337	R	0.1		**23**	**952**
100	4/10/2018	10:22:49 AM	7	935	R	0.1	Grid 11	**6**	**473**
101	4/10/2018	10:23:01 AM	5	1154	R	0.1		**2**	**734**
102	4/10/2018	10:23:12 AM	1	1311	R	0.1		**-7**	**921**
103	4/10/2018	10:23:24 AM	0	1789	R	0.1		**-9**	**1492**
104	4/10/2018	10:23:36 AM	4	1576	R	0.1		**0**	**1237**
105	4/10/2018	10:23:47 AM	11	1322	R	0.1		**15**	**934**
106	4/10/2018	10:23:59 AM	2	1357	R	0.1		**-5**	**976**
107	4/10/2018	10:24:11 AM	0	1368	R	0.1		**-9**	**989**
108	4/10/2018	10:24:22 AM	11	1478	R	0.1		**15**	**1120**
109	4/10/2018	10:24:34 AM	6	1627	R	0.1		**4**	**1298**
110	4/10/2018	10:27:18 AM	16	1625	R	0.1	Grid 12	**26**	**1296**
111	4/10/2018	10:27:30 AM	3	1579	R	0.1		**-2**	**1241**
112	4/10/2018	10:27:41 AM	0	1468	R	0.1		**-9**	**1108**
113	4/10/2018	10:27:53 AM	20	1642	R	0.1		**34**	**1316**
114	4/10/2018	10:28:05 AM	10	1740	R	0.1		**13**	**1433**
115	4/10/2018	10:28:16 AM	7	1780	R	0.1		**6**	**1481**
116	4/10/2018	10:28:28 AM	9	1673	R	0.1		**11**	**1353**
117	4/10/2018	10:28:39 AM	2	1684	R	0.1		**-5**	**1366**
118	4/10/2018	10:28:51 AM	4	1709	R	0.1		**0**	**1396**
119	4/10/2018	10:29:03 AM	3	1671	R	0.1		**-2**	**1351**
120	4/10/2018	10:35:28 AM	5	1011	R	0.1	Grid 13	**2**	**563**
121	4/10/2018	10:35:39 AM	6	1272	R	0.1		**4**	**875**
122	4/10/2018	10:35:51 AM	8	1167	R	0.1		**8**	**749**
123	4/10/2018	10:36:03 AM	8	1274	R	0.1		**8**	**877**
124	4/10/2018	10:36:14 AM	26	1377	R	0.1		**47**	**1000**
125	4/10/2018	10:36:26 AM	6	1660	R	0.1		**4**	**1338**
126	4/10/2018	10:36:37 AM	1	1454	R	0.1		**-7**	**1092**
127	4/10/2018	10:36:49 AM	10	1463	R	0.1		**13**	**1103**
128	4/10/2018	10:37:01 AM	11	1362	R	0.1		**15**	**982**
129	4/10/2018	10:37:12 AM	2	1387	R	0.1		**-5**	**1012**
130	4/10/2018	10:57:02 AM	7	508	R	0.1	Grid 22	**6**	**-37**
131	4/10/2018	10:57:13 AM	1	503	R	0.1		**-7**	**-43**
132	4/10/2018	10:57:25 AM	11	677	R	0.1		**15**	**165**
133	4/10/2018	10:57:37 AM	5	582	R	0.1		**2**	**51**
134	4/10/2018	10:57:48 AM	1	654	R	0.1		**-7**	**137**
135	4/10/2018	10:58:00 AM	3	670	R	0.1		**-2**	**156**
136	4/10/2018	10:58:11 AM	4	656	R	0.1		**0**	**140**
137	4/10/2018	11:00:19 AM	9	565	R	0.1	Grid 23	**11**	**31**
138	4/10/2018	11:00:30 AM	2	624	R	0.1		**-5**	**101**
139	4/10/2018	11:00:42 AM	0	648	R	0.1		**-9**	**130**
140	4/10/2018	11:00:54 AM	10	588	R	0.1		**13**	**58**
141	4/10/2018	11:01:05 AM	2	622	R	0.1		**-5**	**99**
142	4/10/2018	11:01:17 AM	2	742	R	0.1		**-5**	**242**
143	4/10/2018	11:01:29 AM	7	632	R	0.1		**6**	**111**
144	4/10/2018	11:01:40 AM	4	677	R	0.1		**0**	**165**
145	4/10/2018	11:01:52 AM	5	730	R	0.1		**2**	**228**
146	4/10/2018	11:02:04 AM	5	558	R	0.1		**2**	**23**
147	4/10/2018	12:28:26 PM	2	611	R	0.1	Grid 24	**-5**	**86**
148	4/10/2018	12:28:38 PM	3	744	R	0.1		**-2**	**245**
149	4/10/2018	12:28:49 PM	0	902	R	0.1		**-9**	**433**
150	4/10/2018	12:29:01 PM	8	794	R	0.1		**8**	**304**
151	4/10/2018	12:29:13 PM	9	1210	R	0.1		**11**	**801**
152	4/10/2018	12:29:24 PM	10	893	R	0.1		**13**	**422**
153	4/10/2018	12:29:36 PM	2	797	R	0.1		**-5**	**308**

154	4/10/2018	12:29:48 PM	0	644	R	0.1		**-9**	**125**
155	4/10/2018	12:29:59 PM	3	660	R	0.1		**-2**	**144**
156	4/10/2018	12:30:11 PM	5	615	R	0.1		**2**	**91**
157	4/10/2018	12:34:02 PM	0	690	R	0.1	Grid 25	**-9**	**180**
158	4/10/2018	12:34:14 PM	11	844	R	0.1		**15**	**364**
159	4/10/2018	12:34:25 PM	2	689	R	0.1		**-5**	**179**
160	4/10/2018	12:34:37 PM	17	723	R	0.1		**28**	**220**
161	4/10/2018	12:34:49 PM	4	896	R	0.1		**0**	**426**
162	4/10/2018	12:35:00 PM	11	1002	R	0.1		**15**	**552**
163	4/10/2018	12:35:12 PM	6	933	R	0.1		**4**	**470**
164	4/10/2018	12:35:24 PM	1	1064	R	0.1		**-7**	**626**
165	4/10/2018	12:35:35 PM	0	913	R	0.1		**-9**	**446**
166	4/10/2018	12:35:47 PM	10	1027	R	0.1		**13**	**582**
167	4/10/2018	12:38:36 PM	16	545	R	0.1	Grid 26	**26**	**7**
168	4/10/2018	12:38:47 PM	3	629	R	0.1		**-2**	**107**
169	4/10/2018	12:38:59 PM	5	685	R	0.1		**2**	**174**
170	4/10/2018	12:39:11 PM	7	580	R	0.1		**6**	**49**
171	4/10/2018	12:39:22 PM	3	685	R	0.1		**-2**	**174**
172	4/10/2018	1:06:47 PM	5	601	R	0.1	Grid 27	**2**	**74**
173	4/10/2018	1:06:59 PM	6	795	R	0.1		**4**	**305**
174	4/10/2018	1:07:11 PM	0	645	R	0.1		**-9**	**126**
175	4/10/2018	1:07:22 PM	4	639	R	0.1		**0**	**119**
176	4/10/2018	1:07:34 PM	1	754	R	0.1		**-7**	**257**
177	4/10/2018	1:07:46 PM	4	674	R	0.1		**0**	**161**
178	4/10/2018	1:07:57 PM	6	728	R	0.1		**4**	**226**
179	4/10/2018	1:08:09 PM	7	673	R	0.1		**6**	**160**
180	4/10/2018	1:08:21 PM	1	673	R	0.1		**-7**	**160**
181	4/10/2018	1:08:32 PM	5	577	R	0.1		**2**	**45**
182	4/10/2018	1:10:29 PM	6	578	R	0.1	Grid 28	**4**	**47**
183	4/10/2018	1:10:40 PM	3	673	R	0.1		**-2**	**160**
184	4/10/2018	1:10:52 PM	0	564	R	0.1		**-9**	**30**
185	4/10/2018	1:11:03 PM	11	460	R	0.1		**15**	**-94**
186	4/10/2018	1:11:15 PM	2	470	R	0.1		**-5**	**-82**
187	4/10/2018	1:11:27 PM	4	522	R	0.1		**0**	**-20**
188	4/10/2018	1:11:38 PM	1	537	R	0.1		**-7**	**-2**
189	4/10/2018	1:11:50 PM	0	450	R	0.1		**-9**	**-106**
190	4/10/2018	1:12:02 PM	0	537	R	0.1		**-9**	**-2**
191	4/10/2018	1:12:13 PM	13	502	R	0.1		**19**	**-44**
192	4/10/2018	1:18:23 PM	11	571	R	0.1	Grid 29	**15**	**38**
193	4/10/2018	1:18:34 PM	2	604	R	0.1		**-5**	**78**
194	4/10/2018	1:18:46 PM	6	597	R	0.1		**4**	**69**
195	4/10/2018	1:18:58 PM	5	663	R	0.1		**2**	**148**
196	4/10/2018	1:19:09 PM	7	512	R	0.1		**6**	**-32**
197	4/10/2018	1:19:21 PM	8	572	R	0.1		**8**	**39**
198	4/10/2018	1:19:33 PM	5	567	R	0.1		**2**	**33**
199	4/10/2018	1:19:44 PM	3	581	R	0.1		**-2**	**50**
200	4/10/2018	1:19:56 PM	4	688	R	0.1		**0**	**178**
201	4/10/2018	1:20:08 PM	0	639	R	0.1		**-9**	**119**
202	4/10/2018	1:31:07 PM	5	701	R	0.1	Grid 30	**2**	**193**
203	4/10/2018	1:31:19 PM	1	974	R	0.1		**-7**	**519**
204	4/10/2018	1:31:31 PM	4	1231	R	0.1		**0**	**826**
205	4/10/2018	1:31:42 PM	5	997	R	0.1		**2**	**546**
206	4/10/2018	1:31:54 PM	9	973	R	0.1		**11**	**518**
207	4/10/2018	1:32:06 PM	2	813	R	0.1		**-5**	**327**
208	4/10/2018	1:32:17 PM	10	848	R	0.1		**13**	**369**
209	4/10/2018	1:32:29 PM	11	1071	R	0.1		**15**	**635**

210	4/10/2018	1:32:41 PM	9	1149	R	0.1		**11**	**728**
211	4/10/2018	1:32:52 PM	2	1188	R	0.1		**-5**	**774**
212	4/10/2018	1:35:38 PM	0	1121	R	0.1	Grid 31	**-9**	**694**
213	4/10/2018	1:35:50 PM	11	1296	R	0.1		**15**	**903**
214	4/10/2018	1:36:02 PM	2	1347	R	0.1		**-5**	**964**
215	4/10/2018	1:36:13 PM	0	1347	R	0.1		**-9**	**964**
216	4/10/2018	1:36:25 PM	0	1229	R	0.1		**-9**	**823**
217	4/10/2018	1:36:37 PM	12	981	R	0.1		**17**	**527**
218	4/10/2018	1:36:48 PM	3	1570	R	0.1		**-2**	**1230**
219	4/10/2018	1:37:00 PM	8	1594	R	0.1		**8**	**1259**
220	4/10/2018	1:37:12 PM	2	1532	R	0.1		**-5**	**1185**
221	4/10/2018	1:37:23 PM	14	1602	R	0.1		**21**	**1268**
222	4/10/2018	2:08:48 PM	0	1345	R	0.1	Grid 32	**-9**	**962**
223	4/10/2018	2:09:00 PM	0	1474	R	0.1		**-9**	**1116**
224	4/10/2018	2:09:12 PM	0	1505	R	0.1		**-9**	**1153**
225	4/10/2018	2:09:23 PM	11	1422	R	0.1		**15**	**1054**
226	4/10/2018	2:09:35 PM	14	1413	R	0.1		**21**	**1043**
227	4/10/2018	2:09:47 PM	11	1448	R	0.1		**15**	**1085**
228	4/10/2018	2:09:58 PM	5	1695	R	0.1		**2**	**1379**
229	4/10/2018	2:10:10 PM	1	1593	R	0.1		**-7**	**1258**
230	4/10/2018	2:10:22 PM	0	1494	R	0.1		**-9**	**1140**
231	4/10/2018	2:10:33 PM	11	1407	R	0.1		**15**	**1036**
232	4/10/2018	2:10:45 PM	2	1477	R	0.1		**-5**	**1119**
233	4/10/2018	2:10:56 PM	8	1214	R	0.1		**8**	**805**
234	4/10/2018	2:11:08 PM	8	1189	R	0.1		**8**	**776**
		Maximum:	**29**	**2229**				**54**	**2017**
		Average:	**5**	**1043**				**3**	**602**
		StDEv:	**5**	**434**				**11**	**517**

2360 SN:297743
43-37 #302111
Cal Due Date: 10/10/2018
Surveyor: Adolfo Matus
Bldg 218
Room 103 A Upper Walls Grids 33 thru 52
Alpha Efficiency: 0.319
Beta/Gamma Efficiency: 0.384
Alpha Background: 4.1
Beta/Gamma Background: 539

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/11/2018	1:05:51	PM	3	1055	R	0.1	Grid 33	**-2**	**616**
2	4/11/2018	1:06:02	PM	0	1342	R	0.1		**-9**	**958**
3	4/11/2018	1:06:14	PM	7	1363	R	0.1		**6**	**983**
4	4/11/2018	1:06:25	PM	1	1275	R	0.1		**-7**	**878**
5	4/11/2018	1:06:37	PM	0	1376	R	0.1		**-9**	**999**
6	4/11/2018	1:06:49	PM	26	1469	R	0.1		**47**	**1110**
7	4/11/2018	1:07:00	PM	6	1645	R	0.1		**4**	**1320**
8	4/11/2018	1:07:12	PM	1	1566	R	0.1		**-7**	**1225**
9	4/11/2018	1:07:24	PM	8	1474	R	0.1		**8**	**1116**
10	4/11/2018	1:10:39	PM	11	1016	R	0.1	Grid 34	**15**	**569**
11	4/11/2018	1:10:50	PM	2	1008	R	0.1		**-5**	**560**
12	4/11/2018	1:11:02	PM	5	922	R	0.1		**2**	**457**
13	4/11/2018	1:11:14	PM	1	955	R	0.1		**-7**	**496**
14	4/11/2018	1:11:25	PM	0	1185	R	0.1		**-9**	**771**
15	4/11/2018	1:11:37	PM	10	1026	R	0.1		**13**	**581**
16	4/11/2018	1:11:49	PM	14	1068	R	0.1		**21**	**631**
17	4/11/2018	1:12:00	PM	3	1128	R	0.1		**-2**	**703**
18	4/11/2018	1:12:12	PM	11	1129	R	0.1		**15**	**704**
19	4/11/2018	1:12:24	PM	2	1358	R	0.1		**-5**	**977**
20	4/11/2018	1:15:55	PM	3	1026	R	0.1	Grid 35	**-2**	**581**
21	4/11/2018	1:16:06	PM	3	1146	R	0.1		**-2**	**724**
22	4/11/2018	1:16:18	PM	0	1378	R	0.1		**-9**	**1001**
23	4/11/2018	1:16:30	PM	0	1270	R	0.1		**-9**	**872**
24	4/11/2018	1:16:41	PM	4	1323	R	0.1		**0**	**935**
25	4/11/2018	1:16:53	PM	13	1357	R	0.1		**19**	**976**
26	4/11/2018	1:17:05	PM	11	1553	R	0.1		**15**	**1210**
27	4/11/2018	1:17:16	PM	2	1665	R	0.1		**-5**	**1344**
28	4/11/2018	1:17:28	PM	4	1388	R	0.1		**0**	**1013**
29	4/11/2018	1:17:39	PM	1	1360	R	0.1		**-7**	**980**
30	4/11/2018	1:19:31	PM	0	862	R	0.1	Grid 36	**-9**	**385**
31	4/11/2018	1:19:43	PM	0	1050	R	0.1		**-9**	**610**
32	4/11/2018	1:19:54	PM	5	1348	R	0.1		**2**	**965**
33	4/11/2018	1:20:06	PM	1	1228	R	0.1		**-7**	**822**
34	4/11/2018	1:20:18	PM	0	1142	R	0.1		**-9**	**720**
35	4/11/2018	1:20:29	PM	12	964	R	0.1		**17**	**507**
36	4/11/2018	1:20:41	PM	2	1040	R	0.1		**-5**	**598**
37	4/11/2018	1:20:53	PM	20	1412	R	0.1		**34**	**1042**
38	4/11/2018	1:21:04	PM	4	1428	R	0.1		**0**	**1061**
39	4/11/2018	1:21:16	PM	1	1447	R	0.1		**-7**	**1083**
40	4/11/2018	1:22:43	PM	3	822	R	0.1	Grid 37	**-2**	**338**

41	4/11/2018	1:22:54 PM	0	1203	R	0.1		**-9**	**792**
42	4/11/2018	1:23:06 PM	0	1414	R	0.1		**-9**	**1044**
43	4/11/2018	1:23:18 PM	0	1413	R	0.1		**-9**	**1043**
44	4/11/2018	1:23:29 PM	12	1278	R	0.1		**17**	**882**
45	4/11/2018	1:23:41 PM	12	1279	R	0.1		**17**	**883**
46	4/11/2018	1:23:53 PM	3	1488	R	0.1		**-2**	**1132**
47	4/11/2018	1:24:04 PM	9	1258	R	0.1		**11**	**858**
48	4/11/2018	1:24:16 PM	5	1558	R	0.1		**2**	**1216**
49	4/11/2018	1:24:28 PM	4	1411	R	0.1		**0**	**1040**
50	4/11/2018	1:24:39 PM	4	1606	R	0.1		**0**	**1273**
51	4/11/2018	1:29:43 PM	5	1087	R	0.1	Grid 38	**2**	**654**
52	4/11/2018	1:29:55 PM	1	1224	R	0.1		**-7**	**817**
53	4/11/2018	1:30:07 PM	0	1416	R	0.1		**-9**	**1046**
54	4/11/2018	1:30:18 PM	3	1480	R	0.1		**-2**	**1123**
55	4/11/2018	1:30:30 PM	0	1342	R	0.1		**-9**	**958**
56	4/11/2018	1:30:42 PM	0	1599	R	0.1		**-9**	**1265**
57	4/11/2018	1:30:53 PM	0	1639	R	0.1		**-9**	**1313**
58	4/11/2018	1:31:05 PM	0	1364	R	0.1		**-9**	**984**
59	4/11/2018	1:31:17 PM	3	1432	R	0.1		**-2**	**1066**
60	4/11/2018	1:33:30 PM	3	993	R	0.1	Grid 39	**-2**	**542**
61	4/11/2018	1:33:42 PM	7	1199	R	0.1		**6**	**788**
62	4/11/2018	1:33:53 PM	1	1704	R	0.1		**-7**	**1390**
63	4/11/2018	1:34:05 PM	0	1786	R	0.1		**-9**	**1488**
64	4/11/2018	1:34:17 PM	9	1998	R	0.1		**11**	**1741**
65	4/11/2018	1:34:28 PM	2	2289	R	0.1		**-5**	**2088**
66	4/11/2018	1:34:40 PM	0	1926	R	0.1		**-9**	**1655**
67	4/11/2018	1:34:52 PM	0	1861	R	0.1		**-9**	**1577**
68	4/11/2018	1:35:03 PM	3	1661	R	0.1		**-2**	**1339**
69	4/11/2018	1:35:15 PM	0	1604	R	0.1		**-9**	**1271**
70	4/11/2018	1:40:00 PM	0	1351	R	0.1	Grid 40	**-9**	**969**
71	4/11/2018	1:40:12 PM	0	1684	R	0.1		**-9**	**1366**
72	4/11/2018	1:40:23 PM	7	1472	R	0.1		**6**	**1113**
73	4/11/2018	1:40:35 PM	1	1637	R	0.1		**-7**	**1310**
74	4/11/2018	1:40:46 PM	0	1904	R	0.1		**-9**	**1629**
75	4/11/2018	1:40:58 PM	0	2472	R	0.1		**-9**	**2306**
76	4/11/2018	1:41:10 PM	0	3095	R	0.1		**-9**	**3050**
77	4/11/2018	1:41:21 PM	0	2702	R	0.1		**-9**	**2581**
78	4/11/2018	1:41:33 PM	0	2157	R	0.1		**-9**	**1931**
79	4/11/2018	1:41:45 PM	10	2084	R	0.1		**13**	**1843**
80	4/11/2018	1:45:06 PM	0	1480	R	0.1	Grid 41	**-9**	**1123**
81	4/11/2018	1:45:18 PM	0	1420	R	0.1		**-9**	**1051**
82	4/11/2018	1:45:30 PM	4	1150	R	0.1		**0**	**729**
83	4/11/2018	1:45:41 PM	4	1482	R	0.1		**0**	**1125**
84	4/11/2018	1:45:53 PM	13	1157	R	0.1		**19**	**737**
85	4/11/2018	1:46:05 PM	3	1033	R	0.1		**-2**	**589**
86	4/11/2018	1:46:16 PM	0	2007	R	0.1		**-9**	**1752**
87	4/11/2018	1:46:28 PM	8	2435	R	0.1		**8**	**2262**
88	4/11/2018	1:46:40 PM	7	1830	R	0.1		**6**	**1540**
89	4/11/2018	1:46:51 PM	1	1622	R	0.1		**-7**	**1292**
90	4/11/2018	1:47:58 PM	0	697	R	0.1	Grid 42	**-9**	**189**
91	4/11/2018	1:48:09 PM	3	1279	R	0.1		**-2**	**883**
92	4/11/2018	1:48:21 PM	0	1608	R	0.1		**-9**	**1276**
93	4/11/2018	1:48:33 PM	0	2298	R	0.1		**-9**	**2099**
94	4/11/2018	2:05:28 PM	8	1696	R	0.1		**8**	**1381**
95	4/11/2018	2:05:39 PM	6	2021	R	0.1		**4**	**1768**

96	4/11/2018	2:05:51 PM	15	1440	R	0.1		**23**	**1075**
97	4/11/2018	2:06:03 PM	3	1339	R	0.1		**-2**	**955**
98	4/11/2018	2:06:14 PM	9	2363	R	0.1		**11**	**2176**
99	4/11/2018	2:06:26 PM	11	2716	R	0.1		**15**	**2598**
100	4/11/2018	2:07:00 PM	0	858	R	0.1	Grid 43	**-9**	**381**
101	4/11/2018	2:07:11 PM	0	1124	R	0.1		**-9**	**698**
102	4/11/2018	2:07:23 PM	13	2361	R	0.1		**19**	**2174**
103	4/11/2018	2:07:35 PM	3	2169	R	0.1		**-2**	**1945**
104	4/11/2018	2:07:46 PM	13	3316	R	0.1		**19**	**3314**
105	4/11/2018	2:07:58 PM	7	2376	R	0.1		**6**	**2192**
106	4/11/2018	2:08:10 PM	24	2277	R	0.1		**43**	**2074**
107	4/11/2018	2:08:21 PM	5	1885	R	0.1		**2**	**1606**
108	4/11/2018	2:08:33 PM	1	1832	R	0.1		**-7**	**1543**
109	4/11/2018	2:08:45 PM	0	3950	R	0.1		**-9**	**4070**
110	4/11/2018	2:15:30 PM	3	1500	R	0.1	Grid 44	**-2**	**1147**
111	4/11/2018	2:15:41 PM	4	1103	R	0.1		**0**	**673**
112	4/11/2018	2:15:53 PM	1	875	R	0.1		**-7**	**401**
113	4/11/2018	2:16:05 PM	0	1566	R	0.1		**-9**	**1225**
114	4/11/2018	2:16:16 PM	4	1475	R	0.1		**0**	**1117**
115	4/11/2018	2:16:28 PM	1	1387	R	0.1		**-7**	**1012**
116	4/11/2018	2:16:40 PM	0	1081	R	0.1		**-9**	**647**
117	4/11/2018	2:16:51 PM	0	3381	R	0.1		**-9**	**3391**
118	4/11/2018	2:17:03 PM	6	4111	R	0.1		**4**	**4262**
119	4/11/2018	2:17:15 PM	1	2834	R	0.1		**-7**	**2738**
120	4/11/2018	2:17:26 PM	15	3223	R	0.1		**23**	**3203**
121	4/11/2018	2:46:50 PM	3	790	R	0.1	Grid 45	**-2**	**299**
122	4/11/2018	2:47:02 PM	15	649	R	0.1		**23**	**131**
123	4/11/2018	2:47:14 PM	7	682	R	0.1		**6**	**171**
124	4/11/2018	2:47:25 PM	1	736	R	0.1		**-7**	**235**
125	4/11/2018	2:47:37 PM	0	910	R	0.1		**-9**	**443**
126	4/11/2018	2:47:49 PM	6	1010	R	0.1		**4**	**562**
127	4/11/2018	2:48:00 PM	1	1187	R	0.1		**-7**	**773**
128	4/11/2018	2:48:12 PM	0	1106	R	0.1		**-9**	**677**
129	4/11/2018	2:48:24 PM	11	1091	R	0.1		**15**	**659**
130	4/11/2018	2:49:50 PM	4	835	R	0.1	Grid 46	**0**	**353**
131	4/11/2018	2:50:01 PM	7	899	R	0.1		**6**	**430**
132	4/11/2018	2:50:13 PM	8	1063	R	0.1		**8**	**625**
133	4/11/2018	2:50:24 PM	6	1008	R	0.1		**4**	**560**
134	4/11/2018	2:50:36 PM	11	1184	R	0.1		**15**	**770**
135	4/11/2018	2:50:48 PM	2	781	R	0.1		**-5**	**289**
136	4/11/2018	2:50:59 PM	0	1088	R	0.1		**-9**	**655**
137	4/11/2018	2:51:11 PM	6	1311	R	0.1		**4**	**921**
138	4/11/2018	2:51:23 PM	5	1557	R	0.1		**2**	**1215**
139	4/11/2018	2:51:34 PM	8	1080	R	0.1		**8**	**646**
139	4/11/2018	2:51:54 PM	8	972	R	0.1		**8**	**517**
140	4/11/2018	2:53:20 PM	4	530	R	0.1	Grid 47	**0**	**-11**
141	4/11/2018	2:53:32 PM	0	783	R	0.1		**-9**	**291**
142	4/11/2018	2:53:43 PM	0	1022	R	0.1		**-9**	**576**
143	4/11/2018	2:53:55 PM	8	858	R	0.1		**8**	**381**
144	4/11/2018	2:54:07 PM	2	618	R	0.1		**-5**	**94**
145	4/11/2018	2:54:18 PM	12	759	R	0.1		**17**	**263**
146	4/11/2018	2:54:30 PM	20	876	R	0.1		**34**	**402**
147	4/11/2018	2:54:42 PM	13	901	R	0.1		**19**	**432**
148	4/11/2018	2:54:53 PM	3	1192	R	0.1		**-2**	**779**
149	4/11/2018	2:55:05 PM	0	897	R	0.1		**-9**	**427**

150	4/11/2018	2:55:54 PM	3	1427	R	0.1	Grid 48	**-2**	**1060**
151	4/11/2018	2:56:06 PM	0	774	R	0.1		**-9**	**280**
152	4/11/2018	2:56:17 PM	13	670	R	0.1		**19**	**156**
153	4/11/2018	2:56:29 PM	7	574	R	0.1		**6**	**42**
154	4/11/2018	2:56:41 PM	13	528	R	0.1		**19**	**-13**
155	4/11/2018	2:56:52 PM	14	526	R	0.1		**21**	**-16**
156	4/11/2018	2:57:04 PM	3	579	R	0.1		**-2**	**48**
157	4/11/2018	2:57:16 PM	0	645	R	0.1		**-9**	**126**
158	4/11/2018	2:57:27 PM	0	642	R	0.1		**-9**	**123**
159	4/11/2018	2:57:39 PM	0	729	R	0.1		**-9**	**227**
160	4/11/2018	2:59:10 PM	28	535	R	0.1	Grid 49	**51**	**-5**
161	4/11/2018	2:59:21 PM	6	535	R	0.1		**4**	**-5**
162	4/11/2018	2:59:33 PM	1	552	R	0.1		**-7**	**16**
163	4/11/2018	2:59:45 PM	3	639	R	0.1		**-2**	**119**
164	4/11/2018	2:59:56 PM	2	689	R	0.1		**-5**	**179**
165	4/11/2018	3:00:08 PM	4	737	R	0.1		**0**	**236**
166	4/11/2018	3:00:20 PM	5	759	R	0.1		**2**	**263**
167	4/11/2018	3:00:31 PM	10	658	R	0.1		**13**	**142**
168	4/11/2018	3:00:43 PM	18	576	R	0.1		**30**	**44**
169	4/11/2018	3:00:54 PM	13	653	R	0.1		**19**	**136**
170	4/11/2018	3:04:56 PM	0	486	R	0.1	Grid 50	**-9**	**-63**
171	4/11/2018	3:05:08 PM	5	561	R	0.1		**2**	**26**
172	4/11/2018	3:05:19 PM	1	547	R	0.1		**-7**	**10**
173	4/11/2018	3:05:31 PM	0	553	R	0.1		**-9**	**17**
174	4/11/2018	3:05:43 PM	3	670	R	0.1		**-2**	**156**
175	4/11/2018	3:05:54 PM	0	715	R	0.1		**-9**	**210**
176	4/11/2018	3:06:06 PM	0	730	R	0.1		**-9**	**228**
177	4/11/2018	3:06:18 PM	15	593	R	0.1		**23**	**64**
178	4/11/2018	3:06:29 PM	3	600	R	0.1		**-2**	**73**
179	4/11/2018	3:06:41 PM	0	563	R	0.1		**-9**	**29**
180	4/11/2018	3:15:54 PM	11	568	R	0.1	Grid 51	**15**	**35**
181	4/11/2018	3:16:06 PM	8	499	R	0.1		**8**	**-48**
182	4/11/2018	3:16:18 PM	2	628	R	0.1		**-5**	**106**
183	4/11/2018	3:16:29 PM	5	513	R	0.1		**2**	**-31**
184	4/11/2018	3:16:41 PM	1	653	R	0.1		**-7**	**136**
185	4/11/2018	3:16:53 PM	3	540	R	0.1		**-2**	**1**
186	4/11/2018	3:17:04 PM	4	627	R	0.1		**0**	**105**
187	4/11/2018	3:17:16 PM	4	749	R	0.1		**0**	**251**
188	4/11/2018	3:17:28 PM	6	737	R	0.1		**4**	**236**
189	4/11/2018	3:17:39 PM	5	657	R	0.1		**2**	**141**
190	4/11/2018	3:20:28 PM	5	546	R	0.1	Grid 52	**2**	**8**
191	4/11/2018	3:20:39 PM	9	725	R	0.1		**11**	**222**
192	4/11/2018	3:20:51 PM	7	589	R	0.1		**6**	**60**
193	4/11/2018	3:21:03 PM	6	534	R	0.1		**4**	**-6**
194	4/11/2018	3:21:14 PM	1	596	R	0.1		**-7**	**68**
195	4/11/2018	3:21:26 PM	23	620	R	0.1		**41**	**97**
196	4/11/2018	3:21:38 PM	5	645	R	0.1		**2**	**126**
197	4/11/2018	3:21:49 PM	18	645	R	0.1		**30**	**126**
198	4/11/2018	3:22:01 PM	4	684	R	0.1		**0**	**173**
199	4/11/2018	3:22:12 PM	1	626	R	0.1		**-7**	**104**
		Maximum:	**28**	**4111**				**51**	**4262**
		Average:	**5**	**1258**				**2**	**858**
		StDev:	**6**	**650**				**12**	**776**

Room 103A Ceiling/Overhead

2360 SN:297743
43-93# 302111
Cal Due Date: 10/10/2018
Surveyor: Adolfo Matus
Bldg. 218
Room 103A Ceiling Grids 3-5-6-14-15-20-22-25-30-33-40-43
Alpha Efficiency: 0.319
Beta/Gamma Efficiency: 0.384
Alpha Background: 4.1
Beta/Gamma Background: 539

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/12/2018	10:21:06	AM	0	481	R	0.1	Grid 3	**-9**	**-69**
2	4/12/2018	10:21:17	AM	0	523	R	0.1		**-9**	**-19**
3	4/12/2018	10:21:29	AM	0	628	R	0.1		**-9**	**106**
4	4/12/2018	10:21:41	AM	0	564	R	0.1		**-9**	**30**
5	4/12/2018	10:21:52	AM	0	634	R	0.1		**-9**	**113**
6	4/12/2018	10:22:04	AM	10	571	R	0.1		**13**	**38**
7	4/12/2018	10:22:16	AM	4	564	R	0.1		**0**	**30**
8	4/12/2018	10:22:27	AM	0	484	R	0.1		**-9**	**-66**
9	4/12/2018	10:22:39	AM	3	549	R	0.1		**-2**	**12**
10	4/12/2018	10:28:03	AM	0	711	R	0.1	Grid 5	**-9**	**205**
11	4/12/2018	10:28:15	AM	3	640	R	0.1		**-2**	**121**
12	4/12/2018	10:28:27	AM	8	566	R	0.1		**8**	**32**
13	4/12/2018	10:28:38	AM	6	796	R	0.1		**4**	**307**
14	4/12/2018	10:28:50	AM	11	843	R	0.1		**15**	**363**
15	4/12/2018	10:29:02	AM	2	809	R	0.1		**-5**	**322**
16	4/12/2018	10:29:13	AM	7	781	R	0.1		**6**	**289**
17	4/12/2018	10:29:25	AM	6	781	R	0.1		**4**	**289**
18	4/12/2018	10:29:37	AM	1	854	R	0.1		**-7**	**376**
19	4/12/2018	10:29:48	AM	0	814	R	0.1		**-9**	**328**
20	4/12/2018	10:43:21	AM	7	678	R	0.1	Grid 6	**6**	**166**
21	4/12/2018	10:43:33	AM	1	880	R	0.1		**-7**	**407**
22	4/12/2018	10:43:44	AM	6	865	R	0.1		**4**	**389**
23	4/12/2018	10:43:56	AM	6	832	R	0.1		**4**	**350**
24	4/12/2018	10:44:07	AM	5	806	R	0.1		**2**	**319**
25	4/12/2018	10:44:19	AM	21	727	R	0.1		**36**	**224**
26	4/12/2018	10:44:31	AM	15	854	R	0.1		**23**	**376**
27	4/12/2018	10:44:42	AM	3	698	R	0.1		**-2**	**190**
28	4/12/2018	10:44:54	AM	11	750	R	0.1		**15**	**252**
29	4/12/2018	10:45:06	AM	2	742	R	0.1		**-5**	**242**
30	4/12/2018	10:49:41	AM	10	588	R	0.1	Grid 14	**13**	**58**
31	4/12/2018	10:49:52	AM	2	617	R	0.1		**-5**	**93**
32	4/12/2018	10:50:04	AM	10	670	R	0.1		**13**	**156**
33	4/12/2018	10:50:16	AM	7	706	R	0.1		**6**	**199**
34	4/12/2018	10:50:27	AM	1	739	R	0.1		**-7**	**239**
35	4/12/2018	10:50:39	AM	0	689	R	0.1		**-9**	**179**
36	4/12/2018	10:50:50	AM	3	717	R	0.1		**-2**	**212**
37	4/12/2018	10:51:02	AM	0	848	R	0.1		**-9**	**369**
38	4/12/2018	10:51:14	AM	4	612	R	0.1		**0**	**87**
39	4/12/2018	10:51:25	AM	6	602	R	0.1		**4**	**75**

40	4/12/2018	12:13:41 PM	3	583	R	0.1	Grid 15	**-2**	**53**
41	4/12/2018	12:13:53 PM	3	752	R	0.1		**-2**	**254**
42	4/12/2018	12:14:05 PM	6	732	R	0.1		**4**	**230**
43	4/12/2018	12:14:16 PM	1	837	R	0.1		**-7**	**356**
44	4/12/2018	12:14:28 PM	0	756	R	0.1		**-9**	**259**
45	4/12/2018	12:14:40 PM	3	821	R	0.1		**-2**	**336**
46	4/12/2018	12:14:59 PM	5	801	R	0.1		**2**	**313**
47	4/12/2018	12:15:10 PM	4	833	R	0.1		**0**	**351**
48	4/12/2018	12:15:22 PM	1	803	R	0.1		**-7**	**315**
49	4/12/2018	12:15:34 PM	0	719	R	0.1		**-9**	**215**
50	4/12/2018	12:28:43 PM	7	614	R	0.1	Grid 20	**6**	**89**
51	4/12/2018	12:28:55 PM	1	663	R	0.1		**-7**	**148**
52	4/12/2018	12:29:06 PM	2	622	R	0.1		**-5**	**99**
53	4/12/2018	12:29:18 PM	3	556	R	0.1		**-2**	**20**
54	4/12/2018	12:29:30 PM	0	713	R	0.1		**-9**	**208**
55	4/12/2018	12:29:41 PM	0	603	R	0.1		**-9**	**76**
56	4/12/2018	12:29:53 PM	12	642	R	0.1		**17**	**123**
57	4/12/2018	12:30:05 PM	3	645	R	0.1		**-2**	**126**
58	4/12/2018	12:30:16 PM	0	639	R	0.1		**-9**	**119**
59	4/12/2018	12:30:28 PM	3	661	R	0.1		**-2**	**146**
60	4/12/2018	12:39:05 PM	0	523	R	0.1	Grid 22	**-9**	**-19**
61	4/12/2018	12:39:17 PM	8	842	R	0.1		**8**	**362**
62	4/12/2018	12:39:29 PM	5	801	R	0.1		**2**	**313**
63	4/12/2018	12:39:40 PM	9	720	R	0.1		**11**	**216**
64	4/12/2018	12:39:52 PM	2	679	R	0.1		**-5**	**167**
65	4/12/2018	12:40:04 PM	3	672	R	0.1		**-2**	**159**
66	4/12/2018	12:40:15 PM	2	646	R	0.1		**-5**	**128**
67	4/12/2018	12:40:27 PM	3	615	R	0.1		**-2**	**91**
68	4/12/2018	12:40:39 PM	2	703	R	0.1		**-5**	**196**
69	4/12/2018	12:40:50 PM	4	640	R	0.1		**0**	**121**
70	4/12/2018	12:54:57 PM	2	766	R	0.1	Grid 25	**-5**	**271**
71	4/12/2018	12:55:09 PM	2	786	R	0.1		**-5**	**295**
72	4/12/2018	12:55:20 PM	3	817	R	0.1		**-2**	**332**
73	4/12/2018	12:55:32 PM	0	822	R	0.1		**-9**	**338**
74	4/12/2018	12:55:44 PM	6	824	R	0.1		**4**	**340**
75	4/12/2018	12:55:55 PM	1	841	R	0.1		**-7**	**360**
76	4/12/2018	12:56:07 PM	0	842	R	0.1		**-9**	**362**
77	4/12/2018	12:56:19 PM	0	833	R	0.1		**-9**	**351**
78	4/12/2018	12:56:30 PM	5	825	R	0.1		**2**	**341**
79	4/12/2018	12:56:42 PM	15	670	R	0.1		**23**	**156**
80	4/12/2018	1:08:31 PM	4	516	R	0.1	Grid 30	**0**	**-27**
81	4/12/2018	1:08:43 PM	7	554	R	0.1		**6**	**18**
82	4/12/2018	1:08:55 PM	9	608	R	0.1		**11**	**82**
83	4/12/2018	1:09:06 PM	10	637	R	0.1		**13**	**117**
84	4/12/2018	1:09:18 PM	2	631	R	0.1		**-5**	**110**
85	4/12/2018	1:09:30 PM	22	688	R	0.1		**39**	**178**
86	4/12/2018	1:09:41 PM	5	783	R	0.1		**2**	**291**
87	4/12/2018	1:09:53 PM	1	637	R	0.1		**-7**	**117**
88	4/12/2018	1:10:06 PM	5	536	R	0.1		**2**	**-4**
89	4/12/2018	1:10:17 PM	1	651	R	0.1		**-7**	**134**
90	4/12/2018	1:17:53 PM	3	676	R	0.1	Grid 33	**-2**	**163**
91	4/12/2018	1:18:04 PM	4	843	R	0.1		**0**	**363**
92	4/12/2018	1:18:16 PM	2	806	R	0.1		**-5**	**319**
93	4/12/2018	1:18:28 PM	0	731	R	0.1		**-9**	**229**

94	4/12/2018	1:18:39 PM	8	765	R	0.1		**8**	**270**
95	4/12/2018	1:19:03 PM	3	488	R	0.1		**-2**	**-61**
96	4/12/2018	1:19:15 PM	0	586	R	0.1		**-9**	**56**
97	4/12/2018	1:19:26 PM	6	644	R	0.1		**4**	**125**
98	4/12/2018	1:19:38 PM	5	612	R	0.1		**2**	**87**
99	4/12/2018	1:19:50 PM	5	604	R	0.1		**2**	**78**
100	4/12/2018	1:24:40 PM	3	523	R	0.1	Grid 40	**-2**	**-19**
101	4/12/2018	1:24:51 PM	10	599	R	0.1		**13**	**72**
102	4/12/2018	1:25:03 PM	2	586	R	0.1		**-5**	**56**
103	4/12/2018	1:25:15 PM	0	603	R	0.1		**-9**	**76**
104	4/12/2018	1:25:26 PM	0	568	R	0.1		**-9**	**35**
105	4/12/2018	1:25:38 PM	7	523	R	0.1		**6**	**-19**
106	4/12/2018	1:25:50 PM	1	812	R	0.1		**-7**	**326**
107	4/12/2018	1:26:01 PM	10	568	R	0.1		**13**	**35**
108	4/12/2018	1:26:13 PM	2	606	R	0.1		**-5**	**80**
109	4/12/2018	1:26:25 PM	17	598	R	0.1		**28**	**70**
110	4/12/2018	1:26:36 PM	10	642	R	0.1		**13**	**123**
111	4/12/2018	1:34:00 PM	7	566	R	0.1	Grid 43	**6**	**32**
112	4/12/2018	1:34:12 PM	1	749	R	0.1		**-7**	**251**
113	4/12/2018	1:34:24 PM	2	679	R	0.1		**-5**	**167**
114	4/12/2018	1:34:35 PM	3	530	R	0.1		**-2**	**-11**
115	4/12/2018	1:34:47 PM	0	511	R	0.1		**-9**	**-33**
116	4/12/2018	1:34:59 PM	12	634	R	0.1		**17**	**113**
117	4/12/2018	1:35:10 PM	21	671	R	0.1		**36**	**158**
118	4/12/2018	1:35:22 PM	11	603	R	0.1		**15**	**76**
119	4/12/2018	1:35:33 PM	23	553	R	0.1		**41**	**17**
		Maximum:	**23**	**880**				**41**	**407**
		Average:	**5**	**682**				**1**	**171**
		StDev:	**5**	**107**				**11**	**127**

Tunnel Floor

2360 SN:268488
43-37 #190672
Cal Due Date: 10/27/2018
Surveyor: Adolfo Matus
Tunnel
Floor Grids 1 thru 5
Alpha Efficiency: 0.302
Beta/Gamma Efficiency: 0.37
Alpha Background: 5.8
Beta/Gamma Background: 881

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/19/2018	9:16:55	AM	3	834	R	0.1	Grid 1	**-6**	**-58**
2	4/19/2018	9:17:07	AM	7	901	R	0.1		**3**	**25**
3	4/19/2018	9:17:18	AM	1	812	R	0.1		**-11**	**-85**
4	4/19/2018	9:17:30	AM	0	880	R	0.1		**-13**	**-1**
5	4/19/2018	9:17:42	AM	0	821	R	0.1		**-13**	**-74**
6	4/19/2018	9:17:53	AM	7	847	R	0.1		**3**	**-42**
7	4/19/2018	9:18:05	AM	6	889	R	0.1		**0**	**10**
8	4/19/2018	9:18:17	AM	4	843	R	0.1		**-4**	**-47**
9	4/19/2018	9:18:29	AM	1	897	R	0.1		**-11**	**20**
10	4/19/2018	9:21:25	AM	0	817	R	0.1	Grid 2	**-13**	**-79**
11	4/19/2018	9:21:37	AM	4	821	R	0.1		**-4**	**-74**
12	4/19/2018	9:21:49	AM	1	906	R	0.1		**-11**	**31**
13	4/19/2018	9:22:00	AM	11	870	R	0.1		**12**	**-14**
14	4/19/2018	9:22:12	AM	8	831	R	0.1		**5**	**-62**
15	4/19/2018	9:22:24	AM	2	882	R	0.1		**-9**	**1**
16	4/19/2018	9:22:35	AM	0	833	R	0.1		**-13**	**-59**
17	4/19/2018	9:22:47	AM	17	847	R	0.1		**25**	**-42**
18	4/19/2018	9:22:59	AM	11	869	R	0.1		**12**	**-15**
19	4/19/2018	9:23:11	AM	13	875	R	0.1		**16**	**-7**
20	4/19/2018	9:25:35	AM	0	890	R	0.1	Grid 3	**-13**	**11**
21	4/19/2018	9:25:47	AM	7	846	R	0.1		**3**	**-43**
22	4/19/2018	9:25:59	AM	13	855	R	0.1		**16**	**-32**
23	4/19/2018	9:26:10	AM	6	879	R	0.1		**0**	**-2**
24	4/19/2018	9:26:22	AM	1	899	R	0.1		**-11**	**22**
25	4/19/2018	9:26:34	AM	7	823	R	0.1		**3**	**-72**
26	4/19/2018	9:26:45	AM	1	845	R	0.1		**-11**	**-45**
27	4/19/2018	9:26:57	AM	2	841	R	0.1		**-9**	**-50**
28	4/19/2018	9:27:09	AM	3	825	R	0.1		**-6**	**-69**
29	4/19/2018	9:27:21	AM	0	856	R	0.1		**-13**	**-31**
30	4/19/2018	9:29:46	AM	5	823	R	0.1	Grid 4	**-2**	**-72**
31	4/19/2018	9:29:58	AM	1	856	R	0.1		**-11**	**-31**
32	4/19/2018	9:30:09	AM	0	858	R	0.1		**-13**	**-28**
33	4/19/2018	9:30:21	AM	0	818	R	0.1		**-13**	**-78**
34	4/19/2018	9:30:33	AM	7	820	R	0.1		**3**	**-76**
35	4/19/2018	9:30:45	AM	1	860	R	0.1		**-11**	**-26**
36	4/19/2018	9:30:56	AM	0	849	R	0.1		**-13**	**-40**
37	4/19/2018	9:31:08	AM	8	888	R	0.1		**5**	**9**
38	4/19/2018	9:31:20	AM	2	823	R	0.1		**-9**	**-72**
39	4/19/2018	9:31:31	AM	7	827	R	0.1		**3**	**-67**
40	4/19/2018	9:35:50	AM	0	887	R	0.1	Grid 5	**-13**	**7**
41	4/19/2018	9:36:01	AM	3	879	R	0.1		**-6**	**-2**

42	4/19/2018	9:36:13 AM	0	847	R	0.1	**-13**	**-42**
43	4/19/2018	9:36:25 AM	2	877	R	0.1	**-9**	**-5**
44	4/19/2018	9:36:36 AM	4	868	R	0.1	**-4**	**-16**
45	4/19/2018	9:36:48 AM	3	842	R	0.1	**-6**	**-48**
46	4/19/2018	9:37:00 AM	4	835	R	0.1	**-4**	**-57**
47	4/19/2018	9:37:11 AM	8	893	R	0.1	**5**	**15**
48	4/19/2018	9:37:23 AM	5	842	R	0.1	**-2**	**-48**
49	4/19/2018	9:37:35 AM	6	862	R	0.1	**0**	**-24**
		Maximum:	**17**	**906**			**25**	**31**
		Average:	**4**	**855**			**-4**	**-32**
		StDev:	**4**	**27**			**9**	**33**

Tunnel Lower/Upper Walls

2360 SN:297766
43-93# 323074
Cal Due Date: 12/20/2018
Surveyor: Joan Cosgrove
Tunnel
Grids 1 thru 8 16 thru 20
Alpha Efficiency: 0.404
Beta/Gamma Efficiency: 0.254
Alpha Background: 1
Beta/Gamma Background: 192

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/5/2018	10:10:37	AM	7	190	R	0.1	Grid 1	**10**	**-21**
2	4/5/2018	10:10:49	AM	10	195	R	0.1		**15**	**31**
3	4/5/2018	10:11:00	AM	2	182	R	0.1		**2**	**-105**
4	4/5/2018	10:11:12	AM	2	191	R	0.1		**2**	**-10**
5	4/5/2018	10:11:24	AM	0	212	R	0.1		**-2**	**210**
6	4/5/2018	10:11:35	AM	2	241	R	0.1		**2**	**514**
7	4/5/2018	10:11:47	AM	0	220	R	0.1		**-2**	**294**
8	4/5/2018	10:11:59	AM	1	183	R	0.1		**0**	**-94**
9	4/5/2018	10:12:10	AM	0	190	R	0.1		**-2**	**-21**
10	4/5/2018	10:12:22	AM	1	185	R	0.1		**0**	**-73**
11	4/5/2018	10:12:34	AM	2	192	R	0.1		**2**	**0**
12	4/5/2018	10:12:45	AM	0	204	R	0.1		**-2**	**126**
13	4/5/2018	10:12:57	AM	0	190	R	0.1		**-2**	**-21**
14	4/5/2018	10:13:09	AM	8	191	R	0.1		**12**	**-10**
15	4/5/2018	10:13:20	AM	7	195	R	0.1		**10**	**31**
16	4/5/2018	10:13:32	AM	5	246	R	0.1		**7**	**567**
17	4/5/2018	10:13:44	AM	1	240	R	0.1		**0**	**504**
18	4/5/2018	10:13:55	AM	0	225	R	0.1		**-2**	**346**
19	4/5/2018	10:14:07	AM	0	231	R	0.1		**-2**	**409**
20	4/5/2018	10:14:19	AM	0	229	R	0.1		**-2**	**388**
21	4/5/2018	10:14:30	AM	12	207	R	0.1		**19**	**157**
22	4/5/2018	10:14:42	AM	3	222	R	0.1		**3**	**315**
23	4/5/2018	10:14:54	AM	2	189	R	0.1		**2**	**-31**
24	4/5/2018	10:15:05	AM	1	188	R	0.1		**0**	**-42**
25	4/5/2018	10:15:17	AM	2	206	R	0.1		**2**	**147**
26	4/5/2018	10:15:29	AM	3	191	R	0.1		**3**	**-10**
27	4/5/2018	10:15:40	AM	2	198	R	0.1		**2**	**63**
28	4/5/2018	10:15:52	AM	1	183	R	0.1		**0**	**-94**
29	4/5/2018	10:16:04	AM	0	243	R	0.1		**-2**	**535**
30	4/5/2018	10:16:15	AM	3	258	R	0.1		**3**	**693**
31	4/5/2018	10:16:27	AM	4	237	R	0.1		**5**	**472**
32	4/5/2018	10:16:39	AM	3	217	R	0.1		**3**	**262**
33	4/5/2018	10:16:50	AM	0	243	R	0.1		**-2**	**535**
34	4/5/2018	10:17:02	AM	3	197	R	0.1		**3**	**52**
35	4/5/2018	10:17:14	AM	2	243	R	0.1		**2**	**535**
36	4/5/2018	10:17:25	AM	2	208	R	0.1		**2**	**168**
37	4/5/2018	10:17:37	AM	1	240	R	0.1		**0**	**504**
38	4/5/2018	10:17:49	AM	2	245	R	0.1		**2**	**556**

39	4/5/2018	10:18:00	AM	0	229	R	0.1		**-2**	**388**
40	4/5/2018	10:21:07	AM	2	187	R	0.1	Grid 2	**2**	**-52**
41	4/5/2018	10:21:19	AM	0	184	R	0.1		**-2**	**-84**
42	4/5/2018	10:21:31	AM	9	244	R	0.1		**14**	**546**
43	4/5/2018	10:21:42	AM	2	181	R	0.1		**2**	**-115**
44	4/5/2018	10:21:54	AM	11	191	R	0.1		**17**	**-10**
45	4/5/2018	10:22:06	AM	2	199	R	0.1		**2**	**73**
46	4/5/2018	10:22:17	AM	2	191	R	0.1		**2**	**-10**
47	4/5/2018	10:22:29	AM	0	212	R	0.1		**-2**	**210**
48	4/5/2018	10:22:41	AM	6	189	R	0.1		**9**	**-31**
49	4/5/2018	10:22:52	AM	11	189	R	0.1		**17**	**-31**
50	4/5/2018	10:23:04	AM	2	213	R	0.1		**2**	**220**
51	4/5/2018	10:23:16	AM	0	198	R	0.1		**-2**	**63**
52	4/5/2018	10:23:27	AM	6	267	R	0.1		**9**	**787**
53	4/5/2018	10:23:39	AM	1	261	R	0.1		**0**	**724**
54	4/5/2018	10:23:51	AM	0	195	R	0.1		**-2**	**31**
55	4/5/2018	10:24:02	AM	0	248	R	0.1		**-2**	**588**
56	4/5/2018	10:24:14	AM	7	271	R	0.1		**10**	**829**
57	4/5/2018	10:24:26	AM	18	246	R	0.1		**29**	**567**
58	4/5/2018	10:24:37	AM	4	227	R	0.1		**5**	**367**
59	4/5/2018	10:24:49	AM	1	198	R	0.1		**0**	**63**
60	4/5/2018	10:25:01	AM	0	242	R	0.1		**-2**	**525**
61	4/5/2018	10:25:12	AM	7	256	R	0.1		**10**	**672**
62	4/5/2018	10:25:24	AM	1	212	R	0.1		**0**	**210**
63	4/5/2018	10:25:36	AM	2	202	R	0.1		**2**	**105**
64	4/5/2018	10:25:47	AM	0	231	R	0.1		**-2**	**409**
65	4/5/2018	10:25:59	AM	3	223	R	0.1		**3**	**325**
66	4/5/2018	10:26:11	AM	0	259	R	0.1		**-2**	**703**
67	4/5/2018	10:26:22	AM	0	260	R	0.1		**-2**	**714**
68	4/5/2018	10:26:34	AM	11	255	R	0.1		**17**	**661**
69	4/5/2018	10:26:46	AM	9	224	R	0.1		**14**	**336**
70	4/5/2018	10:26:57	AM	2	211	R	0.1		**2**	**199**
71	4/5/2018	10:27:09	AM	10	191	R	0.1		**15**	**-10**
72	4/5/2018	10:27:21	AM	2	231	R	0.1		**2**	**409**
73	4/5/2018	10:27:32	AM	4	270	R	0.1		**5**	**819**
74	4/5/2018	10:27:44	AM	1	266	R	0.1		**0**	**777**
75	4/5/2018	10:27:56	AM	2	277	R	0.1		**2**	**892**
76	4/5/2018	10:28:07	AM	1	263	R	0.1		**0**	**745**
77	4/5/2018	10:28:19	AM	2	270	R	0.1		**2**	**819**
78	4/5/2018	10:28:31	AM	3	266	R	0.1		**3**	**777**
79	4/5/2018	10:28:42	AM	3	275	R	0.1		**3**	**871**
80	4/5/2018	10:34:01	AM	2	199	R	0.1	Grid 3	**2**	**73**
81	4/5/2018	10:34:13	AM	2	238	R	0.1		**2**	**483**
82	4/5/2018	10:34:24	AM	1	259	R	0.1		**0**	**703**
83	4/5/2018	10:34:36	AM	2	192	R	0.1		**2**	**0**
84	4/5/2018	10:34:48	AM	2	187	R	0.1		**2**	**-52**
85	4/5/2018	10:34:59	AM	0	196	R	0.1		**-2**	**42**
86	4/5/2018	10:35:11	AM	0	190	R	0.1		**-2**	**-21**
87	4/5/2018	10:35:23	AM	8	223	R	0.1		**12**	**325**
88	4/5/2018	10:35:34	AM	2	223	R	0.1		**2**	**325**
89	4/5/2018	10:35:46	AM	7	232	R	0.1		**10**	**420**
90	4/5/2018	10:35:58	AM	11	240	R	0.1		**17**	**504**
91	4/5/2018	10:36:09	AM	4	262	R	0.1		**5**	**735**

92	4/5/2018	10:36:21	AM	1	204	R	0.1	**0**	**126**
93	4/5/2018	10:36:33	AM	2	242	R	0.1	**2**	**525**
94	4/5/2018	10:36:44	AM	3	254	R	0.1	**3**	**651**
95	4/5/2018	10:36:56	AM	2	208	R	0.1	**2**	**168**
96	4/5/2018	10:37:08	AM	1	255	R	0.1	**0**	**661**
97	4/5/2018	10:37:19	AM	2	231	R	0.1	**2**	**409**
98	4/5/2018	10:37:31	AM	2	189	R	0.1	**2**	**-31**
99	4/5/2018	10:37:43	AM	8	206	R	0.1	**12**	**147**
100	4/5/2018	10:37:54	AM	2	241	R	0.1	**2**	**514**
101	4/5/2018	10:38:06	AM	2	239	R	0.1	**2**	**493**
102	4/5/2018	10:38:18	AM	4	272	R	0.1	**5**	**840**
103	4/5/2018	10:38:29	AM	3	238	R	0.1	**3**	**483**
104	4/5/2018	10:38:41	AM	2	250	R	0.1	**2**	**609**
105	4/5/2018	10:38:53	AM	1	224	R	0.1	**0**	**336**
106	4/5/2018	10:39:04	AM	2	274	R	0.1	**2**	**861**
107	4/5/2018	10:39:16	AM	3	221	R	0.1	**3**	**304**
108	4/5/2018	10:39:28	AM	0	234	R	0.1	**-2**	**441**
109	4/5/2018	10:39:39	AM	8	258	R	0.1	**12**	**693**
110	4/5/2018	10:39:51	AM	2	265	R	0.1	**2**	**766**
111	4/5/2018	10:40:02	AM	0	245	R	0.1	**-2**	**556**
112	4/5/2018	10:40:14	AM	0	208	R	0.1	**-2**	**168**
113	4/5/2018	10:40:26	AM	0	223	R	0.1	**-2**	**325**
114	4/5/2018	10:40:37	AM	10	219	R	0.1	**15**	**283**
115	4/5/2018	10:40:49	AM	2	210	R	0.1	**2**	**189**
116	4/5/2018	10:41:01	AM	2	241	R	0.1	**2**	**514**
117	4/5/2018	10:41:12	AM	1	197	R	0.1	**0**	**52**
118	4/5/2018	10:41:24	AM	2	188	R	0.1	**2**	**-42**
119	4/5/2018	10:41:36	AM	3	203	R	0.1	**3**	**115**
120	4/5/2018	10:46:27	AM	2	192	R	0.1 Grid 4	**2**	**0**
121	4/5/2018	10:46:38	AM	1	202	R	0.1	**0**	**105**
122	4/5/2018	10:46:50	AM	2	229	R	0.1	**2**	**388**
123	4/5/2018	10:47:02	AM	5	230	R	0.1	**7**	**399**
124	4/5/2018	10:47:13	AM	5	214	R	0.1	**7**	**231**
125	4/5/2018	10:47:25	AM	4	207	R	0.1	**5**	**157**
126	4/5/2018	10:47:37	AM	8	197	R	0.1	**12**	**52**
127	4/5/2018	10:47:48	AM	2	200	R	0.1	**2**	**84**
128	4/5/2018	10:48:00	AM	0	274	R	0.1	**-2**	**861**
129	4/5/2018	10:48:12	AM	0	270	R	0.1	**-2**	**819**
130	4/5/2018	10:48:23	AM	8	211	R	0.1	**12**	**199**
131	4/5/2018	10:48:35	AM	2	241	R	0.1	**2**	**514**
132	4/5/2018	10:48:47	AM	2	214	R	0.1	**2**	**231**
133	4/5/2018	10:48:58	AM	3	204	R	0.1	**3**	**126**
134	4/5/2018	10:49:10	AM	2	220	R	0.1	**2**	**294**
135	4/5/2018	10:49:22	AM	1	227	R	0.1	**0**	**367**
136	4/5/2018	10:49:33	AM	2	240	R	0.1	**2**	**504**
137	4/5/2018	10:49:45	AM	0	241	R	0.1	**-2**	**514**
138	4/5/2018	10:49:57	AM	4	261	R	0.1	**5**	**724**
139	4/5/2018	10:50:08	AM	1	239	R	0.1	**0**	**493**
140	4/5/2018	10:50:20	AM	1	193	R	0.1	**0**	**10**
141	4/5/2018	10:50:32	AM	2	250	R	0.1	**2**	**609**
142	4/5/2018	10:50:43	AM	2	268	R	0.1	**2**	**798**
143	4/5/2018	10:50:55	AM	1	266	R	0.1	**0**	**777**
144	4/5/2018	10:51:07	AM	3	265	R	0.1	**3**	**766**

145	4/5/2018	10:51:18	AM	2	205	R	0.1	**2**	**136**
146	4/5/2018	10:51:30	AM	0	243	R	0.1	**-2**	**535**
147	4/5/2018	10:51:42	AM	6	287	R	0.1	**9**	**997**
148	4/5/2018	10:51:53	AM	1	204	R	0.1	**0**	**126**
149	4/5/2018	10:52:05	AM	11	188	R	0.1	**17**	**-42**
150	4/5/2018	10:52:16	AM	2	271	R	0.1	**2**	**829**
151	4/5/2018	10:52:28	AM	0	274	R	0.1	**-2**	**861**
152	4/5/2018	10:52:40	AM	8	262	R	0.1	**12**	**735**
153	4/5/2018	10:52:51	AM	2	244	R	0.1	**2**	**546**
154	4/5/2018	10:53:03	AM	2	245	R	0.1	**2**	**556**
155	4/5/2018	10:53:15	AM	1	243	R	0.1	**0**	**535**
156	4/5/2018	10:53:26	AM	2	187	R	0.1	**2**	**-52**
157	4/5/2018	10:53:38	AM	2	213	R	0.1	**2**	**220**
158	4/5/2018	10:53:50	AM	2	205	R	0.1	**2**	**136**
159	4/5/2018	10:54:01	AM	1	196	R	0.1	**0**	**42**
160	4/5/2018	10:59:56	AM	2	199	R	0.1 Grid 5	**2**	**73**
161	4/5/2018	11:00:08	AM	3	189	R	0.1	**3**	**-31**
162	4/5/2018	11:00:19	AM	4	206	R	0.1	**5**	**147**
163	4/5/2018	11:00:31	AM	2	220	R	0.1	**2**	**294**
164	4/5/2018	11:00:43	AM	2	220	R	0.1	**2**	**294**
165	4/5/2018	11:00:54	AM	3	236	R	0.1	**3**	**462**
166	4/5/2018	11:01:06	AM	1	191	R	0.1	**0**	**-10**
167	4/5/2018	11:01:18	AM	2	212	R	0.1	**2**	**210**
168	4/5/2018	11:01:29	AM	2	189	R	0.1	**2**	**-31**
169	4/5/2018	11:01:41	AM	0	216	R	0.1	**-2**	**252**
170	4/5/2018	11:01:53	AM	8	180	R	0.1	**12**	**-126**
171	4/5/2018	11:02:04	AM	2	221	R	0.1	**2**	**304**
172	4/5/2018	11:02:16	AM	1	193	R	0.1	**0**	**10**
173	4/5/2018	11:02:28	AM	2	190	R	0.1	**2**	**-21**
174	4/5/2018	11:02:39	AM	4	220	R	0.1	**5**	**294**
175	4/5/2018	11:02:51	AM	3	202	R	0.1	**3**	**105**
176	4/5/2018	11:03:03	AM	0	239	R	0.1	**-2**	**493**
177	4/5/2018	11:03:14	AM	10	188	R	0.1	**15**	**-42**
178	4/5/2018	11:03:26	AM	2	234	R	0.1	**2**	**441**
179	4/5/2018	11:03:38	AM	2	238	R	0.1	**2**	**483**
180	4/5/2018	11:03:49	AM	3	254	R	0.1	**3**	**651**
181	4/5/2018	11:04:01	AM	1	219	R	0.1	**0**	**283**
182	4/5/2018	11:04:13	AM	2	198	R	0.1	**2**	**63**
183	4/5/2018	11:04:24	AM	2	262	R	0.1	**2**	**735**
184	4/5/2018	11:04:36	AM	3	242	R	0.1	**3**	**525**
185	4/5/2018	11:04:48	AM	1	243	R	0.1	**0**	**535**
186	4/5/2018	11:04:59	AM	1	224	R	0.1	**0**	**336**
187	4/5/2018	11:05:11	AM	2	228	R	0.1	**2**	**378**
188	4/5/2018	11:05:23	AM	2	250	R	0.1	**2**	**609**
189	4/5/2018	11:05:34	AM	5	255	R	0.1	**7**	**661**
190	4/5/2018	11:05:46	AM	4	212	R	0.1	**5**	**210**
191	4/5/2018	11:05:58	AM	1	281	R	0.1	**0**	**934**
192	4/5/2018	11:06:09	AM	0	265	R	0.1	**-2**	**766**
193	4/5/2018	11:06:21	AM	0	241	R	0.1	**-2**	**514**
194	4/5/2018	11:06:33	AM	4	254	R	0.1	**5**	**651**
195	4/5/2018	11:06:44	AM	1	198	R	0.1	**0**	**63**
196	4/5/2018	11:06:56	AM	1	192	R	0.1	**0**	**0**
197	4/5/2018	11:07:08	AM	1	241	R	0.1	**0**	**514**

198	4/5/2018	11:07:19	AM	2	227	R	0.1		**2**	**367**
199	4/5/2018	11:07:31	AM	4	202	R	0.1		**5**	**105**
200	4/5/2018	12:15:25	PM	2	204	R	0.1	Grid 6	**2**	**126**
201	4/5/2018	12:15:37	PM	1	199	R	0.1		**0**	**73**
202	4/5/2018	12:15:49	PM	2	196	R	0.1		**2**	**42**
203	4/5/2018	12:16:00	PM	2	200	R	0.1		**2**	**84**
204	4/5/2018	12:16:12	PM	3	184	R	0.1		**3**	**-84**
205	4/5/2018	12:16:24	PM	5	192	R	0.1		**7**	**0**
206	4/5/2018	12:16:35	PM	0	203	R	0.1		**-2**	**115**
207	4/5/2018	12:16:47	PM	5	204	R	0.1		**7**	**126**
208	4/5/2018	12:16:59	PM	1	222	R	0.1		**0**	**315**
209	4/5/2018	12:17:10	PM	0	212	R	0.1		**-2**	**210**
210	4/5/2018	12:17:22	PM	8	201	R	0.1		**12**	**94**
211	4/5/2018	12:17:34	PM	2	262	R	0.1		**2**	**735**
212	4/5/2018	12:17:45	PM	11	248	R	0.1		**17**	**588**
213	4/5/2018	12:17:57	PM	2	249	R	0.1		**2**	**598**
214	4/5/2018	12:18:09	PM	1	264	R	0.1		**0**	**756**
215	4/5/2018	12:18:20	PM	2	203	R	0.1		**2**	**115**
216	4/5/2018	12:18:32	PM	2	189	R	0.1		**2**	**-31**
217	4/5/2018	12:18:44	PM	3	194	R	0.1		**3**	**21**
218	4/5/2018	12:18:55	PM	1	190	R	0.1		**0**	**-21**
219	4/5/2018	12:19:17	PM	2	205	R	0.1		**2**	**136**
220	4/5/2018	12:24:15	PM	5	188	R	0.1	Grid 7	**7**	**-42**
221	4/5/2018	12:24:27	PM	3	197	R	0.1		**3**	**52**
222	4/5/2018	12:24:38	PM	2	190	R	0.1		**2**	**-21**
223	4/5/2018	12:24:50	PM	2	198	R	0.1		**2**	**63**
224	4/5/2018	12:25:02	PM	3	238	R	0.1		**3**	**483**
225	4/5/2018	12:25:13	PM	0	199	R	0.1		**-2**	**73**
226	4/5/2018	12:25:25	PM	11	209	R	0.1		**17**	**178**
227	4/5/2018	12:25:37	PM	13	203	R	0.1		**20**	**115**
228	4/5/2018	12:25:48	PM	3	198	R	0.1		**3**	**63**
229	4/5/2018	12:26:00	PM	0	182	R	0.1		**-2**	**-105**
230	4/5/2018	12:26:12	PM	13	187	R	0.1		**20**	**-52**
231	4/5/2018	12:26:23	PM	3	202	R	0.1		**3**	**105**
232	4/5/2018	12:26:35	PM	7	192	R	0.1		**10**	**0**
233	4/5/2018	12:26:47	PM	1	199	R	0.1		**0**	**73**
234	4/5/2018	12:26:58	PM	2	187	R	0.1		**2**	**-52**
235	4/5/2018	12:27:10	PM	5	192	R	0.1		**7**	**0**
236	4/5/2018	12:27:22	PM	3	184	R	0.1		**3**	**-84**
237	4/5/2018	12:27:33	PM	4	201	R	0.1		**5**	**94**
238	4/5/2018	12:27:45	PM	9	244	R	0.1		**14**	**546**
239	4/5/2018	12:27:57	PM	2	197	R	0.1		**2**	**52**
240	4/5/2018	12:28:08	PM	2	191	R	0.1		**2**	**-10**
241	4/5/2018	12:28:20	PM	2	231	R	0.1		**2**	**409**
242	4/5/2018	12:28:32	PM	4	198	R	0.1		**5**	**63**
243	4/5/2018	12:28:43	PM	1	210	R	0.1		**0**	**189**
244	4/5/2018	12:28:55	PM	0	190	R	0.1		**-2**	**-21**
245	4/5/2018	12:29:07	PM	0	203	R	0.1		**-2**	**115**
246	4/5/2018	12:29:18	PM	3	194	R	0.1		**3**	**21**
247	4/5/2018	12:29:30	PM	0	233	R	0.1		**-2**	**430**
248	4/5/2018	12:29:42	PM	0	199	R	0.1		**-2**	**73**
249	4/5/2018	12:29:53	PM	0	188	R	0.1		**-2**	**-42**
250	4/5/2018	12:33:49	PM	16	217	R	0.1	Grid 8	**26**	**262**

251	4/5/2018	12:34:01 PM	3	220	R	0.1		**3**	**294**
252	4/5/2018	12:34:13 PM	6	189	R	0.1		**9**	**-31**
253	4/5/2018	12:34:24 PM	1	216	R	0.1		**0**	**252**
254	4/5/2018	12:34:36 PM	8	198	R	0.1		**12**	**63**
255	4/5/2018	12:34:48 PM	2	208	R	0.1		**2**	**168**
256	4/5/2018	12:34:59 PM	1	189	R	0.1		**0**	**-31**
257	4/5/2018	12:35:11 PM	2	186	R	0.1		**2**	**-63**
258	4/5/2018	12:35:23 PM	0	187	R	0.1		**-2**	**-52**
259	4/5/2018	12:35:34 PM	3	206	R	0.1		**3**	**147**
260	4/5/2018	12:35:46 PM	0	184	R	0.1		**-2**	**-84**
261	4/5/2018	12:35:58 PM	6	197	R	0.1		**9**	**52**
262	4/5/2018	12:36:09 PM	1	186	R	0.1		**0**	**-63**
263	4/5/2018	12:36:21 PM	0	188	R	0.1		**-2**	**-42**
264	4/5/2018	12:36:33 PM	0	193	R	0.1		**-2**	**10**
265	4/5/2018	12:36:44 PM	3	201	R	0.1		**3**	**94**
266	4/5/2018	12:36:56 PM	1	195	R	0.1		**0**	**31**
267	4/5/2018	12:37:08 PM	1	227	R	0.1		**0**	**367**
268	4/5/2018	12:37:19 PM	2	188	R	0.1		**2**	**-42**
269	4/5/2018	12:37:31 PM	2	184	R	0.1		**2**	**-84**
270	4/5/2018	12:37:43 PM	1	197	R	0.1		**0**	**52**
271	4/5/2018	12:37:54 PM	3	190	R	0.1		**3**	**-21**
272	4/5/2018	12:38:06 PM	3	193	R	0.1		**3**	**10**
273	4/5/2018	12:38:18 PM	2	205	R	0.1		**2**	**136**
274	4/5/2018	12:38:29 PM	1	190	R	0.1		**0**	**-21**
275	4/5/2018	12:38:41 PM	1	196	R	0.1		**0**	**42**
276	4/5/2018	12:38:53 PM	1	193	R	0.1		**0**	**10**
277	4/5/2018	12:39:04 PM	0	189	R	0.1		**-2**	**-31**
278	4/5/2018	12:39:16 PM	0	190	R	0.1		**-2**	**-21**
279	4/5/2018	12:39:28 PM	12	188	R	0.1		**19**	**-42**
280	4/5/2018	12:39:39 PM	6	191	R	0.1		**9**	**-10**
281	4/5/2018	12:39:51 PM	1	186	R	0.1		**0**	**-63**
282	4/5/2018	12:47:00 PM	2	195	R	0.1	Grid 16	**2**	**31**
283	4/5/2018	12:47:11 PM	1	187	R	0.1		**0**	**-52**
284	4/5/2018	12:47:23 PM	1	193	R	0.1		**0**	**10**
285	4/5/2018	12:47:35 PM	2	189	R	0.1		**2**	**-31**
286	4/5/2018	12:47:46 PM	3	197	R	0.1		**3**	**52**
287	4/5/2018	12:47:58 PM	2	199	R	0.1		**2**	**73**
288	4/5/2018	12:48:10 PM	1	202	R	0.1		**0**	**105**
289	4/5/2018	12:48:21 PM	4	190	R	0.1		**5**	**-21**
290	4/5/2018	12:48:33 PM	2	190	R	0.1		**2**	**-21**
291	4/5/2018	12:48:45 PM	1	199	R	0.1		**0**	**73**
292	4/5/2018	12:48:56 PM	2	252	R	0.1		**2**	**630**
293	4/5/2018	12:49:08 PM	2	205	R	0.1		**2**	**136**
294	4/5/2018	12:49:20 PM	2	186	R	0.1		**2**	**-63**
295	4/5/2018	12:49:31 PM	1	189	R	0.1		**0**	**-31**
296	4/5/2018	12:49:43 PM	3	200	R	0.1		**3**	**84**
297	4/5/2018	12:49:55 PM	2	195	R	0.1		**2**	**31**
298	4/5/2018	12:50:06 PM	3	217	R	0.1		**3**	**262**
299	4/5/2018	12:50:18 PM	2	207	R	0.1		**2**	**157**
300	4/5/2018	12:50:30 PM	1	183	R	0.1		**0**	**-94**
301	4/5/2018	12:50:41 PM	2	215	R	0.1		**2**	**241**
302	4/5/2018	12:50:53 PM	1	195	R	0.1		**0**	**31**
303	4/5/2018	12:51:05 PM	0	196	R	0.1		**-2**	**42**

304	4/5/2018	12:51:16 PM	0	225	R	0.1		**-2**	**346**
305	4/5/2018	12:51:28 PM	3	206	R	0.1		**3**	**147**
306	4/5/2018	12:51:40 PM	2	196	R	0.1		**2**	**42**
307	4/5/2018	12:51:51 PM	1	190	R	0.1		**0**	**-21**
308	4/5/2018	12:52:03 PM	3	225	R	0.1		**3**	**346**
309	4/5/2018	12:52:15 PM	0	204	R	0.1		**-2**	**126**
310	4/5/2018	12:52:26 PM	6	187	R	0.1		**9**	**-52**
311	4/5/2018	12:52:38 PM	1	193	R	0.1		**0**	**10**
312	4/5/2018	12:52:50 PM	2	185	R	0.1		**2**	**-73**
313	4/5/2018	12:53:01 PM	2	191	R	0.1		**2**	**-10**
314	4/5/2018	12:53:13 PM	3	189	R	0.1		**3**	**-31**
315	4/5/2018	12:53:25 PM	2	186	R	0.1		**2**	**-63**
316	4/5/2018	12:53:36 PM	1	188	R	0.1		**0**	**-42**
317	4/5/2018	12:53:48 PM	1	195	R	0.1		**0**	**31**
318	4/5/2018	12:54:00 PM	2	187	R	0.1		**2**	**-52**
319	4/5/2018	12:54:11 PM	2	188	R	0.1		**2**	**-42**
320	4/5/2018	12:58:49 PM	3	191	R	0.1	Grid 17	**3**	**-10**
321	4/5/2018	12:59:00 PM	1	191	R	0.1		**0**	**-10**
322	4/5/2018	12:59:12 PM	2	187	R	0.1		**2**	**-52**
323	4/5/2018	12:59:24 PM	1	203	R	0.1		**0**	**115**
324	4/5/2018	12:59:35 PM	2	190	R	0.1		**2**	**-21**
325	4/5/2018	12:59:47 PM	2	222	R	0.1		**2**	**315**
326	4/5/2018	12:59:59 PM	6	206	R	0.1		**9**	**147**
327	4/5/2018	1:00:10 PM	4	192	R	0.1		**5**	**0**
328	4/5/2018	1:00:22 PM	3	197	R	0.1		**3**	**52**
329	4/5/2018	1:00:34 PM	2	188	R	0.1		**2**	**-42**
330	4/5/2018	1:00:45 PM	1	188	R	0.1		**0**	**-42**
331	4/5/2018	1:00:57 PM	2	237	R	0.1		**2**	**472**
332	4/5/2018	1:01:09 PM	0	197	R	0.1		**-2**	**52**
333	4/5/2018	1:01:20 PM	8	196	R	0.1		**12**	**42**
334	4/5/2018	1:01:32 PM	7	195	R	0.1		**10**	**31**
335	4/5/2018	1:01:44 PM	1	201	R	0.1		**0**	**94**
336	4/5/2018	1:01:55 PM	2	195	R	0.1		**2**	**31**
337	4/5/2018	1:02:07 PM	3	193	R	0.1		**3**	**10**
338	4/5/2018	1:02:19 PM	1	188	R	0.1		**0**	**-42**
339	4/5/2018	1:02:30 PM	3	194	R	0.1		**3**	**21**
340	4/5/2018	1:02:42 PM	2	204	R	0.1		**2**	**126**
341	4/5/2018	1:02:54 PM	0	233	R	0.1		**-2**	**430**
342	4/5/2018	1:03:05 PM	0	211	R	0.1		**-2**	**199**
343	4/5/2018	1:03:17 PM	8	198	R	0.1		**12**	**63**
344	4/5/2018	1:03:29 PM	2	202	R	0.1		**2**	**105**
345	4/5/2018	1:03:40 PM	0	189	R	0.1		**-2**	**-31**
346	4/5/2018	1:03:52 PM	4	202	R	0.1		**5**	**105**
347	4/5/2018	1:04:04 PM	1	231	R	0.1		**0**	**409**
348	4/5/2018	1:04:15 PM	6	187	R	0.1		**9**	**-52**
349	4/5/2018	1:04:27 PM	1	184	R	0.1		**0**	**-84**
350	4/5/2018	1:04:38 PM	12	193	R	0.1		**19**	**10**
351	4/5/2018	1:04:50 PM	15	199	R	0.1		**24**	**73**
352	4/5/2018	1:05:02 PM	3	188	R	0.1		**3**	**-42**
353	4/5/2018	1:05:13 PM	1	229	R	0.1		**0**	**388**
354	4/5/2018	1:05:25 PM	2	188	R	0.1		**2**	**-42**
355	4/5/2018	1:05:37 PM	3	188	R	0.1		**3**	**-42**
356	4/5/2018	1:05:48 PM	3	205	R	0.1		**3**	**136**

357	4/5/2018	1:06:00 PM	2	192	R	0.1		**2**	**0**
358	4/5/2018	1:06:12 PM	1	190	R	0.1		**0**	**-21**
359	4/5/2018	1:06:23 PM	2	192	R	0.1		**2**	**0**
360	4/5/2018	1:10:24 PM	2	186	R	0.1	Grid 18	**2**	**-63**
361	4/5/2018	1:10:36 PM	1	189	R	0.1		**0**	**-31**
362	4/5/2018	1:10:47 PM	2	179	R	0.1		**2**	**-136**
363	4/5/2018	1:10:59 PM	0	187	R	0.1		**-2**	**-52**
364	4/5/2018	1:11:11 PM	0	193	R	0.1		**-2**	**10**
365	4/5/2018	1:11:22 PM	0	230	R	0.1		**-2**	**399**
366	4/5/2018	1:11:34 PM	8	230	R	0.1		**12**	**399**
367	4/5/2018	1:11:46 PM	2	254	R	0.1		**2**	**651**
368	4/5/2018	1:11:57 PM	3	191	R	0.1		**3**	**-10**
369	4/5/2018	1:12:09 PM	2	213	R	0.1		**2**	**220**
370	4/5/2018	1:12:21 PM	0	189	R	0.1		**-2**	**-31**
371	4/5/2018	1:12:32 PM	1	191	R	0.1		**0**	**-10**
372	4/5/2018	1:12:44 PM	2	205	R	0.1		**2**	**136**
373	4/5/2018	1:12:56 PM	3	209	R	0.1		**3**	**178**
374	4/5/2018	1:13:07 PM	0	227	R	0.1		**-2**	**367**
375	4/5/2018	1:13:19 PM	2	191	R	0.1		**2**	**-10**
376	4/5/2018	1:13:31 PM	2	209	R	0.1		**2**	**178**
377	4/5/2018	1:13:42 PM	1	200	R	0.1		**0**	**84**
378	4/5/2018	1:13:54 PM	1	189	R	0.1		**0**	**-31**
379	4/5/2018	1:14:06 PM	2	189	R	0.1		**2**	**-31**
380	4/5/2018	1:14:17 PM	3	190	R	0.1		**3**	**-21**
381	4/5/2018	1:14:29 PM	2	200	R	0.1		**2**	**84**
382	4/5/2018	1:14:41 PM	1	185	R	0.1		**0**	**-73**
383	4/5/2018	1:14:52 PM	2	211	R	0.1		**2**	**199**
384	4/5/2018	1:15:04 PM	3	189	R	0.1		**3**	**-31**
385	4/5/2018	1:15:16 PM	4	199	R	0.1		**5**	**73**
386	4/5/2018	1:15:27 PM	2	202	R	0.1		**2**	**105**
387	4/5/2018	1:15:39 PM	0	213	R	0.1		**-2**	**220**
388	4/5/2018	1:15:51 PM	0	194	R	0.1		**-2**	**21**
389	4/5/2018	1:16:02 PM	0	195	R	0.1		**-2**	**31**
390	4/5/2018	1:16:14 PM	4	183	R	0.1		**5**	**-94**
391	4/5/2018	1:16:26 PM	1	189	R	0.1		**0**	**-31**
392	4/5/2018	1:16:37 PM	0	183	R	0.1		**-2**	**-94**
393	4/5/2018	1:16:49 PM	3	188	R	0.1		**3**	**-42**
394	4/5/2018	1:17:01 PM	2	190	R	0.1		**2**	**-21**
395	4/5/2018	1:17:12 PM	1	188	R	0.1		**0**	**-42**
396	4/5/2018	1:17:24 PM	3	185	R	0.1		**3**	**-73**
397	4/5/2018	1:17:36 PM	0	198	R	0.1		**-2**	**63**
398	4/5/2018	1:17:47 PM	1	211	R	0.1		**0**	**199**
399	4/5/2018	1:17:59 PM	2	189	R	0.1		**2**	**-31**
400	4/5/2018	1:21:32 PM	3	189	R	0.1	Grid 19	**3**	**-31**
401	4/5/2018	1:21:44 PM	2	190	R	0.1		**2**	**-21**
402	4/5/2018	1:21:56 PM	1	186	R	0.1		**0**	**-63**
403	4/5/2018	1:22:07 PM	2	191	R	0.1		**2**	**-10**
404	4/5/2018	1:22:19 PM	1	186	R	0.1		**0**	**-63**
405	4/5/2018	1:22:31 PM	2	188	R	0.1		**2**	**-42**
406	4/5/2018	1:22:42 PM	0	195	R	0.1		**-2**	**31**
407	4/5/2018	1:22:54 PM	2	207	R	0.1		**2**	**157**
408	4/5/2018	1:23:06 PM	4	189	R	0.1		**5**	**-31**
409	4/5/2018	1:23:17 PM	1	229	R	0.1		**0**	**388**

410	4/5/2018	1:23:29 PM	1	228	R	0.1		**0**	**378**
411	4/5/2018	1:23:41 PM	1	195	R	0.1		**0**	**31**
412	4/5/2018	1:23:52 PM	2	190	R	0.1		**2**	**-21**
413	4/5/2018	1:24:04 PM	2	192	R	0.1		**2**	**0**
414	4/5/2018	1:24:16 PM	1	190	R	0.1		**0**	**-21**
415	4/5/2018	1:24:27 PM	1	193	R	0.1		**0**	**10**
416	4/5/2018	1:24:39 PM	0	185	R	0.1		**-2**	**-73**
417	4/5/2018	1:24:51 PM	2	215	R	0.1		**2**	**241**
418	4/5/2018	1:25:02 PM	3	190	R	0.1		**3**	**-21**
419	4/5/2018	1:25:14 PM	2	202	R	0.1		**2**	**105**
420	4/5/2018	1:25:26 PM	1	188	R	0.1		**0**	**-42**
421	4/5/2018	1:25:37 PM	2	191	R	0.1		**2**	**-10**
422	4/5/2018	1:25:49 PM	2	193	R	0.1		**2**	**10**
423	4/5/2018	1:26:01 PM	1	192	R	0.1		**0**	**0**
424	4/5/2018	1:26:12 PM	2	194	R	0.1		**2**	**21**
425	4/5/2018	1:26:24 PM	0	186	R	0.1		**-2**	**-63**
426	4/5/2018	1:26:36 PM	5	191	R	0.1		**7**	**-10**
427	4/5/2018	1:26:47 PM	1	192	R	0.1		**0**	**0**
428	4/5/2018	1:26:59 PM	2	190	R	0.1		**2**	**-21**
429	4/5/2018	1:27:11 PM	1	185	R	0.1		**0**	**-73**
430	4/5/2018	1:27:22 PM	2	186	R	0.1		**2**	**-63**
431	4/5/2018	1:27:34 PM	1	192	R	0.1		**0**	**0**
432	4/5/2018	1:27:46 PM	0	188	R	0.1		**-2**	**-42**
433	4/5/2018	1:27:57 PM	2	217	R	0.1		**2**	**262**
434	4/5/2018	1:28:09 PM	3	221	R	0.1		**3**	**304**
435	4/5/2018	1:28:21 PM	0	194	R	0.1		**-2**	**21**
436	4/5/2018	1:28:32 PM	0	185	R	0.1		**-2**	**-73**
437	4/5/2018	1:28:44 PM	0	192	R	0.1		**-2**	**0**
438	4/5/2018	1:28:56 PM	0	200	R	0.1		**-2**	**84**
439	4/5/2018	1:29:07 PM	11	203	R	0.1		**17**	**115**
440	4/5/2018	1:33:26 PM	0	202	R	0.1	Grid 20	**-2**	**105**
441	4/5/2018	1:33:37 PM	1	213	R	0.1		**0**	**220**
442	4/5/2018	1:33:49 PM	2	186	R	0.1		**2**	**-63**
443	4/5/2018	1:34:01 PM	1	190	R	0.1		**0**	**-21**
444	4/5/2018	1:34:12 PM	1	191	R	0.1		**0**	**-10**
445	4/5/2018	1:34:24 PM	2	196	R	0.1		**2**	**42**
446	4/5/2018	1:34:36 PM	3	187	R	0.1		**3**	**-52**
447	4/5/2018	1:34:47 PM	2	201	R	0.1		**2**	**94**
448	4/5/2018	1:34:59 PM	1	188	R	0.1		**0**	**-42**
449	4/5/2018	1:35:11 PM	1	191	R	0.1		**0**	**-10**
450	4/5/2018	1:35:22 PM	2	193	R	0.1		**2**	**10**
451	4/5/2018	1:35:34 PM	3	193	R	0.1		**3**	**10**
452	4/5/2018	1:35:46 PM	1	198	R	0.1		**0**	**63**
453	4/5/2018	1:35:57 PM	2	186	R	0.1		**2**	**-63**
454	4/5/2018	1:36:09 PM	2	211	R	0.1		**2**	**199**
455	4/5/2018	1:36:21 PM	4	193	R	0.1		**5**	**10**
456	4/5/2018	1:36:32 PM	2	223	R	0.1		**2**	**325**
457	4/5/2018	1:36:44 PM	1	190	R	0.1		**0**	**-21**
458	4/5/2018	1:36:56 PM	0	204	R	0.1		**-2**	**126**
459	4/5/2018	1:37:07 PM	3	195	R	0.1		**3**	**31**
460	4/5/2018	1:37:19 PM	1	227	R	0.1		**0**	**367**
461	4/5/2018	1:37:31 PM	2	201	R	0.1		**2**	**94**
462	4/5/2018	1:37:42 PM	1	196	R	0.1		**0**	**42**

463	4/5/2018	1:37:54 PM	1	196	R	0.1		**0**	**42**
464	4/5/2018	1:38:06 PM	3	193	R	0.1		**3**	**10**
465	4/5/2018	1:38:17 PM	2	206	R	0.1		**2**	**147**
466	4/5/2018	1:38:29 PM	1	199	R	0.1		**0**	**73**
467	4/5/2018	1:38:41 PM	2	220	R	0.1		**2**	**294**
468	4/5/2018	1:38:52 PM	1	192	R	0.1		**0**	**0**
469	4/5/2018	1:39:04 PM	4	191	R	0.1		**5**	**-10**
470	4/5/2018	1:39:16 PM	9	207	R	0.1		**14**	**157**
471	4/5/2018	1:39:27 PM	14	189	R	0.1		**22**	**-31**
472	4/5/2018	1:39:39 PM	3	202	R	0.1		**3**	**105**
473	4/5/2018	1:39:51 PM	2	201	R	0.1		**2**	**94**
474	4/5/2018	1:40:02 PM	1	191	R	0.1		**0**	**-10**
475	4/5/2018	1:40:14 PM	1	193	R	0.1		**0**	**10**
476	4/5/2018	1:40:26 PM	2	192	R	0.1		**2**	**0**
477	4/5/2018	1:40:37 PM	1	193	R	0.1		**0**	**10**
478	4/5/2018	1:40:49 PM	1	198	R	0.1		**0**	**63**
479	4/5/2018	1:41:01 PM	0	206	R	0.1		**-2**	**147**
		Maximum:	**18**	**287**				**29**	**997**
		Average:	**3**	**209**				**3**	**182**
		StDev:	**3**	**25**				**5**	**257**

2360 SN:297758
43-93# 299597
Cal Due Date: 2/14/2019
Surveyor: Richard Thatcher
Tunnel
Grids 9 thru 15 24 thru 30
Alpha Efficiency: 0.444
Beta/Gamma Efficiency: 0.313
Alpha Background: 1
Beta/Gamma Background: 175

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/5/2018	10:24:25	AM	2	171	R	0.1	Grid 9	**2**	**-34**
2	4/5/2018	10:24:36	AM	0	180	R	0.1		**-2**	**43**
3	4/5/2018	10:24:48	AM	3	188	R	0.1		**3**	**111**
4	4/5/2018	10:25:00	AM	4	233	R	0.1		**5**	**494**
5	4/5/2018	10:25:11	AM	0	212	R	0.1		**-2**	**315**
6	4/5/2018	10:25:23	AM	3	222	R	0.1		**3**	**400**
7	4/5/2018	10:25:35	AM	2	192	R	0.1		**2**	**145**
8	4/5/2018	10:25:46	AM	0	252	R	0.1		**-2**	**656**
9	4/5/2018	10:25:58	AM	1	196	R	0.1		**0**	**179**
10	4/5/2018	10:26:09	AM	2	180	R	0.1		**2**	**43**
11	4/5/2018	10:26:21	AM	0	228	R	0.1		**-2**	**452**
12	4/5/2018	10:26:33	AM	9	232	R	0.1		**12**	**486**
13	4/5/2018	10:26:44	AM	2	254	R	0.1		**2**	**673**
14	4/5/2018	10:26:56	AM	3	275	R	0.1		**3**	**852**
15	4/5/2018	10:27:08	AM	2	244	R	0.1		**2**	**588**
16	4/5/2018	10:27:19	AM	1	246	R	0.1		**0**	**605**
17	4/5/2018	10:27:31	AM	2	289	R	0.1		**2**	**971**
18	4/5/2018	10:27:43	AM	1	249	R	0.1		**0**	**630**
19	4/5/2018	10:27:54	AM	2	236	R	0.1		**2**	**520**
20	4/5/2018	10:28:06	AM	0	271	R	0.1		**-2**	**818**
21	4/5/2018	10:28:17	AM	3	219	R	0.1		**3**	**375**
22	4/5/2018	10:28:29	AM	0	158	R	0.1		**-2**	**-145**
23	4/5/2018	10:28:41	AM	1	201	R	0.1		**0**	**222**
24	4/5/2018	10:28:52	AM	2	270	R	0.1		**2**	**809**
25	4/5/2018	10:29:04	AM	1	266	R	0.1		**0**	**775**
26	4/5/2018	10:29:16	AM	6	230	R	0.1		**8**	**469**
27	4/5/2018	10:29:27	AM	1	271	R	0.1		**0**	**818**
28	4/5/2018	10:29:39	AM	6	291	R	0.1		**8**	**988**
29	4/5/2018	10:29:51	AM	1	268	R	0.1		**0**	**792**
30	4/5/2018	10:30:02	AM	2	288	R	0.1		**2**	**963**
31	4/5/2018	10:30:14	AM	4	290	R	0.1		**5**	**980**
32	4/5/2018	10:30:25	AM	3	345	R	0.1		**3**	**1448**
33	4/5/2018	10:30:37	AM	2	221	R	0.1		**2**	**392**
34	4/5/2018	10:30:49	AM	2	256	R	0.1		**2**	**690**
35	4/5/2018	10:31:00	AM	1	236	R	0.1		**0**	**520**
36	4/5/2018	10:31:12	AM	0	228	R	0.1		**-2**	**452**
37	4/5/2018	10:31:24	AM	10	221	R	0.1		**14**	**392**
38	4/5/2018	10:31:35	AM	2	257	R	0.1		**2**	**699**
39	4/5/2018	10:31:47	AM	1	200	R	0.1		**0**	**213**
40	4/5/2018	10:34:27	AM	0	182	R	0.1	Grid 10	**-2**	**60**
41	4/5/2018	10:34:38	AM	9	188	R	0.1		**12**	**111**

42	4/5/2018	10:34:50 AM	2	237	R	0.1	**2**	**528**
43	4/5/2018	10:35:02 AM	0	234	R	0.1	**-2**	**503**
44	4/5/2018	10:35:13 AM	0	251	R	0.1	**-2**	**647**
45	4/5/2018	10:35:25 AM	12	222	R	0.1	**17**	**400**
46	4/5/2018	10:35:37 AM	3	234	R	0.1	**3**	**503**
47	4/5/2018	10:35:48 AM	2	213	R	0.1	**2**	**324**
48	4/5/2018	10:36:00 AM	3	182	R	0.1	**3**	**60**
49	4/5/2018	10:36:11 AM	1	169	R	0.1	**0**	**-51**
50	4/5/2018	10:36:23 AM	2	170	R	0.1	**2**	**-43**
51	4/5/2018	10:36:35 AM	1	256	R	0.1	**0**	**690**
52	4/5/2018	10:36:46 AM	9	196	R	0.1	**12**	**179**
53	4/5/2018	10:36:58 AM	6	236	R	0.1	**8**	**520**
54	4/5/2018	10:37:10 AM	1	255	R	0.1	**0**	**682**
55	4/5/2018	10:37:21 AM	0	256	R	0.1	**-2**	**690**
56	4/5/2018	10:37:33 AM	3	179	R	0.1	**3**	**34**
57	4/5/2018	10:37:45 AM	0	190	R	0.1	**-2**	**128**
58	4/5/2018	10:37:56 AM	0	226	R	0.1	**-2**	**435**
59	4/5/2018	10:38:08 AM	0	281	R	0.1	**-2**	**903**
60	4/5/2018	10:38:19 AM	4	198	R	0.1	**5**	**196**
61	4/5/2018	10:38:31 AM	6	289	R	0.1	**8**	**971**
62	4/5/2018	10:38:43 AM	1	217	R	0.1	**0**	**358**
63	4/5/2018	10:38:54 AM	0	171	R	0.1	**-2**	**-34**
64	4/5/2018	10:39:06 AM	1	239	R	0.1	**0**	**545**
65	4/5/2018	10:39:18 AM	2	228	R	0.1	**2**	**452**
66	4/5/2018	10:39:29 AM	3	225	R	0.1	**3**	**426**
67	4/5/2018	10:39:41 AM	1	202	R	0.1	**0**	**230**
68	4/5/2018	10:39:53 AM	2	222	R	0.1	**2**	**400**
69	4/5/2018	10:40:04 AM	1	215	R	0.1	**0**	**341**
70	4/5/2018	10:40:16 AM	2	271	R	0.1	**2**	**818**
71	4/5/2018	10:40:28 AM	3	216	R	0.1	**3**	**349**
72	4/5/2018	10:40:39 AM	4	195	R	0.1	**5**	**170**
73	4/5/2018	10:40:51 AM	0	265	R	0.1	**-2**	**767**
74	4/5/2018	10:41:02 AM	8	221	R	0.1	**11**	**392**
75	4/5/2018	10:41:14 AM	2	212	R	0.1	**2**	**315**
76	4/5/2018	10:41:26 AM	2	281	R	0.1	**2**	**903**
77	4/5/2018	10:41:37 AM	3	192	R	0.1	**3**	**145**
78	4/5/2018	10:41:49 AM	1	245	R	0.1	**0**	**596**
79	4/5/2018	10:42:01 AM	2	224	R	0.1	**2**	**417**
80	4/5/2018	10:46:16 AM	0	186	R	0.1 Grid 11	**-2**	**94**
81	4/5/2018	10:46:27 AM	6	202	R	0.1	**8**	**230**
82	4/5/2018	10:46:39 AM	1	203	R	0.1	**0**	**239**
83	4/5/2018	10:46:51 AM	9	176	R	0.1	**12**	**9**
84	4/5/2018	10:47:02 AM	2	219	R	0.1	**2**	**375**
85	4/5/2018	10:47:14 AM	2	226	R	0.1	**2**	**435**
86	4/5/2018	10:47:25 AM	4	237	R	0.1	**5**	**528**
87	4/5/2018	10:47:37 AM	4	206	R	0.1	**5**	**264**
88	4/5/2018	10:47:49 AM	1	230	R	0.1	**0**	**469**
89	4/5/2018	10:48:00 AM	2	219	R	0.1	**2**	**375**
90	4/5/2018	10:48:12 AM	3	187	R	0.1	**3**	**102**
91	4/5/2018	10:48:24 AM	2	206	R	0.1	**2**	**264**
92	4/5/2018	10:48:35 AM	1	212	R	0.1	**0**	**315**
93	4/5/2018	10:48:47 AM	1	216	R	0.1	**0**	**349**
94	4/5/2018	10:48:59 AM	9	269	R	0.1	**12**	**801**
95	4/5/2018	10:49:10 AM	2	178	R	0.1	**2**	**26**
96	4/5/2018	10:49:22 AM	0	283	R	0.1	**-2**	**920**
97	4/5/2018	10:49:33 AM	0	254	R	0.1	**-2**	**673**

98	4/5/2018	10:49:45 AM	13	175	R	0.1	**19**	**0**
99	4/5/2018	10:49:57 AM	7	274	R	0.1	**9**	**843**
100	4/5/2018	10:50:08 AM	1	277	R	0.1	**0**	**869**
101	4/5/2018	10:50:20 AM	0	235	R	0.1	**-2**	**511**
102	4/5/2018	10:50:32 AM	0	222	R	0.1	**-2**	**400**
103	4/5/2018	10:50:43 AM	0	251	R	0.1	**-2**	**647**
104	4/5/2018	10:50:55 AM	5	280	R	0.1	**6**	**895**
105	4/5/2018	10:51:06 AM	1	287	R	0.1	**0**	**954**
106	4/5/2018	10:51:18 AM	0	241	R	0.1	**-2**	**562**
107	4/5/2018	10:51:30 AM	0	267	R	0.1	**-2**	**784**
108	4/5/2018	10:51:41 AM	0	203	R	0.1	**-2**	**239**
109	4/5/2018	10:51:53 AM	6	272	R	0.1	**8**	**826**
110	4/5/2018	10:52:05 AM	5	257	R	0.1	**6**	**699**
111	4/5/2018	10:52:16 AM	1	248	R	0.1	**0**	**622**
112	4/5/2018	10:52:28 AM	2	220	R	0.1	**2**	**383**
113	4/5/2018	10:52:40 AM	3	255	R	0.1	**3**	**682**
114	4/5/2018	10:52:51 AM	1	278	R	0.1	**0**	**878**
115	4/5/2018	10:53:03 AM	2	285	R	0.1	**2**	**937**
116	4/5/2018	10:53:14 AM	0	287	R	0.1	**-2**	**954**
117	4/5/2018	10:53:26 AM	4	284	R	0.1	**5**	**929**
118	4/5/2018	10:53:38 AM	2	286	R	0.1	**2**	**946**
119	4/5/2018	10:53:49 AM	3	227	R	0.1	**3**	**443**
120	4/5/2018	10:57:48 AM	1	194	R	0.1 Grid 12	**0**	**162**
121	4/5/2018	10:58:00 AM	2	208	R	0.1	**2**	**281**
122	4/5/2018	10:58:12 AM	3	260	R	0.1	**3**	**724**
123	4/5/2018	10:58:23 AM	0	247	R	0.1	**-2**	**613**
124	4/5/2018	10:58:35 AM	3	247	R	0.1	**3**	**613**
125	4/5/2018	10:58:46 AM	4	202	R	0.1	**5**	**230**
126	4/5/2018	10:58:58 AM	3	215	R	0.1	**3**	**341**
127	4/5/2018	10:59:10 AM	2	245	R	0.1	**2**	**596**
128	4/5/2018	10:59:21 AM	0	201	R	0.1	**-2**	**222**
129	4/5/2018	10:59:33 AM	3	234	R	0.1	**3**	**503**
130	4/5/2018	10:59:45 AM	5	272	R	0.1	**6**	**826**
131	4/5/2018	10:59:56 AM	1	230	R	0.1	**0**	**469**
132	4/5/2018	11:00:08 AM	0	200	R	0.1	**-2**	**213**
133	4/5/2018	11:00:20 AM	0	179	R	0.1	**-2**	**34**
134	4/5/2018	11:00:31 AM	4	203	R	0.1	**5**	**239**
135	4/5/2018	11:00:43 AM	1	238	R	0.1	**0**	**537**
136	4/5/2018	11:00:54 AM	4	277	R	0.1	**5**	**869**
137	4/5/2018	11:01:06 AM	1	223	R	0.1	**0**	**409**
138	4/5/2018	11:01:18 AM	2	224	R	0.1	**2**	**417**
139	4/5/2018	11:01:29 AM	3	268	R	0.1	**3**	**792**
140	4/5/2018	11:01:41 AM	2	281	R	0.1	**2**	**903**
141	4/5/2018	11:01:53 AM	1	187	R	0.1	**0**	**102**
142	4/5/2018	11:02:04 AM	2	249	R	0.1	**2**	**630**
143	4/5/2018	11:02:16 AM	3	222	R	0.1	**3**	**400**
144	4/5/2018	11:02:27 AM	3	277	R	0.1	**3**	**869**
145	4/5/2018	11:02:39 AM	8	292	R	0.1	**11**	**997**
146	4/5/2018	11:02:51 AM	2	271	R	0.1	**2**	**818**
147	4/5/2018	11:03:02 AM	0	286	R	0.1	**-2**	**946**
148	4/5/2018	11:03:14 AM	3	272	R	0.1	**3**	**826**
149	4/5/2018	11:03:26 AM	2	288	R	0.1	**2**	**963**
150	4/5/2018	11:03:37 AM	1	254	R	0.1	**0**	**673**
151	4/5/2018	11:03:49 AM	2	239	R	0.1	**2**	**545**
152	4/5/2018	11:04:01 AM	2	254	R	0.1	**2**	**673**
153	4/5/2018	11:04:12 AM	4	262	R	0.1	**5**	**741**

154	4/5/2018	11:04:24 AM	5	266	R	0.1		**6**	**775**
155	4/5/2018	11:04:35 AM	11	248	R	0.1		**15**	**622**
156	4/5/2018	11:04:47 AM	2	279	R	0.1		**2**	**886**
157	4/5/2018	11:04:59 AM	1	278	R	0.1		**0**	**878**
158	4/5/2018	11:05:10 AM	2	257	R	0.1		**2**	**699**
159	4/5/2018	11:05:22 AM	5	213	R	0.1		**6**	**324**
160	4/5/2018	12:16:11 PM	3	196	R	0.1	Grid 13	**3**	**179**
161	4/5/2018	12:16:23 PM	2	201	R	0.1		**2**	**222**
162	4/5/2018	12:16:35 PM	2	187	R	0.1		**2**	**102**
163	4/5/2018	12:16:46 PM	1	176	R	0.1		**0**	**9**
164	4/5/2018	12:16:58 PM	3	186	R	0.1		**3**	**94**
165	4/5/2018	12:17:10 PM	2	192	R	0.1		**2**	**145**
166	4/5/2018	12:17:21 PM	1	165	R	0.1		**0**	**-85**
167	4/5/2018	12:17:33 PM	0	239	R	0.1		**-2**	**545**
168	4/5/2018	12:17:45 PM	11	228	R	0.1		**15**	**452**
169	4/5/2018	12:17:56 PM	2	252	R	0.1		**2**	**656**
170	4/5/2018	12:18:08 PM	1	214	R	0.1		**0**	**332**
171	4/5/2018	12:18:19 PM	1	195	R	0.1		**0**	**170**
172	4/5/2018	12:18:31 PM	3	236	R	0.1		**3**	**520**
173	4/5/2018	12:18:43 PM	2	280	R	0.1		**2**	**895**
174	4/5/2018	12:18:54 PM	2	287	R	0.1		**2**	**954**
175	4/5/2018	12:19:06 PM	0	216	R	0.1		**-2**	**349**
176	4/5/2018	12:19:18 PM	3	203	R	0.1		**3**	**239**
177	4/5/2018	12:19:29 PM	0	302	R	0.1		**-2**	**1082**
178	4/5/2018	12:19:41 PM	4	292	R	0.1		**5**	**997**
179	4/5/2018	12:19:52 PM	1	273	R	0.1		**0**	**835**
180	4/5/2018	12:20:04 PM	0	293	R	0.1		**-2**	**1005**
181	4/5/2018	12:20:16 PM	0	319	R	0.1		**-2**	**1227**
182	4/5/2018	12:20:27 PM	6	286	R	0.1		**8**	**946**
183	4/5/2018	12:20:39 PM	1	272	R	0.1		**0**	**826**
184	4/5/2018	12:20:51 PM	1	328	R	0.1		**0**	**1304**
185	4/5/2018	12:21:02 PM	2	240	R	0.1		**2**	**554**
186	4/5/2018	12:21:14 PM	0	227	R	0.1		**-2**	**443**
187	4/5/2018	12:21:26 PM	12	311	R	0.1		**17**	**1159**
188	4/5/2018	12:21:37 PM	3	315	R	0.1		**3**	**1193**
189	4/5/2018	12:21:49 PM	12	298	R	0.1		**17**	**1048**
190	4/5/2018	12:22:00 PM	3	281	R	0.1		**3**	**903**
191	4/5/2018	12:22:12 PM	0	276	R	0.1		**-2**	**860**
192	4/5/2018	12:22:24 PM	2	302	R	0.1		**2**	**1082**
193	4/5/2018	12:22:35 PM	3	291	R	0.1		**3**	**988**
194	4/5/2018	12:22:47 PM	4	266	R	0.1		**5**	**775**
195	4/5/2018	12:22:59 PM	1	284	R	0.1		**0**	**929**
196	4/5/2018	12:23:10 PM	0	231	R	0.1		**-2**	**477**
197	4/5/2018	12:23:22 PM	2	224	R	0.1		**2**	**417**
198	4/5/2018	12:23:33 PM	2	184	R	0.1		**2**	**77**
199	4/5/2018	12:23:45 PM	3	290	R	0.1		**3**	**980**
200	4/5/2018	12:26:04 PM	2	182	R	0.1	Grid 14	**2**	**60**
201	4/5/2018	12:26:16 PM	1	240	R	0.1		**0**	**554**
202	4/5/2018	12:26:28 PM	2	288	R	0.1		**2**	**963**
203	4/5/2018	12:26:39 PM	3	290	R	0.1		**3**	**980**
204	4/5/2018	12:26:51 PM	3	284	R	0.1		**3**	**929**
205	4/5/2018	12:27:03 PM	2	246	R	0.1		**2**	**605**
206	4/5/2018	12:27:14 PM	4	216	R	0.1		**5**	**349**
207	4/5/2018	12:27:26 PM	2	239	R	0.1		**2**	**545**
208	4/5/2018	12:27:38 PM	3	201	R	0.1		**3**	**222**
209	4/5/2018	12:27:49 PM	1	187	R	0.1		**0**	**102**

210	4/5/2018	12:28:01 PM	2	231	R	0.1		**2**	**477**
211	4/5/2018	12:28:12 PM	2	290	R	0.1		**2**	**980**
212	4/5/2018	12:28:24 PM	1	311	R	0.1		**0**	**1159**
213	4/5/2018	12:28:36 PM	2	303	R	0.1		**2**	**1091**
214	4/5/2018	12:28:47 PM	3	298	R	0.1		**3**	**1048**
215	4/5/2018	12:29:10 PM	1	187	R	0.1		**0**	**102**
216	4/5/2018	12:29:22 PM	1	181	R	0.1		**0**	**51**
217	4/5/2018	12:29:49 PM	3	173	R	0.1		**3**	**-17**
218	4/5/2018	12:30:00 PM	2	176	R	0.1		**2**	**9**
219	4/5/2018	12:30:12 PM	3	174	R	0.1		**3**	**-9**
220	4/5/2018	12:33:11 PM	5	180	R	0.1	Grid 15	**6**	**43**
221	4/5/2018	12:33:22 PM	2	185	R	0.1		**2**	**85**
222	4/5/2018	12:33:34 PM	0	191	R	0.1		**-2**	**136**
223	4/5/2018	12:33:46 PM	3	222	R	0.1		**3**	**400**
224	4/5/2018	12:33:57 PM	1	226	R	0.1		**0**	**435**
225	4/5/2018	12:34:09 PM	1	182	R	0.1		**0**	**60**
226	4/5/2018	12:34:20 PM	3	184	R	0.1		**3**	**77**
227	4/5/2018	12:34:32 PM	0	178	R	0.1		**-2**	**26**
228	4/5/2018	12:34:44 PM	0	198	R	0.1		**-2**	**196**
229	4/5/2018	12:34:55 PM	10	171	R	0.1		**14**	**-34**
230	4/5/2018	12:35:07 PM	2	176	R	0.1		**2**	**9**
231	4/5/2018	12:35:19 PM	0	198	R	0.1		**-2**	**196**
232	4/5/2018	12:35:30 PM	0	164	R	0.1		**-2**	**-94**
233	4/5/2018	12:35:42 PM	0	217	R	0.1		**-2**	**358**
234	4/5/2018	12:35:54 PM	0	207	R	0.1		**-2**	**273**
235	4/5/2018	12:36:05 PM	0	221	R	0.1		**-2**	**392**
236	4/5/2018	12:36:17 PM	15	271	R	0.1		**22**	**818**
237	4/5/2018	12:36:28 PM	3	181	R	0.1		**3**	**51**
238	4/5/2018	12:36:40 PM	1	192	R	0.1		**0**	**145**
239	4/5/2018	12:36:52 PM	2	183	R	0.1		**2**	**68**
240	4/5/2018	12:41:37 PM	2	178	R	0.1	Grid 24	**2**	**26**
241	4/5/2018	12:41:49 PM	1	175	R	0.1		**0**	**0**
242	4/5/2018	12:42:01 PM	3	188	R	0.1		**3**	**111**
243	4/5/2018	12:42:12 PM	2	180	R	0.1		**2**	**43**
244	4/5/2018	12:42:24 PM	2	171	R	0.1		**2**	**-34**
245	4/5/2018	12:42:36 PM	1	168	R	0.1		**0**	**-60**
246	4/5/2018	12:42:47 PM	1	169	R	0.1		**0**	**-51**
247	4/5/2018	12:42:59 PM	2	165	R	0.1		**2**	**-85**
248	4/5/2018	12:43:10 PM	0	166	R	0.1		**-2**	**-77**
249	4/5/2018	12:43:22 PM	2	170	R	0.1		**2**	**-43**
250	4/5/2018	12:43:34 PM	3	164	R	0.1		**3**	**-94**
251	4/5/2018	12:43:45 PM	1	178	R	0.1		**0**	**26**
252	4/5/2018	12:43:57 PM	2	199	R	0.1		**2**	**204**
253	4/5/2018	12:44:09 PM	2	174	R	0.1		**2**	**-9**
254	4/5/2018	12:44:20 PM	1	195	R	0.1		**0**	**170**
255	4/5/2018	12:44:32 PM	2	187	R	0.1		**2**	**102**
256	4/5/2018	12:44:43 PM	3	205	R	0.1		**3**	**256**
257	4/5/2018	12:44:55 PM	1	181	R	0.1		**0**	**51**
258	4/5/2018	12:45:07 PM	2	176	R	0.1		**2**	**9**
259	4/5/2018	12:45:18 PM	3	179	R	0.1		**3**	**34**
260	4/5/2018	12:45:30 PM	1	189	R	0.1		**0**	**119**
261	4/5/2018	12:45:42 PM	1	176	R	0.1		**0**	**9**
262	4/5/2018	12:45:53 PM	2	177	R	0.1		**2**	**17**
263	4/5/2018	12:46:05 PM	4	169	R	0.1		**5**	**-51**
264	4/5/2018	12:46:17 PM	1	171	R	0.1		**0**	**-34**
265	4/5/2018	12:46:28 PM	2	170	R	0.1		**2**	**-43**

266	4/5/2018	12:46:40 PM	1	171	R	0.1		**0**	**-34**
267	4/5/2018	12:46:51 PM	3	173	R	0.1		**3**	**-17**
268	4/5/2018	12:47:03 PM	1	235	R	0.1		**0**	**511**
269	4/5/2018	12:47:15 PM	2	179	R	0.1		**2**	**34**
270	4/5/2018	12:47:26 PM	3	181	R	0.1		**3**	**51**
271	4/5/2018	12:47:38 PM	0	170	R	0.1		**-2**	**-43**
272	4/5/2018	12:47:50 PM	7	231	R	0.1		**9**	**477**
273	4/5/2018	12:48:01 PM	1	185	R	0.1		**0**	**85**
274	4/5/2018	12:48:13 PM	0	166	R	0.1		**-2**	**-77**
275	4/5/2018	12:48:24 PM	18	186	R	0.1		**26**	**94**
276	4/5/2018	12:48:36 PM	4	252	R	0.1		**5**	**656**
277	4/5/2018	12:48:48 PM	1	171	R	0.1		**0**	**-34**
278	4/5/2018	12:48:59 PM	0	229	R	0.1		**-2**	**460**
279	4/5/2018	12:49:11 PM	0	169	R	0.1		**-2**	**-51**
280	4/5/2018	12:52:44 PM	0	177	R	0.1	Grid 25	**-2**	**17**
281	4/5/2018	12:52:55 PM	0	179	R	0.1		**-2**	**34**
282	4/5/2018	12:53:07 PM	7	181	R	0.1		**9**	**51**
283	4/5/2018	12:53:19 PM	1	192	R	0.1		**0**	**145**
284	4/5/2018	12:53:30 PM	1	188	R	0.1		**0**	**111**
285	4/5/2018	12:53:42 PM	2	177	R	0.1		**2**	**17**
286	4/5/2018	12:53:54 PM	2	182	R	0.1		**2**	**60**
287	4/5/2018	12:54:05 PM	3	176	R	0.1		**3**	**9**
288	4/5/2018	12:54:17 PM	2	176	R	0.1		**2**	**9**
289	4/5/2018	12:54:28 PM	2	186	R	0.1		**2**	**94**
290	4/5/2018	12:54:40 PM	0	185	R	0.1		**-2**	**85**
291	4/5/2018	12:54:52 PM	7	208	R	0.1		**9**	**281**
292	4/5/2018	12:55:03 PM	1	205	R	0.1		**0**	**256**
293	4/5/2018	12:55:15 PM	2	173	R	0.1		**2**	**-17**
294	4/5/2018	12:55:27 PM	1	177	R	0.1		**0**	**17**
295	4/5/2018	12:55:38 PM	2	195	R	0.1		**2**	**170**
296	4/5/2018	12:55:50 PM	3	174	R	0.1		**3**	**-9**
297	4/5/2018	12:56:01 PM	2	176	R	0.1		**2**	**9**
298	4/5/2018	12:56:13 PM	3	175	R	0.1		**3**	**0**
299	4/5/2018	12:56:25 PM	1	180	R	0.1		**0**	**43**
300	4/5/2018	12:56:36 PM	2	189	R	0.1		**2**	**119**
301	4/5/2018	12:56:48 PM	2	210	R	0.1		**2**	**298**
302	4/5/2018	12:57:00 PM	1	177	R	0.1		**0**	**17**
303	4/5/2018	12:57:11 PM	2	204	R	0.1		**2**	**247**
304	4/5/2018	12:57:23 PM	1	179	R	0.1		**0**	**34**
305	4/5/2018	12:57:35 PM	3	169	R	0.1		**3**	**-51**
306	4/5/2018	12:57:46 PM	2	176	R	0.1		**2**	**9**
307	4/5/2018	12:57:58 PM	5	198	R	0.1		**6**	**196**
308	4/5/2018	12:58:09 PM	2	205	R	0.1		**2**	**256**
309	4/5/2018	12:58:21 PM	1	179	R	0.1		**0**	**34**
310	4/5/2018	12:58:33 PM	1	180	R	0.1		**0**	**43**
311	4/5/2018	12:58:44 PM	3	172	R	0.1		**3**	**-26**
312	4/5/2018	12:58:56 PM	2	195	R	0.1		**2**	**170**
313	4/5/2018	12:59:08 PM	3	170	R	0.1		**3**	**-43**
314	4/5/2018	12:59:19 PM	1	212	R	0.1		**0**	**315**
315	4/5/2018	12:59:31 PM	2	201	R	0.1		**2**	**222**
316	4/5/2018	12:59:43 PM	3	176	R	0.1		**3**	**9**
317	4/5/2018	12:59:54 PM	3	177	R	0.1		**3**	**17**
318	4/5/2018	1:00:06 PM	2	166	R	0.1		**2**	**-77**
319	4/5/2018	1:00:17 PM	2	181	R	0.1		**2**	**51**
320	4/5/2018	1:04:33 PM	1	177	R	0.1	Grid 26	**0**	**17**
321	4/5/2018	1:04:44 PM	1	186	R	0.1		**0**	**94**

322	4/5/2018	1:04:56 PM	2	168	R	0.1		**2**	**-60**
323	4/5/2018	1:05:17 PM	3	170	R	0.1		**3**	**-43**
324	4/5/2018	1:05:28 PM	1	170	R	0.1		**0**	**-43**
325	4/5/2018	1:05:40 PM	4	169	R	0.1		**5**	**-51**
326	4/5/2018	1:05:51 PM	2	166	R	0.1		**2**	**-77**
327	4/5/2018	1:06:03 PM	3	173	R	0.1		**3**	**-17**
328	4/5/2018	1:06:15 PM	1	184	R	0.1		**0**	**77**
329	4/5/2018	1:06:26 PM	2	170	R	0.1		**2**	**-43**
330	4/5/2018	1:06:38 PM	1	181	R	0.1		**0**	**51**
331	4/5/2018	1:06:50 PM	1	177	R	0.1		**0**	**17**
332	4/5/2018	1:07:01 PM	3	200	R	0.1		**3**	**213**
333	4/5/2018	1:07:16 PM	2	182	R	0.1		**2**	**60**
334	4/5/2018	1:07:28 PM	1	177	R	0.1		**0**	**17**
335	4/5/2018	1:07:39 PM	1	167	R	0.1		**0**	**-68**
336	4/5/2018	1:07:51 PM	1	180	R	0.1		**0**	**43**
337	4/5/2018	1:08:03 PM	3	176	R	0.1		**3**	**9**
338	4/5/2018	1:08:14 PM	1	177	R	0.1		**0**	**17**
339	4/5/2018	1:08:26 PM	2	175	R	0.1		**2**	**0**
340	4/5/2018	1:08:38 PM	2	167	R	0.1		**2**	**-68**
341	4/5/2018	1:08:49 PM	1	178	R	0.1		**0**	**26**
342	4/5/2018	1:09:01 PM	1	168	R	0.1		**0**	**-60**
343	4/5/2018	1:09:12 PM	0	173	R	0.1		**-2**	**-17**
344	4/5/2018	1:09:24 PM	1	177	R	0.1		**0**	**17**
345	4/5/2018	1:09:36 PM	2	179	R	0.1		**2**	**34**
346	4/5/2018	1:09:47 PM	3	181	R	0.1		**3**	**51**
347	4/5/2018	1:09:59 PM	2	177	R	0.1		**2**	**17**
348	4/5/2018	1:10:11 PM	1	170	R	0.1		**0**	**-43**
349	4/5/2018	1:10:22 PM	2	172	R	0.1		**2**	**-26**
350	4/5/2018	1:10:34 PM	2	181	R	0.1		**2**	**51**
351	4/5/2018	1:10:46 PM	1	179	R	0.1		**0**	**34**
352	4/5/2018	1:10:57 PM	0	176	R	0.1		**-2**	**9**
353	4/5/2018	1:11:09 PM	4	182	R	0.1		**5**	**60**
354	4/5/2018	1:11:20 PM	2	186	R	0.1		**2**	**94**
355	4/5/2018	1:11:32 PM	1	180	R	0.1		**0**	**43**
356	4/5/2018	1:11:44 PM	0	178	R	0.1		**-2**	**26**
357	4/5/2018	1:11:55 PM	3	165	R	0.1		**3**	**-85**
358	4/5/2018	1:12:07 PM	2	175	R	0.1		**2**	**0**
359	4/5/2018	1:12:19 PM	0	225	R	0.1		**-2**	**426**
360	4/5/2018	1:15:13 PM	0	180	R	0.1	Grid 27	**-2**	**43**
361	4/5/2018	1:15:25 PM	2	172	R	0.1		**2**	**-26**
362	4/5/2018	1:15:37 PM	2	190	R	0.1		**2**	**128**
363	4/5/2018	1:15:48 PM	1	198	R	0.1		**0**	**196**
364	4/5/2018	1:16:00 PM	2	182	R	0.1		**2**	**60**
365	4/5/2018	1:16:11 PM	3	185	R	0.1		**3**	**85**
366	4/5/2018	1:16:23 PM	3	179	R	0.1		**3**	**34**
367	4/5/2018	1:16:35 PM	2	171	R	0.1		**2**	**-34**
368	4/5/2018	1:16:46 PM	1	242	R	0.1		**0**	**571**
369	4/5/2018	1:16:58 PM	1	224	R	0.1		**0**	**417**
370	4/5/2018	1:17:10 PM	2	165	R	0.1		**2**	**-85**
371	4/5/2018	1:17:21 PM	3	166	R	0.1		**3**	**-77**
372	4/5/2018	1:17:33 PM	1	180	R	0.1		**0**	**43**
373	4/5/2018	1:17:45 PM	4	181	R	0.1		**5**	**51**
374	4/5/2018	1:17:56 PM	5	178	R	0.1		**6**	**26**
375	4/5/2018	1:18:08 PM	2	179	R	0.1		**2**	**34**
376	4/5/2018	1:18:19 PM	1	169	R	0.1		**0**	**-51**
377	4/5/2018	1:18:31 PM	1	191	R	0.1		**0**	**136**

378	4/5/2018	1:18:43 PM	4	179	R	0.1		**5**	**34**
379	4/5/2018	1:18:54 PM	2	174	R	0.1		**2**	**-9**
380	4/5/2018	1:19:06 PM	1	180	R	0.1		**0**	**43**
381	4/5/2018	1:19:18 PM	3	181	R	0.1		**3**	**51**
382	4/5/2018	1:19:29 PM	2	206	R	0.1		**2**	**264**
383	4/5/2018	1:19:41 PM	2	174	R	0.1		**2**	**-9**
384	4/5/2018	1:19:53 PM	2	221	R	0.1		**2**	**392**
385	4/5/2018	1:20:04 PM	1	222	R	0.1		**0**	**400**
386	4/5/2018	1:20:16 PM	3	230	R	0.1		**3**	**469**
387	4/5/2018	1:20:27 PM	2	233	R	0.1		**2**	**494**
388	4/5/2018	1:20:39 PM	2	191	R	0.1		**2**	**136**
389	4/5/2018	1:20:51 PM	1	179	R	0.1		**0**	**34**
390	4/5/2018	1:21:02 PM	2	196	R	0.1		**2**	**179**
391	4/5/2018	1:21:14 PM	1	177	R	0.1		**0**	**17**
392	4/5/2018	1:21:26 PM	1	192	R	0.1		**0**	**145**
393	4/5/2018	1:21:37 PM	3	185	R	0.1		**3**	**85**
394	4/5/2018	1:21:49 PM	2	179	R	0.1		**2**	**34**
395	4/5/2018	1:22:01 PM	1	239	R	0.1		**0**	**545**
396	4/5/2018	1:22:12 PM	1	202	R	0.1		**0**	**230**
397	4/5/2018	1:22:24 PM	2	195	R	0.1		**2**	**170**
398	4/5/2018	1:22:35 PM	3	252	R	0.1		**3**	**656**
399	4/5/2018	1:22:47 PM	2	210	R	0.1		**2**	**298**
400	4/5/2018	1:22:59 PM	0	208	R	0.1		**-2**	**281**
401	4/5/2018	1:25:52 PM	7	184	R	0.1	Grid 28	**9**	**77**
402	4/5/2018	1:26:04 PM	4	166	R	0.1		**5**	**-77**
403	4/5/2018	1:26:15 PM	1	169	R	0.1		**0**	**-51**
404	4/5/2018	1:26:27 PM	1	179	R	0.1		**0**	**34**
405	4/5/2018	1:26:38 PM	2	185	R	0.1		**2**	**85**
406	4/5/2018	1:26:50 PM	2	183	R	0.1		**2**	**68**
407	4/5/2018	1:27:02 PM	1	187	R	0.1		**0**	**102**
408	4/5/2018	1:27:13 PM	2	186	R	0.1		**2**	**94**
409	4/5/2018	1:27:25 PM	1	181	R	0.1		**0**	**51**
410	4/5/2018	1:27:37 PM	1	168	R	0.1		**0**	**-60**
411	4/5/2018	1:27:48 PM	3	193	R	0.1		**3**	**153**
412	4/5/2018	1:28:00 PM	2	180	R	0.1		**2**	**43**
413	4/5/2018	1:28:12 PM	1	169	R	0.1		**0**	**-51**
414	4/5/2018	1:28:23 PM	4	175	R	0.1		**5**	**0**
415	4/5/2018	1:28:35 PM	1	169	R	0.1		**0**	**-51**
416	4/5/2018	1:28:46 PM	2	176	R	0.1		**2**	**9**
417	4/5/2018	1:28:58 PM	1	193	R	0.1		**0**	**153**
418	4/5/2018	1:29:10 PM	0	168	R	0.1		**-2**	**-60**
419	4/5/2018	1:29:21 PM	10	174	R	0.1		**14**	**-9**
420	4/5/2018	1:29:33 PM	2	179	R	0.1		**2**	**34**
421	4/5/2018	1:29:45 PM	2	180	R	0.1		**2**	**43**
422	4/5/2018	1:29:56 PM	1	181	R	0.1		**0**	**51**
423	4/5/2018	1:30:08 PM	2	180	R	0.1		**2**	**43**
424	4/5/2018	1:30:20 PM	0	188	R	0.1		**-2**	**111**
425	4/5/2018	1:30:31 PM	10	176	R	0.1		**14**	**9**
426	4/5/2018	1:30:43 PM	2	185	R	0.1		**2**	**85**
427	4/5/2018	1:30:54 PM	2	179	R	0.1		**2**	**34**
428	4/5/2018	1:31:06 PM	3	183	R	0.1		**3**	**68**
429	4/5/2018	1:31:18 PM	2	211	R	0.1		**2**	**307**
430	4/5/2018	1:31:29 PM	1	215	R	0.1		**0**	**341**
431	4/5/2018	1:31:41 PM	2	181	R	0.1		**2**	**51**
432	4/5/2018	1:31:53 PM	0	197	R	0.1		**-2**	**187**
433	4/5/2018	1:32:04 PM	15	217	R	0.1		**22**	**358**

434	4/5/2018	1:32:16 PM	3	219	R	0.1		**3**	**375**
435	4/5/2018	1:32:28 PM	1	182	R	0.1		**0**	**60**
436	4/5/2018	1:32:39 PM	2	172	R	0.1		**2**	**-26**
437	4/5/2018	1:32:51 PM	2	178	R	0.1		**2**	**26**
438	4/5/2018	1:33:02 PM	3	166	R	0.1		**3**	**-77**
439	4/5/2018	1:33:14 PM	2	191	R	0.1		**2**	**136**
440	4/5/2018	1:35:09 PM	3	179	R	0.1	Grid 29	**3**	**34**
441	4/5/2018	1:35:20 PM	6	181	R	0.1		**8**	**51**
442	4/5/2018	1:35:32 PM	1	181	R	0.1		**0**	**51**
443	4/5/2018	1:35:44 PM	0	192	R	0.1		**-2**	**145**
444	4/5/2018	1:35:55 PM	1	176	R	0.1		**0**	**9**
445	4/5/2018	1:36:07 PM	0	169	R	0.1		**-2**	**-51**
446	4/5/2018	1:36:19 PM	0	174	R	0.1		**-2**	**-9**
447	4/5/2018	1:36:30 PM	2	182	R	0.1		**2**	**60**
448	4/5/2018	1:36:42 PM	3	191	R	0.1		**3**	**136**
449	4/5/2018	1:36:54 PM	0	174	R	0.1		**-2**	**-9**
450	4/5/2018	1:37:05 PM	2	181	R	0.1		**2**	**51**
451	4/5/2018	1:37:17 PM	3	168	R	0.1		**3**	**-60**
452	4/5/2018	1:37:29 PM	0	169	R	0.1		**-2**	**-51**
453	4/5/2018	1:37:41 PM	2	175	R	0.1		**2**	**0**
454	4/5/2018	1:37:52 PM	0	174	R	0.1		**-2**	**-9**
455	4/5/2018	1:38:04 PM	1	167	R	0.1		**0**	**-68**
456	4/5/2018	1:38:16 PM	2	188	R	0.1		**2**	**111**
457	4/5/2018	1:38:27 PM	0	181	R	0.1		**-2**	**51**
458	4/5/2018	1:38:39 PM	2	179	R	0.1		**2**	**34**
459	4/5/2018	1:38:51 PM	2	169	R	0.1		**2**	**-51**
460	4/5/2018	1:41:22 PM	0	177	R	0.1	Grid 30	**-2**	**17**
461	4/5/2018	1:41:34 PM	8	180	R	0.1		**11**	**43**
462	4/5/2018	1:41:46 PM	2	166	R	0.1		**2**	**-77**
463	4/5/2018	1:41:57 PM	2	178	R	0.1		**2**	**26**
464	4/5/2018	1:42:09 PM	1	181	R	0.1		**0**	**51**
465	4/5/2018	1:42:21 PM	2	180	R	0.1		**2**	**43**
466	4/5/2018	1:42:33 PM	0	189	R	0.1		**-2**	**119**
467	4/5/2018	1:42:44 PM	1	184	R	0.1		**0**	**77**
468	4/5/2018	1:42:56 PM	2	171	R	0.1		**2**	**-34**
469	4/5/2018	1:43:08 PM	3	187	R	0.1		**3**	**102**
470	4/5/2018	1:43:19 PM	4	192	R	0.1		**5**	**145**
471	4/5/2018	1:43:31 PM	1	180	R	0.1		**0**	**43**
472	4/5/2018	1:43:43 PM	2	187	R	0.1		**2**	**102**
473	4/5/2018	1:43:54 PM	3	175	R	0.1		**3**	**0**
474	4/5/2018	1:44:06 PM	1	177	R	0.1		**0**	**17**
475	4/5/2018	1:44:18 PM	0	181	R	0.1		**-2**	**51**
476	4/5/2018	1:44:29 PM	2	177	R	0.1		**2**	**17**
477	4/5/2018	1:44:41 PM	1	183	R	0.1		**0**	**68**
478	4/5/2018	1:44:53 PM	1	177	R	0.1		**0**	**17**
479	4/5/2018	1:45:05 PM	0	227	R	0.1		**-2**	**443**
		Maximum:	**18**	**345**				**26**	**1448**
		Average:	**2**	**209**				**2**	**290**
		StDev:	**2**	**40**				**4**	**339**

2360 SN:297766
43-93# 323074
Cal Due Date: 12/20/2018
Surveyor: Joan Cosgrove
Tunnel
Grids 21 thru 23
Alpha Efficiency: 0.404
Beta/Gamma Efficiency: 0.254
Alpha Background: 1
Beta/Gamma Background: 192

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/5/2018	2:03:03	PM	10	188	R	0.1	Grid 21	**15**	**-42**
2	4/5/2018	2:03:15	PM	2	186	R	0.1		**2**	**-63**
3	4/5/2018	2:03:26	PM	0	221	R	0.1		**-2**	**304**
4	4/5/2018	2:03:38	PM	3	204	R	0.1		**3**	**126**
5	4/5/2018	2:03:50	PM	0	189	R	0.1		**-2**	**-31**
6	4/5/2018	2:04:01	PM	2	208	R	0.1		**2**	**168**
7	4/5/2018	2:04:13	PM	2	208	R	0.1		**2**	**168**
8	4/5/2018	2:04:25	PM	0	227	R	0.1		**-2**	**367**
9	4/5/2018	2:04:36	PM	3	210	R	0.1		**3**	**189**
10	4/5/2018	2:04:48	PM	2	240	R	0.1		**2**	**504**
11	4/5/2018	2:05:00	PM	3	213	R	0.1		**3**	**220**
12	4/5/2018	2:05:12	PM	1	242	R	0.1		**0**	**525**
13	4/5/2018	2:05:23	PM	1	208	R	0.1		**0**	**168**
14	4/5/2018	2:05:35	PM	2	231	R	0.1		**2**	**409**
15	4/5/2018	2:05:47	PM	3	238	R	0.1		**3**	**483**
16	4/5/2018	2:05:58	PM	2	207	R	0.1		**2**	**157**
17	4/5/2018	2:06:10	PM	0	231	R	0.1		**-2**	**409**
18	4/5/2018	2:06:22	PM	3	260	R	0.1		**3**	**714**
19	4/5/2018	2:06:33	PM	0	262	R	0.1		**-2**	**735**
20	4/5/2018	2:07:42	PM	2	197	R	0.1	Grid 22	**2**	**52**
21	4/5/2018	2:07:54	PM	1	188	R	0.1		**0**	**-42**
22	4/5/2018	2:08:05	PM	11	188	R	0.1		**17**	**-42**
23	4/5/2018	2:08:17	PM	2	188	R	0.1		**2**	**-42**
24	4/5/2018	2:08:29	PM	1	191	R	0.1		**0**	**-10**
25	4/5/2018	2:08:41	PM	2	188	R	0.1		**2**	**-42**
26	4/5/2018	2:08:52	PM	1	190	R	0.1		**0**	**-21**
27	4/5/2018	2:09:04	PM	0	192	R	0.1		**-2**	**0**
28	4/5/2018	2:09:16	PM	12	187	R	0.1		**19**	**-52**
29	4/5/2018	2:09:27	PM	3	186	R	0.1		**3**	**-63**
30	4/5/2018	2:09:39	PM	0	188	R	0.1		**-2**	**-42**
31	4/5/2018	2:09:51	PM	0	189	R	0.1		**-2**	**-31**
32	4/5/2018	2:10:02	PM	0	187	R	0.1		**-2**	**-52**
33	4/5/2018	2:10:14	PM	7	196	R	0.1		**10**	**42**
34	4/5/2018	2:10:26	PM	1	190	R	0.1		**0**	**-21**
35	4/5/2018	2:10:37	PM	5	188	R	0.1		**7**	**-42**
36	4/5/2018	2:10:49	PM	7	191	R	0.1		**10**	**-10**
37	4/5/2018	2:11:01	PM	1	186	R	0.1		**0**	**-63**
38	4/5/2018	2:11:12	PM	0	221	R	0.1		**-2**	**304**
39	4/5/2018	2:11:24	PM	0	193	R	0.1		**-2**	**10**
40	4/5/2018	2:11:36	PM	5	223	R	0.1		**7**	**325**

41	4/5/2018	2:11:48 PM	1	185	R	0.1		**0**	**-73**
42	4/5/2018	2:11:59 PM	0	190	R	0.1		**-2**	**-21**
43	4/5/2018	2:12:11 PM	4	191	R	0.1		**5**	**-10**
44	4/5/2018	2:12:23 PM	1	188	R	0.1		**0**	**-42**
45	4/5/2018	2:12:34 PM	0	181	R	0.1		**-2**	**-115**
46	4/5/2018	2:12:46 PM	0	225	R	0.1		**-2**	**346**
47	4/5/2018	2:12:58 PM	15	206	R	0.1		**24**	**147**
48	4/5/2018	2:13:09 PM	3	231	R	0.1		**3**	**409**
49	4/5/2018	2:13:21 PM	1	192	R	0.1		**0**	**0**
50	4/5/2018	2:15:46 PM	2	210	R	0.1	Grid 23	**2**	**189**
51	4/5/2018	2:15:57 PM	1	194	R	0.1		**0**	**21**
52	4/5/2018	2:16:09 PM	1	212	R	0.1		**0**	**210**
53	4/5/2018	2:16:21 PM	3	191	R	0.1		**3**	**-10**
54	4/5/2018	2:16:32 PM	2	187	R	0.1		**2**	**-52**
55	4/5/2018	2:16:44 PM	1	186	R	0.1		**0**	**-63**
56	4/5/2018	2:16:56 PM	2	187	R	0.1		**2**	**-52**
57	4/5/2018	2:17:07 PM	1	191	R	0.1		**0**	**-10**
58	4/5/2018	2:17:19 PM	2	185	R	0.1		**2**	**-73**
59	4/5/2018	2:17:31 PM	3	191	R	0.1		**3**	**-10**
60	4/5/2018	2:17:42 PM	0	185	R	0.1		**-2**	**-73**
61	4/5/2018	2:17:54 PM	5	193	R	0.1		**7**	**10**
62	4/5/2018	2:18:06 PM	1	190	R	0.1		**0**	**-21**
63	4/5/2018	2:18:17 PM	1	178	R	0.1		**0**	**-147**
64	4/5/2018	2:18:29 PM	2	202	R	0.1		**2**	**105**
65	4/5/2018	2:18:41 PM	4	189	R	0.1		**5**	**-31**
66	4/5/2018	2:18:53 PM	2	199	R	0.1		**2**	**73**
67	4/5/2018	2:19:04 PM	1	199	R	0.1		**0**	**73**
68	4/5/2018	2:19:16 PM	2	191	R	0.1		**2**	**-10**
69	4/5/2018	2:19:28 PM	1	191	R	0.1		**0**	**-10**
70	4/5/2018	2:19:39 PM	2	186	R	0.1		**2**	**-63**
71	4/5/2018	2:19:51 PM	2	187	R	0.1		**2**	**-52**
72	4/5/2018	2:20:03 PM	1	188	R	0.1		**0**	**-42**
73	4/5/2018	2:20:14 PM	2	183	R	0.1		**2**	**-94**
74	4/5/2018	2:20:26 PM	3	183	R	0.1		**3**	**-94**
75	4/5/2018	2:20:38 PM	1	199	R	0.1		**0**	**73**
76	4/5/2018	2:20:49 PM	2	191	R	0.1		**2**	**-10**
77	4/5/2018	2:21:01 PM	1	201	R	0.1		**0**	**94**
78	4/5/2018	2:21:13 PM	1	199	R	0.1		**0**	**73**
79	4/5/2018	2:21:24 PM	2	189	R	0.1		**2**	**-31**
		Maximum:	**15**	**262**				**24**	**735**
		Average:	**2**	**200**				**2**	**79**
		StDev:	**3**	**18**				**5**	**191**

Tunnel Overhead/Ceiling

2360 SN:297758
43-93# 299597
Cal Due Date: 2/14/2019
Surveyor: Richard Thatcher
Tunnel Overhead
Grids 1 thru 5
Alpha Efficiency: 0.444
Beta/Gamma Efficiency: 0.313
Alpha Background: 1
Beta/Gamma Background: 175

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2 Alpha	dpm/100cm^2 Beta
1	4/6/2018	9:38:48	AM	5	169	R	0.1	Grid 1	**6**	**-51**
2	4/6/2018	9:39:00	AM	1	211	R	0.1		**0**	**307**
3	4/6/2018	9:39:12	AM	3	172	R	0.1		**3**	**-26**
4	4/6/2018	9:39:23	AM	4	181	R	0.1		**5**	**51**
5	4/6/2018	9:39:35	AM	0	174	R	0.1		**-2**	**-9**
6	4/6/2018	9:39:47	AM	0	171	R	0.1		**-2**	**-34**
7	4/6/2018	9:39:58	AM	2	181	R	0.1		**2**	**51**
8	4/6/2018	9:40:10	AM	0	178	R	0.1		**-2**	**26**
9	4/6/2018	9:40:22	AM	3	175	R	0.1		**3**	**0**
10	4/6/2018	9:40:34	AM	0	182	R	0.1		**-2**	**60**
11	4/6/2018	9:40:45	AM	0	181	R	0.1		**-2**	**51**
12	4/6/2018	9:40:57	AM	9	181	R	0.1		**12**	**51**
13	4/6/2018	9:41:09	AM	2	183	R	0.1		**2**	**68**
14	4/6/2018	9:41:20	AM	0	207	R	0.1		**-2**	**273**
15	4/6/2018	9:41:32	AM	2	173	R	0.1		**2**	**-17**
16	4/6/2018	9:41:44	AM	3	178	R	0.1		**3**	**26**
17	4/6/2018	9:41:55	AM	2	168	R	0.1		**2**	**-60**
18	4/6/2018	9:42:07	AM	0	194	R	0.1		**-2**	**162**
19	4/6/2018	9:42:19	AM	3	180	R	0.1		**3**	**43**
20	4/6/2018	9:42:31	AM	0	181	R	0.1		**-2**	**51**
21	4/6/2018	9:42:42	AM	12	176	R	0.1		**17**	**9**
22	4/6/2018	9:42:54	AM	3	191	R	0.1		**3**	**136**
23	4/6/2018	9:43:06	AM	2	172	R	0.1		**2**	**-26**
24	4/6/2018	9:43:17	AM	1	200	R	0.1		**0**	**213**
25	4/6/2018	9:48:18	AM	3	213	R	0.1	Grid 2	**3**	**324**
26	4/6/2018	9:48:29	AM	1	174	R	0.1		**0**	**-9**
27	4/6/2018	9:48:41	AM	2	191	R	0.1		**2**	**136**
28	4/6/2018	9:48:53	AM	3	165	R	0.1		**3**	**-85**
29	4/6/2018	9:49:05	AM	1	165	R	0.1		**0**	**-85**
30	4/6/2018	9:49:16	AM	1	179	R	0.1		**0**	**34**
31	4/6/2018	9:49:28	AM	2	176	R	0.1		**2**	**9**
32	4/6/2018	9:49:40	AM	2	233	R	0.1		**2**	**494**
33	4/6/2018	9:49:51	AM	4	168	R	0.1		**5**	**-60**
34	4/6/2018	9:50:03	AM	3	171	R	0.1		**3**	**-34**
35	4/6/2018	9:50:15	AM	2	174	R	0.1		**2**	**-9**
36	4/6/2018	9:50:26	AM	2	174	R	0.1		**2**	**-9**
37	4/6/2018	9:50:38	AM	5	168	R	0.1		**6**	**-60**
38	4/6/2018	9:50:50	AM	5	177	R	0.1		**6**	**17**
39	4/6/2018	9:51:02	AM	6	169	R	0.1		**8**	**-51**
40	4/6/2018	9:51:13	AM	3	182	R	0.1		**3**	**60**
41	4/6/2018	9:51:25	AM	4	168	R	0.1		**5**	**-60**

42	4/6/2018	9:51:37 AM	2	175	R	0.1		**2**	**0**
43	4/6/2018	9:51:48 AM	2	172	R	0.1		**2**	**-26**
44	4/6/2018	9:52:00 AM	0	184	R	0.1		**-2**	**77**
45	4/6/2018	9:52:12 AM	4	174	R	0.1		**5**	**-9**
46	4/6/2018	9:52:23 AM	1	193	R	0.1		**0**	**153**
47	4/6/2018	9:52:35 AM	0	177	R	0.1		**-2**	**17**
48	4/6/2018	9:52:47 AM	2	178	R	0.1		**2**	**26**
49	4/6/2018	9:52:59 AM	0	190	R	0.1		**-2**	**128**
50	4/6/2018	9:56:34 AM	4	171	R	0.1	Grid 3	**5**	**-34**
51	4/6/2018	9:56:45 AM	1	166	R	0.1		**0**	**-77**
52	4/6/2018	9:56:57 AM	0	214	R	0.1		**-2**	**332**
53	4/6/2018	9:57:09 AM	4	206	R	0.1		**5**	**264**
54	4/6/2018	9:57:20 AM	1	206	R	0.1		**0**	**264**
55	4/6/2018	9:57:32 AM	6	202	R	0.1		**8**	**230**
56	4/6/2018	9:57:44 AM	4	171	R	0.1		**5**	**-34**
57	4/6/2018	9:57:55 AM	1	187	R	0.1		**0**	**102**
58	4/6/2018	9:58:07 AM	5	179	R	0.1		**6**	**34**
59	4/6/2018	9:58:19 AM	1	179	R	0.1		**0**	**34**
60	4/6/2018	9:58:31 AM	11	181	R	0.1		**15**	**51**
61	4/6/2018	9:58:42 AM	2	190	R	0.1		**2**	**128**
62	4/6/2018	9:58:54 AM	4	210	R	0.1		**5**	**298**
63	4/6/2018	9:59:06 AM	1	172	R	0.1		**0**	**-26**
64	4/6/2018	9:59:17 AM	2	239	R	0.1		**2**	**545**
65	4/6/2018	9:59:29 AM	1	202	R	0.1		**0**	**230**
66	4/6/2018	9:59:41 AM	1	209	R	0.1		**0**	**290**
67	4/6/2018	9:59:52 AM	3	177	R	0.1		**3**	**17**
68	4/6/2018	10:00:04 AM	2	175	R	0.1		**2**	**0**
69	4/6/2018	10:00:16 AM	4	176	R	0.1		**5**	**9**
70	4/6/2018	10:00:28 AM	1	174	R	0.1		**0**	**-9**
71	4/6/2018	10:00:39 AM	2	182	R	0.1		**2**	**60**
72	4/6/2018	10:00:51 AM	2	173	R	0.1		**2**	**-17**
73	4/6/2018	10:01:03 AM	1	182	R	0.1		**0**	**60**
74	4/6/2018	10:01:14 AM	7	199	R	0.1		**9**	**204**
75	4/6/2018	10:06:20 AM	5	187	R	0.1	Grid 4	**6**	**102**
76	4/6/2018	10:06:32 AM	2	181	R	0.1		**2**	**51**
77	4/6/2018	10:06:44 AM	3	184	R	0.1		**3**	**77**
78	4/6/2018	10:06:55 AM	2	176	R	0.1		**2**	**9**
79	4/6/2018	10:07:07 AM	1	209	R	0.1		**0**	**290**
80	4/6/2018	10:07:19 AM	4	195	R	0.1		**5**	**170**
81	4/6/2018	10:07:30 AM	3	183	R	0.1		**3**	**68**
82	4/6/2018	10:07:42 AM	0	245	R	0.1		**-2**	**596**
83	4/6/2018	10:07:54 AM	11	215	R	0.1		**15**	**341**
84	4/6/2018	10:08:06 AM	2	183	R	0.1		**2**	**68**
85	4/6/2018	10:08:17 AM	2	167	R	0.1		**2**	**-68**
86	4/6/2018	10:08:29 AM	3	173	R	0.1		**3**	**-17**
87	4/6/2018	10:08:41 AM	1	194	R	0.1		**0**	**162**
88	4/6/2018	10:08:52 AM	4	256	R	0.1		**5**	**690**
89	4/6/2018	10:09:04 AM	2	191	R	0.1		**2**	**136**
90	4/6/2018	10:09:16 AM	2	164	R	0.1		**2**	**-94**
91	4/6/2018	10:09:27 AM	7	169	R	0.1		**9**	**-51**
92	4/6/2018	10:09:39 AM	1	181	R	0.1		**0**	**51**
93	4/6/2018	10:09:50 AM	1	172	R	0.1		**0**	**-26**
94	4/6/2018	10:10:02 AM	0	227	R	0.1		**-2**	**443**
95	4/6/2018	10:10:14 AM	11	177	R	0.1		**15**	**17**
96	4/6/2018	10:10:25 AM	2	189	R	0.1		**2**	**119**
97	4/6/2018	10:10:37 AM	0	211	R	0.1		**-2**	**307**

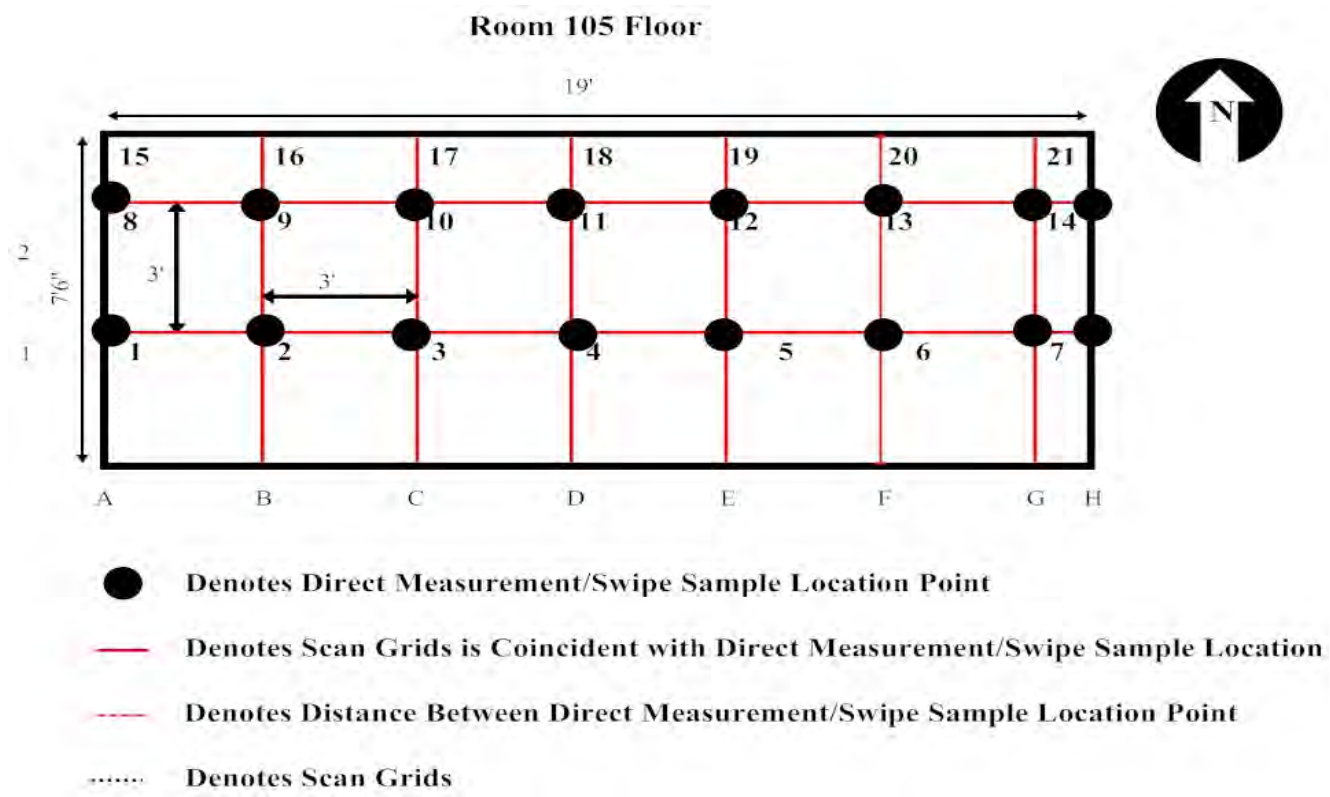
98	4/6/2018	10:10:49 AM	0	199	R	0.1		**-2**	**204**
99	4/6/2018	10:11:00 AM	10	221	R	0.1		**14**	**392**
100	4/6/2018	10:13:58 AM	3	167	R	0.1	Grid 5	**3**	**-68**
101	4/6/2018	10:14:10 AM	0	194	R	0.1		**-2**	**162**
102	4/6/2018	10:14:22 AM	0	170	R	0.1		**-2**	**-43**
103	4/6/2018	10:14:33 AM	10	168	R	0.1		**14**	**-60**
104	4/6/2018	10:14:45 AM	2	193	R	0.1		**2**	**153**
105	4/6/2018	10:14:57 AM	0	212	R	0.1		**-2**	**315**
106	4/6/2018	10:15:08 AM	0	228	R	0.1		**-2**	**452**
107	4/6/2018	10:15:20 AM	0	167	R	0.1		**-2**	**-68**
108	4/6/2018	10:15:32 AM	3	172	R	0.1		**3**	**-26**
109	4/6/2018	10:15:43 AM	1	197	R	0.1		**0**	**187**
110	4/6/2018	10:15:55 AM	1	184	R	0.1		**0**	**77**
111	4/6/2018	10:16:06 AM	2	180	R	0.1		**2**	**43**
112	4/6/2018	10:16:18 AM	5	242	R	0.1		**6**	**571**
113	4/6/2018	10:16:30 AM	3	178	R	0.1		**3**	**26**
114	4/6/2018	10:16:41 AM	2	186	R	0.1		**2**	**94**
115	4/6/2018	10:16:53 AM	1	203	R	0.1		**0**	**239**
116	4/6/2018	10:17:05 AM	2	171	R	0.1		**2**	**-34**
117	4/6/2018	10:17:16 AM	1	179	R	0.1		**0**	**34**
118	4/6/2018	10:17:28 AM	2	192	R	0.1		**2**	**145**
119	4/6/2018	10:17:40 AM	2	203	R	0.1		**2**	**239**
120	4/6/2018	10:17:51 AM	3	215	R	0.1		**3**	**341**
121	4/6/2018	10:18:03 AM	4	169	R	0.1		**5**	**-51**
122	4/6/2018	10:18:14 AM	2	180	R	0.1		**2**	**43**
123	4/6/2018	10:18:26 AM	3	166	R	0.1		**3**	**-77**
124	4/6/2018	10:18:38 AM	0	185	R	0.1		**-2**	**85**
		Maximum:	**12**	**256**				**17**	**690**
		Average:	**3**	**186**				**2**	**98**
		StDev:	**3**	**19**				**4**	**160**

Room 105 Floor

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 15:00	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 53.3	α 16.2
		43-93	299597		βγ 31.3%	βγ 11.7%	βγ 481.0	βγ 2377.0
LOCATION:	Room 105 Floor	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Thomas Hogan/Joan Cosgrove							
DATE: 4/23/2018	TIME: 15:05 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

The 3' by 3' area at each direct measurement location was 100% gross alpha/beta-gamma surveyed.

Scan results were: 0-5 CPM alpha, 250-300 cpm beta-gamma.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Joan Cosgrove

LOCATION: Room 105 Floor

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				19.8	106.5	1.9	-13.6	See Map For Location
B1				-2.7	-68.2	1.9	-8.6	See Map For Location
C1				10.8	-42.6	-1.2	-21.1	See Map For Location
D1				-2.7	-42.6	-1.2	-11.1	See Map For Location
E1				-7.2	-119.3	-1.2	-13.6	See Map For Location
F1				-2.7	-115.0	-1.2	-3.5	See Map For Location
G1				-2.7	-132.1	1.9	-16.1	See Map For Location
H1				-7.2	132.1	-1.2	4.0	See Map For Location
A2				24.3	-132.1	-1.2	-26.2	See Map For Location
B2				-2.7	-115.0	-1.2	-18.6	See Map For Location
C2				6.3	119.3	1.9	-16.1	See Map For Location
D2				1.8	29.8	-1.2	-31.2	See Map For Location
E2				-2.7	-115.0	-1.2	-11.1	See Map For Location
F2				-16.2	98.0	-1.2	-6.0	See Map For Location
G2				1.8	123.5	-1.2	-3.5	See Map For Location
H2				6.3	34.1	1.9	-23.6	See Map For Location
E1D						-1.2	-11.1	Duplicate Swipe
F2D						-1.2	-8.6	Duplicate Swipe
Maximum:				**24.3**	**132.1**	**1.9**	**4.0**	
Average:				**1.5**	**-14.9**	**-0.4**	**-13.3**	
StDev:				**10.2**	**104.4**	**1.4**	**8.8**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 15:05

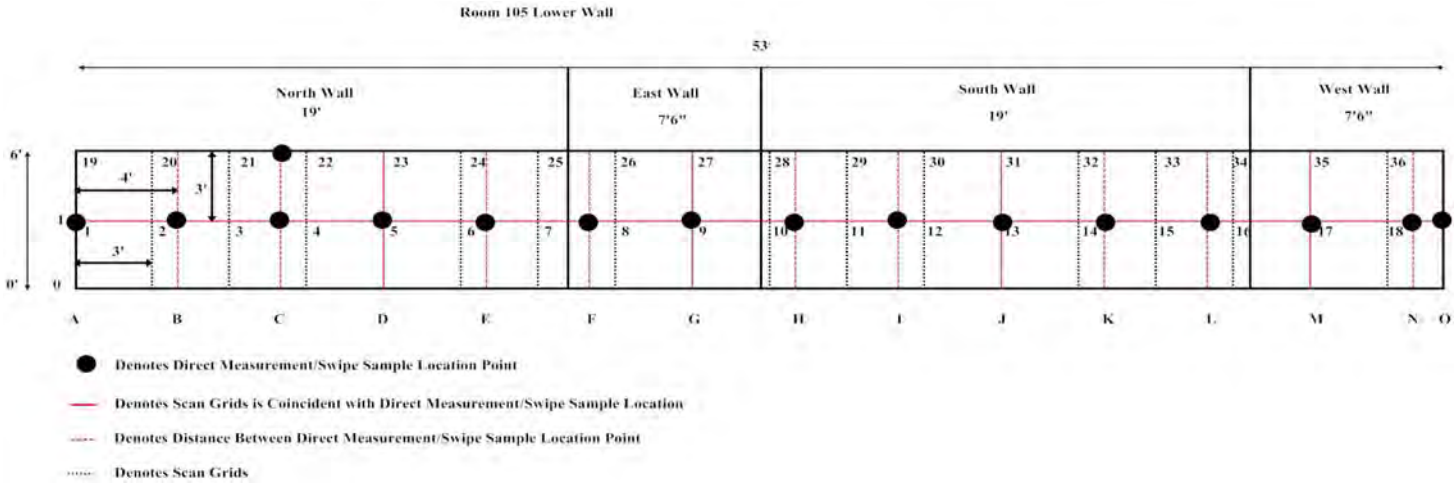
THIS AREA INTENTIONALLY LEFT BLANK

Room 105 Lower/Upper Wall

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 13:22	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	193668	8/15/2018	α 49.7%	α 12.4%	α 45.6	α 12.9
SURVEY NUMBER:	N/A	43-93	326725		βγ 32.7%	βγ 12.3%	βγ 364.1	βγ 1402.7
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
LOCATION:	Room 105 Lower Walls				βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Thomas Hogan							
DATE: 4/23/2018	TIME: 13:41	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

The 3' by 3' area at each direct measurement location was 100% gross alpha/beta-gamma surveyed.

Scan results were: 0-4 CPM alpha, 150-200 cpm beta-gamma.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Room 105 Lower Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				-0.8	403.7	-1.2	-6.0	See Map For Location
B1				-4.8	191.6	-1.2	-1.0	See Map For Location
C1				-4.8	77.5	1.9	-16.1	See Map For Location
D1				3.2	28.5	-1.2	-3.5	See Map For Location
E1				11.3	167.2	-1.2	4.0	See Map For Location
F1				-4.8	273.2	-1.2	-11.1	See Map For Location
G1				-8.9	191.6	-1.2	-16.1	See Map For Location
H1				3.2	110.1	-1.2	-3.5	See Map For Location
I1				3.2	53.0	-1.2	-18.6	See Map For Location
J1				3.2	36.7	-1.2	-26.2	See Map For Location
K1				-12.9	-36.7	1.9	-6.0	See Map For Location
L1				3.2	-85.6	-1.2	-3.5	See Map For Location
M1				-4.8	-8.2	-1.2	-3.5	See Map For Location
N1				-0.8	32.6	-1.2	-8.6	See Map For Location
O1				-0.8	473.0	-1.2	-3.5	See Map For Location
C2				7.2	28.5	-1.2	-8.6	See Map For Location
C1D						1.9	-8.6	Duplicate Swipe
K1D						1.9	-13.6	Duplicate Swipe
Maximum:				**11.3**	**473.0**	**1.9**	**4.0**	
Average:				**-0.6**	**121.0**	**-0.6**	**-8.6**	
StDev:				**6.1**	**155.3**	**1.3**	**7.3**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 13:41

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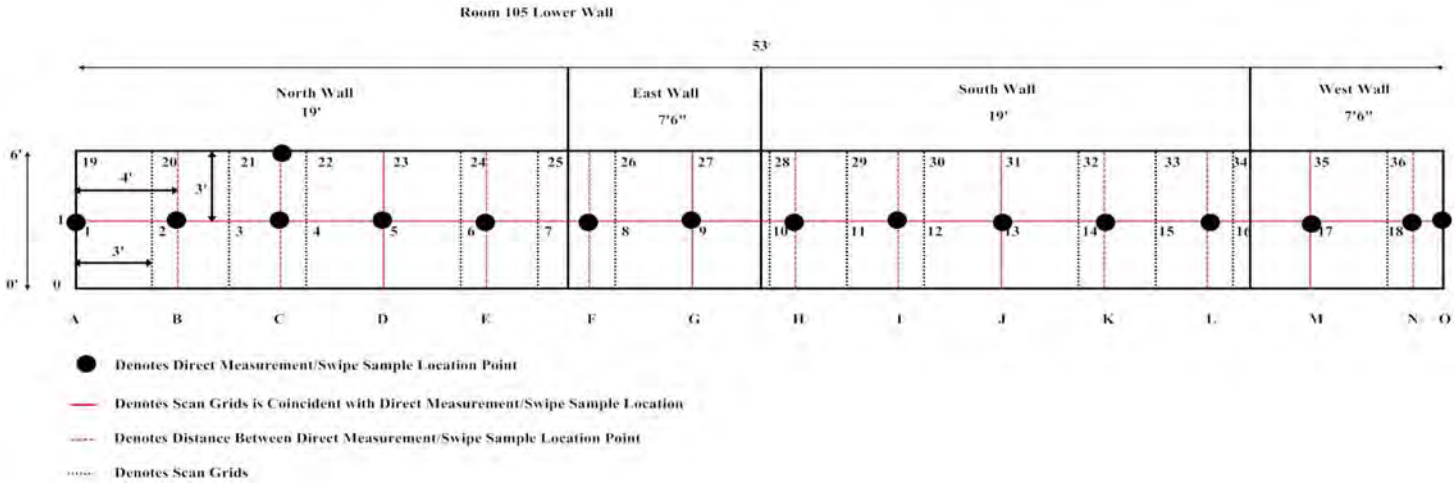
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 13:22	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	193668	8/15/2018	α 49.7%	α 12.4%	α 45.6	α 12.9
SURVEY NUMBER:	N/A	43-93	326725		βγ 32.7%	βγ 12.3%	βγ 364.1	βγ 1402.7
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
LOCATION:	Room 105 Lower Walls				βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Thomas Hogan							
DATE: 4/23/2018	TIME: 13:41	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

The 3' by 3' area at each direct measurement location was 100% gross alpha/beta-gamma surveyed.

Scan results were: 0-4 CPM alpha, 150-200 cpm beta-gamma.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Room 105 Lower Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				-0.8	403.7	-1.2	-6.0	See Map For Location
B1				-4.8	191.6	-1.2	-1.0	See Map For Location
C1				-4.8	77.5	1.9	-16.1	See Map For Location
D1				3.2	28.5	-1.2	-3.5	See Map For Location
E1				11.3	167.2	-1.2	4.0	See Map For Location
F1				-4.8	273.2	-1.2	-11.1	See Map For Location
G1				-8.9	191.6	-1.2	-16.1	See Map For Location
H1				3.2	110.1	-1.2	-3.5	See Map For Location
I1				3.2	53.0	-1.2	-18.6	See Map For Location
J1				3.2	36.7	-1.2	-26.2	See Map For Location
K1				-12.9	-36.7	1.9	-6.0	See Map For Location
L1				3.2	-85.6	-1.2	-3.5	See Map For Location
M1				-4.8	-8.2	-1.2	-3.5	See Map For Location
N1				-0.8	32.6	-1.2	-8.6	See Map For Location
O1				-0.8	473.0	-1.2	-3.5	See Map For Location
C2				7.2	28.5	-1.2	-8.6	See Map For Location
C1D						1.9	-8.6	Duplicate Swipe
K1D						1.9	-13.6	Duplicate Swipe
Maximum:				**11.3**	**473.0**	**1.9**	**4.0**	
Average:				**-0.6**	**121.0**	**-0.6**	**-8.6**	
StDev:				**6.1**	**155.3**	**1.3**	**7.3**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 13:41

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Room 105A Floor

2360 SN:268488
43-37 #190672
Cal Due Date: 10/27/2018
Surveyor: Richard Thatcher
Bldg 218
Room 105A Floor Grids 1 thru 38
Alpha Efficiency: 0.302
Beta/Gamma Efficiency: 0.37
Alpha Background: 5.8
Beta/Gamma Background: 881

S=Scaler, R=Ratemeter

Sample #	Date	Time	Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
--------	----------	-------- ---	-------	-------	---	----------	----------	**Alpha**	**Beta**
1	4/16/2018	12:15:20 PM	9	830	R	0.1	Grid 1	**7**	**-63**
2	4/16/2018	12:15:32 PM	8	747	R	0.1		**5**	**-166**
3	4/16/2018	12:15:44 PM	14	896	R	0.1		**19**	**19**
4	4/16/2018	12:15:55 PM	12	845	R	0.1		**14**	**-45**
5	4/16/2018	12:16:07 PM	7	834	R	0.1		**3**	**-58**
6	4/16/2018	12:16:56 PM	0	838	R	0.1	Grid 2	**-13**	**-53**
7	4/16/2018	12:17:08 PM	8	904	R	0.1		**5**	**28**
8	4/16/2018	12:20:17 PM	9	860	R	0.1	Grid 3	**7**	**-26**
9	4/16/2018	12:20:28 PM	3	841	R	0.1		**-6**	**-50**
10	4/16/2018	12:20:40 PM	0	865	R	0.1		**-13**	**-20**
11	4/16/2018	12:20:52 PM	11	767	R	0.1		**12**	**-141**
12	4/16/2018	12:21:04 PM	2	813	R	0.1		**-9**	**-84**
13	4/16/2018	12:21:15 PM	0	845	R	0.1		**-13**	**-45**
14	4/16/2018	12:21:27 PM	3	925	R	0.1		**-6**	**54**
15	4/16/2018	12:21:39 PM	3	957	R	0.1		**-6**	**94**
16	4/16/2018	12:21:50 PM	6	955	R	0.1		**0**	**92**
17	4/16/2018	12:22:02 PM	1	986	R	0.1		**-11**	**130**
18	4/16/2018	12:24:10 PM	9	865	R	0.1	Grid 4	**7**	**-20**
19	4/16/2018	12:24:22 PM	2	994	R	0.1		**-9**	**140**
20	4/16/2018	12:24:33 PM	8	857	R	0.1		**5**	**-30**
21	4/16/2018	12:24:45 PM	12	852	R	0.1		**14**	**-36**
22	4/16/2018	12:24:57 PM	3	892	R	0.1		**-6**	**14**
23	4/16/2018	12:25:08 PM	0	957	R	0.1		**-13**	**94**
24	4/16/2018	12:25:20 PM	0	1045	R	0.1		**-13**	**203**
25	4/16/2018	12:25:32 PM	0	941	R	0.1		**-13**	**74**
26	4/16/2018	12:25:44 PM	15	1003	R	0.1		**21**	**151**
27	4/16/2018	12:25:55 PM	8	868	R	0.1		**5**	**-16**
28	4/16/2018	12:27:32 PM	0	864	R	0.1	Grid 5	**-13**	**-21**
29	4/16/2018	12:27:44 PM	6	850	R	0.1		**0**	**-38**
30	4/16/2018	12:27:55 PM	1	873	R	0.1		**-11**	**-10**
31	4/16/2018	12:28:07 PM	0	887	R	0.1		**-13**	**7**
32	4/16/2018	12:28:19 PM	0	857	R	0.1		**-13**	**-30**
33	4/16/2018	12:28:30 PM	11	871	R	0.1		**12**	**-12**
34	4/16/2018	12:28:42 PM	2	809	R	0.1		**-9**	**-89**
35	4/16/2018	12:28:54 PM	0	828	R	0.1		**-13**	**-66**
36	4/16/2018	12:29:05 PM	6	865	R	0.1		**0**	**-20**
37	4/16/2018	12:29:17 PM	10	823	R	0.1		**10**	**-72**
38	4/16/2018	12:29:29 PM	2	863	R	0.1		**-9**	**-22**
39	4/16/2018	12:29:41 PM	3	858	R	0.1		**-6**	**-28**
40	4/16/2018	12:32:23 PM	0	887	R	0.1	Grid 6	**-13**	**7**
41	4/16/2018	12:32:35 PM	3	801	R	0.1		**-6**	**-99**
42	4/16/2018	12:32:46 PM	0	866	R	0.1		**-13**	**-19**

43	4/16/2018	12:32:58 PM	7	937	R	0.1		**3**	**69**
44	4/16/2018	12:33:10 PM	0	1095	R	0.1		**-13**	**265**
45	4/16/2018	12:33:21 PM	6	987	R	0.1		**0**	**131**
46	4/16/2018	12:33:33 PM	7	992	R	0.1		**3**	**137**
47	4/16/2018	12:33:45 PM	1	960	R	0.1		**-11**	**98**
48	4/16/2018	12:33:56 PM	16	898	R	0.1		**23**	**21**
49	4/16/2018	12:34:08 PM	6	905	R	0.1		**0**	**30**
50	4/16/2018	12:36:17 PM	0	823	R	0.1	Grid 7	**-13**	**-72**
51	4/16/2018	12:36:29 PM	11	835	R	0.1		**12**	**-57**
52	4/16/2018	12:36:40 PM	5	826	R	0.1		**-2**	**-68**
53	4/16/2018	12:36:52 PM	18	1037	R	0.1		**28**	**193**
54	4/16/2018	12:37:04 PM	10	1097	R	0.1		**10**	**267**
55	4/16/2018	12:37:16 PM	2	1073	R	0.1		**-9**	**238**
56	4/16/2018	12:37:27 PM	11	979	R	0.1		**12**	**121**
57	4/16/2018	12:37:39 PM	2	1000	R	0.1		**-9**	**147**
58	4/16/2018	12:37:51 PM	0	939	R	0.1		**-13**	**72**
59	4/16/2018	12:38:02 PM	6	897	R	0.1		**0**	**20**
60	4/16/2018	12:41:34 PM	8	811	R	0.1	Grid 8	**5**	**-87**
61	4/16/2018	12:41:46 PM	6	828	R	0.1		**0**	**-66**
62	4/16/2018	12:41:57 PM	6	918	R	0.1		**0**	**46**
63	4/16/2018	12:42:09 PM	11	982	R	0.1		**12**	**125**
64	4/16/2018	12:42:21 PM	2	1016	R	0.1		**-9**	**167**
65	4/16/2018	12:42:32 PM	15	1076	R	0.1		**21**	**241**
66	4/16/2018	12:42:44 PM	8	1016	R	0.1		**5**	**167**
67	4/16/2018	12:42:56 PM	6	1108	R	0.1		**0**	**281**
68	4/16/2018	12:43:08 PM	14	1055	R	0.1		**19**	**215**
69	4/16/2018	12:43:19 PM	3	980	R	0.1		**-6**	**123**
70	4/16/2018	12:44:52 PM	0	802	R	0.1	Grid 9	**-13**	**-98**
71	4/16/2018	12:45:03 PM	3	1064	R	0.1		**-6**	**227**
72	4/16/2018	12:45:15 PM	0	1028	R	0.1		**-13**	**182**
73	4/16/2018	12:45:27 PM	4	1015	R	0.1		**-4**	**166**
74	4/16/2018	12:45:38 PM	4	1242	R	0.1		**-4**	**447**
75	4/16/2018	12:45:50 PM	4	1029	R	0.1		**-4**	**183**
76	4/16/2018	12:48:40 PM	8	834	R	0.1	Grid 10	**5**	**-58**
77	4/16/2018	12:48:51 PM	0	732	R	0.1		**-13**	**-185**
78	4/16/2018	12:49:03 PM	7	985	R	0.1		**3**	**129**
79	4/16/2018	12:49:15 PM	3	704	R	0.1		**-6**	**-219**
80	4/16/2018	12:49:26 PM	5	844	R	0.1		**-2**	**-46**
81	4/16/2018	12:49:38 PM	4	808	R	0.1		**-4**	**-90**
82	4/16/2018	12:49:50 PM	6	880	R	0.1		**0**	**-1**
83	4/16/2018	12:50:02 PM	1	737	R	0.1		**-11**	**-178**
84	4/16/2018	12:50:13 PM	4	938	R	0.1		**-4**	**71**
85	4/16/2018	12:50:25 PM	4	964	R	0.1		**-4**	**103**
86	4/16/2018	12:51:53 PM	0	812	R	0.1	Grid 11	**-13**	**-85**
87	4/16/2018	12:52:05 PM	7	848	R	0.1		**3**	**-41**
88	4/16/2018	12:52:17 PM	7	823	R	0.1		**3**	**-72**
89	4/16/2018	12:52:29 PM	1	865	R	0.1		**-11**	**-20**
90	4/16/2018	12:52:40 PM	10	816	R	0.1		**10**	**-80**
91	4/16/2018	12:52:52 PM	2	814	R	0.1		**-9**	**-83**
92	4/16/2018	12:53:04 PM	16	849	R	0.1		**23**	**-40**
93	4/16/2018	12:53:15 PM	3	805	R	0.1		**-6**	**-94**
94	4/16/2018	12:53:27 PM	8	875	R	0.1		**5**	**-7**
95	4/16/2018	12:54:51 PM	0	913	R	0.1	Grid 12	**-13**	**40**
96	4/16/2018	12:55:02 PM	11	799	R	0.1		**12**	**-102**
97	4/16/2018	12:55:14 PM	10	816	R	0.1		**10**	**-80**
98	4/16/2018	12:55:26 PM	2	846	R	0.1		**-9**	**-43**
99	4/16/2018	12:55:38 PM	0	823	R	0.1		**-13**	**-72**
100	4/16/2018	12:55:49 PM	12	777	R	0.1		**14**	**-129**

101	4/16/2018	12:56:01 PM	3	837	R	0.1		**-6**	**-54**
102	4/16/2018	12:56:13 PM	20	859	R	0.1		**32**	**-27**
103	4/16/2018	12:56:24 PM	4	922	R	0.1		**-4**	**51**
104	4/16/2018	12:58:14 PM	0	889	R	0.1	Grid 13	**-13**	**10**
105	4/16/2018	12:58:25 PM	3	921	R	0.1		**-6**	**50**
106	4/16/2018	12:58:37 PM	0	855	R	0.1		**-13**	**-32**
107	4/16/2018	12:58:49 PM	4	963	R	0.1		**-4**	**102**
108	4/16/2018	12:59:00 PM	10	1034	R	0.1		**10**	**189**
109	4/16/2018	12:59:12 PM	2	878	R	0.1		**-9**	**-4**
110	4/16/2018	12:59:24 PM	3	877	R	0.1		**-6**	**-5**
111	4/16/2018	12:59:36 PM	6	870	R	0.1		**0**	**-14**
112	4/16/2018	12:59:47 PM	0	1004	R	0.1		**-13**	**152**
113	4/16/2018	12:59:59 PM	5	944	R	0.1		**-2**	**78**
114	4/16/2018	1:00:11 PM	0	810	R	0.1		**-13**	**-88**
115	4/16/2018	1:02:21 PM	10	832	R	0.1	Grid 14	**10**	**-61**
116	4/16/2018	1:02:32 PM	11	861	R	0.1		**12**	**-25**
117	4/16/2018	1:02:44 PM	2	849	R	0.1		**-9**	**-40**
118	4/16/2018	1:02:56 PM	4	838	R	0.1		**-4**	**-53**
119	4/16/2018	1:03:07 PM	6	911	R	0.1		**0**	**37**
120	4/16/2018	1:03:19 PM	13	783	R	0.1		**16**	**-121**
121	4/16/2018	1:03:31 PM	9	822	R	0.1		**7**	**-73**
122	4/16/2018	1:03:43 PM	2	832	R	0.1		**-9**	**-61**
123	4/16/2018	1:03:54 PM	3	1020	R	0.1		**-6**	**172**
124	4/16/2018	1:04:06 PM	6	946	R	0.1		**0**	**80**
125	4/16/2018	1:07:09 PM	7	835	R	0.1	Grid 15	**3**	**-57**
126	4/16/2018	1:07:21 PM	7	834	R	0.1		**3**	**-58**
127	4/16/2018	1:07:33 PM	1	918	R	0.1		**-11**	**46**
128	4/16/2018	1:07:45 PM	0	868	R	0.1		**-13**	**-16**
129	4/16/2018	1:07:56 PM	0	943	R	0.1		**-13**	**77**
130	4/16/2018	1:09:21 PM	8	922	R	0.1	Grid 16	**5**	**51**
131	4/16/2018	1:09:33 PM	9	945	R	0.1		**7**	**79**
132	4/16/2018	1:09:44 PM	9	900	R	0.1		**7**	**24**
133	4/16/2018	1:09:56 PM	2	901	R	0.1		**-9**	**25**
134	4/16/2018	1:11:40 PM	0	881	R	0.1	Grid 17	**-13**	**0**
135	4/16/2018	1:11:52 PM	0	820	R	0.1		**-13**	**-76**
136	4/16/2018	1:12:03 PM	0	799	R	0.1		**-13**	**-102**
137	4/16/2018	1:12:15 PM	0	888	R	0.1		**-13**	**9**
138	4/16/2018	1:18:43 PM	3	784	R	0.1	Grid 18	**-6**	**-120**
139	4/16/2018	1:18:55 PM	4	847	R	0.1		**-4**	**-42**
140	4/16/2018	1:19:06 PM	1	807	R	0.1		**-11**	**-92**
141	4/16/2018	1:19:18 PM	7	741	R	0.1		**3**	**-173**
142	4/16/2018	1:19:30 PM	1	907	R	0.1		**-11**	**32**
143	4/16/2018	1:19:41 PM	5	868	R	0.1		**-2**	**-16**
144	4/16/2018	1:19:53 PM	1	851	R	0.1		**-11**	**-37**
145	4/16/2018	1:20:05 PM	0	905	R	0.1		**-13**	**30**
146	4/16/2018	1:20:17 PM	0	873	R	0.1		**-13**	**-10**
147	4/16/2018	1:20:28 PM	0	854	R	0.1		**-13**	**-33**
148	4/16/2018	1:20:40 PM	0	817	R	0.1		**-13**	**-79**
149	4/16/2018	1:23:07 PM	7	893	R	0.1	Grid 19	**3**	**15**
150	4/16/2018	1:23:19 PM	13	918	R	0.1		**16**	**46**
151	4/16/2018	1:23:30 PM	10	877	R	0.1		**10**	**-5**
152	4/16/2018	1:23:42 PM	2	836	R	0.1		**-9**	**-56**
153	4/16/2018	1:23:54 PM	3	873	R	0.1		**-6**	**-10**
154	4/16/2018	1:24:05 PM	7	875	R	0.1		**3**	**-7**
155	4/16/2018	1:24:17 PM	6	916	R	0.1		**0**	**43**
156	4/16/2018	1:24:29 PM	1	979	R	0.1		**-11**	**121**
157	4/16/2018	1:24:40 PM	0	841	R	0.1		**-13**	**-50**
158	4/16/2018	1:24:52 PM	11	932	R	0.1		**12**	**63**

159	4/16/2018	1:25:56 PM	3	832	R	0.1	Grid 20	**-6**	**-61**
160	4/16/2018	1:26:08 PM	0	863	R	0.1		**-13**	**-22**
161	4/16/2018	1:26:20 PM	0	843	R	0.1		**-13**	**-47**
162	4/16/2018	1:26:32 PM	0	846	R	0.1		**-13**	**-43**
163	4/16/2018	1:26:43 PM	0	899	R	0.1		**-13**	**22**
164	4/16/2018	1:26:55 PM	0	879	R	0.1		**-13**	**-2**
165	4/16/2018	1:27:07 PM	12	794	R	0.1		**14**	**-108**
166	4/16/2018	1:27:18 PM	16	903	R	0.1		**23**	**27**
167	4/16/2018	1:27:30 PM	11	881	R	0.1		**12**	**0**
168	4/16/2018	1:27:42 PM	10	978	R	0.1		**10**	**120**
169	4/16/2018	1:30:06 PM	5	866	R	0.1	Grid 21	**-2**	**-19**
170	4/16/2018	1:30:18 PM	15	869	R	0.1		**21**	**-15**
171	4/16/2018	1:30:30 PM	3	884	R	0.1		**-6**	**4**
172	4/16/2018	1:30:41 PM	0	901	R	0.1		**-13**	**25**
173	4/16/2018	1:32:46 PM	3	799	R	0.1	Grid 22	**-6**	**-102**
174	4/16/2018	1:32:58 PM	7	886	R	0.1		**3**	**6**
175	4/16/2018	1:33:09 PM	10	833	R	0.1		**10**	**-59**
176	4/16/2018	1:33:21 PM	14	852	R	0.1		**19**	**-36**
177	4/16/2018	1:33:33 PM	21	876	R	0.1		**35**	**-6**
178	4/16/2018	1:33:44 PM	5	936	R	0.1		**-2**	**68**
179	4/16/2018	1:33:56 PM	13	1023	R	0.1		**16**	**176**
180	4/16/2018	1:34:08 PM	7	911	R	0.1		**3**	**37**
181	4/16/2018	1:34:20 PM	16	855	R	0.1		**23**	**-32**
182	4/16/2018	1:34:31 PM	3	583	R	0.1		**-6**	**-369**
183	4/16/2018	1:34:43 PM	9	780	R	0.1		**7**	**-125**
184	4/16/2018	1:36:35 PM	7	828	R	0.1	Grid 23	**3**	**-66**
185	4/16/2018	1:36:47 PM	6	876	R	0.1		**0**	**-6**
186	4/16/2018	1:36:58 PM	0	817	R	0.1		**-13**	**-79**
187	4/16/2018	1:37:10 PM	10	893	R	0.1		**10**	**15**
188	4/16/2018	1:37:22 PM	10	836	R	0.1		**10**	**-56**
189	4/16/2018	1:37:34 PM	2	929	R	0.1		**-9**	**59**
190	4/16/2018	1:37:45 PM	0	992	R	0.1		**-13**	**137**
191	4/16/2018	1:37:57 PM	13	963	R	0.1		**16**	**102**
192	4/16/2018	1:38:09 PM	8	791	R	0.1		**5**	**-111**
193	4/16/2018	1:39:35 PM	0	869	R	0.1	Grid 24	**-13**	**-15**
194	4/16/2018	1:39:47 PM	3	871	R	0.1		**-6**	**-12**
195	4/16/2018	1:39:59 PM	0	911	R	0.1		**-13**	**37**
196	4/16/2018	1:40:10 PM	0	813	R	0.1		**-13**	**-84**
197	4/16/2018	1:40:22 PM	0	810	R	0.1		**-13**	**-88**
198	4/16/2018	1:40:34 PM	4	998	R	0.1		**-4**	**145**
199	4/16/2018	1:40:46 PM	1	852	R	0.1		**-11**	**-36**
200	4/16/2018	1:40:57 PM	20	977	R	0.1		**32**	**119**
201	4/16/2018	1:41:09 PM	16	933	R	0.1		**23**	**64**
202	4/16/2018	1:41:21 PM	14	972	R	0.1		**19**	**113**
203	4/16/2018	1:44:43 PM	0	799	R	0.1	Grid 25	**-13**	**-102**
204	4/16/2018	1:44:55 PM	3	768	R	0.1		**-6**	**-140**
205	4/16/2018	1:45:06 PM	0	913	R	0.1		**-13**	**40**
206	4/16/2018	1:45:18 PM	17	855	R	0.1		**25**	**-32**
207	4/16/2018	1:45:30 PM	4	833	R	0.1		**-4**	**-59**
208	4/16/2018	1:45:41 PM	0	932	R	0.1		**-13**	**63**
209	4/16/2018	1:45:53 PM	7	842	R	0.1		**3**	**-48**
210	4/16/2018	1:46:05 PM	0	869	R	0.1		**-13**	**-15**
211	4/16/2018	1:46:16 PM	6	845	R	0.1		**0**	**-45**
212	4/16/2018	1:46:28 PM	4	888	R	0.1		**-4**	**9**
213	4/16/2018	1:50:40 PM	3	841	R	0.1	Grid 26	**-6**	**-50**
214	4/16/2018	1:50:51 PM	5	893	R	0.1		**-2**	**15**
215	4/16/2018	1:51:03 PM	1	872	R	0.1		**-11**	**-11**
216	4/16/2018	1:51:15 PM	6	812	R	0.1		**0**	**-85**

217	4/16/2018	1:51:26 PM	0	907	R	0.1		**-13**	**32**
218	4/16/2018	1:51:38 PM	5	756	R	0.1		**-2**	**-155**
219	4/16/2018	1:51:50 PM	7	1112	R	0.1		**3**	**286**
220	4/16/2018	1:52:01 PM	1	868	R	0.1		**-11**	**-16**
221	4/16/2018	1:52:13 PM	7	892	R	0.1		**3**	**14**
222	4/16/2018	1:52:25 PM	6	1031	R	0.1		**0**	**186**
223	4/16/2018	1:54:21 PM	5	880	R	0.1	Grid 27	**-2**	**-1**
224	4/16/2018	1:54:33 PM	0	857	R	0.1		**-13**	**-30**
225	4/16/2018	1:54:45 PM	4	877	R	0.1		**-4**	**-5**
226	4/16/2018	1:54:56 PM	1	1001	R	0.1		**-11**	**149**
227	4/16/2018	1:55:08 PM	0	1120	R	0.1		**-13**	**296**
228	4/16/2018	1:55:20 PM	0	1184	R	0.1		**-13**	**375**
229	4/16/2018	1:55:32 PM	16	977	R	0.1		**23**	**119**
230	4/16/2018	1:55:43 PM	8	880	R	0.1		**5**	**-1**
231	4/16/2018	1:55:55 PM	13	747	R	0.1		**16**	**-166**
232	4/16/2018	1:56:07 PM	3	901	R	0.1		**-6**	**25**
233	4/16/2018	1:59:06 PM	0	805	R	0.1	Grid 28	**-13**	**-94**
234	4/16/2018	1:59:18 PM	8	788	R	0.1		**5**	**-115**
235	4/16/2018	1:59:29 PM	7	839	R	0.1		**3**	**-52**
236	4/16/2018	1:59:41 PM	12	866	R	0.1		**14**	**-19**
237	4/16/2018	1:59:53 PM	3	885	R	0.1		**-6**	**5**
238	4/16/2018	2:00:05 PM	10	760	R	0.1		**10**	**-150**
239	4/16/2018	2:00:16 PM	8	832	R	0.1		**5**	**-61**
240	4/16/2018	2:00:28 PM	19	822	R	0.1		**30**	**-73**
241	4/16/2018	2:00:40 PM	5	904	R	0.1		**-2**	**28**
242	4/16/2018	2:00:51 PM	1	902	R	0.1		**-11**	**26**
243	4/16/2018	2:03:34 PM	13	800	R	0.1	Grid 29	**16**	**-100**
244	4/16/2018	2:03:46 PM	3	823	R	0.1		**-6**	**-72**
245	4/16/2018	2:03:57 PM	0	827	R	0.1		**-13**	**-67**
246	4/16/2018	2:04:09 PM	0	802	R	0.1		**-13**	**-98**
247	4/16/2018	2:04:21 PM	8	780	R	0.1		**5**	**-125**
248	4/16/2018	2:04:32 PM	2	736	R	0.1		**-9**	**-180**
249	4/16/2018	2:04:44 PM	3	796	R	0.1		**-6**	**-105**
250	4/16/2018	2:04:56 PM	11	799	R	0.1		**12**	**-102**
251	4/16/2018	2:05:08 PM	9	849	R	0.1		**7**	**-40**
252	4/16/2018	2:05:19 PM	2	845	R	0.1		**-9**	**-45**
253	4/16/2018	2:08:13 PM	7	867	R	0.1	Grid 30	**3**	**-17**
254	4/16/2018	2:08:25 PM	1	791	R	0.1		**-11**	**-111**
255	4/16/2018	2:08:36 PM	8	992	R	0.1		**5**	**137**
256	4/16/2018	2:08:48 PM	9	894	R	0.1		**7**	**16**
257	4/16/2018	2:09:00 PM	2	952	R	0.1		**-9**	**88**
258	4/16/2018	2:09:11 PM	0	1021	R	0.1		**-13**	**173**
259	4/16/2018	2:09:23 PM	8	1037	R	0.1		**5**	**193**
260	4/16/2018	2:09:35 PM	2	922	R	0.1		**-9**	**51**
261	4/16/2018	2:09:47 PM	6	957	R	0.1		**0**	**94**
262	4/16/2018	2:09:58 PM	0	1031	R	0.1		**-13**	**186**
263	4/16/2018	2:12:48 PM	5	802	R	0.1	Grid 31	**-2**	**-98**
264	4/16/2018	2:12:59 PM	0	782	R	0.1		**-13**	**-123**
265	4/16/2018	2:13:11 PM	7	842	R	0.1		**3**	**-48**
266	4/16/2018	2:13:23 PM	6	782	R	0.1		**0**	**-123**
267	4/16/2018	2:13:35 PM	1	988	R	0.1		**-11**	**133**
268	4/16/2018	2:13:46 PM	0	884	R	0.1		**-13**	**4**
269	4/16/2018	2:13:58 PM	5	911	R	0.1		**-2**	**37**
270	4/16/2018	2:14:10 PM	0	935	R	0.1		**-13**	**67**
271	4/16/2018	2:14:21 PM	6	919	R	0.1		**0**	**47**
272	4/16/2018	2:14:33 PM	0	1135	R	0.1		**-13**	**315**
273	4/16/2018	2:17:09 PM	7	735	R	0.1	Grid 32	**3**	**-181**
274	4/16/2018	2:17:21 PM	0	933	R	0.1		**-13**	**64**

275	4/16/2018	2:17:32 PM	10	963	R	0.1		**10**	**102**
276	4/16/2018	2:17:44 PM	2	887	R	0.1		**-9**	**7**
277	4/16/2018	2:17:56 PM	0	766	R	0.1		**-13**	**-142**
278	4/16/2018	2:18:07 PM	4	711	R	0.1		**-4**	**-211**
279	4/16/2018	2:18:19 PM	9	786	R	0.1		**7**	**-118**
280	4/16/2018	2:18:31 PM	2	822	R	0.1		**-9**	**-73**
281	4/16/2018	2:18:43 PM	3	796	R	0.1		**-6**	**-105**
282	4/16/2018	2:18:54 PM	0	868	R	0.1		**-13**	**-16**
283	4/16/2018	2:22:20 PM	11	907	R	0.1	Grid 33	**12**	**32**
284	4/16/2018	2:22:32 PM	2	829	R	0.1		**-9**	**-64**
285	4/16/2018	2:22:44 PM	0	910	R	0.1		**-13**	**36**
286	4/16/2018	2:22:56 PM	8	946	R	0.1		**5**	**80**
287	4/16/2018	2:23:07 PM	8	997	R	0.1		**5**	**144**
288	4/16/2018	2:23:19 PM	2	824	R	0.1		**-9**	**-71**
289	4/16/2018	2:23:31 PM	5	795	R	0.1		**-2**	**-106**
290	4/16/2018	2:23:42 PM	1	746	R	0.1		**-11**	**-167**
291	4/16/2018	2:23:54 PM	0	818	R	0.1		**-13**	**-78**
292	4/16/2018	2:24:06 PM	0	880	R	0.1		**-13**	**-1**
293	4/16/2018	2:26:38 PM	15	824	R	0.1	Grid 34	**21**	**-71**
294	4/16/2018	2:26:50 PM	8	856	R	0.1		**5**	**-31**
295	4/16/2018	2:27:01 PM	17	847	R	0.1		**25**	**-42**
296	4/16/2018	2:27:13 PM	13	880	R	0.1		**16**	**-1**
297	4/16/2018	2:27:25 PM	3	847	R	0.1		**-6**	**-42**
298	4/16/2018	2:27:37 PM	4	799	R	0.1		**-4**	**-102**
299	4/16/2018	2:27:48 PM	1	833	R	0.1		**-11**	**-59**
300	4/16/2018	2:28:00 PM	23	843	R	0.1		**39**	**-47**
301	4/16/2018	2:28:12 PM	11	873	R	0.1		**12**	**-10**
302	4/16/2018	2:28:23 PM	2	929	R	0.1		**-9**	**59**
303	4/16/2018	2:32:41 PM	3	709	R	0.1	Grid 35	**-6**	**-213**
304	4/16/2018	2:32:52 PM	12	871	R	0.1		**14**	**-12**
305	4/16/2018	2:33:04 PM	3	835	R	0.1		**-6**	**-57**
306	4/16/2018	2:33:16 PM	0	892	R	0.1		**-13**	**14**
307	4/16/2018	2:33:27 PM	0	964	R	0.1		**-13**	**103**
308	4/16/2018	2:33:39 PM	0	836	R	0.1		**-13**	**-56**
309	4/16/2018	2:33:51 PM	0	873	R	0.1		**-13**	**-10**
310	4/16/2018	2:34:03 PM	0	904	R	0.1		**-13**	**28**
311	4/16/2018	2:34:14 PM	0	735	R	0.1		**-13**	**-181**
312	4/16/2018	2:34:26 PM	8	855	R	0.1		**5**	**-32**
313	4/16/2018	2:37:49 PM	3	818	R	0.1	Grid 36	**-6**	**-78**
314	4/16/2018	2:38:00 PM	0	855	R	0.1		**-13**	**-32**
315	4/16/2018	2:38:12 PM	0	798	R	0.1		**-13**	**-103**
316	4/16/2018	2:38:24 PM	0	821	R	0.1		**-13**	**-74**
317	4/16/2018	2:38:36 PM	13	786	R	0.1		**16**	**-118**
318	4/16/2018	2:38:47 PM	3	799	R	0.1		**-6**	**-102**
319	4/16/2018	2:42:40 PM	0	897	R	0.1	Grid 37	**-13**	**20**
320	4/16/2018	2:42:52 PM	5	794	R	0.1		**-2**	**-108**
321	4/16/2018	2:43:04 PM	11	790	R	0.1		**12**	**-113**
322	4/16/2018	2:43:15 PM	2	821	R	0.1		**-9**	**-74**
323	4/16/2018	2:43:27 PM	0	810	R	0.1		**-13**	**-88**
324	4/16/2018	2:43:39 PM	8	666	R	0.1		**5**	**-266**
325	4/16/2018	2:43:51 PM	2	733	R	0.1		**-9**	**-183**
326	4/16/2018	2:44:02 PM	11	819	R	0.1		**12**	**-77**
327	4/16/2018	2:44:14 PM	2	854	R	0.1		**-9**	**-33**
328	4/16/2018	2:44:26 PM	11	832	R	0.1		**12**	**-61**
329	4/16/2018	2:46:34 PM	7	843	R	0.1	Grid 38	**3**	**-47**
330	4/16/2018	2:46:45 PM	7	818	R	0.1		**3**	**-78**
331	4/16/2018	2:46:57 PM	0	812	R	0.1		**-13**	**-85**
332	4/16/2018	2:47:09 PM	6	809	R	0.1		**0**	**-89**

333	4/16/2018	2:47:20 PM	7	866	R	0.1	**3**	**-19**
334	4/16/2018	2:47:32 PM	11	749	R	0.1	**12**	**-163**
335	4/16/2018	2:47:44 PM	2	797	R	0.1	**-9**	**-104**
336	4/16/2018	2:47:56 PM	8	821	R	0.1	**5**	**-74**
337	4/16/2018	2:48:07 PM	5	795	R	0.1	**-2**	**-106**
338	4/16/2018	2:48:19 PM	6	800	R	0.1	**0**	**-100**
		Maximum:	**23**	**1242**			**39**	**447**
		Average:	**5**	**876**			**-2**	**-6**
		StDev:	**5**	**85**			**11**	**105**

Room 105A Lower\Upper Walls

2360 SN:268497
43-37 SN:093965
Cal Due Date: 10/10/2018
Surveyor: Thomas Hogan
Bldg 218
Room 105A East&West Lower Wall Grids 9 thru 17 27 thru 35 44 thru 52 62 thru 70
Alpha Efficiency: 0.31
Beta/Gamma Efficiency: 0.352
Alpha Background: 3.3
Beta/Gamma Background: 484

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/18/2018	12:27:57	PM	8	481	R	0.1	Grid 9	**10**	**-4**
2	4/18/2018	12:28:09	PM	7	490	R	0.1		**8**	**8**
3	4/18/2018	12:28:21	PM	11	410	R	0.1		**17**	**-96**
4	4/18/2018	12:28:33	PM	2	469	R	0.1		**-3**	**-20**
5	4/18/2018	12:28:44	PM	0	429	R	0.1		**-7**	**-72**
6	4/18/2018	12:28:56	PM	0	504	R	0.1		**-7**	**26**
7	4/18/2018	12:29:08	PM	7	440	R	0.1		**8**	**-57**
8	4/18/2018	12:29:20	PM	12	475	R	0.1		**19**	**-12**
9	4/18/2018	12:29:31	PM	3	444	R	0.1		**-1**	**-52**
10	4/18/2018	12:53:56	PM	3	503	R	0.1	Grid 10	**-1**	**25**
11	4/18/2018	12:54:08	PM	3	489	R	0.1		**-1**	**7**
12	4/18/2018	12:54:19	PM	0	506	R	0.1		**-7**	**29**
13	4/18/2018	12:54:31	PM	0	520	R	0.1		**-7**	**47**
14	4/18/2018	12:54:43	PM	2	525	R	0.1		**-3**	**53**
15	4/18/2018	12:54:55	PM	0	521	R	0.1		**-7**	**48**
16	4/18/2018	12:55:06	PM	0	524	R	0.1		**-7**	**52**
17	4/18/2018	12:55:18	PM	3	437	R	0.1		**-1**	**-61**
18	4/18/2018	12:55:30	PM	4	536	R	0.1		**2**	**68**
19	4/18/2018	12:55:42	PM	11	513	R	0.1		**17**	**38**
20	4/18/2018	12:57:45	PM	0	537	R	0.1	Grid 11	**-7**	**69**
21	4/18/2018	12:57:56	PM	0	424	R	0.1		**-7**	**-78**
22	4/18/2018	12:58:08	PM	11	443	R	0.1		**17**	**-53**
23	4/18/2018	12:58:20	PM	9	456	R	0.1		**13**	**-36**
24	4/18/2018	12:58:32	PM	11	422	R	0.1		**17**	**-81**
25	4/18/2018	12:58:43	PM	2	552	R	0.1		**-3**	**89**
26	4/18/2018	12:58:55	PM	4	473	R	0.1		**2**	**-14**
27	4/18/2018	12:59:07	PM	4	476	R	0.1		**2**	**-10**
28	4/18/2018	12:59:19	PM	0	418	R	0.1		**-7**	**-86**
29	4/18/2018	12:59:30	PM	3	465	R	0.1		**-1**	**-25**
30	4/18/2018	1:05:36	PM	0	434	R	0.1	Grid 12	**-7**	**-65**
31	4/18/2018	1:05:47	PM	3	422	R	0.1		**-1**	**-81**
32	4/18/2018	1:05:59	PM	12	447	R	0.1		**19**	**-48**
33	4/18/2018	1:06:11	PM	3	471	R	0.1		**-1**	**-17**
34	4/18/2018	1:06:23	PM	0	434	R	0.1		**-7**	**-65**
35	4/18/2018	1:06:34	PM	15	455	R	0.1		**26**	**-38**
36	4/18/2018	1:06:46	PM	3	566	R	0.1		**-1**	**107**
37	4/18/2018	1:06:58	PM	0	442	R	0.1		**-7**	**-55**
38	4/18/2018	1:07:10	PM	0	453	R	0.1		**-7**	**-40**

39	4/18/2018	1:07:21 PM	3	434	R	0.1		**-1**	**-65**
40	4/18/2018	1:21:28 PM	11	535	R	0.1	Grid 13	**17**	**66**
41	4/18/2018	1:21:39 PM	2	554	R	0.1		**-3**	**91**
42	4/18/2018	1:21:51 PM	3	464	R	0.1		**-1**	**-26**
43	4/18/2018	1:22:03 PM	0	535	R	0.1		**-7**	**66**
44	4/18/2018	1:22:15 PM	0	428	R	0.1		**-7**	**-73**
45	4/18/2018	1:22:27 PM	12	532	R	0.1		**19**	**62**
46	4/18/2018	1:22:38 PM	12	550	R	0.1		**19**	**86**
47	4/18/2018	1:22:50 PM	3	580	R	0.1		**-1**	**125**
48	4/18/2018	1:23:02 PM	15	621	R	0.1		**26**	**178**
49	4/18/2018	1:23:14 PM	17	626	R	0.1		**30**	**185**
50	4/18/2018	1:25:35 PM	8	466	R	0.1	Grid 14	**10**	**-23**
51	4/18/2018	1:25:47 PM	5	529	R	0.1		**4**	**59**
52	4/18/2018	1:25:58 PM	1	501	R	0.1		**-5**	**22**
53	4/18/2018	1:26:10 PM	5	472	R	0.1		**4**	**-16**
54	4/18/2018	1:26:22 PM	1	530	R	0.1		**-5**	**60**
55	4/18/2018	1:26:34 PM	3	651	R	0.1		**-1**	**217**
56	4/18/2018	1:26:45 PM	0	604	R	0.1		**-7**	**156**
57	4/18/2018	1:26:57 PM	14	502	R	0.1		**24**	**23**
58	4/18/2018	1:27:09 PM	6	491	R	0.1		**6**	**9**
59	4/18/2018	1:27:21 PM	1	536	R	0.1		**-5**	**68**
60	4/18/2018	1:36:39 PM	0	577	R	0.1	Grid 15	**-7**	**121**
61	4/18/2018	1:36:51 PM	2	531	R	0.1		**-3**	**61**
62	4/18/2018	1:37:03 PM	3	567	R	0.1		**-1**	**108**
63	4/18/2018	1:37:14 PM	2	548	R	0.1		**-3**	**83**
64	4/18/2018	1:37:26 PM	3	510	R	0.1		**-1**	**34**
65	4/18/2018	1:37:38 PM	0	497	R	0.1		**-7**	**17**
66	4/18/2018	1:37:50 PM	4	550	R	0.1		**2**	**86**
67	4/18/2018	1:38:01 PM	0	574	R	0.1		**-7**	**117**
68	4/18/2018	1:38:13 PM	3	540	R	0.1		**-1**	**73**
69	4/18/2018	1:38:25 PM	9	519	R	0.1		**13**	**46**
70	4/18/2018	1:41:14 PM	0	551	R	0.1	Grid 16	**-7**	**87**
71	4/18/2018	1:41:26 PM	0	487	R	0.1		**-7**	**4**
72	4/18/2018	1:41:37 PM	3	430	R	0.1		**-1**	**-70**
73	4/18/2018	1:41:49 PM	0	442	R	0.1		**-7**	**-55**
74	4/18/2018	1:42:01 PM	0	425	R	0.1		**-7**	**-77**
75	4/18/2018	1:42:13 PM	3	468	R	0.1		**-1**	**-21**
76	4/18/2018	1:42:24 PM	0	498	R	0.1		**-7**	**18**
77	4/18/2018	1:42:36 PM	3	502	R	0.1		**-1**	**23**
78	4/18/2018	1:42:48 PM	0	508	R	0.1		**-7**	**31**
79	4/18/2018	1:43:00 PM	2	471	R	0.1		**-3**	**-17**
80	4/18/2018	1:48:34 PM	0	444	R	0.1	Grid 17	**-7**	**-52**
81	4/18/2018	1:48:46 PM	14	576	R	0.1		**24**	**120**
82	4/18/2018	1:48:57 PM	3	576	R	0.1		**-1**	**120**
83	4/18/2018	1:49:09 PM	0	569	R	0.1		**-7**	**111**
84	4/18/2018	1:49:21 PM	2	554	R	0.1		**-3**	**91**
85	4/18/2018	1:49:33 PM	1	622	R	0.1		**-5**	**180**
86	4/18/2018	1:49:44 PM	3	649	R	0.1		**-1**	**215**
87	4/18/2018	1:49:56 PM	4	566	R	0.1		**2**	**107**
88	4/18/2018	1:50:08 PM	2	551	R	0.1		**-3**	**87**
89	4/18/2018	1:50:20 PM	3	599	R	0.1		**-1**	**150**
90	4/18/2018	2:02:53 PM	4	498	R	0.1	Grid 27	**2**	**18**
91	4/18/2018	2:03:04 PM	0	510	R	0.1		**-7**	**34**

92	4/18/2018	2:03:16 PM	3	502	R	0.1		**-1**	**23**
93	4/18/2018	2:03:28 PM	4	608	R	0.1		**2**	**161**
94	4/18/2018	2:03:40 PM	1	563	R	0.1		**-5**	**103**
95	4/18/2018	2:03:51 PM	0	527	R	0.1		**-7**	**56**
96	4/18/2018	2:04:03 PM	6	585	R	0.1		**6**	**131**
97	4/18/2018	2:04:15 PM	1	539	R	0.1		**-5**	**72**
98	4/18/2018	2:04:27 PM	0	523	R	0.1		**-7**	**51**
99	4/18/2018	2:04:38 PM	4	527	R	0.1		**2**	**56**
100	4/18/2018	2:09:48 PM	3	415	R	0.1	Grid 28	**-1**	**-90**
101	4/18/2018	2:10:00 PM	7	488	R	0.1		**8**	**5**
102	4/18/2018	2:10:12 PM	1	499	R	0.1		**-5**	**20**
103	4/18/2018	2:10:24 PM	4	445	R	0.1		**2**	**-51**
104	4/18/2018	2:10:35 PM	4	433	R	0.1		**2**	**-66**
105	4/18/2018	2:10:47 PM	1	412	R	0.1		**-5**	**-94**
106	4/18/2018	2:10:59 PM	1	402	R	0.1		**-5**	**-107**
107	4/18/2018	2:11:11 PM	2	626	R	0.1		**-3**	**185**
108	4/18/2018	2:11:22 PM	4	479	R	0.1		**2**	**-7**
109	4/18/2018	2:11:34 PM	0	503	R	0.1		**-7**	**25**
110	4/18/2018	2:17:05 PM	3	463	R	0.1	Grid 29	**-1**	**-27**
111	4/18/2018	2:17:17 PM	0	465	R	0.1		**-7**	**-25**
112	4/18/2018	2:17:29 PM	3	414	R	0.1		**-1**	**-91**
113	4/18/2018	2:17:41 PM	0	451	R	0.1		**-7**	**-43**
114	4/18/2018	2:17:52 PM	0	544	R	0.1		**-7**	**78**
115	4/18/2018	2:18:04 PM	5	471	R	0.1		**4**	**-17**
116	4/18/2018	2:18:16 PM	1	448	R	0.1		**-5**	**-47**
117	4/18/2018	2:18:28 PM	0	487	R	0.1		**-7**	**4**
118	4/18/2018	2:18:39 PM	0	471	R	0.1		**-7**	**-17**
119	4/18/2018	2:18:51 PM	4	445	R	0.1		**2**	**-51**
120	4/18/2018	2:22:30 PM	0	478	R	0.1	Grid 30	**-7**	**-8**
121	4/18/2018	2:22:42 PM	3	412	R	0.1		**-1**	**-94**
122	4/18/2018	2:22:54 PM	0	423	R	0.1		**-7**	**-79**
123	4/18/2018	2:23:05 PM	4	502	R	0.1		**2**	**23**
124	4/18/2018	2:23:17 PM	3	580	R	0.1		**-1**	**125**
125	4/18/2018	2:23:29 PM	2	438	R	0.1		**-3**	**-60**
126	4/18/2018	2:23:41 PM	20	508	R	0.1		**37**	**31**
127	4/18/2018	2:23:52 PM	4	455	R	0.1		**2**	**-38**
128	4/18/2018	2:24:04 PM	9	542	R	0.1		**13**	**75**
129	4/18/2018	2:24:16 PM	2	504	R	0.1		**-3**	**26**
130	4/18/2018	2:28:07 PM	14	467	R	0.1	Grid 31	**24**	**-22**
131	4/18/2018	2:28:19 PM	3	505	R	0.1		**-1**	**27**
132	4/18/2018	2:28:31 PM	3	403	R	0.1		**-1**	**-105**
133	4/18/2018	2:28:42 PM	0	416	R	0.1		**-7**	**-89**
134	4/18/2018	2:28:54 PM	4	423	R	0.1		**2**	**-79**
135	4/18/2018	2:29:06 PM	5	385	R	0.1		**4**	**-129**
136	4/18/2018	2:29:18 PM	11	431	R	0.1		**17**	**-69**
137	4/18/2018	2:29:29 PM	2	429	R	0.1		**-3**	**-72**
138	4/18/2018	2:29:41 PM	0	443	R	0.1		**-7**	**-53**
139	4/18/2018	2:29:53 PM	0	478	R	0.1		**-7**	**-8**
140	4/18/2018	2:33:49 PM	0	473	R	0.1	Grid 32	**-7**	**-14**
141	4/18/2018	2:34:01 PM	0	456	R	0.1		**-7**	**-36**
142	4/18/2018	2:34:13 PM	8	498	R	0.1		**10**	**18**
143	4/18/2018	2:34:24 PM	2	587	R	0.1		**-3**	**134**
144	4/18/2018	2:34:36 PM	6	503	R	0.1		**6**	**25**

145	4/18/2018	2:34:48 PM	5	445	R	0.1		**4**	**-51**
146	4/18/2018	2:35:00 PM	4	443	R	0.1		**2**	**-53**
147	4/18/2018	2:35:11 PM	0	507	R	0.1		**-7**	**30**
148	4/18/2018	2:35:23 PM	3	432	R	0.1		**-1**	**-68**
149	4/18/2018	2:35:35 PM	7	433	R	0.1		**8**	**-66**
150	4/18/2018	2:40:08 PM	3	450	R	0.1	Grid 33	**-1**	**-44**
151	4/18/2018	2:40:20 PM	5	424	R	0.1		**4**	**-78**
152	4/18/2018	2:40:32 PM	7	430	R	0.1		**8**	**-70**
153	4/18/2018	2:40:43 PM	0	439	R	0.1		**-7**	**-59**
154	4/18/2018	2:40:55 PM	4	410	R	0.1		**2**	**-96**
155	4/18/2018	2:41:07 PM	1	412	R	0.1		**-5**	**-94**
156	4/18/2018	2:41:19 PM	9	467	R	0.1		**13**	**-22**
157	4/18/2018	2:41:30 PM	2	448	R	0.1		**-3**	**-47**
158	4/18/2018	2:41:42 PM	0	497	R	0.1		**-7**	**17**
159	4/18/2018	2:41:54 PM	0	434	R	0.1		**-7**	**-65**
160	4/18/2018	2:47:58 PM	0	488	R	0.1	Grid 34	**-7**	**5**
161	4/18/2018	2:48:09 PM	0	436	R	0.1		**-7**	**-62**
162	4/18/2018	2:48:21 PM	13	465	R	0.1		**22**	**-25**
163	4/18/2018	2:48:33 PM	12	457	R	0.1		**19**	**-35**
164	4/18/2018	2:48:45 PM	3	454	R	0.1		**-1**	**-39**
165	4/18/2018	2:48:57 PM	10	436	R	0.1		**15**	**-62**
166	4/18/2018	2:49:08 PM	2	410	R	0.1		**-3**	**-96**
167	4/18/2018	2:49:30 PM	4	453	R	0.1		**2**	**-40**
168	4/18/2018	2:49:42 PM	4	500	R	0.1		**2**	**21**
169	4/18/2018	2:49:54 PM	1	565	R	0.1		**-5**	**105**
170	4/18/2018	2:56:42 PM	0	475	R	0.1	Grid 35	**-7**	**-12**
171	4/18/2018	2:56:53 PM	6	453	R	0.1		**6**	**-40**
172	4/18/2018	2:57:05 PM	13	485	R	0.1		**22**	**1**
173	4/18/2018	2:57:17 PM	3	531	R	0.1		**-1**	**61**
174	4/18/2018	2:57:29 PM	4	509	R	0.1		**2**	**33**
175	4/18/2018	2:57:40 PM	6	474	R	0.1		**6**	**-13**
176	4/18/2018	2:57:52 PM	4	531	R	0.1		**2**	**61**
177	4/18/2018	2:58:04 PM	5	477	R	0.1		**4**	**-9**
178	4/18/2018	2:58:16 PM	3	437	R	0.1		**-1**	**-61**
179	4/18/2018	2:58:27 PM	4	475	R	0.1		**2**	**-12**
180	4/18/2018	3:30:53 PM	0	484	R	0.1	Grid 44	**-7**	**0**
181	4/18/2018	3:31:05 PM	3	501	R	0.1		**-1**	**22**
182	4/18/2018	3:31:17 PM	4	556	R	0.1		**2**	**94**
183	4/18/2018	3:31:29 PM	7	512	R	0.1		**8**	**36**
184	4/18/2018	3:31:40 PM	5	473	R	0.1		**4**	**-14**
185	4/18/2018	3:31:52 PM	3	531	R	0.1		**-1**	**61**
186	4/18/2018	3:32:04 PM	3	511	R	0.1		**-1**	**35**
187	4/18/2018	3:32:16 PM	4	414	R	0.1		**2**	**-91**
188	4/18/2018	3:32:27 PM	0	445	R	0.1		**-7**	**-51**
189	4/18/2018	3:32:39 PM	8	482	R	0.1		**10**	**-3**
190	4/18/2018	3:35:14 PM	7	459	R	0.1	Grid 45	**8**	**-33**
191	4/18/2018	3:35:26 PM	9	471	R	0.1		**13**	**-17**
192	4/18/2018	3:35:38 PM	5	452	R	0.1		**4**	**-42**
193	4/18/2018	3:35:50 PM	1	454	R	0.1		**-5**	**-39**
194	4/18/2018	3:36:01 PM	0	409	R	0.1		**-7**	**-98**
195	4/18/2018	3:36:13 PM	4	414	R	0.1		**2**	**-91**
196	4/18/2018	3:36:25 PM	1	487	R	0.1		**-5**	**4**
197	4/18/2018	3:36:37 PM	6	463	R	0.1		**6**	**-27**

198	4/18/2018	3:36:48 PM	1	472	R	0.1		**-5**	**-16**
199	4/18/2018	3:37:00 PM	4	437	R	0.1		**2**	**-61**
200	4/18/2018	3:42:05 PM	3	428	R	0.1	Grid 46	**-1**	**-73**
201	4/18/2018	3:42:17 PM	0	428	R	0.1		**-7**	**-73**
202	4/18/2018	3:42:29 PM	3	485	R	0.1		**-1**	**1**
203	4/18/2018	3:42:41 PM	0	465	R	0.1		**-7**	**-25**
204	4/18/2018	3:42:52 PM	0	452	R	0.1		**-7**	**-42**
205	4/18/2018	3:43:04 PM	9	427	R	0.1		**13**	**-74**
206	4/18/2018	3:43:16 PM	2	437	R	0.1		**-3**	**-61**
207	4/18/2018	3:43:28 PM	3	477	R	0.1		**-1**	**-9**
208	4/18/2018	3:43:39 PM	4	547	R	0.1		**2**	**82**
209	4/18/2018	3:43:51 PM	0	473	R	0.1		**-7**	**-14**
210	4/18/2018	3:50:21 PM	3	455	R	0.1	Grid 47	**-1**	**-38**
211	4/18/2018	3:50:33 PM	0	465	R	0.1		**-7**	**-25**
212	4/18/2018	3:50:45 PM	3	440	R	0.1		**-1**	**-57**
213	4/18/2018	3:50:57 PM	6	444	R	0.1		**6**	**-52**
214	4/18/2018	3:51:08 PM	5	450	R	0.1		**4**	**-44**
215	4/18/2018	3:51:20 PM	4	451	R	0.1		**2**	**-43**
216	4/18/2018	3:51:32 PM	0	449	R	0.1		**-7**	**-46**
217	4/18/2018	3:51:44 PM	3	456	R	0.1		**-1**	**-36**
218	4/18/2018	3:51:55 PM	0	577	R	0.1		**-7**	**121**
219	4/18/2018	3:52:07 PM	3	566	R	0.1		**-1**	**107**
220	4/19/2018	8:53:45 AM	11	461	R	0.1	Grid 48	**17**	**-30**
221	4/19/2018	8:53:57 AM	2	431	R	0.1		**-3**	**-69**
222	4/19/2018	8:54:08 AM	0	450	R	0.1		**-7**	**-44**
223	4/19/2018	8:54:21 AM	0	538	R	0.1		**-7**	**70**
224	4/19/2018	8:54:51 AM	4	420	R	0.1		**2**	**-83**
225	4/19/2018	8:55:15 AM	7	490	R	0.1		**8**	**8**
226	4/19/2018	8:55:27 AM	1	473	R	0.1		**-5**	**-14**
227	4/19/2018	8:55:39 AM	16	511	R	0.1		**28**	**35**
228	4/19/2018	8:55:50 AM	7	510	R	0.1		**8**	**34**
229	4/19/2018	8:56:02 AM	13	476	R	0.1		**22**	**-10**
230	4/19/2018	8:58:18 AM	0	436	R	0.1	Grid 49	**-7**	**-62**
231	4/19/2018	8:58:30 AM	8	493	R	0.1		**10**	**12**
232	4/19/2018	8:58:42 AM	2	566	R	0.1		**-3**	**107**
233	4/19/2018	8:58:53 AM	5	564	R	0.1		**4**	**104**
234	4/19/2018	8:59:05 AM	1	479	R	0.1		**-5**	**-7**
235	4/19/2018	8:59:17 AM	22	566	R	0.1		**41**	**107**
236	4/19/2018	8:59:29 AM	5	552	R	0.1		**4**	**89**
237	4/19/2018	8:59:40 AM	1	440	R	0.1		**-5**	**-57**
238	4/19/2018	8:59:52 AM	0	494	R	0.1		**-7**	**13**
239	4/19/2018	9:00:04 AM	5	537	R	0.1		**4**	**69**
240	4/19/2018	9:16:05 AM	0	364	R	0.1	Grid 50	**-7**	**-156**
241	4/19/2018	9:16:17 AM	10	423	R	0.1		**15**	**-79**
242	4/19/2018	9:16:28 AM	2	371	R	0.1		**-3**	**-147**
243	4/19/2018	9:16:40 AM	0	447	R	0.1		**-7**	**-48**
244	4/19/2018	9:16:52 AM	6	496	R	0.1		**6**	**16**
245	4/19/2018	9:17:04 AM	12	464	R	0.1		**19**	**-26**
246	4/19/2018	9:17:15 AM	2	481	R	0.1		**-3**	**-4**
247	4/19/2018	9:17:27 AM	3	554	R	0.1		**-1**	**91**
248	4/19/2018	9:17:39 AM	0	492	R	0.1		**-7**	**10**
249	4/19/2018	9:17:51 AM	4	698	R	0.1		**2**	**279**
250	4/19/2018	9:21:24 AM	3	765	R	0.1	Grid 51	**-1**	**366**

251	4/19/2018	9:21:36 AM	10	641	R	0.1		**15**	**204**
252	4/19/2018	9:21:48 AM	9	465	R	0.1		**13**	**-25**
253	4/19/2018	9:21:59 AM	2	480	R	0.1		**-3**	**-5**
254	4/19/2018	9:22:11 AM	4	458	R	0.1		**2**	**-34**
255	4/19/2018	9:22:23 AM	3	390	R	0.1		**-1**	**-122**
256	4/19/2018	9:22:35 AM	3	769	R	0.1		**-1**	**371**
257	4/19/2018	9:22:46 AM	2	588	R	0.1		**-3**	**135**
258	4/19/2018	9:22:58 AM	4	469	R	0.1		**2**	**-20**
259	4/19/2018	9:23:10 AM	3	469	R	0.1		**-1**	**-20**
260	4/19/2018	9:26:06 AM	7	555	R	0.1	Grid 52	**8**	**92**
261	4/19/2018	9:26:17 AM	1	549	R	0.1		**-5**	**85**
262	4/19/2018	9:26:29 AM	4	538	R	0.1		**2**	**70**
263	4/19/2018	9:26:41 AM	1	574	R	0.1		**-5**	**117**
264	4/19/2018	9:27:27 AM	0	455	R	0.1		**-7**	**-38**
265	4/19/2018	9:27:38 AM	20	562	R	0.1		**37**	**102**
266	4/19/2018	9:27:50 AM	4	498	R	0.1		**2**	**18**
267	4/19/2018	9:28:02 AM	13	620	R	0.1		**22**	**177**
268	4/19/2018	9:28:14 AM	3	562	R	0.1		**-1**	**102**
269	4/19/2018	9:28:25 AM	6	547	R	0.1		**6**	**82**
270	4/19/2018	9:35:06 AM	0	449	R	0.1	Grid 62	**-7**	**-46**
271	4/19/2018	9:35:18 AM	3	532	R	0.1		**-1**	**62**
272	4/19/2018	9:35:29 AM	4	662	R	0.1		**2**	**232**
273	4/19/2018	9:35:41 AM	3	648	R	0.1		**-1**	**213**
274	4/19/2018	9:35:53 AM	0	518	R	0.1		**-7**	**44**
275	4/19/2018	9:36:05 AM	3	545	R	0.1		**-1**	**79**
276	4/19/2018	9:36:16 AM	4	501	R	0.1		**2**	**22**
277	4/19/2018	9:36:28 AM	8	560	R	0.1		**10**	**99**
278	4/19/2018	9:36:40 AM	4	575	R	0.1		**2**	**118**
279	4/19/2018	9:36:52 AM	5	552	R	0.1		**4**	**89**
280	4/19/2018	9:40:44 AM	0	464	R	0.1	Grid 63	**-7**	**-26**
281	4/19/2018	9:40:56 AM	0	437	R	0.1		**-7**	**-61**
282	4/19/2018	9:41:08 AM	24	486	R	0.1		**46**	**3**
283	4/19/2018	9:41:20 AM	5	495	R	0.1		**4**	**14**
284	4/19/2018	9:41:31 AM	1	521	R	0.1		**-5**	**48**
285	4/19/2018	9:41:43 AM	0	463	R	0.1		**-7**	**-27**
286	4/19/2018	9:41:55 AM	12	494	R	0.1		**19**	**13**
287	4/19/2018	9:42:07 AM	18	441	R	0.1		**33**	**-56**
288	4/19/2018	9:42:18 AM	4	467	R	0.1		**2**	**-22**
289	4/19/2018	9:42:30 AM	1	431	R	0.1		**-5**	**-69**
290	4/19/2018	9:46:38 AM	11	490	R	0.1	Grid 64	**17**	**8**
291	4/19/2018	9:46:50 AM	2	410	R	0.1		**-3**	**-96**
292	4/19/2018	9:47:40 AM	4	411	R	0.1		**2**	**-95**
293	4/19/2018	9:47:51 AM	3	476	R	0.1		**-1**	**-10**
294	4/19/2018	9:48:03 AM	3	455	R	0.1		**-1**	**-38**
295	4/19/2018	9:48:15 AM	5	502	R	0.1		**4**	**23**
296	4/19/2018	9:48:27 AM	4	546	R	0.1		**2**	**81**
297	4/19/2018	9:48:38 AM	0	538	R	0.1		**-7**	**70**
298	4/19/2018	9:48:50 AM	3	474	R	0.1		**-1**	**-13**
299	4/19/2018	9:49:02 AM	9	533	R	0.1		**13**	**64**
300	4/19/2018	9:55:48 AM	4	467	R	0.1	Grid 65	**2**	**-22**
301	4/19/2018	9:55:59 AM	3	432	R	0.1		**-1**	**-68**
302	4/19/2018	9:56:11 AM	2	461	R	0.1		**-3**	**-30**
303	4/19/2018	9:56:23 AM	0	469	R	0.1		**-7**	**-20**

304	4/19/2018	9:56:35	AM	7	443	R	0.1		**8**	**-53**
305	4/19/2018	9:56:46	AM	1	516	R	0.1		**-5**	**42**
306	4/19/2018	9:56:58	AM	0	489	R	0.1		**-7**	**7**
307	4/19/2018	9:57:10	AM	7	533	R	0.1		**8**	**64**
308	4/19/2018	9:57:22	AM	1	497	R	0.1		**-5**	**17**
309	4/19/2018	9:57:33	AM	0	452	R	0.1		**-7**	**-42**
310	4/19/2018	9:59:28	AM	5	432	R	0.1	Grid 66	**4**	**-68**
311	4/19/2018	9:59:40	AM	12	437	R	0.1		**19**	**-61**
312	4/19/2018	9:59:52	AM	7	442	R	0.1		**8**	**-55**
313	4/19/2018	10:00:04	AM	1	524	R	0.1		**-5**	**52**
314	4/19/2018	10:00:15	AM	0	495	R	0.1		**-7**	**14**
315	4/19/2018	10:00:27	AM	9	511	R	0.1		**13**	**35**
316	4/19/2018	10:00:39	AM	2	485	R	0.1		**-3**	**1**
317	4/19/2018	10:00:51	AM	2	552	R	0.1		**-3**	**89**
318	4/19/2018	10:01:03	AM	3	540	R	0.1		**-1**	**73**
319	4/19/2018	10:01:14	AM	1	455	R	0.1		**-5**	**-38**
320	4/19/2018	10:03:48	AM	6	447	R	0.1	Grid 67	**6**	**-48**
321	4/19/2018	10:04:00	AM	4	435	R	0.1		**2**	**-64**
322	4/19/2018	10:04:11	AM	5	436	R	0.1		**4**	**-62**
323	4/19/2018	10:04:23	AM	0	513	R	0.1		**-7**	**38**
324	4/19/2018	10:04:35	AM	8	476	R	0.1		**10**	**-10**
325	4/19/2018	10:04:47	AM	18	451	R	0.1		**33**	**-43**
326	4/19/2018	10:04:58	AM	16	434	R	0.1		**28**	**-65**
327	4/19/2018	10:05:10	AM	7	497	R	0.1		**8**	**17**
328	4/19/2018	10:05:22	AM	1	487	R	0.1		**-5**	**4**
329	4/19/2018	10:05:34	AM	0	471	R	0.1		**-7**	**-17**
330	4/19/2018	10:07:16	AM	0	454	R	0.1	Grid 68	**-7**	**-39**
331	4/19/2018	10:07:28	AM	8	484	R	0.1		**10**	**0**
332	4/19/2018	10:07:39	AM	2	487	R	0.1		**-3**	**4**
333	4/19/2018	10:07:51	AM	6	485	R	0.1		**6**	**1**
334	4/19/2018	10:08:03	AM	1	458	R	0.1		**-5**	**-34**
335	4/19/2018	10:08:15	AM	0	438	R	0.1		**-7**	**-60**
336	4/19/2018	10:08:26	AM	12	505	R	0.1		**19**	**27**
337	4/19/2018	10:08:38	AM	3	445	R	0.1		**-1**	**-51**
338	4/19/2018	10:08:50	AM	0	478	R	0.1		**-7**	**-8**
339	4/19/2018	10:09:02	AM	5	430	R	0.1		**4**	**-70**
340	4/19/2018	10:12:28	AM	3	442	R	0.1	Grid 69	**-1**	**-55**
341	4/19/2018	10:12:40	AM	4	410	R	0.1		**2**	**-96**
342	4/19/2018	10:12:52	AM	2	487	R	0.1		**-3**	**4**
343	4/19/2018	10:13:04	AM	3	449	R	0.1		**-1**	**-46**
344	4/19/2018	10:13:15	AM	4	413	R	0.1		**2**	**-92**
345	4/19/2018	10:13:27	AM	4	418	R	0.1		**2**	**-86**
346	4/19/2018	10:13:39	AM	1	497	R	0.1		**-5**	**17**
347	4/19/2018	10:13:51	AM	0	458	R	0.1		**-7**	**-34**
348	4/19/2018	10:14:02	AM	12	454	R	0.1		**19**	**-39**
349	4/19/2018	10:14:14	AM	3	470	R	0.1		**-1**	**-18**
350	4/19/2018	10:22:08	AM	5	426	R	0.1	Grid 70	**4**	**-75**
351	4/19/2018	10:22:19	AM	1	456	R	0.1		**-5**	**-36**
352	4/19/2018	10:22:31	AM	0	569	R	0.1		**-7**	**111**
353	4/19/2018	10:22:43	AM	11	524	R	0.1		**17**	**52**
354	4/19/2018	10:22:55	AM	11	602	R	0.1		**17**	**154**
355	4/19/2018	10:23:06	AM	2	543	R	0.1		**-3**	**77**
356	4/19/2018	10:23:18	AM	0	508	R	0.1		**-7**	**31**

357	4/19/2018	10:23:30 AM	0	494	R	0.1	**-7**	**13**
358	4/19/2018	10:23:42 AM	9	470	R	0.1	**13**	**-18**
359	4/19/2018	10:23:53 AM	2	512	R	0.1	**-3**	**36**
		Maximum:	**24**	**769**			**46**	**371**
		Average:	**4**	**490**			**2**	**7**
		StDev:	**4**	**59**			**10**	**77**

2360 SN:297766
43-93# 323074
Cal Due Date: 12/20/2018
Surveyor: Richard Thatcher
Bldg 218
Room 105A North &South Lower Wall Grids 1 thru 8 18 thru 22

Alpha Efficiency:	0.404	
Beta/Gamma Efficiency:	0.254	Concrete
Alpha Background:	1	1.9
Beta/Gamma Background:	192	207

S=Scaler, R=Ratemeter

Sample #	Date	Time	Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2 Alpha	dpm/100cm^2 Beta	
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1	4/19/2018	8:08:48 AM	2	202	R	0.1	Grid 1	**2**	**105**	
2	4/19/2018	8:08:59 AM	3	187	R	0.1		**3**	**-52**	
3	4/19/2018	8:09:11 AM	0	228	R	0.1		**-2**	**378**	
4	4/19/2018	8:09:23 AM	2	187	R	0.1		**2**	**-52**	
5	4/19/2018	8:09:34 AM	3	186	R	0.1		**3**	**-63**	
6	4/19/2018	8:09:46 AM	0	193	R	0.1		**-2**	**10**	
7	4/19/2018	8:09:58 AM	21	244	R	0.1		**34**	**546**	
8	4/19/2018	8:10:09 AM	1	227	R	0.1		**0**	**367**	
9	4/19/2018	8:10:21 AM	2	225	R	0.1		**2**	**346**	
10	4/19/2018	8:10:33 AM	3	196	R	0.1		**3**	**42**	
11	4/19/2018	8:10:44 AM	1	190	R	0.1		**0**	**-21**	
12	4/19/2018	8:10:56 AM	4	241	R	0.1		**5**	**514**	
13	4/19/2018	8:11:08 AM	2	191	R	0.1		**2**	**-10**	
14	4/19/2018	8:11:20 AM	1	195	R	0.1		**0**	**31**	
15	4/19/2018	8:11:31 AM	2	188	R	0.1		**2**	**-42**	
16	4/19/2018	8:11:43 AM	3	188	R	0.1		**3**	**-42**	
17	4/19/2018	8:11:55 AM	0	244	R	0.1		**-2**	**388**	Concrete
18	4/19/2018	8:12:06 AM	16	268	R	0.1		**26**	**640**	Concrete
19	4/19/2018	8:12:18 AM	3	240	R	0.1		**3**	**346**	Concrete
20	4/19/2018	8:12:30 AM	0	254	R	0.1		**-2**	**493**	Concrete
21	4/19/2018	8:12:41 AM	0	207	R	0.1		**-2**	**0**	Concrete
22	4/19/2018	8:12:53 AM	3	259	R	0.1		**3**	**546**	Concrete
23	4/19/2018	8:13:05 AM	5	252	R	0.1		**7**	**472**	Concrete
24	4/19/2018	8:13:16 AM	1	249	R	0.1		**0**	**441**	Concrete
25	4/19/2018	8:13:28 AM	0	247	R	0.1		**-2**	**420**	Concrete
26	4/19/2018	8:13:40 AM	0	231	R	0.1		**-2**	**252**	Concrete
27	4/19/2018	8:13:51 AM	10	207	R	0.1		**15**	**0**	Concrete
28	4/19/2018	8:14:03 AM	8	254	R	0.1		**12**	**493**	Concrete
29	4/19/2018	8:16:10 AM	2	199	R	0.1	Grid 2	**2**	**73**	
30	4/19/2018	8:16:21 AM	1	187	R	0.1		**0**	**-52**	
31	4/19/2018	8:16:33 AM	3	190	R	0.1		**3**	**-21**	
32	4/19/2018	8:16:45 AM	4	187	R	0.1		**5**	**-52**	
33	4/19/2018	8:16:56 AM	3	191	R	0.1		**3**	**-10**	
34	4/19/2018	8:17:08 AM	0	198	R	0.1		**-2**	**63**	
35	4/19/2018	8:17:20 AM	0	191	R	0.1		**-2**	**-10**	
36	4/19/2018	8:17:31 AM	10	185	R	0.1		**15**	**-73**	
37	4/19/2018	8:17:43 AM	2	190	R	0.1		**2**	**-21**	
38	4/19/2018	8:17:55 AM	7	188	R	0.1		**10**	**-42**	
39	4/19/2018	8:18:07 AM	5	184	R	0.1		**7**	**-84**	
40	4/19/2018	8:18:18 AM	1	196	R	0.1		**0**	**42**	
41	4/19/2018	8:18:30 AM	2	233	R	0.1		**2**	**430**	
42	4/19/2018	8:18:42 AM	3	228	R	0.1		**3**	**378**	
43	4/19/2018	8:18:53 AM	1	228	R	0.1		**0**	**378**	
44	4/19/2018	8:19:05 AM	3	187	R	0.1		**3**	**-52**	
45	4/19/2018	8:19:17 AM	3	186	R	0.1		**3**	**-63**	

46	4/19/2018	8:19:28 AM	2	194	R	0.1		**2**	**21**	
47	4/19/2018	8:19:40 AM	2	191	R	0.1		**2**	**-10**	
48	4/19/2018	8:19:52 AM	4	266	R	0.1		**5**	**777**	
49	4/19/2018	8:20:03 AM	7	267	R	0.1		**10**	**630**	Concrete
50	4/19/2018	8:20:15 AM	1	248	R	0.1		**0**	**430**	Concrete
51	4/19/2018	8:20:27 AM	1	212	R	0.1		**0**	**52**	Concrete
52	4/19/2018	8:20:38 AM	2	203	R	0.1		**2**	**-42**	Concrete
53	4/19/2018	8:20:50 AM	1	236	R	0.1		**0**	**304**	Concrete
54	4/19/2018	8:21:02 AM	1	199	R	0.1		**0**	**-84**	Concrete
55	4/19/2018	8:21:13 AM	0	201	R	0.1		**-2**	**-63**	Concrete
56	4/19/2018	8:21:25 AM	1	221	R	0.1		**0**	**147**	Concrete
57	4/19/2018	8:21:37 AM	1	202	R	0.1		**0**	**-52**	Concrete
58	4/19/2018	8:21:48 AM	8	202	R	0.1		**12**	**-52**	Concrete
59	4/19/2018	8:22:00 AM	2	237	R	0.1		**2**	**315**	Concrete
60	4/19/2018	8:22:12 AM	8	206	R	0.1		**12**	**-10**	Concrete
61	4/19/2018	8:22:23 AM	2	211	R	0.1		**2**	**42**	Concrete
62	4/19/2018	8:22:35 AM	2	286	R	0.1		**2**	**829**	Concrete
63	4/19/2018	8:22:47 AM	3	262	R	0.1		**3**	**577**	Concrete
64	4/19/2018	8:22:58 AM	1	207	R	0.1		**0**	**0**	Concrete
65	4/19/2018	8:23:10 AM	0	211	R	0.1		**-2**	**42**	Concrete
66	4/19/2018	8:23:22 AM	9	203	R	0.1		**14**	**-42**	Concrete
67	4/19/2018	8:23:33 AM	2	217	R	0.1		**2**	**105**	Concrete
68	4/19/2018	8:23:45 AM	0	229	R	0.1		**-2**	**231**	Concrete
69	4/19/2018	8:25:52 AM	3	190	R	0.1	Grid 3	**3**	**-21**	
70	4/19/2018	8:26:04 AM	0	229	R	0.1		**-2**	**388**	
71	4/19/2018	8:26:15 AM	0	254	R	0.1		**-2**	**651**	
72	4/19/2018	8:26:27 AM	7	234	R	0.1		**10**	**441**	
73	4/19/2018	8:26:39 AM	1	222	R	0.1		**0**	**315**	
74	4/19/2018	8:26:50 AM	0	240	R	0.1		**-2**	**504**	
75	4/19/2018	8:27:02 AM	10	245	R	0.1		**15**	**556**	
76	4/19/2018	8:27:14 AM	2	252	R	0.1		**2**	**630**	
77	4/19/2018	8:27:26 AM	1	194	R	0.1		**0**	**21**	
78	4/19/2018	8:27:37 AM	2	197	R	0.1		**2**	**52**	
79	4/19/2018	8:27:49 AM	2	186	R	0.1		**2**	**-63**	
80	4/19/2018	8:28:01 AM	0	250	R	0.1		**-2**	**609**	
81	4/19/2018	8:28:12 AM	10	198	R	0.1		**15**	**63**	
82	4/19/2018	8:28:24 AM	13	189	R	0.1		**20**	**-31**	
83	4/19/2018	8:28:36 AM	3	235	R	0.1		**3**	**451**	
84	4/19/2018	8:28:47 AM	2	222	R	0.1		**2**	**315**	
85	4/19/2018	8:28:59 AM	1	289	R	0.1		**0**	**1018**	
86	4/19/2018	8:29:11 AM	0	235	R	0.1		**-2**	**451**	
87	4/19/2018	8:29:22 AM	2	161	R	0.1		**2**	**-325**	
88	4/19/2018	8:29:34 AM	1	209	R	0.1		**0**	**178**	
89	4/19/2018	8:29:46 AM	0	241	R	0.1		**-2**	**357**	Concrete
90	4/19/2018	8:29:57 AM	16	281	R	0.1		**26**	**777**	Concrete
91	4/19/2018	8:30:09 AM	7	293	R	0.1		**10**	**903**	Concrete
92	4/19/2018	8:30:21 AM	1	285	R	0.1		**0**	**819**	Concrete
93	4/19/2018	8:30:32 AM	1	239	R	0.1		**0**	**336**	Concrete
94	4/19/2018	8:30:44 AM	2	201	R	0.1		**2**	**-63**	Concrete
95	4/19/2018	8:30:56 AM	1	199	R	0.1		**0**	**-84**	Concrete
96	4/19/2018	8:31:07 AM	1	257	R	0.1		**0**	**525**	Concrete
97	4/19/2018	8:31:19 AM	2	240	R	0.1		**2**	**346**	Concrete
98	4/19/2018	8:31:31 AM	0	304	R	0.1		**-2**	**1018**	Concrete
99	4/19/2018	8:31:42 AM	14	202	R	0.1		**22**	**-52**	Concrete
100	4/19/2018	8:31:54 AM	9	209	R	0.1		**14**	**21**	Concrete
101	4/19/2018	8:32:06 AM	2	243	R	0.1		**2**	**378**	Concrete
102	4/19/2018	8:32:17 AM	0	237	R	0.1		**-2**	**315**	Concrete
103	4/19/2018	8:32:29 AM	4	279	R	0.1		**5**	**756**	Concrete
104	4/19/2018	8:32:41 AM	1	201	R	0.1		**0**	**-63**	Concrete
105	4/19/2018	8:32:52 AM	0	276	R	0.1		**-2**	**724**	Concrete

106	4/19/2018	8:33:04 AM	9	268	R	0.1		**14**	**640**	Concrete
107	4/19/2018	8:33:16 AM	2	220	R	0.1		**2**	**136**	Concrete
108	4/19/2018	8:33:27 AM	5	248	R	0.1		**7**	**430**	Concrete
109	4/19/2018	8:35:36 AM	1	181	R	0.1	Grid 4	**0**	**-115**	
110	4/19/2018	8:35:47 AM	2	191	R	0.1		**2**	**-10**	
111	4/19/2018	8:35:59 AM	3	189	R	0.1		**3**	**-31**	
112	4/19/2018	8:36:11 AM	2	192	R	0.1		**2**	**0**	
113	4/19/2018	8:36:22 AM	1	189	R	0.1		**0**	**-31**	
114	4/19/2018	8:36:34 AM	0	217	R	0.1		**-2**	**262**	
115	4/19/2018	8:36:46 AM	10	198	R	0.1		**15**	**63**	
116	4/19/2018	8:36:57 AM	2	188	R	0.1		**2**	**-42**	
117	4/19/2018	8:37:09 AM	0	191	R	0.1		**-2**	**-10**	
118	4/19/2018	8:37:21 AM	10	264	R	0.1		**15**	**756**	
119	4/19/2018	8:37:32 AM	2	271	R	0.1		**2**	**829**	
120	4/19/2018	8:37:44 AM	0	215	R	0.1		**-2**	**241**	
121	4/19/2018	8:37:56 AM	0	234	R	0.1		**-2**	**441**	
122	4/19/2018	8:38:07 AM	4	262	R	0.1		**5**	**735**	
123	4/19/2018	8:38:19 AM	11	265	R	0.1		**17**	**766**	
124	4/19/2018	8:38:31 AM	2	245	R	0.1		**2**	**556**	
125	4/19/2018	8:38:42 AM	2	271	R	0.1		**2**	**829**	
126	4/19/2018	8:38:54 AM	1	232	R	0.1		**0**	**420**	
127	4/19/2018	8:39:06 AM	2	211	R	0.1		**2**	**199**	
128	4/19/2018	8:39:17 AM	3	271	R	0.1		**3**	**829**	
129	4/19/2018	8:39:29 AM	1	206	R	0.1		**0**	**-10**	Concrete
130	4/19/2018	8:39:41 AM	0	320	R	0.1		**-2**	**1186**	Concrete
131	4/19/2018	8:39:52 AM	9	270	R	0.1		**14**	**661**	Concrete
132	4/19/2018	8:40:04 AM	2	374	R	0.1		**2**	**1753**	Concrete
133	4/19/2018	8:40:16 AM	0	402	R	0.1		**-2**	**2047**	Concrete
134	4/19/2018	8:40:27 AM	0	283	R	0.1		**-2**	**798**	Concrete
135	4/19/2018	8:40:39 AM	6	373	R	0.1		**9**	**1743**	Concrete
136	4/19/2018	8:40:51 AM	1	353	R	0.1		**0**	**1533**	Concrete
137	4/19/2018	8:41:02 AM	2	345	R	0.1		**2**	**1449**	Concrete
138	4/19/2018	8:41:14 AM	1	386	R	0.1		**0**	**1879**	Concrete
139	4/19/2018	8:41:26 AM	0	396	R	0.1		**-2**	**1984**	Concrete
140	4/19/2018	8:41:37 AM	3	378	R	0.1		**3**	**1795**	Concrete
141	4/19/2018	8:41:49 AM	0	281	R	0.1		**-2**	**777**	Concrete
142	4/19/2018	8:42:01 AM	0	251	R	0.1		**-2**	**462**	Concrete
143	4/19/2018	8:42:13 AM	4	204	R	0.1		**5**	**-31**	Concrete
144	4/19/2018	8:42:24 AM	1	255	R	0.1		**0**	**504**	Concrete
145	4/19/2018	8:42:36 AM	0	392	R	0.1		**-2**	**1942**	Concrete
146	4/19/2018	8:42:48 AM	2	494	R	0.1		**2**	**3013**	Concrete
147	4/19/2018	8:42:59 AM	2	300	R	0.1		**2**	**976**	Concrete
148	4/19/2018	8:43:11 AM	0	279	R	0.1		**-2**	**756**	Concrete
149	4/19/2018	8:46:45 AM	10	211	R	0.1	Grid 5	**15**	**199**	
150	4/19/2018	8:46:57 AM	2	187	R	0.1		**2**	**-52**	
151	4/19/2018	8:47:08 AM	9	265	R	0.1		**14**	**766**	
152	4/19/2018	8:47:20 AM	12	261	R	0.1		**19**	**724**	
153	4/19/2018	8:47:32 AM	6	185	R	0.1		**9**	**-73**	
154	4/19/2018	8:47:43 AM	1	223	R	0.1		**0**	**325**	
155	4/19/2018	8:47:55 AM	0	248	R	0.1		**-2**	**588**	
156	4/19/2018	8:48:07 AM	0	259	R	0.1		**-2**	**703**	
157	4/19/2018	8:48:18 AM	3	283	R	0.1		**3**	**955**	
158	4/19/2018	8:48:30 AM	3	206	R	0.1		**3**	**147**	
159	4/19/2018	8:48:42 AM	4	191	R	0.1		**5**	**-10**	
160	4/19/2018	8:48:53 AM	2	190	R	0.1		**2**	**-21**	
161	4/19/2018	8:49:05 AM	3	183	R	0.1		**3**	**-94**	
162	4/19/2018	8:49:17 AM	2	192	R	0.1		**2**	**0**	
163	4/19/2018	8:49:29 AM	3	198	R	0.1		**3**	**63**	
164	4/19/2018	8:49:40 AM	2	184	R	0.1		**2**	**-84**	
165	4/19/2018	8:49:52 AM	3	204	R	0.1		**3**	**126**	

166	4/19/2018	8:50:04 AM	0	194	R	0.1		**-2**	**21**	
167	4/19/2018	8:50:15 AM	4	191	R	0.1		**5**	**-10**	
168	4/19/2018	8:50:27 AM	1	184	R	0.1		**0**	**-84**	
169	4/19/2018	8:50:39 AM	0	189	R	0.1		**-2**	**-31**	
170	4/19/2018	8:50:50 AM	0	211	R	0.1		**-2**	**199**	
171	4/19/2018	8:51:02 AM	11	190	R	0.1		**17**	**-21**	
172	4/19/2018	8:51:14 AM	2	187	R	0.1		**2**	**-52**	
173	4/19/2018	8:51:25 AM	4	193	R	0.1		**5**	**10**	
174	4/19/2018	8:51:37 AM	0	197	R	0.1		**-2**	**52**	
175	4/19/2018	8:51:49 AM	0	188	R	0.1		**-2**	**-42**	
176	4/19/2018	8:52:00 AM	5	191	R	0.1		**7**	**-10**	
177	4/19/2018	8:52:12 AM	1	185	R	0.1		**0**	**-73**	
178	4/19/2018	8:52:24 AM	0	191	R	0.1		**-2**	**-10**	
179	4/19/2018	8:52:35 AM	4	189	R	0.1		**5**	**-31**	
180	4/19/2018	8:52:47 AM	1	227	R	0.1		**0**	**367**	
181	4/19/2018	8:52:59 AM	1	198	R	0.1		**0**	**63**	
182	4/19/2018	8:53:10 AM	2	195	R	0.1		**2**	**31**	
183	4/19/2018	8:53:22 AM	2	194	R	0.1		**2**	**21**	
184	4/19/2018	8:53:34 AM	1	222	R	0.1		**0**	**315**	
185	4/19/2018	8:53:45 AM	3	288	R	0.1		**3**	**1008**	
186	4/19/2018	8:53:57 AM	2	190	R	0.1		**2**	**-21**	
187	4/19/2018	8:54:09 AM	2	192	R	0.1		**2**	**0**	
188	4/19/2018	8:54:21 AM	0	186	R	0.1		**-2**	**-63**	
189	4/19/2018	8:57:16 AM	0	196	R	0.1	Grid 6	**-2**	**42**	
190	4/19/2018	8:57:28 AM	13	188	R	0.1		**20**	**-42**	
191	4/19/2018	8:57:40 AM	3	196	R	0.1		**3**	**42**	
192	4/19/2018	8:57:52 AM	0	198	R	0.1		**-2**	**63**	
193	4/19/2018	8:58:03 AM	4	188	R	0.1		**5**	**-42**	
194	4/19/2018	8:58:15 AM	1	185	R	0.1		**0**	**-73**	
195	4/19/2018	8:58:27 AM	3	191	R	0.1		**3**	**-10**	
196	4/19/2018	8:58:38 AM	2	187	R	0.1		**2**	**-52**	
197	4/19/2018	8:58:50 AM	1	233	R	0.1		**0**	**430**	
198	4/19/2018	8:59:02 AM	2	218	R	0.1		**2**	**273**	
199	4/19/2018	8:59:13 AM	3	192	R	0.1		**3**	**0**	
200	4/19/2018	8:59:25 AM	2	195	R	0.1		**2**	**31**	
201	4/19/2018	8:59:37 AM	1	186	R	0.1		**0**	**-63**	
202	4/19/2018	8:59:48 AM	2	204	R	0.1		**2**	**126**	
203	4/19/2018	9:00:00 AM	3	218	R	0.1		**3**	**273**	
204	4/19/2018	9:00:12 AM	3	254	R	0.1		**3**	**651**	
205	4/19/2018	9:00:23 AM	0	213	R	0.1		**-2**	**220**	
206	4/19/2018	9:00:35 AM	3	216	R	0.1		**3**	**252**	
207	4/19/2018	9:00:47 AM	2	304	R	0.1		**2**	**1176**	
208	4/19/2018	9:00:58 AM	4	301	R	0.1		**5**	**1144**	
209	4/19/2018	9:01:10 AM	3	289	R	0.1		**3**	**861**	Concrete
210	4/19/2018	9:01:22 AM	1	210	R	0.1		**0**	**31**	Concrete
211	4/19/2018	9:01:33 AM	2	201	R	0.1		**2**	**-63**	Concrete
212	4/19/2018	9:01:45 AM	3	208	R	0.1		**3**	**10**	Concrete
213	4/19/2018	9:01:57 AM	0	210	R	0.1		**-2**	**31**	Concrete
214	4/19/2018	9:02:08 AM	1	213	R	0.1		**0**	**63**	Concrete
215	4/19/2018	9:02:20 AM	2	202	R	0.1		**2**	**-52**	Concrete
216	4/19/2018	9:02:32 AM	2	221	R	0.1		**2**	**147**	Concrete
217	4/19/2018	9:02:44 AM	2	199	R	0.1		**2**	**-84**	Concrete
218	4/19/2018	9:02:55 AM	1	200	R	0.1		**0**	**-73**	Concrete
219	4/19/2018	9:03:07 AM	3	205	R	0.1		**3**	**-21**	Concrete
220	4/19/2018	9:03:19 AM	1	226	R	0.1		**0**	**199**	Concrete
221	4/19/2018	9:03:30 AM	2	213	R	0.1		**2**	**63**	Concrete
222	4/19/2018	9:03:42 AM	0	292	R	0.1		**-2**	**892**	Concrete
223	4/19/2018	9:03:54 AM	3	312	R	0.1		**3**	**1102**	Concrete
224	4/19/2018	9:04:05 AM	6	346	R	0.1		**9**	**1459**	Concrete
225	4/19/2018	9:04:17 AM	1	302	R	0.1		**0**	**997**	Concrete

226	4/19/2018	9:04:29 AM	0	284	R	0.1		**-2**	**808**	Concrete
227	4/19/2018	9:04:40 AM	8	236	R	0.1		**12**	**304**	Concrete
228	4/19/2018	9:04:52 AM	2	199	R	0.1		**2**	**-84**	Concrete
229	4/19/2018	9:10:08 AM	0	203	R	0.1	Grid 7	**-2**	**115**	
230	4/19/2018	9:10:20 AM	0	200	R	0.1		**-2**	**84**	
231	4/19/2018	9:10:31 AM	0	214	R	0.1		**-2**	**231**	
232	4/19/2018	9:10:43 AM	10	249	R	0.1		**15**	**598**	
233	4/19/2018	9:10:55 AM	7	185	R	0.1		**10**	**-73**	
234	4/19/2018	9:11:06 AM	6	199	R	0.1		**9**	**73**	
235	4/19/2018	9:11:18 AM	1	188	R	0.1		**0**	**-42**	
236	4/19/2018	9:11:30 AM	0	190	R	0.1		**-2**	**-21**	
237	4/19/2018	9:11:41 AM	0	184	R	0.1		**-2**	**-84**	
238	4/19/2018	9:11:53 AM	3	186	R	0.1		**3**	**-63**	
239	4/19/2018	9:12:05 AM	0	195	R	0.1		**-2**	**31**	
240	4/19/2018	9:12:16 AM	0	186	R	0.1		**-2**	**-63**	
241	4/19/2018	9:12:28 AM	4	189	R	0.1		**5**	**-31**	
242	4/19/2018	9:12:40 AM	8	215	R	0.1		**12**	**241**	
243	4/19/2018	9:12:51 AM	10	199	R	0.1		**15**	**73**	
244	4/19/2018	9:13:03 AM	17	199	R	0.1		**27**	**73**	
245	4/19/2018	9:13:15 AM	13	196	R	0.1		**20**	**42**	
246	4/19/2018	9:13:26 AM	3	205	R	0.1		**3**	**136**	
247	4/19/2018	9:13:38 AM	1	211	R	0.1		**0**	**199**	
248	4/19/2018	9:13:50 AM	2	189	R	0.1		**2**	**-31**	
249	4/19/2018	9:14:02 AM	1	194	R	0.1		**0**	**21**	
250	4/19/2018	9:14:13 AM	0	209	R	0.1		**-2**	**178**	
251	4/19/2018	9:14:25 AM	0	211	R	0.1		**-2**	**199**	
252	4/19/2018	9:14:37 AM	5	185	R	0.1		**7**	**-73**	
253	4/19/2018	9:14:48 AM	1	198	R	0.1		**0**	**63**	
254	4/19/2018	9:15:00 AM	1	202	R	0.1		**0**	**105**	
255	4/19/2018	9:15:12 AM	2	190	R	0.1		**2**	**-21**	
256	4/19/2018	9:15:23 AM	1	187	R	0.1		**0**	**-52**	
257	4/19/2018	9:15:35 AM	2	192	R	0.1		**2**	**0**	
258	4/19/2018	9:15:47 AM	0	222	R	0.1		**-2**	**315**	
259	4/19/2018	9:18:19 AM	8	221	R	0.1	Grid 8	**12**	**304**	
260	4/19/2018	9:18:31 AM	2	209	R	0.1		**2**	**178**	
261	4/19/2018	9:18:43 AM	0	203	R	0.1		**-2**	**115**	
262	4/19/2018	9:18:54 AM	0	199	R	0.1		**-2**	**73**	
263	4/19/2018	9:19:06 AM	4	220	R	0.1		**5**	**294**	
264	4/19/2018	9:19:18 AM	1	202	R	0.1		**0**	**105**	
265	4/19/2018	9:19:29 AM	1	195	R	0.1		**0**	**31**	
266	4/19/2018	9:19:41 AM	2	200	R	0.1		**2**	**84**	
267	4/19/2018	9:19:53 AM	0	222	R	0.1		**-2**	**315**	
268	4/19/2018	9:20:04 AM	1	202	R	0.1		**0**	**105**	
269	4/19/2018	9:20:16 AM	2	187	R	0.1		**2**	**-52**	
270	4/19/2018	9:20:28 AM	0	207	R	0.1		**-2**	**157**	
271	4/19/2018	9:20:39 AM	3	219	R	0.1		**3**	**283**	
272	4/19/2018	9:20:51 AM	0	234	R	0.1		**-2**	**441**	
273	4/19/2018	9:21:03 AM	12	187	R	0.1		**19**	**-52**	
274	4/19/2018	9:21:15 AM	3	186	R	0.1		**3**	**-63**	
275	4/19/2018	9:21:26 AM	0	190	R	0.1		**-2**	**-21**	
276	4/19/2018	9:21:38 AM	0	190	R	0.1		**-2**	**-21**	
277	4/19/2018	9:21:50 AM	7	231	R	0.1		**10**	**409**	
278	4/19/2018	9:22:01 AM	1	211	R	0.1		**0**	**199**	
279	4/19/2018	9:22:13 AM	0	226	R	0.1		**-2**	**357**	
280	4/19/2018	9:22:25 AM	3	200	R	0.1		**3**	**84**	
281	4/19/2018	9:22:36 AM	0	188	R	0.1		**-2**	**-42**	
282	4/19/2018	9:22:48 AM	7	199	R	0.1		**10**	**73**	
283	4/19/2018	9:23:00 AM	6	205	R	0.1		**9**	**136**	
284	4/19/2018	9:23:11 AM	1	209	R	0.1		**0**	**178**	
285	4/19/2018	9:23:23 AM	1	204	R	0.1		**0**	**126**	

286	4/19/2018	9:23:35 AM	2	185	R	0.1		**2**	**-73**	
287	4/19/2018	9:23:46 AM	1	257	R	0.1		**0**	**682**	
288	4/19/2018	9:23:58 AM	2	201	R	0.1		**2**	**94**	
289	4/19/2018	9:24:10 AM	0	247	R	0.1		**-2**	**577**	
290	4/19/2018	9:24:22 AM	0	207	R	0.1		**-2**	**157**	
291	4/19/2018	9:24:33 AM	3	189	R	0.1		**3**	**-31**	
292	4/19/2018	9:24:45 AM	3	248	R	0.1		**3**	**588**	
293	4/19/2018	9:24:57 AM	0	237	R	0.1		**-2**	**472**	
294	4/19/2018	9:25:08 AM	2	229	R	0.1		**2**	**388**	
295	4/19/2018	9:25:20 AM	0	186	R	0.1		**-2**	**-63**	
296	4/19/2018	9:25:32 AM	0	232	R	0.1		**-2**	**420**	
297	4/19/2018	9:25:43 AM	11	221	R	0.1		**17**	**304**	
298	4/19/2018	9:25:55 AM	2	244	R	0.1		**2**	**546**	
299	4/19/2018	9:37:43 AM	2	189	R	0.1	Grid 18	**2**	**-31**	
300	4/19/2018	9:37:55 AM	1	196	R	0.1		**0**	**42**	
301	4/19/2018	9:38:07 AM	0	212	R	0.1		**-2**	**210**	
302	4/19/2018	9:38:19 AM	2	220	R	0.1		**2**	**294**	
303	4/19/2018	9:38:30 AM	1	226	R	0.1		**0**	**357**	
304	4/19/2018	9:38:42 AM	2	219	R	0.1		**2**	**283**	
305	4/19/2018	9:38:54 AM	1	228	R	0.1		**0**	**378**	
306	4/19/2018	9:39:05 AM	2	186	R	0.1		**2**	**-63**	
307	4/19/2018	9:39:17 AM	4	191	R	0.1		**5**	**-10**	
308	4/19/2018	9:39:29 AM	3	205	R	0.1		**3**	**136**	
309	4/19/2018	9:39:40 AM	0	204	R	0.1		**-2**	**126**	
310	4/19/2018	9:39:52 AM	1	241	R	0.1		**0**	**514**	
311	4/19/2018	9:40:04 AM	0	207	R	0.1		**-2**	**157**	
312	4/19/2018	9:40:15 AM	3	286	R	0.1		**3**	**987**	
313	4/19/2018	9:40:27 AM	7	211	R	0.1		**10**	**199**	
314	4/19/2018	9:40:39 AM	1	241	R	0.1		**0**	**514**	
315	4/19/2018	9:40:50 AM	0	217	R	0.1		**-2**	**262**	
316	4/19/2018	9:41:02 AM	10	187	R	0.1		**15**	**-52**	
317	4/19/2018	9:41:14 AM	2	191	R	0.1		**2**	**-10**	
318	4/19/2018	9:41:26 AM	0	199	R	0.1		**-2**	**73**	
319	4/19/2018	9:41:37 AM	0	222	R	0.1		**-2**	**157**	Concrete
320	4/19/2018	9:41:49 AM	12	261	R	0.1		**19**	**567**	Concrete
321	4/19/2018	9:42:01 AM	3	233	R	0.1		**3**	**273**	Concrete
322	4/19/2018	9:42:12 AM	0	321	R	0.1		**-2**	**1197**	Concrete
323	4/19/2018	9:42:24 AM	0	248	R	0.1		**-2**	**430**	Concrete
324	4/19/2018	9:42:36 AM	6	274	R	0.1		**9**	**703**	Concrete
325	4/19/2018	9:42:47 AM	1	275	R	0.1		**0**	**714**	Concrete
326	4/19/2018	9:42:59 AM	0	254	R	0.1		**-2**	**493**	Concrete
327	4/19/2018	9:43:11 AM	9	304	R	0.1		**14**	**1018**	Concrete
328	4/19/2018	9:43:22 AM	2	218	R	0.1		**2**	**115**	Concrete
329	4/19/2018	9:43:34 AM	2	300	R	0.1		**2**	**976**	Concrete
330	4/19/2018	9:43:46 AM	3	270	R	0.1		**3**	**661**	Concrete
331	4/19/2018	9:43:57 AM	1	256	R	0.1		**0**	**514**	Concrete
332	4/19/2018	9:44:09 AM	0	227	R	0.1		**-2**	**210**	Concrete
333	4/19/2018	9:44:21 AM	2	237	R	0.1		**2**	**315**	Concrete
334	4/19/2018	9:44:32 AM	1	232	R	0.1		**0**	**262**	Concrete
335	4/19/2018	9:44:44 AM	2	221	R	0.1		**2**	**147**	Concrete
336	4/19/2018	9:44:56 AM	2	240	R	0.1		**2**	**346**	Concrete
337	4/19/2018	9:45:08 AM	1	201	R	0.1		**0**	**-63**	Concrete
338	4/19/2018	9:45:19 AM	2	242	R	0.1		**2**	**367**	Concrete
339	4/19/2018	9:52:15 AM	3	181	R	0.1	Grid 19	**3**	**-115**	
340	4/19/2018	9:52:27 AM	0	189	R	0.1		**-2**	**-31**	
341	4/19/2018	9:52:39 AM	4	198	R	0.1		**5**	**63**	
342	4/19/2018	9:52:51 AM	1	180	R	0.1		**0**	**-126**	
343	4/19/2018	9:53:02 AM	1	186	R	0.1		**0**	**-63**	
344	4/19/2018	9:53:14 AM	3	192	R	0.1		**3**	**0**	
345	4/19/2018	9:53:26 AM	2	190	R	0.1		**2**	**-21**	

346	4/19/2018	9:53:37 AM	0	185	R	0.1		**-2**	**-73**	
347	4/19/2018	9:53:49 AM	3	196	R	0.1		**3**	**42**	
348	4/19/2018	9:54:01 AM	1	187	R	0.1		**0**	**-52**	
349	4/19/2018	9:54:12 AM	2	191	R	0.1		**2**	**-10**	
350	4/19/2018	9:54:24 AM	1	192	R	0.1		**0**	**0**	
351	4/19/2018	9:54:36 AM	0	208	R	0.1		**-2**	**168**	
352	4/19/2018	9:54:47 AM	0	191	R	0.1		**-2**	**-10**	
353	4/19/2018	9:54:59 AM	11	209	R	0.1		**17**	**178**	
354	4/19/2018	9:55:11 AM	2	187	R	0.1		**2**	**-52**	
355	4/19/2018	9:55:22 AM	1	191	R	0.1		**0**	**-10**	
356	4/19/2018	9:55:34 AM	2	186	R	0.1		**2**	**-63**	
357	4/19/2018	9:55:46 AM	0	186	R	0.1		**-2**	**-63**	
358	4/19/2018	9:55:58 AM	1	187	R	0.1		**0**	**-52**	
359	4/19/2018	9:56:09 AM	2	255	R	0.1		**2**	**504**	Concrete
360	4/19/2018	9:56:21 AM	3	267	R	0.1		**3**	**630**	Concrete
361	4/19/2018	9:56:33 AM	2	250	R	0.1		**2**	**451**	Concrete
362	4/19/2018	9:56:44 AM	0	264	R	0.1		**-2**	**598**	Concrete
363	4/19/2018	9:56:56 AM	1	204	R	0.1		**0**	**-31**	Concrete
364	4/19/2018	9:57:08 AM	0	248	R	0.1		**-2**	**430**	Concrete
365	4/19/2018	9:57:19 AM	6	236	R	0.1		**9**	**304**	Concrete
366	4/19/2018	9:57:31 AM	1	209	R	0.1		**0**	**21**	Concrete
367	4/19/2018	9:57:43 AM	5	199	R	0.1		**7**	**-84**	Concrete
368	4/19/2018	9:57:54 AM	7	203	R	0.1		**10**	**-42**	Concrete
369	4/19/2018	9:58:06 AM	1	261	R	0.1		**0**	**567**	Concrete
370	4/19/2018	9:58:18 AM	2	222	R	0.1		**2**	**157**	Concrete
371	4/19/2018	9:58:29 AM	1	202	R	0.1		**0**	**-52**	Concrete
372	4/19/2018	9:58:41 AM	2	202	R	0.1		**2**	**-52**	Concrete
373	4/19/2018	9:58:53 AM	1	208	R	0.1		**0**	**10**	Concrete
374	4/19/2018	9:59:05 AM	2	214	R	0.1		**2**	**73**	Concrete
375	4/19/2018	9:59:16 AM	0	215	R	0.1		**-2**	**84**	Concrete
376	4/19/2018	9:59:28 AM	10	218	R	0.1		**15**	**115**	Concrete
377	4/19/2018	9:59:40 AM	2	210	R	0.1		**2**	**31**	Concrete
378	4/19/2018	9:59:51 AM	5	198	R	0.1		**7**	**-94**	Concrete
379	4/19/2018	10:03:59 AM	10	195	R	0.1	Grid 20	**15**	**31**	
380	4/19/2018	10:04:11 AM	2	185	R	0.1		**2**	**-73**	
381	4/19/2018	10:04:23 AM	1	195	R	0.1		**0**	**31**	
382	4/19/2018	10:04:34 AM	2	185	R	0.1		**2**	**-73**	
383	4/19/2018	10:04:46 AM	3	192	R	0.1		**3**	**0**	
384	4/19/2018	10:04:58 AM	1	221	R	0.1		**0**	**304**	
385	4/19/2018	10:05:10 AM	2	189	R	0.1		**2**	**-31**	
386	4/19/2018	10:05:21 AM	1	190	R	0.1		**0**	**-21**	
387	4/19/2018	10:05:33 AM	1	189	R	0.1		**0**	**-31**	
388	4/19/2018	10:05:45 AM	0	185	R	0.1		**-2**	**-73**	
389	4/19/2018	10:05:56 AM	0	194	R	0.1		**-2**	**21**	
390	4/19/2018	10:06:08 AM	5	197	R	0.1		**7**	**52**	
391	4/19/2018	10:06:20 AM	1	203	R	0.1		**0**	**115**	
392	4/19/2018	10:06:31 AM	0	221	R	0.1		**-2**	**304**	
393	4/19/2018	10:06:43 AM	1	228	R	0.1		**0**	**378**	
394	4/19/2018	10:06:55 AM	0	226	R	0.1		**-2**	**357**	
395	4/19/2018	10:07:07 AM	6	191	R	0.1		**9**	**-10**	
396	4/19/2018	10:07:18 AM	1	187	R	0.1		**0**	**-52**	
397	4/19/2018	10:07:30 AM	2	219	R	0.1		**2**	**283**	
398	4/19/2018	10:07:42 AM	1	199	R	0.1		**0**	**73**	
399	4/19/2018	10:07:53 AM	9	201	R	0.1		**14**	**-63**	Concrete
400	4/19/2018	10:08:05 AM	2	200	R	0.1		**2**	**-73**	Concrete
401	4/19/2018	10:08:17 AM	2	278	R	0.1		**2**	**745**	Concrete
402	4/19/2018	10:08:28 AM	1	217	R	0.1		**0**	**105**	Concrete
403	4/19/2018	10:08:40 AM	2	276	R	0.1		**2**	**724**	Concrete
404	4/19/2018	10:08:52 AM	0	261	R	0.1		**-2**	**567**	Concrete
405	4/19/2018	10:09:03 AM	4	256	R	0.1		**5**	**514**	Concrete

406	4/19/2018	10:09:15 AM	1	304	R	0.1		**0**	**1018**	Concrete
407	4/19/2018	10:09:27 AM	1	209	R	0.1		**0**	**21**	Concrete
408	4/19/2018	10:09:38 AM	2	201	R	0.1		**2**	**-63**	Concrete
409	4/19/2018	10:09:50 AM	1	201	R	0.1		**0**	**-63**	Concrete
410	4/19/2018	10:10:02 AM	2	200	R	0.1		**2**	**-73**	Concrete
411	4/19/2018	10:10:14 AM	2	242	R	0.1		**2**	**367**	Concrete
412	4/19/2018	10:10:25 AM	1	210	R	0.1		**0**	**31**	Concrete
413	4/19/2018	10:10:37 AM	1	232	R	0.1		**0**	**262**	Concrete
414	4/19/2018	10:10:49 AM	0	243	R	0.1		**-2**	**378**	Concrete
415	4/19/2018	10:11:00 AM	2	244	R	0.1		**2**	**388**	Concrete
416	4/19/2018	10:11:12 AM	2	289	R	0.1		**2**	**861**	Concrete
417	4/19/2018	10:11:24 AM	2	302	R	0.1		**2**	**997**	Concrete
418	4/19/2018	10:11:35 AM	1	299	R	0.1		**0**	**966**	Concrete
419	4/19/2018	10:19:58 AM	2	193	R	0.1	Grid 21	**2**	**10**	
420	4/19/2018	10:20:09 AM	0	188	R	0.1		**-2**	**-42**	
421	4/19/2018	10:20:21 AM	8	191	R	0.1		**12**	**-10**	
422	4/19/2018	10:20:33 AM	2	189	R	0.1		**2**	**-31**	
423	4/19/2018	10:20:44 AM	2	189	R	0.1		**2**	**-31**	
424	4/19/2018	10:20:56 AM	1	187	R	0.1		**0**	**-52**	
425	4/19/2018	10:21:08 AM	0	191	R	0.1		**-2**	**-10**	
426	4/19/2018	10:21:20 AM	0	188	R	0.1		**-2**	**-42**	
427	4/19/2018	10:21:31 AM	2	192	R	0.1		**2**	**0**	
428	4/19/2018	10:21:43 AM	1	197	R	0.1		**0**	**52**	
429	4/19/2018	10:21:55 AM	0	187	R	0.1		**-2**	**-52**	
430	4/19/2018	10:22:06 AM	8	188	R	0.1		**12**	**-42**	
431	4/19/2018	10:22:18 AM	2	188	R	0.1		**2**	**-42**	
432	4/19/2018	10:22:30 AM	0	198	R	0.1		**-2**	**63**	
433	4/19/2018	10:22:41 AM	0	221	R	0.1		**-2**	**304**	
434	4/19/2018	10:22:53 AM	7	193	R	0.1		**10**	**10**	
435	4/19/2018	10:23:05 AM	1	188	R	0.1		**0**	**-42**	
436	4/19/2018	10:23:16 AM	0	190	R	0.1		**-2**	**-21**	
437	4/19/2018	10:23:28 AM	0	191	R	0.1		**-2**	**-10**	
438	4/19/2018	10:23:40 AM	11	250	R	0.1		**17**	**609**	
439	4/19/2018	10:23:51 AM	2	194	R	0.1		**2**	**21**	
440	4/19/2018	10:24:03 AM	0	187	R	0.1		**-2**	**-52**	Concrete
441	4/19/2018	10:24:15 AM	13	191	R	0.1		**20**	**-10**	Concrete
442	4/19/2018	10:24:27 AM	3	184	R	0.1		**3**	**-84**	Concrete
443	4/19/2018	10:24:38 AM	2	190	R	0.1		**2**	**-21**	Concrete
444	4/19/2018	10:24:50 AM	1	221	R	0.1		**0**	**304**	Concrete
445	4/19/2018	10:25:02 AM	2	189	R	0.1		**2**	**-31**	Concrete
446	4/19/2018	10:25:13 AM	1	287	R	0.1		**0**	**997**	Concrete
447	4/19/2018	10:25:25 AM	0	277	R	0.1		**-2**	**892**	Concrete
448	4/19/2018	10:25:37 AM	10	276	R	0.1		**15**	**882**	Concrete
449	4/19/2018	10:25:48 AM	2	260	R	0.1		**2**	**714**	Concrete
450	4/19/2018	10:26:00 AM	2	233	R	0.1		**2**	**430**	Concrete
451	4/19/2018	10:26:12 AM	1	209	R	0.1		**0**	**178**	Concrete
452	4/19/2018	10:26:23 AM	2	188	R	0.1		**2**	**-42**	Concrete
453	4/19/2018	10:26:35 AM	3	191	R	0.1		**3**	**-10**	Concrete
454	4/19/2018	10:26:47 AM	1	188	R	0.1		**0**	**-42**	Concrete
455	4/19/2018	10:26:58 AM	2	187	R	0.1		**2**	**-52**	Concrete
456	4/19/2018	10:27:10 AM	0	194	R	0.1		**-2**	**21**	Concrete
457	4/19/2018	10:27:22 AM	7	203	R	0.1		**10**	**115**	Concrete
458	4/19/2018	10:27:33 AM	1	294	R	0.1		**0**	**1071**	Concrete
459	4/19/2018	10:27:45 AM	1	270	R	0.1		**0**	**819**	Concrete
460	4/19/2018	10:30:15 AM	2	191	R	0.1	Grid 22	**2**	**-10**	
461	4/19/2018	10:30:27 AM	3	201	R	0.1		**3**	**94**	
462	4/19/2018	10:30:39 AM	0	187	R	0.1		**-2**	**-52**	
463	4/19/2018	10:30:50 AM	10	186	R	0.1		**15**	**-63**	
464	4/19/2018	10:31:02 AM	5	192	R	0.1		**7**	**0**	
465	4/19/2018	10:31:14 AM	1	186	R	0.1		**0**	**-63**	

466	4/19/2018	10:31:25 AM	3	188	R	0.1	**3**	**-42**	
467	4/19/2018	10:31:37 AM	3	192	R	0.1	**3**	**0**	
468	4/19/2018	10:31:49 AM	0	199	R	0.1	**-2**	**73**	
469	4/19/2018	10:32:00 AM	2	221	R	0.1	**2**	**147**	Concrete
470	4/19/2018	10:32:12 AM	2	221	R	0.1	**2**	**147**	Concrete
471	4/19/2018	10:32:24 AM	1	227	R	0.1	**0**	**210**	Concrete
472	4/19/2018	10:32:35 AM	0	236	R	0.1	**-2**	**304**	Concrete
473	4/19/2018	10:32:47 AM	2	230	R	0.1	**2**	**241**	Concrete
474	4/19/2018	10:32:59 AM	0	221	R	0.1	**-2**	**147**	Concrete
475	4/19/2018	10:33:11 AM	7	190	R	0.1	**10**	**-21**	
476	4/19/2018	10:33:22 AM	1	187	R	0.1	**0**	**-52**	
477	4/19/2018	10:33:34 AM	3	188	R	0.1	**3**	**-42**	
478	4/19/2018	10:33:46 AM	2	186	R	0.1	**2**	**-63**	
479	4/19/2018	10:33:57 AM	1	191	R	0.1	**0**	**-10**	
480	4/19/2018	10:34:09 AM	0	200	R	0.1	**-2**	**84**	
481	4/19/2018	10:34:21 AM	2	188	R	0.1	**2**	**-42**	
482	4/19/2018	10:34:32 AM	7	191	R	0.1	**10**	**-10**	
483	4/19/2018	10:34:44 AM	13	186	R	0.1	**20**	**-63**	
484	4/19/2018	10:34:56 AM	3	184	R	0.1	**3**	**-84**	
485	4/19/2018	10:35:07 AM	0	191	R	0.1	**-2**	**-10**	
486	4/19/2018	10:35:19 AM	0	197	R	0.1	**-2**	**52**	
487	4/19/2018	10:35:31 AM	0	223	R	0.1	**-2**	**325**	
488	4/19/2018	10:35:42 AM	0	191	R	0.1	**-2**	**-10**	
489	4/19/2018	10:35:54 AM	0	189	R	0.1	**-2**	**-31**	
490	4/19/2018	10:36:06 AM	14	196	R	0.1	**22**	**42**	
491	4/19/2018	10:36:17 AM	3	203	R	0.1	**3**	**115**	
492	4/19/2018	10:36:29 AM	0	204	R	0.1	**-2**	**126**	
493	4/19/2018	10:36:41 AM	3	188	R	0.1	**3**	**-42**	
494	4/19/2018	10:36:53 AM	0	207	R	0.1	**-2**	**157**	
495	4/19/2018	10:37:04 AM	0	205	R	0.1	**-2**	**136**	
496	4/19/2018	10:37:16 AM	8	222	R	0.1	**12**	**315**	
497	4/19/2018	10:37:28 AM	2	195	R	0.1	**2**	**31**	
498	4/19/2018	10:37:39 AM	0	187	R	0.1	**-2**	**-52**	
		Maximum:	**21**	**494**			**34**	**3013**	
		Average:	**3**	**220**			**3**	**241**	
		StDev:	**3**	**40**			**6**	**394**	

2360 SN:297766
43-93# 323074
Cal Due Date: 12/20/2018
Surveyor: Richard Thatcher
Bldg 218
Room 105A North and South Lower Wall Grids 23 thru 26 36 thru 38
Alpha Efficiency: 0.404
Beta/Gamma Efficiency: 0.254 Concrete
Alpha Background: 1 1.4
Beta/Gamma Background: 192 207

S=Scaler, R=Ratemeter

Sample #	Date	Time	Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2 Alpha	dpm/100cm^2 Beta	
1	4/19/2018	12:35:57 PM	10	199	R	0.1	Grid 23	**15**	**73**	
2	4/19/2018	12:36:09 PM	8	187	R	0.1		**12**	**-52**	
3	4/19/2018	12:36:20 PM	5	188	R	0.1		**7**	**-42**	
4	4/19/2018	12:36:32 PM	14	185	R	0.1		**22**	**-73**	
5	4/19/2018	12:36:44 PM	10	191	R	0.1		**15**	**-10**	
6	4/19/2018	12:36:56 PM	11	188	R	0.1		**17**	**-42**	
7	4/19/2018	12:37:07 PM	8	197	R	0.1		**12**	**52**	
8	4/19/2018	12:37:19 PM	9	200	R	0.1		**14**	**84**	
9	4/19/2018	12:37:31 PM	11	186	R	0.1		**17**	**-63**	
10	4/19/2018	12:37:42 PM	2	199	R	0.1		**2**	**73**	
11	4/19/2018	12:37:54 PM	9	199	R	0.1		**14**	**73**	
12	4/19/2018	12:38:06 PM	4	187	R	0.1		**5**	**-52**	
13	4/19/2018	12:38:17 PM	11	197	R	0.1		**17**	**52**	
14	4/19/2018	12:38:29 PM	2	190	R	0.1		**2**	**-21**	
15	4/19/2018	12:38:41 PM	13	186	R	0.1		**20**	**-63**	
16	4/19/2018	12:38:52 PM	1	193	R	0.1		**0**	**10**	
17	4/19/2018	12:39:04 PM	11	190	R	0.1		**17**	**-21**	
18	4/19/2018	12:39:16 PM	7	187	R	0.1		**10**	**-52**	
19	4/19/2018	12:39:28 PM	7	191	R	0.1		**10**	**-10**	
20	4/19/2018	12:39:39 PM	7	199	R	0.1		**10**	**-84**	Concrete
21	4/19/2018	12:39:51 PM	3	199	R	0.1		**3**	**-84**	Concrete
22	4/19/2018	12:40:03 PM	0	206	R	0.1		**-2**	**-10**	Concrete
23	4/19/2018	12:40:14 PM	6	201	R	0.1		**9**	**-63**	Concrete
24	4/19/2018	12:40:26 PM	5	209	R	0.1		**7**	**21**	Concrete
25	4/19/2018	12:40:38 PM	0	211	R	0.1		**-2**	**42**	Concrete
26	4/19/2018	12:40:49 PM	3	261	R	0.1		**3**	**567**	Concrete
27	4/19/2018	12:41:01 PM	5	204	R	0.1		**7**	**-31**	Concrete
28	4/19/2018	12:41:13 PM	11	221	R	0.1		**17**	**147**	Concrete
29	4/19/2018	12:41:25 PM	1	205	R	0.1		**0**	**-21**	Concrete
30	4/19/2018	12:41:36 PM	2	214	R	0.1		**2**	**73**	Concrete
31	4/19/2018	12:41:48 PM	5	234	R	0.1		**7**	**283**	Concrete
32	4/19/2018	12:42:00 PM	3	209	R	0.1		**3**	**21**	Concrete
33	4/19/2018	12:42:11 PM	6	223	R	0.1		**9**	**168**	Concrete
34	4/19/2018	12:42:23 PM	10	211	R	0.1		**15**	**42**	Concrete
35	4/19/2018	12:42:35 PM	8	202	R	0.1		**12**	**-52**	Concrete
36	4/19/2018	12:42:46 PM	0	201	R	0.1		**-2**	**-63**	Concrete
37	4/19/2018	12:42:58 PM	6	202	R	0.1		**9**	**-52**	Concrete
38	4/19/2018	12:43:10 PM	6	221	R	0.1		**9**	**147**	Concrete
39	4/19/2018	12:43:21 PM	2	223	R	0.1		**2**	**168**	Concrete
40	4/19/2018	12:45:54 PM	10	191	R	0.1	Grid 24	**15**	**-10**	
41	4/19/2018	12:46:06 PM	7	187	R	0.1		**10**	**-52**	
42	4/19/2018	12:46:17 PM	14	188	R	0.1		**22**	**-42**	
43	4/19/2018	12:46:29 PM	8	184	R	0.1		**12**	**-84**	
44	4/19/2018	12:46:41 PM	13	188	R	0.1		**20**	**-42**	

45	4/19/2018	12:46:53 PM	3	190	R	0.1		**3**	**-21**	
46	4/19/2018	12:47:04 PM	11	190	R	0.1		**17**	**-21**	
47	4/19/2018	12:47:16 PM	10	187	R	0.1		**15**	**-52**	
48	4/19/2018	12:47:28 PM	12	187	R	0.1		**19**	**-52**	
49	4/19/2018	12:47:39 PM	12	197	R	0.1		**19**	**52**	
50	4/19/2018	12:47:51 PM	11	188	R	0.1		**17**	**-42**	
51	4/19/2018	12:48:03 PM	7	193	R	0.1		**10**	**10**	
52	4/19/2018	12:48:14 PM	5	188	R	0.1		**7**	**-42**	
53	4/19/2018	12:48:26 PM	11	191	R	0.1		**17**	**-10**	
54	4/19/2018	12:48:38 PM	12	189	R	0.1		**19**	**-31**	
55	4/19/2018	12:48:49 PM	9	198	R	0.1		**14**	**63**	
56	4/19/2018	12:49:01 PM	0	189	R	0.1		**-2**	**-31**	
57	4/19/2018	12:49:13 PM	5	200	R	0.1		**7**	**84**	
58	4/19/2018	12:49:24 PM	0	187	R	0.1		**-2**	**-52**	
59	4/19/2018	12:49:36 PM	13	190	R	0.1		**20**	**-21**	
60	4/19/2018	12:49:48 PM	1	186	R	0.1		**0**	**-63**	
61	4/19/2018	12:50:00 PM	3	223	R	0.1		**3**	**168**	Concrete
62	4/19/2018	12:50:11 PM	14	202	R	0.1		**22**	**-52**	Concrete
63	4/19/2018	12:50:23 PM	4	209	R	0.1		**5**	**21**	Concrete
64	4/19/2018	12:50:35 PM	4	205	R	0.1		**5**	**-21**	Concrete
65	4/19/2018	12:50:46 PM	8	222	R	0.1		**12**	**157**	Concrete
66	4/19/2018	12:50:58 PM	3	226	R	0.1		**3**	**199**	Concrete
67	4/19/2018	12:51:10 PM	10	219	R	0.1		**15**	**126**	Concrete
68	4/19/2018	12:51:21 PM	7	234	R	0.1		**10**	**283**	Concrete
69	4/19/2018	12:51:33 PM	6	207	R	0.1		**9**	**0**	Concrete
70	4/19/2018	12:51:45 PM	7	214	R	0.1		**10**	**73**	Concrete
71	4/19/2018	12:51:56 PM	2	216	R	0.1		**2**	**94**	Concrete
72	4/19/2018	12:52:08 PM	11	221	R	0.1		**17**	**147**	Concrete
73	4/19/2018	12:52:20 PM	7	211	R	0.1		**10**	**42**	Concrete
74	4/19/2018	12:52:31 PM	6	224	R	0.1		**9**	**178**	Concrete
75	4/19/2018	12:52:43 PM	4	223	R	0.1		**5**	**168**	Concrete
76	4/19/2018	12:52:55 PM	9	232	R	0.1		**14**	**262**	Concrete
77	4/19/2018	12:53:07 PM	6	221	R	0.1		**9**	**147**	Concrete
78	4/19/2018	12:53:18 PM	9	223	R	0.1		**14**	**168**	Concrete
79	4/19/2018	12:53:30 PM	0	217	R	0.1		**-2**	**105**	Concrete
80	4/19/2018	12:56:27 PM	11	192	R	0.1	Grid 25	**17**	**0**	
81	4/19/2018	12:56:39 PM	0	186	R	0.1		**-2**	**-63**	
82	4/19/2018	12:56:51 PM	0	201	R	0.1		**-2**	**94**	
83	4/19/2018	12:57:02 PM	0	197	R	0.1		**-2**	**52**	
84	4/19/2018	12:57:14 PM	3	191	R	0.1		**3**	**-10**	
85	4/19/2018	12:57:26 PM	1	185	R	0.1		**0**	**-73**	
86	4/19/2018	12:57:37 PM	4	187	R	0.1		**5**	**-52**	
87	4/19/2018	12:57:49 PM	14	198	R	0.1		**22**	**63**	
88	4/19/2018	12:58:01 PM	14	189	R	0.1		**22**	**-31**	
89	4/19/2018	12:58:12 PM	9	187	R	0.1		**14**	**-52**	
90	4/19/2018	12:58:24 PM	3	188	R	0.1		**3**	**-42**	
91	4/19/2018	12:58:36 PM	3	205	R	0.1		**3**	**136**	
92	4/19/2018	12:58:47 PM	0	184	R	0.1		**-2**	**-84**	
93	4/19/2018	12:58:59 PM	5	190	R	0.1		**7**	**-21**	
94	4/19/2018	12:59:11 PM	0	192	R	0.1		**-2**	**0**	
95	4/19/2018	12:59:22 PM	5	187	R	0.1		**7**	**-52**	
96	4/19/2018	12:59:34 PM	6	212	R	0.1		**9**	**210**	
97	4/19/2018	12:59:46 PM	8	200	R	0.1		**12**	**84**	
98	4/19/2018	12:59:58 PM	9	191	R	0.1		**14**	**-10**	
99	4/19/2018	1:00:09 PM	7	212	R	0.1		**10**	**210**	
100	4/19/2018	1:00:21 PM	12	211	R	0.1		**19**	**42**	Concrete
101	4/19/2018	1:00:33 PM	12	215	R	0.1		**19**	**84**	Concrete
102	4/19/2018	1:00:44 PM	14	204	R	0.1		**22**	**-31**	Concrete
103	4/19/2018	1:00:56 PM	0	225	R	0.1		**-2**	**189**	Concrete

104	4/19/2018	1:01:08 PM	0	201	R	0.1		**-2**	**-63**	Concrete
105	4/19/2018	1:01:19 PM	3	208	R	0.1		**3**	**10**	Concrete
106	4/19/2018	1:01:31 PM	2	243	R	0.1		**2**	**378**	Concrete
107	4/19/2018	1:01:43 PM	9	254	R	0.1		**14**	**493**	Concrete
108	4/19/2018	1:01:54 PM	10	227	R	0.1		**15**	**210**	Concrete
109	4/19/2018	1:02:06 PM	2	226	R	0.1		**2**	**199**	Concrete
110	4/19/2018	1:02:18 PM	8	221	R	0.1		**12**	**147**	Concrete
111	4/19/2018	1:02:30 PM	11	245	R	0.1		**17**	**399**	Concrete
112	4/19/2018	1:02:41 PM	8	251	R	0.1		**12**	**462**	Concrete
113	4/19/2018	1:02:53 PM	9	240	R	0.1		**14**	**346**	Concrete
114	4/19/2018	1:03:05 PM	7	260	R	0.1		**10**	**556**	Concrete
115	4/19/2018	1:03:16 PM	0	200	R	0.1		**-2**	**-73**	Concrete
116	4/19/2018	1:03:28 PM	7	256	R	0.1		**10**	**514**	Concrete
117	4/19/2018	1:03:40 PM	4	274	R	0.1		**5**	**703**	Concrete
118	4/19/2018	1:03:51 PM	4	209	R	0.1		**5**	**21**	Concrete
119	4/19/2018	1:04:03 PM	9	259	R	0.1		**14**	**546**	Concrete
120	4/19/2018	1:05:45 PM	2	170	R	0.1	Grid 26	**2**	**-231**	
121	4/19/2018	1:05:57 PM	13	188	R	0.1		**20**	**-42**	
122	4/19/2018	1:06:09 PM	6	199	R	0.1		**9**	**73**	
123	4/19/2018	1:06:20 PM	8	195	R	0.1		**12**	**31**	
124	4/19/2018	1:06:32 PM	2	190	R	0.1		**2**	**-21**	
125	4/19/2018	1:06:44 PM	13	187	R	0.1		**20**	**-52**	
126	4/19/2018	1:06:56 PM	14	191	R	0.1		**22**	**-10**	
127	4/19/2018	1:07:07 PM	0	187	R	0.1		**-2**	**-52**	
128	4/19/2018	1:07:19 PM	0	187	R	0.1		**-2**	**-52**	
129	4/19/2018	1:07:31 PM	8	192	R	0.1		**12**	**0**	
130	4/19/2018	1:07:42 PM	8	189	R	0.1		**12**	**-31**	
131	4/19/2018	1:07:54 PM	12	199	R	0.1		**19**	**73**	
132	4/19/2018	1:08:06 PM	7	188	R	0.1		**10**	**-42**	
133	4/19/2018	1:08:17 PM	11	198	R	0.1		**17**	**63**	
134	4/19/2018	1:08:29 PM	10	187	R	0.1		**15**	**-52**	
135	4/19/2018	1:08:41 PM	6	195	R	0.1		**9**	**31**	
136	4/19/2018	1:08:52 PM	9	213	R	0.1		**14**	**220**	
137	4/19/2018	1:09:04 PM	1	183	R	0.1		**0**	**-94**	
138	4/19/2018	1:09:16 PM	1	187	R	0.1		**0**	**-52**	
139	4/19/2018	1:09:28 PM	13	188	R	0.1		**20**	**-42**	
140	4/19/2018	1:09:39 PM	12	212	R	0.1		**19**	**210**	Concrete
141	4/19/2018	1:09:51 PM	12	222	R	0.1		**19**	**315**	Concrete
142	4/19/2018	1:10:03 PM	11	212	R	0.1		**17**	**210**	Concrete
143	4/19/2018	1:10:14 PM	9	257	R	0.1		**14**	**682**	Concrete
144	4/19/2018	1:10:26 PM	0	206	R	0.1		**-2**	**147**	Concrete
145	4/19/2018	1:10:38 PM	4	254	R	0.1		**5**	**651**	Concrete
146	4/19/2018	1:10:49 PM	12	211	R	0.1		**19**	**199**	Concrete
147	4/19/2018	1:11:01 PM	0	204	R	0.1		**-2**	**126**	Concrete
148	4/19/2018	1:11:13 PM	10	200	R	0.1		**15**	**84**	Concrete
149	4/19/2018	1:11:24 PM	6	197	R	0.1		**9**	**52**	Concrete
150	4/19/2018	1:11:36 PM	7	215	R	0.1		**10**	**241**	Concrete
151	4/19/2018	1:11:48 PM	4	199	R	0.1		**5**	**73**	Concrete
152	4/19/2018	1:11:59 PM	0	196	R	0.1		**-2**	**42**	Concrete
153	4/19/2018	1:12:11 PM	6	232	R	0.1		**9**	**420**	Concrete
154	4/19/2018	1:12:23 PM	8	188	R	0.1		**12**	**-42**	Concrete
155	4/19/2018	1:12:35 PM	9	194	R	0.1		**14**	**21**	Concrete
156	4/19/2018	1:12:46 PM	7	228	R	0.1		**10**	**378**	Concrete
157	4/19/2018	1:12:58 PM	5	221	R	0.1		**7**	**304**	Concrete
158	4/19/2018	1:13:10 PM	12	201	R	0.1		**19**	**94**	Concrete
159	4/19/2018	1:13:21 PM	5	189	R	0.1		**7**	**-31**	Concrete
160	4/19/2018	1:17:59 PM	1	187	R	0.1	Grid 36	**0**	**-52**	
161	4/19/2018	1:18:10 PM	14	197	R	0.1		**22**	**52**	
162	4/19/2018	1:18:22 PM	2	216	R	0.1		**2**	**252**	

163	4/19/2018	1:18:34 PM	9	205	R	0.1		**14**	**136**
164	4/19/2018	1:18:45 PM	10	214	R	0.1		**15**	**231**
165	4/19/2018	1:18:57 PM	10	183	R	0.1		**15**	**-94**
166	4/19/2018	1:19:09 PM	10	184	R	0.1		**15**	**-84**
167	4/19/2018	1:19:20 PM	8	195	R	0.1		**12**	**31**
168	4/19/2018	1:19:32 PM	10	191	R	0.1		**15**	**-10**
169	4/19/2018	1:19:44 PM	13	188	R	0.1		**20**	**-42**
170	4/19/2018	1:19:55 PM	0	187	R	0.1		**-2**	**-52**
171	4/19/2018	1:20:07 PM	8	215	R	0.1		**12**	**241**
172	4/19/2018	1:20:19 PM	0	188	R	0.1		**-2**	**-42**
173	4/19/2018	1:20:30 PM	6	215	R	0.1		**9**	**241**
174	4/19/2018	1:20:42 PM	10	189	R	0.1		**15**	**-31**
175	4/19/2018	1:20:54 PM	8	187	R	0.1		**12**	**-52**
176	4/19/2018	1:21:06 PM	7	195	R	0.1		**10**	**31**
177	4/19/2018	1:21:17 PM	12	191	R	0.1		**19**	**-10**
178	4/19/2018	1:21:29 PM	2	224	R	0.1		**2**	**336**
179	4/19/2018	1:21:41 PM	14	220	R	0.1		**22**	**294**
180	4/19/2018	1:21:52 PM	2	186	R	0.1		**2**	**-63**
181	4/19/2018	1:22:04 PM	12	204	R	0.1		**19**	**126**
182	4/19/2018	1:22:16 PM	0	205	R	0.1		**-2**	**136**
183	4/19/2018	1:22:27 PM	10	193	R	0.1		**15**	**10**
184	4/19/2018	1:22:39 PM	5	226	R	0.1		**7**	**357**
185	4/19/2018	1:22:51 PM	7	249	R	0.1		**10**	**598**
186	4/19/2018	1:23:02 PM	1	215	R	0.1		**0**	**241**
187	4/19/2018	1:23:14 PM	7	190	R	0.1		**10**	**-21**
188	4/19/2018	1:23:26 PM	0	188	R	0.1		**-2**	**-42**
189	4/19/2018	1:23:37 PM	12	182	R	0.1		**19**	**-105**
190	4/19/2018	1:23:49 PM	0	201	R	0.1		**-2**	**94**
191	4/19/2018	1:24:01 PM	3	199	R	0.1		**3**	**73**
192	4/19/2018	1:24:13 PM	5	210	R	0.1		**7**	**189**
193	4/19/2018	1:24:24 PM	4	194	R	0.1		**5**	**21**
194	4/19/2018	1:24:36 PM	4	197	R	0.1		**5**	**52**
195	4/19/2018	1:24:48 PM	0	199	R	0.1		**-2**	**73**
196	4/19/2018	1:24:59 PM	12	185	R	0.1		**19**	**-73**
197	4/19/2018	1:25:11 PM	5	222	R	0.1		**7**	**315**
198	4/19/2018	1:25:23 PM	4	212	R	0.1		**5**	**210**
199	4/19/2018	1:25:34 PM	2	206	R	0.1		**2**	**147**
200	4/19/2018	1:27:18 PM	6	191	R	0.1	Grid 37	**9**	**-10**
201	4/19/2018	1:27:30 PM	8	189	R	0.1		**12**	**-31**
202	4/19/2018	1:27:42 PM	0	208	R	0.1		**-2**	**168**
203	4/19/2018	1:27:53 PM	7	189	R	0.1		**10**	**-31**
204	4/19/2018	1:28:05 PM	3	181	R	0.1		**3**	**-115**
205	4/19/2018	1:28:17 PM	0	186	R	0.1		**-2**	**-63**
206	4/19/2018	1:28:29 PM	4	226	R	0.1		**5**	**357**
207	4/19/2018	1:28:40 PM	0	204	R	0.1		**-2**	**126**
208	4/19/2018	1:28:52 PM	9	185	R	0.1		**14**	**-73**
209	4/19/2018	1:29:04 PM	0	266	R	0.1		**-2**	**777**
210	4/19/2018	1:29:15 PM	7	202	R	0.1		**10**	**105**
211	4/19/2018	1:29:27 PM	2	211	R	0.1		**2**	**199**
212	4/19/2018	1:29:39 PM	4	239	R	0.1		**5**	**493**
213	4/19/2018	1:29:50 PM	1	184	R	0.1		**0**	**-84**
214	4/19/2018	1:30:02 PM	0	199	R	0.1		**-2**	**73**
215	4/19/2018	1:30:14 PM	10	210	R	0.1		**15**	**189**
216	4/19/2018	1:30:25 PM	10	194	R	0.1		**15**	**21**
217	4/19/2018	1:30:37 PM	0	185	R	0.1		**-2**	**-73**
218	4/19/2018	1:30:49 PM	3	200	R	0.1		**3**	**84**
219	4/19/2018	1:31:00 PM	13	221	R	0.1		**20**	**304**
220	4/19/2018	1:31:12 PM	2	209	R	0.1		**2**	**178**
221	4/19/2018	1:31:24 PM	7	189	R	0.1		**10**	**-31**

222	4/19/2018	1:31:35 PM	4	221	R	0.1		**5**	**304**
223	4/19/2018	1:31:47 PM	11	222	R	0.1		**17**	**315**
224	4/19/2018	1:31:59 PM	4	200	R	0.1		**5**	**84**
225	4/19/2018	1:32:11 PM	6	183	R	0.1		**9**	**-94**
226	4/19/2018	1:32:22 PM	4	221	R	0.1		**5**	**304**
227	4/19/2018	1:32:34 PM	4	208	R	0.1		**5**	**168**
228	4/19/2018	1:32:46 PM	0	197	R	0.1		**-2**	**52**
229	4/19/2018	1:32:57 PM	2	224	R	0.1		**2**	**336**
230	4/19/2018	1:33:09 PM	0	184	R	0.1		**-2**	**-84**
231	4/19/2018	1:33:21 PM	0	201	R	0.1		**-2**	**94**
232	4/19/2018	1:33:32 PM	1	235	R	0.1		**0**	**451**
233	4/19/2018	1:33:44 PM	13	230	R	0.1		**20**	**399**
234	4/19/2018	1:33:56 PM	13	239	R	0.1		**20**	**493**
235	4/19/2018	1:34:07 PM	10	189	R	0.1		**15**	**-31**
236	4/19/2018	1:34:19 PM	14	231	R	0.1		**22**	**409**
237	4/19/2018	1:34:31 PM	9	240	R	0.1		**14**	**504**
238	4/19/2018	1:34:42 PM	2	202	R	0.1		**2**	**105**
239	4/19/2018	1:34:54 PM	13	192	R	0.1		**20**	**0**
240	4/19/2018	1:36:52 PM	4	196	R	0.1	Grid 38	**5**	**42**
241	4/19/2018	1:37:04 PM	9	197	R	0.1		**14**	**52**
242	4/19/2018	1:37:15 PM	0	204	R	0.1		**-2**	**126**
243	4/19/2018	1:37:27 PM	8	223	R	0.1		**12**	**325**
244	4/19/2018	1:37:39 PM	0	190	R	0.1		**-2**	**-21**
245	4/19/2018	1:37:50 PM	0	211	R	0.1		**-2**	**199**
246	4/19/2018	1:38:02 PM	6	235	R	0.1		**9**	**451**
247	4/19/2018	1:38:14 PM	3	185	R	0.1		**3**	**-73**
248	4/19/2018	1:38:25 PM	4	259	R	0.1		**5**	**703**
249	4/19/2018	1:38:37 PM	8	188	R	0.1		**12**	**-42**
250	4/19/2018	1:38:49 PM	6	214	R	0.1		**9**	**231**
251	4/19/2018	1:39:00 PM	3	220	R	0.1		**3**	**294**
252	4/19/2018	1:39:12 PM	2	208	R	0.1		**2**	**168**
253	4/19/2018	1:39:24 PM	9	185	R	0.1		**14**	**-73**
254	4/19/2018	1:39:36 PM	13	198	R	0.1		**20**	**63**
255	4/19/2018	1:39:47 PM	1	202	R	0.1		**0**	**105**
256	4/19/2018	1:39:59 PM	7	204	R	0.1		**10**	**126**
257	4/19/2018	1:40:11 PM	0	200	R	0.1		**-2**	**84**
258	4/19/2018	1:40:22 PM	11	195	R	0.1		**17**	**31**
259	4/19/2018	1:40:34 PM	0	228	R	0.1		**-2**	**378**
260	4/19/2018	1:40:46 PM	0	195	R	0.1		**-2**	**31**
261	4/19/2018	1:40:57 PM	9	244	R	0.1		**14**	**546**
262	4/19/2018	1:41:09 PM	0	211	R	0.1		**-2**	**199**
263	4/19/2018	1:41:21 PM	6	186	R	0.1		**9**	**-63**
264	4/19/2018	1:41:32 PM	5	187	R	0.1		**7**	**-52**
265	4/19/2018	1:41:44 PM	8	228	R	0.1		**12**	**378**
266	4/19/2018	1:41:56 PM	6	202	R	0.1		**9**	**105**
267	4/19/2018	1:42:07 PM	4	234	R	0.1		**5**	**441**
268	4/19/2018	1:42:19 PM	0	219	R	0.1		**-2**	**283**
269	4/19/2018	1:42:31 PM	7	210	R	0.1		**10**	**189**
270	4/19/2018	1:42:43 PM	9	224	R	0.1		**14**	**336**
271	4/19/2018	1:42:54 PM	0	206	R	0.1		**-2**	**147**
272	4/19/2018	1:43:06 PM	0	245	R	0.1		**-2**	**556**
273	4/19/2018	1:43:18 PM	10	201	R	0.1		**15**	**94**
274	4/19/2018	1:43:29 PM	9	199	R	0.1		**14**	**73**
275	4/19/2018	1:43:41 PM	5	223	R	0.1		**7**	**325**
276	4/19/2018	1:43:53 PM	10	201	R	0.1		**15**	**94**
277	4/19/2018	1:44:04 PM	11	217	R	0.1		**17**	**262**
278	4/19/2018	1:44:16 PM	3	227	R	0.1		**3**	**367**
279	4/19/2018	1:44:28 PM	12	246	R	0.1		**19**	**567**
		Maximum:	**14**	**274**				**22**	**777**

Average:	**6**	**206**	**9**	**109**
StDev:	**4**	**19**	**7**	**183**

2360 SN:297766
43-93# 323074
Cal Due Date: 12/20/2018
Surveyor: Richard Thatcher
Bldg 218
Room 105A North&South Lower Wall Grids 39 thru 43 53 thru 54
Alpha Efficiency: 0.404
Beta/Gamma Efficiency: 0.254
Alpha Background: 1
Beta/Gamma Background: 192

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/19/2018	2:49:59	PM	11	201	R	0.1	Grid 39	**17**	**94**
2	4/19/2018	2:50:11	PM	2	207	R	0.1		**2**	**157**
3	4/19/2018	2:50:23	PM	10	202	R	0.1		**15**	**105**
4	4/19/2018	2:50:35	PM	9	216	R	0.1		**14**	**252**
5	4/19/2018	2:50:46	PM	3	209	R	0.1		**3**	**178**
6	4/19/2018	2:50:58	PM	3	188	R	0.1		**3**	**-42**
7	4/19/2018	2:51:10	PM	5	193	R	0.1		**7**	**10**
8	4/19/2018	2:51:21	PM	10	210	R	0.1		**15**	**189**
9	4/19/2018	2:51:33	PM	9	207	R	0.1		**14**	**157**
10	4/19/2018	2:51:45	PM	3	209	R	0.1		**3**	**178**
11	4/19/2018	2:51:56	PM	7	208	R	0.1		**10**	**168**
12	4/19/2018	2:52:08	PM	3	197	R	0.1		**3**	**52**
13	4/19/2018	2:52:20	PM	3	212	R	0.1		**3**	**210**
14	4/19/2018	2:52:32	PM	9	198	R	0.1		**14**	**63**
15	4/19/2018	2:52:43	PM	10	223	R	0.1		**15**	**325**
16	4/19/2018	2:52:55	PM	5	226	R	0.1		**7**	**357**
17	4/19/2018	2:53:07	PM	6	202	R	0.1		**9**	**105**
18	4/19/2018	2:53:18	PM	2	201	R	0.1		**2**	**94**
19	4/19/2018	2:53:30	PM	6	220	R	0.1		**9**	**294**
20	4/19/2018	2:53:42	PM	6	224	R	0.1		**9**	**336**
21	4/19/2018	2:53:53	PM	9	198	R	0.1		**14**	**63**
22	4/19/2018	2:54:05	PM	11	211	R	0.1		**17**	**199**
23	4/19/2018	2:54:17	PM	12	220	R	0.1		**19**	**294**
24	4/19/2018	2:54:29	PM	2	189	R	0.1		**2**	**-31**
25	4/19/2018	2:54:40	PM	8	215	R	0.1		**12**	**241**
26	4/19/2018	2:54:52	PM	11	214	R	0.1		**17**	**231**
27	4/19/2018	2:55:04	PM	1	214	R	0.1		**0**	**231**
28	4/19/2018	2:55:15	PM	4	212	R	0.1		**5**	**210**
29	4/19/2018	2:55:27	PM	4	229	R	0.1		**5**	**388**
30	4/19/2018	2:55:39	PM	11	230	R	0.1		**17**	**399**
31	4/19/2018	2:55:50	PM	13	211	R	0.1		**20**	**199**
32	4/19/2018	2:56:02	PM	1	213	R	0.1		**0**	**220**
33	4/19/2018	2:56:14	PM	6	219	R	0.1		**9**	**283**
34	4/19/2018	2:56:26	PM	10	210	R	0.1		**15**	**189**
35	4/19/2018	2:56:37	PM	2	202	R	0.1		**2**	**105**
36	4/19/2018	2:56:49	PM	10	204	R	0.1		**15**	**126**
37	4/19/2018	2:57:01	PM	2	220	R	0.1		**2**	**294**
38	4/19/2018	2:57:12	PM	3	217	R	0.1		**3**	**262**
39	4/19/2018	2:57:24	PM	7	218	R	0.1		**10**	**273**
40	4/19/2018	2:59:07	PM	2	188	R	0.1	Grid 40	**2**	**-42**
41	4/19/2018	2:59:19	PM	4	231	R	0.1		**5**	**409**

42	4/19/2018	2:59:30 PM	2	197	R	0.1	**2**	**52**
43	4/19/2018	2:59:42 PM	10	192	R	0.1	**15**	**0**
44	4/19/2018	2:59:54 PM	3	200	R	0.1	**3**	**84**
45	4/19/2018	3:00:05 PM	6	187	R	0.1	**9**	**-52**
46	4/19/2018	3:00:17 PM	2	211	R	0.1	**2**	**199**
47	4/19/2018	3:00:29 PM	9	218	R	0.1	**14**	**273**
48	4/19/2018	3:00:40 PM	10	205	R	0.1	**15**	**136**
49	4/19/2018	3:00:52 PM	3	199	R	0.1	**3**	**73**
50	4/19/2018	3:01:04 PM	10	205	R	0.1	**15**	**136**
51	4/19/2018	3:01:15 PM	3	189	R	0.1	**3**	**-31**
52	4/19/2018	3:01:27 PM	13	195	R	0.1	**20**	**31**
53	4/19/2018	3:01:39 PM	4	189	R	0.1	**5**	**-31**
54	4/19/2018	3:01:51 PM	6	193	R	0.1	**9**	**10**
55	4/19/2018	3:02:02 PM	8	190	R	0.1	**12**	**-21**
56	4/19/2018	3:02:14 PM	8	199	R	0.1	**12**	**73**
57	4/19/2018	3:02:26 PM	13	210	R	0.1	**20**	**189**
58	4/19/2018	3:02:37 PM	4	212	R	0.1	**5**	**210**
59	4/19/2018	3:02:49 PM	6	190	R	0.1	**9**	**-21**
60	4/19/2018	3:03:01 PM	1	209	R	0.1	**0**	**178**
61	4/19/2018	3:03:12 PM	12	209	R	0.1	**19**	**178**
62	4/19/2018	3:03:24 PM	5	183	R	0.1	**7**	**-94**
63	4/19/2018	3:03:36 PM	8	219	R	0.1	**12**	**283**
64	4/19/2018	3:03:48 PM	2	207	R	0.1	**2**	**157**
65	4/19/2018	3:03:59 PM	4	232	R	0.1	**5**	**420**
66	4/19/2018	3:04:11 PM	6	208	R	0.1	**9**	**168**
67	4/19/2018	3:04:23 PM	10	213	R	0.1	**15**	**220**
68	4/19/2018	3:04:34 PM	7	218	R	0.1	**10**	**273**
69	4/19/2018	3:04:46 PM	10	206	R	0.1	**15**	**147**
70	4/19/2018	3:06:12 PM	10	211	R	0.1 Grid 41	**15**	**199**
71	4/19/2018	3:06:23 PM	9	211	R	0.1	**14**	**199**
72	4/19/2018	3:06:35 PM	11	232	R	0.1	**17**	**420**
73	4/19/2018	3:06:47 PM	6	202	R	0.1	**9**	**105**
74	4/19/2018	3:06:59 PM	7	210	R	0.1	**10**	**189**
75	4/19/2018	3:07:10 PM	6	230	R	0.1	**9**	**399**
76	4/19/2018	3:07:22 PM	12	219	R	0.1	**19**	**283**
77	4/19/2018	3:07:34 PM	2	184	R	0.1	**2**	**-84**
78	4/19/2018	3:07:45 PM	3	228	R	0.1	**3**	**378**
79	4/19/2018	3:07:57 PM	9	214	R	0.1	**14**	**231**
80	4/19/2018	3:08:09 PM	0	217	R	0.1	**-2**	**262**
81	4/19/2018	3:08:20 PM	1	229	R	0.1	**0**	**388**
82	4/19/2018	3:08:32 PM	0	210	R	0.1	**-2**	**189**
83	4/19/2018	3:08:44 PM	12	217	R	0.1	**19**	**262**
84	4/19/2018	3:08:55 PM	7	204	R	0.1	**10**	**126**
85	4/19/2018	3:09:07 PM	8	216	R	0.1	**12**	**252**
86	4/19/2018	3:09:19 PM	7	217	R	0.1	**10**	**262**
87	4/19/2018	3:09:31 PM	4	186	R	0.1	**5**	**-63**
88	4/19/2018	3:09:42 PM	10	187	R	0.1	**15**	**-52**
89	4/19/2018	3:09:54 PM	7	191	R	0.1	**10**	**-10**
90	4/19/2018	3:10:06 PM	13	228	R	0.1	**20**	**378**
91	4/19/2018	3:10:17 PM	3	215	R	0.1	**3**	**241**
92	4/19/2018	3:10:29 PM	2	192	R	0.1	**2**	**0**
93	4/19/2018	3:10:41 PM	0	233	R	0.1	**-2**	**430**
94	4/19/2018	3:10:52 PM	9	186	R	0.1	**14**	**-63**
95	4/19/2018	3:11:04 PM	5	232	R	0.1	**7**	**420**
96	4/19/2018	3:11:16 PM	7	191	R	0.1	**10**	**-10**
97	4/19/2018	3:11:28 PM	10	186	R	0.1	**15**	**-63**

98	4/19/2018	3:11:39 PM	1	188	R	0.1	**0**	**-42**
99	4/19/2018	3:11:51 PM	6	211	R	0.1	**9**	**199**
100	4/19/2018	3:12:03 PM	2	199	R	0.1	**2**	**73**
101	4/19/2018	3:12:14 PM	2	227	R	0.1	**2**	**367**
102	4/19/2018	3:12:26 PM	4	193	R	0.1	**5**	**10**
103	4/19/2018	3:12:38 PM	12	205	R	0.1	**19**	**136**
104	4/19/2018	3:12:49 PM	1	203	R	0.1	**0**	**115**
105	4/19/2018	3:13:01 PM	5	198	R	0.1	**7**	**63**
106	4/19/2018	3:13:13 PM	5	215	R	0.1	**7**	**241**
107	4/19/2018	3:13:24 PM	5	197	R	0.1	**7**	**52**
108	4/19/2018	3:13:36 PM	8	207	R	0.1	**12**	**157**
109	4/19/2018	3:13:48 PM	6	221	R	0.1	**9**	**304**
110	4/19/2018	3:15:19 PM	8	204	R	0.1 Grid 42	**12**	**126**
111	4/19/2018	3:15:31 PM	4	216	R	0.1	**5**	**252**
112	4/19/2018	3:15:42 PM	4	231	R	0.1	**5**	**409**
113	4/19/2018	3:15:54 PM	12	188	R	0.1	**19**	**-42**
114	4/19/2018	3:16:06 PM	8	233	R	0.1	**12**	**430**
115	4/19/2018	3:16:18 PM	8	214	R	0.1	**12**	**231**
116	4/19/2018	3:16:29 PM	0	192	R	0.1	**-2**	**0**
117	4/19/2018	3:16:41 PM	7	185	R	0.1	**10**	**-73**
118	4/19/2018	3:16:53 PM	11	209	R	0.1	**17**	**178**
119	4/19/2018	3:17:04 PM	0	197	R	0.1	**-2**	**52**
120	4/19/2018	3:17:16 PM	7	210	R	0.1	**10**	**189**
121	4/19/2018	3:17:28 PM	6	232	R	0.1	**9**	**420**
122	4/19/2018	3:17:39 PM	9	213	R	0.1	**14**	**220**
123	4/19/2018	3:17:51 PM	10	231	R	0.1	**15**	**409**
124	4/19/2018	3:18:03 PM	8	221	R	0.1	**12**	**304**
125	4/19/2018	3:18:14 PM	10	189	R	0.1	**15**	**-31**
126	4/19/2018	3:18:26 PM	6	232	R	0.1	**9**	**420**
127	4/19/2018	3:18:38 PM	5	191	R	0.1	**7**	**-10**
128	4/19/2018	3:18:50 PM	11	224	R	0.1	**17**	**336**
129	4/19/2018	3:19:01 PM	9	219	R	0.1	**14**	**283**
130	4/19/2018	3:19:13 PM	0	220	R	0.1	**-2**	**294**
131	4/19/2018	3:19:25 PM	9	202	R	0.1	**14**	**105**
132	4/19/2018	3:19:36 PM	7	229	R	0.1	**10**	**388**
133	4/19/2018	3:19:48 PM	4	205	R	0.1	**5**	**136**
134	4/19/2018	3:20:00 PM	5	215	R	0.1	**7**	**241**
135	4/19/2018	3:20:11 PM	5	196	R	0.1	**7**	**42**
136	4/19/2018	3:20:23 PM	10	209	R	0.1	**15**	**178**
137	4/19/2018	3:20:35 PM	7	213	R	0.1	**10**	**220**
138	4/19/2018	3:20:47 PM	8	206	R	0.1	**12**	**147**
139	4/19/2018	3:20:58 PM	9	218	R	0.1	**14**	**273**
140	4/19/2018	3:21:10 PM	10	209	R	0.1	**15**	**178**
141	4/19/2018	3:21:22 PM	8	195	R	0.1	**12**	**31**
142	4/19/2018	3:21:33 PM	4	231	R	0.1	**5**	**409**
143	4/19/2018	3:21:45 PM	5	226	R	0.1	**7**	**357**
144	4/19/2018	3:21:57 PM	9	215	R	0.1	**14**	**241**
145	4/19/2018	3:22:08 PM	2	198	R	0.1	**2**	**63**
146	4/19/2018	3:22:20 PM	7	217	R	0.1	**10**	**262**
147	4/19/2018	3:22:32 PM	7	185	R	0.1	**10**	**-73**
148	4/19/2018	3:22:43 PM	11	188	R	0.1	**17**	**-42**
149	4/19/2018	3:22:55 PM	2	205	R	0.1	**2**	**136**
150	4/19/2018	3:24:52 PM	6	193	R	0.1 Grid 43	**9**	**10**
151	4/19/2018	3:25:03 PM	5	208	R	0.1	**7**	**168**
152	4/19/2018	3:25:15 PM	11	216	R	0.1	**17**	**252**
153	4/19/2018	3:25:27 PM	1	228	R	0.1	**0**	**378**

154	4/19/2018	3:25:39 PM	5	205	R	0.1		**7**	**136**
155	4/19/2018	3:25:50 PM	4	187	R	0.1		**5**	**-52**
156	4/19/2018	3:26:02 PM	9	222	R	0.1		**14**	**315**
157	4/19/2018	3:26:14 PM	0	199	R	0.1		**-2**	**73**
158	4/19/2018	3:26:25 PM	0	192	R	0.1		**-2**	**0**
159	4/19/2018	3:26:37 PM	12	194	R	0.1		**19**	**21**
160	4/19/2018	3:26:49 PM	6	208	R	0.1		**9**	**168**
161	4/19/2018	3:27:00 PM	2	218	R	0.1		**2**	**273**
162	4/19/2018	3:27:12 PM	5	190	R	0.1		**7**	**-21**
163	4/19/2018	3:27:24 PM	13	190	R	0.1		**20**	**-21**
164	4/19/2018	3:27:35 PM	9	191	R	0.1		**14**	**-10**
165	4/19/2018	3:27:47 PM	7	186	R	0.1		**10**	**-63**
166	4/19/2018	3:27:59 PM	4	220	R	0.1		**5**	**294**
167	4/19/2018	3:28:10 PM	11	215	R	0.1		**17**	**241**
168	4/19/2018	3:28:22 PM	7	195	R	0.1		**10**	**31**
169	4/19/2018	3:28:34 PM	5	203	R	0.1		**7**	**115**
170	4/19/2018	3:28:46 PM	5	198	R	0.1		**7**	**63**
171	4/19/2018	3:28:57 PM	12	196	R	0.1		**19**	**42**
172	4/19/2018	3:29:09 PM	1	222	R	0.1		**0**	**315**
173	4/19/2018	3:29:21 PM	1	205	R	0.1		**0**	**136**
174	4/19/2018	3:29:32 PM	4	197	R	0.1		**5**	**52**
175	4/19/2018	3:29:44 PM	4	191	R	0.1		**5**	**-10**
176	4/19/2018	3:29:56 PM	4	203	R	0.1		**5**	**115**
177	4/19/2018	3:30:07 PM	10	197	R	0.1		**15**	**52**
178	4/19/2018	3:30:19 PM	9	220	R	0.1		**14**	**294**
179	4/19/2018	3:30:31 PM	7	225	R	0.1		**10**	**346**
180	4/19/2018	3:30:42 PM	0	193	R	0.1		**-2**	**10**
181	4/19/2018	3:30:54 PM	0	233	R	0.1		**-2**	**430**
182	4/19/2018	3:31:06 PM	2	184	R	0.1		**2**	**-84**
183	4/19/2018	3:31:18 PM	9	214	R	0.1		**14**	**231**
184	4/19/2018	3:31:29 PM	13	192	R	0.1		**20**	**0**
185	4/19/2018	3:31:41 PM	13	185	R	0.1		**20**	**-73**
186	4/19/2018	3:31:53 PM	5	215	R	0.1		**7**	**241**
187	4/19/2018	3:32:04 PM	6	218	R	0.1		**9**	**273**
188	4/19/2018	3:32:16 PM	9	190	R	0.1		**14**	**-21**
189	4/19/2018	3:32:28 PM	0	230	R	0.1		**-2**	**399**
190	4/19/2018	3:34:04 PM	6	225	R	0.1	Grid 53	**9**	**346**
191	4/19/2018	3:34:15 PM	0	224	R	0.1		**-2**	**336**
192	4/19/2018	3:34:27 PM	5	210	R	0.1		**7**	**189**
193	4/19/2018	3:34:39 PM	2	192	R	0.1		**2**	**0**
194	4/19/2018	3:34:50 PM	13	184	R	0.1		**20**	**-84**
195	4/19/2018	3:35:02 PM	9	188	R	0.1		**14**	**-42**
196	4/19/2018	3:35:14 PM	5	193	R	0.1		**7**	**10**
197	4/19/2018	3:35:25 PM	0	216	R	0.1		**-2**	**252**
198	4/19/2018	3:35:37 PM	11	204	R	0.1		**17**	**126**
199	4/19/2018	3:35:49 PM	0	219	R	0.1		**-2**	**283**
200	4/19/2018	3:36:00 PM	10	195	R	0.1		**15**	**31**
201	4/19/2018	3:36:12 PM	11	197	R	0.1		**17**	**52**
202	4/19/2018	3:36:24 PM	2	217	R	0.1		**2**	**262**
203	4/19/2018	3:36:36 PM	0	192	R	0.1		**-2**	**0**
204	4/19/2018	3:36:47 PM	1	205	R	0.1		**0**	**136**
205	4/19/2018	3:36:59 PM	11	196	R	0.1		**17**	**42**
206	4/19/2018	3:37:11 PM	11	185	R	0.1		**17**	**-73**
207	4/19/2018	3:37:22 PM	5	185	R	0.1		**7**	**-73**
208	4/19/2018	3:37:34 PM	13	196	R	0.1		**20**	**42**
209	4/19/2018	3:37:46 PM	0	196	R	0.1		**-2**	**42**

210	4/19/2018	3:37:57 PM	0	188	R	0.1	**-2**	**-42**
211	4/19/2018	3:38:09 PM	4	195	R	0.1	**5**	**31**
212	4/19/2018	3:38:21 PM	8	199	R	0.1	**12**	**73**
213	4/19/2018	3:38:32 PM	8	189	R	0.1	**12**	**-31**
214	4/19/2018	3:38:44 PM	4	211	R	0.1	**5**	**199**
215	4/19/2018	3:38:56 PM	5	196	R	0.1	**7**	**42**
216	4/19/2018	3:39:07 PM	12	194	R	0.1	**19**	**21**
217	4/19/2018	3:39:19 PM	10	220	R	0.1	**15**	**294**
218	4/19/2018	3:39:31 PM	2	214	R	0.1	**2**	**231**
219	4/19/2018	3:39:43 PM	4	195	R	0.1	**5**	**31**
220	4/19/2018	3:39:54 PM	13	214	R	0.1	**20**	**231**
221	4/19/2018	3:40:06 PM	1	225	R	0.1	**0**	**346**
222	4/19/2018	3:40:18 PM	1	209	R	0.1	**0**	**178**
223	4/19/2018	3:40:29 PM	0	194	R	0.1	**-2**	**21**
224	4/19/2018	3:40:41 PM	9	206	R	0.1	**14**	**147**
225	4/19/2018	3:40:53 PM	3	211	R	0.1	**3**	**199**
226	4/19/2018	3:41:04 PM	2	193	R	0.1	**2**	**10**
227	4/19/2018	3:41:16 PM	1	201	R	0.1	**0**	**94**
228	4/19/2018	3:41:28 PM	10	212	R	0.1	**15**	**210**
229	4/19/2018	3:41:39 PM	1	197	R	0.1	**0**	**52**
230	4/19/2018	3:43:26 PM	0	205	R	0.1 Grid 54	**-2**	**136**
231	4/19/2018	3:43:38 PM	0	204	R	0.1	**-2**	**126**
232	4/19/2018	3:43:50 PM	0	219	R	0.1	**-2**	**283**
233	4/19/2018	3:44:01 PM	9	214	R	0.1	**14**	**231**
234	4/19/2018	3:44:13 PM	5	223	R	0.1	**7**	**325**
235	4/19/2018	3:44:25 PM	6	218	R	0.1	**9**	**273**
236	4/19/2018	3:44:36 PM	6	208	R	0.1	**9**	**168**
237	4/19/2018	3:44:48 PM	7	224	R	0.1	**10**	**336**
238	4/19/2018	3:45:00 PM	9	222	R	0.1	**14**	**315**
239	4/19/2018	3:45:11 PM	0	230	R	0.1	**-2**	**399**
240	4/19/2018	3:45:23 PM	0	214	R	0.1	**-2**	**231**
241	4/19/2018	3:45:35 PM	1	216	R	0.1	**0**	**252**
242	4/19/2018	3:45:46 PM	3	222	R	0.1	**3**	**315**
243	4/19/2018	3:45:58 PM	6	208	R	0.1	**9**	**168**
244	4/19/2018	3:46:10 PM	0	208	R	0.1	**-2**	**168**
245	4/19/2018	3:46:22 PM	3	213	R	0.1	**3**	**220**
246	4/19/2018	3:46:33 PM	6	184	R	0.1	**9**	**-84**
247	4/19/2018	3:46:45 PM	9	225	R	0.1	**14**	**346**
248	4/19/2018	3:46:57 PM	10	214	R	0.1	**15**	**231**
249	4/19/2018	3:47:08 PM	8	206	R	0.1	**12**	**147**
250	4/19/2018	3:47:20 PM	0	193	R	0.1	**-2**	**10**
251	4/19/2018	3:47:32 PM	12	192	R	0.1	**19**	**0**
252	4/19/2018	3:47:43 PM	11	192	R	0.1	**17**	**0**
253	4/19/2018	3:47:55 PM	5	183	R	0.1	**7**	**-94**
254	4/19/2018	3:48:07 PM	1	212	R	0.1	**0**	**210**
255	4/19/2018	3:48:18 PM	5	221	R	0.1	**7**	**304**
256	4/19/2018	3:48:30 PM	1	203	R	0.1	**0**	**115**
257	4/19/2018	3:48:42 PM	7	201	R	0.1	**10**	**94**
258	4/19/2018	3:48:53 PM	5	184	R	0.1	**7**	**-84**
259	4/19/2018	3:49:05 PM	3	197	R	0.1	**3**	**52**
260	4/19/2018	3:49:17 PM	0	198	R	0.1	**-2**	**63**
261	4/19/2018	3:49:29 PM	3	198	R	0.1	**3**	**63**
262	4/19/2018	3:49:40 PM	5	200	R	0.1	**7**	**84**
263	4/19/2018	3:49:52 PM	7	187	R	0.1	**10**	**-52**
264	4/19/2018	3:50:04 PM	0	207	R	0.1	**-2**	**157**
265	4/19/2018	3:50:15 PM	4	188	R	0.1	**5**	**-42**

266	4/19/2018	3:50:27 PM	4	211	R	0.1	**5**	**199**
267	4/19/2018	3:50:39 PM	4	202	R	0.1	**5**	**105**
268	4/19/2018	3:50:50 PM	9	227	R	0.1	**14**	**367**
269	4/19/2018	3:51:02 PM	4	186	R	0.1	**5**	**-63**
		Maximum:	**13**	**233**			**20**	**430**
		Average:	**6**	**207**			**8**	**153**
		StDev:	**4**	**14**			**6**	**142**

2360 SN:297766
43-93# 323074
Cal Due Date: 12/20/2018
Surveyor: Richard Thatcher
Bldg 218
Room 105A North & South Lower Wall Grids 55 thru 61
Alpha Efficiency: 0.404
Beta/Gamma Efficiency: 0.254
Alpha Background: 1
Beta/Gamma Background: 192

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/20/2018	8:12:12	AM	5	210	R	0.1	Grid 55	**7**	**189**
2	4/20/2018	8:12:24	AM	5	226	R	0.1		**7**	**357**
3	4/20/2018	8:12:36	AM	9	196	R	0.1		**14**	**42**
4	4/20/2018	8:12:47	AM	8	208	R	0.1		**12**	**168**
5	4/20/2018	8:12:59	AM	4	242	R	0.1		**5**	**525**
6	4/20/2018	8:13:11	AM	2	184	R	0.1		**2**	**-84**
7	4/20/2018	8:13:22	AM	11	235	R	0.1		**17**	**451**
8	4/20/2018	8:13:34	AM	6	203	R	0.1		**9**	**115**
9	4/20/2018	8:13:46	AM	5	212	R	0.1		**7**	**210**
10	4/20/2018	8:13:57	AM	1	222	R	0.1		**0**	**315**
11	4/20/2018	8:14:09	AM	13	220	R	0.1		**20**	**294**
12	4/20/2018	8:14:21	AM	3	211	R	0.1		**3**	**199**
13	4/20/2018	8:14:32	AM	6	208	R	0.1		**9**	**168**
14	4/20/2018	8:14:44	AM	10	195	R	0.1		**15**	**31**
15	4/20/2018	8:14:56	AM	6	190	R	0.1		**9**	**-21**
16	4/20/2018	8:15:07	AM	1	233	R	0.1		**0**	**430**
17	4/20/2018	8:15:19	AM	1	224	R	0.1		**0**	**336**
18	4/20/2018	8:15:31	AM	0	219	R	0.1		**-2**	**283**
19	4/20/2018	8:15:42	AM	0	215	R	0.1		**-2**	**241**
20	4/20/2018	8:15:54	AM	9	228	R	0.1		**14**	**378**
21	4/20/2018	8:16:06	AM	7	204	R	0.1		**10**	**126**
22	4/20/2018	8:16:17	AM	6	219	R	0.1		**9**	**283**
23	4/20/2018	8:16:29	AM	4	192	R	0.1		**5**	**0**
24	4/20/2018	8:16:41	AM	8	217	R	0.1		**12**	**262**
25	4/20/2018	8:16:52	AM	11	201	R	0.1		**17**	**94**
26	4/20/2018	8:17:04	AM	0	200	R	0.1		**-2**	**84**
27	4/20/2018	8:17:16	AM	9	222	R	0.1		**14**	**315**
28	4/20/2018	8:17:27	AM	9	217	R	0.1		**14**	**262**
29	4/20/2018	8:17:39	AM	11	224	R	0.1		**17**	**336**
30	4/20/2018	8:17:51	AM	10	218	R	0.1		**15**	**273**
31	4/20/2018	8:18:02	AM	9	184	R	0.1		**14**	**-84**
32	4/20/2018	8:18:14	AM	0	221	R	0.1		**-2**	**304**
33	4/20/2018	8:18:26	AM	6	218	R	0.1		**9**	**273**
34	4/20/2018	8:18:37	AM	4	214	R	0.1		**5**	**231**
35	4/20/2018	8:18:49	AM	3	224	R	0.1		**3**	**336**
36	4/20/2018	8:19:01	AM	5	196	R	0.1		**7**	**42**
37	4/20/2018	8:19:12	AM	5	192	R	0.1		**7**	**0**
38	4/20/2018	8:19:24	AM	5	194	R	0.1		**7**	**21**
39	4/20/2018	8:19:36	AM	10	226	R	0.1		**15**	**357**
40	4/20/2018	8:21:13	AM	3	210	R	0.1	Grid 56	**3**	**189**
41	4/20/2018	8:21:25	AM	7	203	R	0.1		**10**	**115**

42	4/20/2018	8:21:36 AM	2	238	R	0.1	**2**	**483**
43	4/20/2018	8:21:48 AM	1	194	R	0.1	**0**	**21**
44	4/20/2018	8:22:00 AM	13	230	R	0.1	**20**	**399**
45	4/20/2018	8:22:11 AM	9	242	R	0.1	**14**	**525**
46	4/20/2018	8:22:23 AM	9	215	R	0.1	**14**	**241**
47	4/20/2018	8:22:35 AM	5	205	R	0.1	**7**	**136**
48	4/20/2018	8:22:46 AM	4	188	R	0.1	**5**	**-42**
49	4/20/2018	8:22:58 AM	11	229	R	0.1	**17**	**388**
50	4/20/2018	8:23:10 AM	4	182	R	0.1	**5**	**-105**
51	4/20/2018	8:23:21 AM	5	184	R	0.1	**7**	**-84**
52	4/20/2018	8:23:33 AM	11	183	R	0.1	**17**	**-94**
53	4/20/2018	8:23:45 AM	7	206	R	0.1	**10**	**147**
54	4/20/2018	8:23:56 AM	9	200	R	0.1	**14**	**84**
55	4/20/2018	8:24:08 AM	7	224	R	0.1	**10**	**336**
56	4/20/2018	8:24:20 AM	5	184	R	0.1	**7**	**-84**
57	4/20/2018	8:24:31 AM	4	209	R	0.1	**5**	**178**
58	4/20/2018	8:24:43 AM	11	205	R	0.1	**17**	**136**
59	4/20/2018	8:24:54 AM	1	235	R	0.1	**0**	**451**
60	4/20/2018	8:25:06 AM	12	195	R	0.1	**19**	**31**
61	4/20/2018	8:25:18 AM	2	219	R	0.1	**2**	**283**
62	4/20/2018	8:25:29 AM	2	216	R	0.1	**2**	**252**
63	4/20/2018	8:25:41 AM	2	217	R	0.1	**2**	**262**
64	4/20/2018	8:25:53 AM	11	199	R	0.1	**17**	**73**
65	4/20/2018	8:26:04 AM	4	190	R	0.1	**5**	**-21**
66	4/20/2018	8:26:16 AM	9	242	R	0.1	**14**	**525**
67	4/20/2018	8:26:28 AM	6	209	R	0.1	**9**	**178**
68	4/20/2018	8:26:39 AM	1	218	R	0.1	**0**	**273**
69	4/20/2018	8:26:51 AM	7	219	R	0.1	**10**	**283**
70	4/20/2018	8:27:03 AM	3	189	R	0.1	**3**	**-31**
71	4/20/2018	8:27:14 AM	10	185	R	0.1	**15**	**-73**
72	4/20/2018	8:27:26 AM	6	195	R	0.1	**9**	**31**
73	4/20/2018	8:27:38 AM	10	193	R	0.1	**15**	**10**
74	4/20/2018	8:27:49 AM	9	198	R	0.1	**14**	**63**
75	4/20/2018	8:28:01 AM	10	234	R	0.1	**15**	**441**
76	4/20/2018	8:28:13 AM	4	181	R	0.1	**5**	**-115**
77	4/20/2018	8:28:24 AM	3	180	R	0.1	**3**	**-126**
78	4/20/2018	8:28:36 AM	10	183	R	0.1	**15**	**-94**
79	4/20/2018	8:28:48 AM	3	230	R	0.1	**3**	**399**
80	4/20/2018	8:30:05 AM	10	232	R	0.1 Grid 57	**15**	**420**
81	4/20/2018	8:30:17 AM	9	191	R	0.1	**14**	**-10**
82	4/20/2018	8:30:28 AM	4	201	R	0.1	**5**	**94**
83	4/20/2018	8:30:40 AM	10	208	R	0.1	**15**	**168**
84	4/20/2018	8:30:52 AM	3	224	R	0.1	**3**	**336**
85	4/20/2018	8:31:03 AM	9	239	R	0.1	**14**	**493**
86	4/20/2018	8:31:15 AM	4	242	R	0.1	**5**	**525**
87	4/20/2018	8:31:27 AM	11	188	R	0.1	**17**	**-42**
88	4/20/2018	8:31:38 AM	8	209	R	0.1	**12**	**178**
89	4/20/2018	8:31:50 AM	12	203	R	0.1	**19**	**115**
90	4/20/2018	8:32:02 AM	11	184	R	0.1	**17**	**-84**
91	4/20/2018	8:32:13 AM	10	211	R	0.1	**15**	**199**
92	4/20/2018	8:32:25 AM	6	209	R	0.1	**9**	**178**
93	4/20/2018	8:32:37 AM	9	225	R	0.1	**14**	**346**
94	4/20/2018	8:32:48 AM	4	196	R	0.1	**5**	**42**
95	4/20/2018	8:33:00 AM	12	195	R	0.1	**19**	**31**
96	4/20/2018	8:33:12 AM	7	238	R	0.1	**10**	**483**
97	4/20/2018	8:33:23 AM	9	196	R	0.1	**14**	**42**

98	4/20/2018	8:33:35 AM	9	194	R	0.1	**14**	**21**
99	4/20/2018	8:33:47 AM	2	199	R	0.1	**2**	**73**
100	4/20/2018	8:33:58 AM	2	182	R	0.1	**2**	**-105**
101	4/20/2018	8:34:10 AM	3	199	R	0.1	**3**	**73**
102	4/20/2018	8:34:21 AM	12	195	R	0.1	**19**	**31**
103	4/20/2018	8:34:33 AM	6	187	R	0.1	**9**	**-52**
104	4/20/2018	8:34:45 AM	8	218	R	0.1	**12**	**273**
105	4/20/2018	8:34:56 AM	6	230	R	0.1	**9**	**399**
106	4/20/2018	8:35:08 AM	4	185	R	0.1	**5**	**-73**
107	4/20/2018	8:35:20 AM	4	188	R	0.1	**5**	**-42**
108	4/20/2018	8:35:31 AM	5	186	R	0.1	**7**	**-63**
109	4/20/2018	8:35:43 AM	5	216	R	0.1	**7**	**252**
110	4/20/2018	8:35:55 AM	6	185	R	0.1	**9**	**-73**
111	4/20/2018	8:36:06 AM	4	181	R	0.1	**5**	**-115**
112	4/20/2018	8:36:18 AM	12	188	R	0.1	**19**	**-42**
113	4/20/2018	8:36:30 AM	8	203	R	0.1	**12**	**115**
114	4/20/2018	8:36:41 AM	9	216	R	0.1	**14**	**252**
115	4/20/2018	8:36:53 AM	8	190	R	0.1	**12**	**-21**
116	4/20/2018	8:37:05 AM	7	217	R	0.1	**10**	**262**
117	4/20/2018	8:37:16 AM	4	185	R	0.1	**5**	**-73**
118	4/20/2018	8:37:28 AM	6	209	R	0.1	**9**	**178**
119	4/20/2018	8:37:40 AM	8	189	R	0.1	**12**	**-31**
120	4/20/2018	8:39:09 AM	6	218	R	0.1 Grid 58	**9**	**273**
121	4/20/2018	8:39:20 AM	7	226	R	0.1	**10**	**357**
122	4/20/2018	8:39:32 AM	4	185	R	0.1	**5**	**-73**
123	4/20/2018	8:39:44 AM	6	219	R	0.1	**9**	**283**
124	4/20/2018	8:39:55 AM	6	189	R	0.1	**9**	**-31**
125	4/20/2018	8:40:07 AM	2	200	R	0.1	**2**	**84**
126	4/20/2018	8:40:19 AM	11	205	R	0.1	**17**	**136**
127	4/20/2018	8:40:30 AM	9	200	R	0.1	**14**	**84**
128	4/20/2018	8:40:42 AM	6	218	R	0.1	**9**	**273**
129	4/20/2018	8:40:54 AM	4	234	R	0.1	**5**	**441**
130	4/20/2018	8:41:05 AM	7	221	R	0.1	**10**	**304**
131	4/20/2018	8:41:17 AM	9	203	R	0.1	**14**	**115**
132	4/20/2018	8:41:29 AM	13	216	R	0.1	**20**	**252**
133	4/20/2018	8:41:40 AM	10	180	R	0.1	**15**	**-126**
134	4/20/2018	8:41:52 AM	11	201	R	0.1	**17**	**94**
135	4/20/2018	8:42:03 AM	3	213	R	0.1	**3**	**220**
136	4/20/2018	8:42:15 AM	7	200	R	0.1	**10**	**84**
137	4/20/2018	8:42:27 AM	12	207	R	0.1	**19**	**157**
138	4/20/2018	8:42:38 AM	9	227	R	0.1	**14**	**367**
139	4/20/2018	8:42:50 AM	8	197	R	0.1	**12**	**52**
140	4/20/2018	8:43:02 AM	9	196	R	0.1	**14**	**42**
141	4/20/2018	8:43:13 AM	1	224	R	0.1	**0**	**336**
142	4/20/2018	8:43:25 AM	10	210	R	0.1	**15**	**189**
143	4/20/2018	8:43:37 AM	5	217	R	0.1	**7**	**262**
144	4/20/2018	8:43:48 AM	11	214	R	0.1	**17**	**231**
145	4/20/2018	8:44:00 AM	4	182	R	0.1	**5**	**-105**
146	4/20/2018	8:44:12 AM	10	193	R	0.1	**15**	**10**
147	4/20/2018	8:44:23 AM	2	207	R	0.1	**2**	**157**
148	4/20/2018	8:44:35 AM	11	193	R	0.1	**17**	**10**
149	4/20/2018	8:44:47 AM	4	202	R	0.1	**5**	**105**
150	4/20/2018	8:44:58 AM	5	225	R	0.1	**7**	**346**
151	4/20/2018	8:45:10 AM	8	212	R	0.1	**12**	**210**
152	4/20/2018	8:45:22 AM	2	218	R	0.1	**2**	**273**
153	4/20/2018	8:45:33 AM	4	190	R	0.1	**5**	**-21**

154	4/20/2018	8:45:45 AM	10	211	R	0.1		**15**	**199**
155	4/20/2018	8:45:57 AM	7	187	R	0.1		**10**	**-52**
156	4/20/2018	8:46:08 AM	4	184	R	0.1		**5**	**-84**
157	4/20/2018	8:46:20 AM	3	201	R	0.1		**3**	**94**
158	4/20/2018	8:46:32 AM	5	200	R	0.1		**7**	**84**
159	4/20/2018	8:46:43 AM	8	213	R	0.1		**12**	**220**
160	4/20/2018	8:48:23 AM	4	221	R	0.1	Grid 59	**5**	**304**
161	4/20/2018	8:48:34 AM	12	209	R	0.1		**19**	**178**
162	4/20/2018	8:48:46 AM	4	183	R	0.1		**5**	**-94**
163	4/20/2018	8:48:58 AM	2	201	R	0.1		**2**	**94**
164	4/20/2018	8:49:09 AM	3	203	R	0.1		**3**	**115**
165	4/20/2018	8:49:21 AM	3	184	R	0.1		**3**	**-84**
166	4/20/2018	8:49:33 AM	7	222	R	0.1		**10**	**315**
167	4/20/2018	8:49:44 AM	4	189	R	0.1		**5**	**-31**
168	4/20/2018	8:49:56 AM	9	233	R	0.1		**14**	**430**
169	4/20/2018	8:50:08 AM	6	192	R	0.1		**9**	**0**
170	4/20/2018	8:50:19 AM	4	193	R	0.1		**5**	**10**
171	4/20/2018	8:50:31 AM	9	223	R	0.1		**14**	**325**
172	4/20/2018	8:50:43 AM	12	224	R	0.1		**19**	**336**
173	4/20/2018	8:50:54 AM	3	212	R	0.1		**3**	**210**
174	4/20/2018	8:51:06 AM	4	225	R	0.1		**5**	**346**
175	4/20/2018	8:51:18 AM	12	201	R	0.1		**19**	**94**
176	4/20/2018	8:51:29 AM	7	197	R	0.1		**10**	**52**
177	4/20/2018	8:51:41 AM	5	209	R	0.1		**7**	**178**
178	4/20/2018	8:51:53 AM	4	184	R	0.1		**5**	**-84**
179	4/20/2018	8:52:04 AM	12	239	R	0.1		**19**	**493**
180	4/20/2018	8:52:16 AM	13	226	R	0.1		**20**	**357**
181	4/20/2018	8:52:28 AM	5	182	R	0.1		**7**	**-105**
182	4/20/2018	8:52:39 AM	5	198	R	0.1		**7**	**63**
183	4/20/2018	8:52:51 AM	7	206	R	0.1		**10**	**147**
184	4/20/2018	8:53:03 AM	10	213	R	0.1		**15**	**220**
185	4/20/2018	8:53:14 AM	9	238	R	0.1		**14**	**483**
186	4/20/2018	8:53:26 AM	10	223	R	0.1		**15**	**325**
187	4/20/2018	8:53:38 AM	10	229	R	0.1		**15**	**388**
188	4/20/2018	8:53:49 AM	6	229	R	0.1		**9**	**388**
189	4/20/2018	8:54:01 AM	11	217	R	0.1		**17**	**262**
190	4/20/2018	8:54:13 AM	10	224	R	0.1		**15**	**336**
191	4/20/2018	8:54:24 AM	2	227	R	0.1		**2**	**367**
192	4/20/2018	8:54:36 AM	2	185	R	0.1		**2**	**-73**
193	4/20/2018	8:54:48 AM	11	215	R	0.1		**17**	**241**
194	4/20/2018	8:54:59 AM	9	201	R	0.1		**14**	**94**
195	4/20/2018	8:55:11 AM	3	193	R	0.1		**3**	**10**
196	4/20/2018	8:55:23 AM	3	201	R	0.1		**3**	**94**
197	4/20/2018	8:55:34 AM	1	211	R	0.1		**0**	**199**
198	4/20/2018	8:55:46 AM	11	196	R	0.1		**17**	**42**
199	4/20/2018	8:55:58 AM	2	216	R	0.1		**2**	**252**
200	4/20/2018	8:57:33 AM	10	206	R	0.1	Grid 60	**15**	**147**
201	4/20/2018	8:57:45 AM	5	204	R	0.1		**7**	**126**
202	4/20/2018	8:57:57 AM	11	208	R	0.1		**17**	**168**
203	4/20/2018	8:58:08 AM	6	207	R	0.1		**9**	**157**
204	4/20/2018	8:58:20 AM	12	193	R	0.1		**19**	**10**
205	4/20/2018	8:58:32 AM	7	238	R	0.1		**10**	**483**
206	4/20/2018	8:58:43 AM	1	194	R	0.1		**0**	**21**
207	4/20/2018	8:58:55 AM	7	207	R	0.1		**10**	**157**
208	4/20/2018	8:59:07 AM	4	184	R	0.1		**5**	**-84**
209	4/20/2018	8:59:18 AM	0	208	R	0.1		**-2**	**168**

210	4/20/2018	8:59:30 AM	2	194	R	0.1		**2**	**21**
211	4/20/2018	8:59:42 AM	3	225	R	0.1		**3**	**346**
212	4/20/2018	8:59:53 AM	13	195	R	0.1		**20**	**31**
213	4/20/2018	9:00:05 AM	7	204	R	0.1		**10**	**126**
214	4/20/2018	9:00:17 AM	11	203	R	0.1		**17**	**115**
215	4/20/2018	9:00:28 AM	3	205	R	0.1		**3**	**136**
216	4/20/2018	9:00:40 AM	2	226	R	0.1		**2**	**357**
217	4/20/2018	9:00:52 AM	11	226	R	0.1		**17**	**357**
218	4/20/2018	9:01:03 AM	0	196	R	0.1		**-2**	**42**
219	4/20/2018	9:01:15 AM	0	202	R	0.1		**-2**	**105**
220	4/20/2018	9:01:27 AM	2	216	R	0.1		**2**	**252**
221	4/20/2018	9:01:38 AM	3	218	R	0.1		**3**	**273**
222	4/20/2018	9:01:50 AM	5	239	R	0.1		**7**	**493**
223	4/20/2018	9:02:02 AM	1	192	R	0.1		**0**	**0**
224	4/20/2018	9:02:13 AM	4	210	R	0.1		**5**	**189**
225	4/20/2018	9:02:25 AM	7	223	R	0.1		**10**	**325**
226	4/20/2018	9:02:37 AM	3	182	R	0.1		**3**	**-105**
227	4/20/2018	9:02:48 AM	11	211	R	0.1		**17**	**199**
228	4/20/2018	9:03:00 AM	3	184	R	0.1		**3**	**-84**
229	4/20/2018	9:03:12 AM	2	205	R	0.1		**2**	**136**
230	4/20/2018	9:03:23 AM	8	231	R	0.1		**12**	**409**
231	4/20/2018	9:03:35 AM	8	204	R	0.1		**12**	**126**
232	4/20/2018	9:03:47 AM	6	184	R	0.1		**9**	**-84**
233	4/20/2018	9:03:58 AM	11	225	R	0.1		**17**	**346**
234	4/20/2018	9:04:10 AM	5	218	R	0.1		**7**	**273**
235	4/20/2018	9:04:22 AM	4	222	R	0.1		**5**	**315**
236	4/20/2018	9:04:33 AM	10	232	R	0.1		**15**	**420**
237	4/20/2018	9:04:45 AM	2	221	R	0.1		**2**	**304**
238	4/20/2018	9:04:57 AM	3	194	R	0.1		**3**	**21**
239	4/20/2018	9:05:08 AM	7	238	R	0.1		**10**	**483**
240	4/20/2018	9:06:59 AM	9	220	R	0.1	Grid 61	**14**	**294**
241	4/20/2018	9:07:11 AM	0	214	R	0.1		**-2**	**231**
242	4/20/2018	9:07:23 AM	7	214	R	0.1		**10**	**231**
243	4/20/2018	9:07:34 AM	0	190	R	0.1		**-2**	**-21**
244	4/20/2018	9:07:46 AM	2	216	R	0.1		**2**	**252**
245	4/20/2018	9:07:58 AM	9	219	R	0.1		**14**	**283**
246	4/20/2018	9:08:09 AM	7	240	R	0.1		**10**	**504**
247	4/20/2018	9:08:21 AM	5	236	R	0.1		**7**	**462**
248	4/20/2018	9:08:33 AM	9	214	R	0.1		**14**	**231**
249	4/20/2018	9:08:44 AM	2	188	R	0.1		**2**	**-42**
250	4/20/2018	9:08:56 AM	9	186	R	0.1		**14**	**-63**
251	4/20/2018	9:09:08 AM	12	198	R	0.1		**19**	**63**
252	4/20/2018	9:09:19 AM	3	196	R	0.1		**3**	**42**
253	4/20/2018	9:09:31 AM	7	211	R	0.1		**10**	**199**
254	4/20/2018	9:09:43 AM	6	213	R	0.1		**9**	**220**
255	4/20/2018	9:09:54 AM	8	222	R	0.1		**12**	**315**
256	4/20/2018	9:10:06 AM	8	193	R	0.1		**12**	**10**
257	4/20/2018	9:10:18 AM	5	187	R	0.1		**7**	**-52**
258	4/20/2018	9:10:29 AM	0	189	R	0.1		**-2**	**-31**
259	4/20/2018	9:10:41 AM	2	186	R	0.1		**2**	**-63**
260	4/20/2018	9:10:53 AM	4	186	R	0.1		**5**	**-63**
261	4/20/2018	9:11:04 AM	1	209	R	0.1		**0**	**178**
262	4/20/2018	9:11:16 AM	2	209	R	0.1		**2**	**178**
263	4/20/2018	9:11:28 AM	7	237	R	0.1		**10**	**472**
264	4/20/2018	9:11:39 AM	0	203	R	0.1		**-2**	**115**
265	4/20/2018	9:11:51 AM	0	215	R	0.1		**-2**	**241**

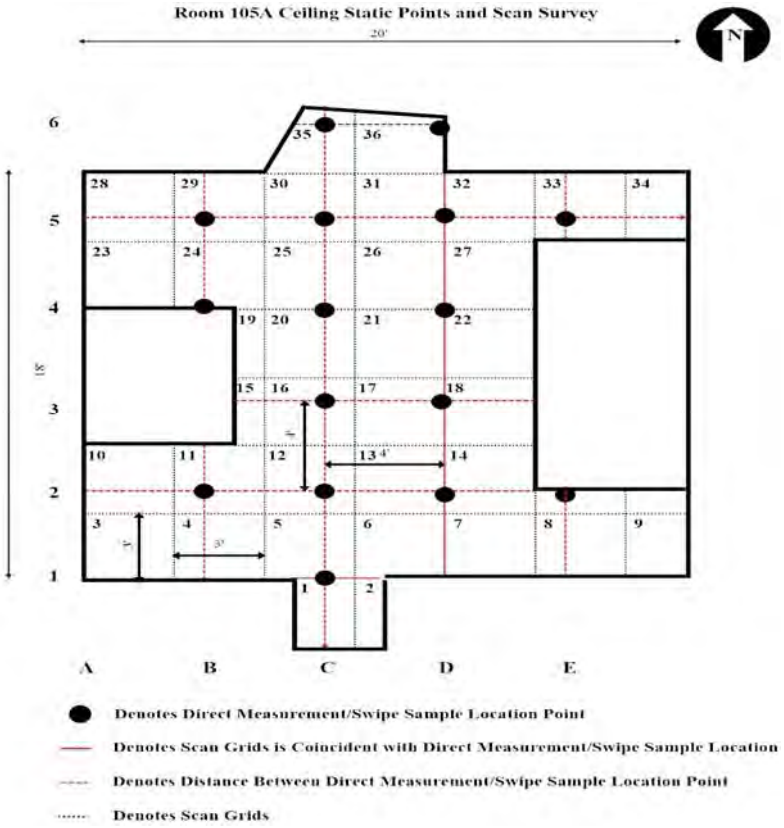
266	4/20/2018	9:12:03 AM	6	223	R	0.1	**9**	**325**
267	4/20/2018	9:12:14 AM	4	214	R	0.1	**5**	**231**
268	4/20/2018	9:12:26 AM	5	189	R	0.1	**7**	**-31**
269	4/20/2018	9:12:38 AM	2	213	R	0.1	**2**	**220**
270	4/20/2018	9:12:49 AM	3	193	R	0.1	**3**	**10**
271	4/20/2018	9:13:01 AM	4	202	R	0.1	**5**	**105**
272	4/20/2018	9:13:13 AM	1	208	R	0.1	**0**	**168**
273	4/20/2018	9:13:24 AM	2	198	R	0.1	**2**	**63**
274	4/20/2018	9:13:36 AM	10	201	R	0.1	**15**	**94**
275	4/20/2018	9:13:48 AM	5	229	R	0.1	**7**	**388**
276	4/20/2018	9:13:59 AM	8	213	R	0.1	**12**	**220**
277	4/20/2018	9:14:11 AM	7	192	R	0.1	**10**	**0**
278	4/20/2018	9:14:23 AM	9	205	R	0.1	**14**	**136**
279	4/20/2018	9:14:34 AM	6	214	R	0.1	**9**	**231**
		Maximum:	**13**	**242**			**20**	**525**
		Average:	**6**	**208**			**9**	**164**
		StDev:	**3**	**16**			**6**	**169**

Room 105A Ceiling/Overhead

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 13:45	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 43.2	α 9.0
		43-93	299597		βγ 31.3%	βγ 15.7%	βγ 287.7	βγ 1118.2
LOCATION:	Room 105A Ceiling	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 26.5%	βγ 62.8	βγ 149.8
SURVEYOR:	Adolfo Matus							
DATE: 4/23/2018	TIME: 14:04	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

The 3' by 3' area at each direct measurement location was 100% gross alpha/beta-gamma surveyed.

Scan results were: 0-5 CPM alpha, 160-200 cpm beta-gamma.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Room 105A Ceiling

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
C1				13.5	169.3	-1.2	-14.0	See Map For Location
B2				9.0	220.4	-1.2	-15.8	See Map For Location
C2				4.5	182.1	-1.2	-0.8	See Map For Location
D2				-4.5	293.9	-1.2	-19.6	See Map For Location
E2				4.5	162.9	-1.2	3.0	See Map For Location
C3				-4.5	159.7	-1.2	-4.5	See Map For Location
D3				4.5	198.1	-1.2	-21.5	See Map For Location
B4				0.0	121.4	1.9	8.7	See Map For Location
C4				0.0	150.2	1.9	-19.6	See Map For Location
D4				0.0	16.0	-1.2	-8.3	See Map For Location
B5				-4.5	162.9	-1.2	-14.0	See Map For Location
C5				-4.5	150.2	-1.2	-10.2	See Map For Location
D5				4.5	156.5	-1.2	-2.6	See Map For Location
E5				13.5	115.0	1.9	-19.6	See Map For Location
C6				-9.0	38.3	-1.2	-6.4	See Map For Location
D6				0.0	124.6	-1.2	-15.8	See Map For Location
D2D						-1.2	-23.4	Duplicate Swipe
C5D						-1.2	-12.1	Duplicate Swipe
Maximum:				**13.5**	**293.9**	**1.9**	**8.7**	
Average:				**1.7**	**151.4**	**-0.7**	**-10.9**	
StDev:				**6.6**	**64.8**	**1.2**	**9.0**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 14:04

THIS AREA INTENTIONALLY LEFT BLANK

Building 227

Room 100 Floor

2360 SN:268488
43-37 #190672
Cal Due Date: 10/27/2018
Surveyor: Josefina Matus
Bldg 227
Room 100 Floor Grids 1 thru 30
Alpha Efficiency: 0.302
Beta/Gamma Efficiency: 0.37
Alpha Background: 5.8
Beta/Gamma Background: 881

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/11/2018	12:55:08	PM	9	850	R	0.1	Grid 1	**7**	**-38**
2	4/11/2018	12:55:20	PM	7	884	R	0.1		**3**	**4**
3	4/11/2018	12:55:31	PM	10	842	R	0.1		**10**	**-48**
4	4/11/2018	12:55:43	PM	2	921	R	0.1		**-9**	**50**
5	4/11/2018	12:55:55	PM	3	907	R	0.1		**-6**	**32**
6	4/11/2018	12:56:06	PM	0	897	R	0.1		**-13**	**20**
7	4/11/2018	12:56:18	PM	3	799	R	0.1		**-6**	**-102**
8	4/11/2018	12:56:30	PM	3	826	R	0.1		**-6**	**-68**
9	4/11/2018	12:56:42	PM	7	860	R	0.1		**3**	**-26**
10	4/11/2018	12:58:16	PM	5	822	R	0.1	Grid 2	**-2**	**-73**
11	4/11/2018	12:58:28	PM	0	895	R	0.1		**-13**	**17**
12	4/11/2018	12:58:40	PM	10	843	R	0.1		**10**	**-47**
13	4/11/2018	12:58:51	PM	2	843	R	0.1		**-9**	**-47**
14	4/11/2018	12:59:03	PM	0	920	R	0.1		**-13**	**48**
15	4/11/2018	12:59:15	PM	4	865	R	0.1		**-4**	**-20**
16	4/11/2018	12:59:26	PM	1	898	R	0.1		**-11**	**21**
17	4/11/2018	12:59:38	PM	0	795	R	0.1		**-13**	**-106**
18	4/11/2018	12:59:50	PM	0	812	R	0.1		**-13**	**-85**
19	4/11/2018	1:00:02	PM	8	923	R	0.1		**5**	**52**
20	4/11/2018	1:01:01	PM	18	899	R	0.1	Grid 3	**28**	**22**
21	4/11/2018	1:01:12	PM	4	786	R	0.1		**-4**	**-118**
22	4/11/2018	1:01:24	PM	7	810	R	0.1		**3**	**-88**
23	4/11/2018	1:01:36	PM	8	823	R	0.1		**5**	**-72**
24	4/11/2018	1:01:48	PM	2	958	R	0.1		**-9**	**95**
25	4/11/2018	1:01:59	PM	10	968	R	0.1		**10**	**108**
26	4/11/2018	1:02:11	PM	2	980	R	0.1		**-9**	**123**
27	4/11/2018	1:02:23	PM	0	934	R	0.1		**-13**	**66**
28	4/11/2018	1:02:34	PM	5	860	R	0.1		**-2**	**-26**
29	4/11/2018	1:02:46	PM	3	853	R	0.1		**-6**	**-35**
30	4/11/2018	1:04:22	PM	3	838	R	0.1	Grid 4	**-6**	**-53**
31	4/11/2018	1:04:34	PM	6	726	R	0.1		**0**	**-192**
32	4/11/2018	1:04:45	PM	0	741	R	0.1		**-13**	**-173**
33	4/11/2018	1:04:57	PM	8	758	R	0.1		**5**	**-152**
34	4/11/2018	1:05:09	PM	0	790	R	0.1		**-13**	**-113**
35	4/11/2018	1:05:21	PM	7	735	R	0.1		**3**	**-181**
36	4/11/2018	1:05:32	PM	0	739	R	0.1		**-13**	**-176**
37	4/11/2018	1:05:44	PM	15	780	R	0.1		**21**	**-125**
38	4/11/2018	1:05:56	PM	3	848	R	0.1		**-6**	**-41**
39	4/11/2018	1:06:07	PM	16	799	R	0.1		**23**	**-102**
40	4/11/2018	1:09:35	PM	0	831	R	0.1	Grid 5	**-13**	**-62**

41	4/11/2018	1:09:46 PM	5	780	R	0.1		**-2**	**-125**
42	4/11/2018	1:09:58 PM	1	826	R	0.1		**-11**	**-68**
43	4/11/2018	1:10:10 PM	6	691	R	0.1		**0**	**-235**
44	4/11/2018	1:10:21 PM	0	761	R	0.1		**-13**	**-149**
45	4/11/2018	1:10:33 PM	8	926	R	0.1		**5**	**56**
46	4/11/2018	1:10:45 PM	2	911	R	0.1		**-9**	**37**
47	4/11/2018	1:10:56 PM	0	907	R	0.1		**-13**	**32**
48	4/11/2018	1:11:08 PM	9	793	R	0.1		**7**	**-109**
49	4/11/2018	1:11:20 PM	2	841	R	0.1		**-9**	**-50**
50	4/11/2018	1:12:29 PM	6	878	R	0.1	Grid 6	**0**	**-4**
51	4/11/2018	1:12:41 PM	1	975	R	0.1		**-11**	**116**
52	4/11/2018	1:12:52 PM	4	935	R	0.1		**-4**	**67**
53	4/11/2018	1:13:04 PM	1	965	R	0.1		**-11**	**104**
54	4/11/2018	1:13:16 PM	0	888	R	0.1		**-13**	**9**
55	4/11/2018	1:13:28 PM	7	966	R	0.1		**3**	**105**
56	4/11/2018	1:13:39 PM	6	1015	R	0.1		**0**	**166**
57	4/11/2018	1:13:51 PM	1	905	R	0.1		**-11**	**30**
58	4/11/2018	1:14:03 PM	0	888	R	0.1		**-13**	**9**
59	4/11/2018	1:14:14 PM	6	811	R	0.1		**0**	**-87**
60	4/11/2018	1:16:18 PM	6	817	R	0.1	Grid 7	**0**	**-79**
61	4/11/2018	1:16:29 PM	12	746	R	0.1		**14**	**-167**
62	4/11/2018	1:16:41 PM	3	774	R	0.1		**-6**	**-133**
63	4/11/2018	1:16:53 PM	0	806	R	0.1		**-13**	**-93**
64	4/11/2018	1:17:04 PM	0	874	R	0.1		**-13**	**-9**
65	4/11/2018	1:17:16 PM	0	826	R	0.1		**-13**	**-68**
66	4/11/2018	1:17:28 PM	13	799	R	0.1		**16**	**-102**
67	4/11/2018	1:17:39 PM	6	856	R	0.1		**0**	**-31**
68	4/11/2018	1:17:51 PM	1	758	R	0.1		**-11**	**-152**
69	4/11/2018	1:18:03 PM	5	765	R	0.1		**-2**	**-144**
70	4/11/2018	1:19:01 PM	0	823	R	0.1	Grid 8	**-13**	**-72**
71	4/11/2018	1:19:12 PM	3	741	R	0.1		**-6**	**-173**
72	4/11/2018	1:19:24 PM	4	756	R	0.1		**-4**	**-155**
73	4/11/2018	1:19:36 PM	5	800	R	0.1		**-2**	**-100**
74	4/11/2018	1:19:48 PM	0	850	R	0.1		**-13**	**-38**
75	4/11/2018	1:19:59 PM	3	862	R	0.1		**-6**	**-24**
76	4/11/2018	1:20:11 PM	0	853	R	0.1		**-13**	**-35**
77	4/11/2018	1:20:23 PM	3	787	R	0.1		**-6**	**-116**
78	4/11/2018	1:20:34 PM	7	845	R	0.1		**3**	**-45**
79	4/11/2018	1:20:46 PM	1	832	R	0.1		**-11**	**-61**
80	4/11/2018	1:21:47 PM	7	882	R	0.1	Grid 9	**3**	**1**
81	4/11/2018	1:21:59 PM	1	770	R	0.1		**-11**	**-137**
82	4/11/2018	1:22:10 PM	6	844	R	0.1		**0**	**-46**
83	4/11/2018	1:22:22 PM	5	848	R	0.1		**-2**	**-41**
84	4/11/2018	1:22:34 PM	7	740	R	0.1		**3**	**-175**
85	4/11/2018	1:22:45 PM	0	878	R	0.1		**-13**	**-4**
86	4/11/2018	1:22:57 PM	0	803	R	0.1		**-13**	**-97**
87	4/11/2018	1:23:09 PM	12	809	R	0.1		**14**	**-89**
88	4/11/2018	1:23:20 PM	3	816	R	0.1		**-6**	**-80**
89	4/11/2018	1:23:32 PM	11	804	R	0.1		**12**	**-95**
90	4/11/2018	1:24:33 PM	3	799	R	0.1	Grid 10	**-6**	**-102**
91	4/11/2018	1:24:45 PM	0	823	R	0.1		**-13**	**-72**
92	4/11/2018	1:24:57 PM	0	865	R	0.1		**-13**	**-20**
93	4/11/2018	1:25:09 PM	4	768	R	0.1		**-4**	**-140**
94	4/11/2018	1:25:20 PM	1	821	R	0.1		**-11**	**-74**
95	4/11/2018	1:25:32 PM	5	897	R	0.1		**-2**	**20**

96	4/11/2018	1:25:44 PM	5	925	R	0.1		**-2**	**54**
97	4/11/2018	1:25:55 PM	0	949	R	0.1		**-13**	**84**
98	4/11/2018	1:26:07 PM	7	871	R	0.1		**3**	**-12**
99	4/11/2018	1:26:19 PM	1	915	R	0.1		**-11**	**42**
100	4/11/2018	1:28:03 PM	0	845	R	0.1	Grid 11	**-13**	**-45**
101	4/11/2018	1:28:15 PM	8	830	R	0.1		**5**	**-63**
102	4/11/2018	1:28:27 PM	6	901	R	0.1		**0**	**25**
103	4/11/2018	1:28:38 PM	5	804	R	0.1		**-2**	**-95**
104	4/11/2018	1:28:50 PM	0	877	R	0.1		**-13**	**-5**
105	4/11/2018	1:29:02 PM	8	833	R	0.1		**5**	**-59**
106	4/11/2018	1:29:13 PM	7	848	R	0.1		**3**	**-41**
107	4/11/2018	1:29:25 PM	0	843	R	0.1		**-13**	**-47**
108	4/11/2018	1:29:37 PM	6	876	R	0.1		**0**	**-6**
109	4/11/2018	1:29:48 PM	3	875	R	0.1		**-6**	**-7**
110	4/11/2018	1:30:57 PM	4	838	R	0.1	Grid 12	**-4**	**-53**
111	4/11/2018	1:31:09 PM	6	962	R	0.1		**0**	**100**
112	4/11/2018	1:31:21 PM	1	956	R	0.1		**-11**	**93**
113	4/11/2018	1:31:32 PM	0	936	R	0.1		**-13**	**68**
114	4/11/2018	1:31:44 PM	0	1003	R	0.1		**-13**	**151**
115	4/11/2018	1:31:56 PM	4	1023	R	0.1		**-4**	**176**
116	4/11/2018	1:32:07 PM	1	982	R	0.1		**-11**	**125**
117	4/11/2018	1:32:19 PM	0	950	R	0.1		**-13**	**85**
118	4/11/2018	1:32:31 PM	4	1070	R	0.1		**-4**	**234**
119	4/11/2018	1:32:43 PM	1	1053	R	0.1		**-11**	**213**
120	4/11/2018	1:34:27 PM	0	895	R	0.1	Grid 13	**-13**	**17**
121	4/11/2018	1:34:39 PM	5	811	R	0.1		**-2**	**-87**
122	4/11/2018	1:34:50 PM	1	886	R	0.1		**-11**	**6**
123	4/11/2018	1:35:02 PM	0	869	R	0.1		**-13**	**-15**
124	4/11/2018	1:35:14 PM	8	912	R	0.1		**5**	**38**
125	4/11/2018	1:35:26 PM	7	790	R	0.1		**3**	**-113**
126	4/11/2018	1:35:37 PM	1	838	R	0.1		**-11**	**-53**
127	4/11/2018	1:35:49 PM	6	817	R	0.1		**0**	**-79**
128	4/11/2018	1:36:01 PM	8	809	R	0.1		**5**	**-89**
129	4/11/2018	1:36:12 PM	5	842	R	0.1		**-2**	**-48**
130	4/11/2018	1:37:13 PM	7	862	R	0.1	Grid 14	**3**	**-24**
131	4/11/2018	1:37:25 PM	0	815	R	0.1		**-13**	**-82**
132	4/11/2018	1:37:36 PM	6	821	R	0.1		**0**	**-74**
133	4/11/2018	1:37:48 PM	0	939	R	0.1		**-13**	**72**
134	4/11/2018	1:38:00 PM	3	838	R	0.1		**-6**	**-53**
135	4/11/2018	1:38:11 PM	9	843	R	0.1		**7**	**-47**
136	4/11/2018	1:38:23 PM	2	958	R	0.1		**-9**	**95**
137	4/11/2018	1:38:35 PM	0	872	R	0.1		**-13**	**-11**
138	4/11/2018	1:38:47 PM	0	885	R	0.1		**-13**	**5**
139	4/11/2018	1:38:58 PM	0	846	R	0.1		**-13**	**-43**
140	4/11/2018	1:39:48 PM	0	796	R	0.1	Grid 15	**-13**	**-105**
141	4/11/2018	1:40:00 PM	13	849	R	0.1		**16**	**-40**
142	4/11/2018	1:40:11 PM	7	821	R	0.1		**3**	**-74**
143	4/11/2018	1:40:23 PM	9	805	R	0.1		**7**	**-94**
144	4/11/2018	1:40:35 PM	10	833	R	0.1		**10**	**-59**
145	4/11/2018	1:40:46 PM	2	837	R	0.1		**-9**	**-54**
146	4/11/2018	1:40:58 PM	0	874	R	0.1		**-13**	**-9**
147	4/11/2018	1:41:10 PM	0	958	R	0.1		**-13**	**95**
148	4/11/2018	1:41:21 PM	4	811	R	0.1		**-4**	**-87**
149	4/11/2018	1:41:33 PM	1	827	R	0.1		**-11**	**-67**
150	4/11/2018	1:42:25 PM	0	524	R	0.1	Grid 16	**-13**	**-442**

151	4/11/2018	1:42:37 PM	0	841	R	0.1		**-13**	**-50**
152	4/11/2018	1:42:49 PM	0	785	R	0.1		**-13**	**-119**
153	4/11/2018	1:43:00 PM	11	906	R	0.1		**12**	**31**
154	4/11/2018	1:43:12 PM	2	879	R	0.1		**-9**	**-2**
155	4/11/2018	1:43:24 PM	0	867	R	0.1		**-13**	**-17**
156	4/11/2018	1:43:36 PM	22	831	R	0.1		**37**	**-62**
157	4/11/2018	1:43:47 PM	5	805	R	0.1		**-2**	**-94**
158	4/11/2018	1:43:59 PM	1	867	R	0.1		**-11**	**-17**
159	4/11/2018	1:44:11 PM	4	854	R	0.1		**-4**	**-33**
160	4/11/2018	1:49:53 PM	5	911	R	0.1	Grid 17	**-2**	**37**
161	4/11/2018	1:50:04 PM	9	792	R	0.1		**7**	**-110**
162	4/11/2018	1:50:16 PM	7	826	R	0.1		**3**	**-68**
163	4/11/2018	1:50:28 PM	0	834	R	0.1		**-13**	**-58**
164	4/11/2018	1:50:40 PM	8	830	R	0.1		**5**	**-63**
165	4/11/2018	1:58:13 PM	0	866	R	0.1	Grid 19	**-13**	**-19**
166	4/11/2018	1:58:25 PM	9	953	R	0.1		**7**	**89**
167	4/11/2018	1:58:37 PM	2	926	R	0.1		**-9**	**56**
168	4/11/2018	1:58:49 PM	0	1022	R	0.1		**-13**	**175**
169	4/11/2018	1:59:00 PM	7	1064	R	0.1		**3**	**227**
170	4/11/2018	1:59:12 PM	1	828	R	0.1		**-11**	**-66**
171	4/11/2018	1:59:24 PM	3	799	R	0.1		**-6**	**-102**
172	4/11/2018	1:59:35 PM	7	763	R	0.1		**3**	**-146**
173	4/11/2018	1:59:47 PM	1	773	R	0.1		**-11**	**-134**
174	4/11/2018	1:59:59 PM	6	954	R	0.1		**0**	**90**
175	4/11/2018	2:00:55 PM	0	677	R	0.1	Grid 20	**-13**	**-253**
176	4/11/2018	2:01:06 PM	7	834	R	0.1		**3**	**-58**
177	4/11/2018	2:01:18 PM	9	798	R	0.1		**7**	**-103**
178	4/11/2018	2:01:30 PM	6	858	R	0.1		**0**	**-28**
179	4/11/2018	2:01:41 PM	8	785	R	0.1		**5**	**-119**
180	4/11/2018	2:01:53 PM	0	771	R	0.1		**-13**	**-136**
181	4/11/2018	2:02:05 PM	7	747	R	0.1		**3**	**-166**
182	4/11/2018	2:02:16 PM	11	807	R	0.1		**12**	**-92**
183	4/11/2018	2:02:28 PM	2	799	R	0.1		**-9**	**-102**
184	4/11/2018	2:02:40 PM	0	876	R	0.1		**-13**	**-6**
185	4/11/2018	2:03:37 PM	0	811	R	0.1	Grid 21	**-13**	**-87**
186	4/11/2018	2:03:49 PM	4	784	R	0.1		**-4**	**-120**
187	4/11/2018	2:04:01 PM	1	845	R	0.1		**-11**	**-45**
188	4/11/2018	2:04:12 PM	12	843	R	0.1		**14**	**-47**
189	4/11/2018	2:04:24 PM	3	838	R	0.1		**-6**	**-53**
190	4/11/2018	2:04:36 PM	4	822	R	0.1		**-4**	**-73**
191	4/11/2018	2:04:48 PM	1	856	R	0.1		**-11**	**-31**
192	4/11/2018	2:04:59 PM	0	844	R	0.1		**-13**	**-46**
193	4/11/2018	2:05:11 PM	3	847	R	0.1		**-6**	**-42**
194	4/11/2018	2:05:23 PM	9	824	R	0.1		**7**	**-71**
195	4/11/2018	2:06:32 PM	7	875	R	0.1	Grid 22	**3**	**-7**
196	4/11/2018	2:06:43 PM	0	735	R	0.1		**-13**	**-181**
197	4/11/2018	2:06:55 PM	8	663	R	0.1		**5**	**-270**
198	4/11/2018	2:07:07 PM	8	772	R	0.1		**5**	**-135**
199	4/11/2018	2:07:18 PM	6	819	R	0.1		**0**	**-77**
200	4/11/2018	2:07:30 PM	1	799	R	0.1		**-11**	**-102**
201	4/11/2018	2:07:42 PM	10	823	R	0.1		**10**	**-72**
202	4/11/2018	2:07:53 PM	2	795	R	0.1		**-9**	**-106**
203	4/11/2018	2:08:05 PM	8	844	R	0.1		**5**	**-46**
204	4/11/2018	2:08:17 PM	0	788	R	0.1		**-13**	**-115**
205	4/11/2018	2:09:54 PM	7	796	R	0.1	Grid 23	**3**	**-105**

206	4/11/2018	2:10:06 PM	3	864	R	0.1		**-6**	**-21**
207	4/11/2018	2:10:17 PM	0	907	R	0.1		**-13**	**32**
208	4/11/2018	2:10:29 PM	4	874	R	0.1		**-4**	**-9**
209	4/11/2018	2:10:41 PM	5	842	R	0.1		**-2**	**-48**
210	4/11/2018	2:10:53 PM	0	802	R	0.1		**-13**	**-98**
211	4/11/2018	2:11:04 PM	3	851	R	0.1		**-6**	**-37**
212	4/11/2018	2:11:16 PM	5	848	R	0.1		**-2**	**-41**
213	4/11/2018	2:11:28 PM	0	853	R	0.1		**-13**	**-35**
214	4/11/2018	2:11:39 PM	4	818	R	0.1		**-4**	**-78**
215	4/11/2018	2:15:01 PM	0	802	R	0.1	Grid 24	**-13**	**-98**
216	4/11/2018	2:15:12 PM	0	802	R	0.1		**-13**	**-98**
217	4/11/2018	2:15:24 PM	4	844	R	0.1		**-4**	**-46**
218	4/11/2018	2:15:36 PM	9	872	R	0.1		**7**	**-11**
219	4/11/2018	2:15:47 PM	2	907	R	0.1		**-9**	**32**
220	4/11/2018	2:15:59 PM	0	813	R	0.1		**-13**	**-84**
221	4/11/2018	2:16:11 PM	0	953	R	0.1		**-13**	**89**
222	4/11/2018	2:16:22 PM	0	1027	R	0.1		**-13**	**181**
223	4/11/2018	2:16:34 PM	7	869	R	0.1		**3**	**-15**
224	4/11/2018	2:16:46 PM	1	872	R	0.1		**-11**	**-11**
225	4/11/2018	2:20:17 PM	16	888	R	0.1	Grid 25	**23**	**9**
226	4/11/2018	2:20:28 PM	3	940	R	0.1		**-6**	**73**
227	4/11/2018	2:20:40 PM	4	896	R	0.1		**-4**	**19**
228	4/11/2018	2:20:52 PM	6	845	R	0.1		**0**	**-45**
229	4/11/2018	2:21:03 PM	7	891	R	0.1		**3**	**12**
230	4/11/2018	2:21:15 PM	1	1088	R	0.1		**-11**	**256**
231	4/11/2018	2:21:27 PM	0	1010	R	0.1		**-13**	**160**
232	4/11/2018	2:21:38 PM	5	917	R	0.1		**-2**	**45**
233	4/11/2018	2:21:50 PM	0	973	R	0.1		**-13**	**114**
234	4/11/2018	2:22:02 PM	4	1071	R	0.1		**-4**	**235**
235	4/11/2018	2:23:04 PM	0	825	R	0.1	Grid 26	**-13**	**-69**
236	4/11/2018	2:23:15 PM	8	841	R	0.1		**5**	**-50**
237	4/11/2018	2:23:27 PM	0	933	R	0.1		**-13**	**64**
238	4/11/2018	2:23:39 PM	7	894	R	0.1		**3**	**16**
239	4/11/2018	2:23:51 PM	7	1021	R	0.1		**3**	**173**
240	4/11/2018	2:24:02 PM	5	932	R	0.1		**-2**	**63**
241	4/11/2018	2:24:14 PM	9	895	R	0.1		**7**	**17**
242	4/11/2018	2:24:26 PM	2	895	R	0.1		**-9**	**17**
243	4/11/2018	2:24:37 PM	0	924	R	0.1		**-13**	**53**
244	4/11/2018	2:24:49 PM	8	821	R	0.1		**5**	**-74**
245	4/11/2018	2:25:46 PM	15	812	R	0.1	Grid 27	**21**	**-85**
246	4/11/2018	2:25:57 PM	3	981	R	0.1		**-6**	**124**
247	4/11/2018	2:26:09 PM	3	913	R	0.1		**-6**	**40**
248	4/11/2018	2:26:21 PM	4	838	R	0.1		**-4**	**-53**
249	4/11/2018	2:26:32 PM	1	899	R	0.1		**-11**	**22**
250	4/11/2018	2:26:44 PM	0	833	R	0.1		**-13**	**-59**
251	4/11/2018	2:26:56 PM	0	966	R	0.1		**-13**	**105**
252	4/11/2018	2:27:07 PM	3	1021	R	0.1		**-6**	**173**
253	4/11/2018	2:27:19 PM	10	860	R	0.1		**10**	**-26**
254	4/11/2018	2:27:31 PM	14	788	R	0.1		**19**	**-115**
255	4/11/2018	2:28:25 PM	6	895	R	0.1	Grid 28	**0**	**17**
256	4/11/2018	2:28:37 PM	0	831	R	0.1		**-13**	**-62**
257	4/11/2018	2:28:48 PM	7	829	R	0.1		**3**	**-64**
258	4/11/2018	2:29:00 PM	5	874	R	0.1		**-2**	**-9**
259	4/11/2018	2:29:12 PM	0	834	R	0.1		**-13**	**-58**
260	4/11/2018	2:29:23 PM	3	839	R	0.1		**-6**	**-52**

261	4/11/2018	2:29:35 PM	0	851	R	0.1		**-13**	**-37**
262	4/11/2018	2:29:47 PM	3	956	R	0.1		**-6**	**93**
263	4/11/2018	2:29:59 PM	0	805	R	0.1		**-13**	**-94**
264	4/11/2018	2:30:10 PM	9	912	R	0.1		**7**	**38**
265	4/11/2018	2:31:33 PM	0	820	R	0.1	Grid 29	**-13**	**-76**
266	4/11/2018	2:31:45 PM	6	835	R	0.1		**0**	**-57**
267	4/11/2018	2:31:57 PM	5	913	R	0.1		**-2**	**40**
268	4/11/2018	2:32:08 PM	0	957	R	0.1		**-13**	**94**
269	4/11/2018	2:32:20 PM	6	1085	R	0.1		**0**	**253**
270	4/11/2018	2:32:32 PM	0	888	R	0.1		**-13**	**9**
271	4/11/2018	2:32:43 PM	7	921	R	0.1		**3**	**50**
272	4/11/2018	2:32:55 PM	1	1022	R	0.1		**-11**	**175**
273	4/11/2018	2:33:07 PM	0	989	R	0.1		**-13**	**134**
274	4/11/2018	2:33:19 PM	4	833	R	0.1		**-4**	**-59**
275	4/11/2018	2:34:28 PM	5	901	R	0.1	Grid 30	**-2**	**25**
276	4/11/2018	2:34:39 PM	1	864	R	0.1		**-11**	**-21**
277	4/11/2018	2:34:51 PM	4	1036	R	0.1		**-4**	**192**
278	4/11/2018	2:35:03 PM	3	1031	R	0.1		**-6**	**186**
279	4/11/2018	2:35:14 PM	6	970	R	0.1		**0**	**110**
		Maximum:	**22**	**1088**				**37**	**256**
		Average:	**4**	**861**				**-4**	**-25**
		StDev:	**4**	**77**				**9**	**95**

Building 227

Room 100 Lower Walls

2360 SN:268497
43-37 SN:093965
Cal Due Date: 10/10/2018
Surveyor: Thomas Hogan
Bldg 227
Room 100 Lower Wall Grids 1 thru 28 34 thru 38
Alpha Efficiency: 0.31
Beta/Gamma Efficiency: 0.352 Metal
Alpha Background: 4.2 3.3
Beta/Gamma Background: 551 483

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/11/2018	10:16:43	AM	0	560	R	0.1	Grid 1	**-9**	**12**
2	4/11/2018	10:16:55	AM	0	557	R	0.1		**-9**	**8**
3	4/11/2018	10:17:06	AM	14	520	R	0.1		**22**	**-40**
4	4/11/2018	10:17:18	AM	11	521	R	0.1		**15**	**-39**
5	4/11/2018	10:17:30	AM	11	502	R	0.1		**15**	**-64**
6	4/11/2018	10:17:42	AM	6	593	R	0.1		**4**	**55**
7	4/11/2018	10:17:53	AM	1	535	R	0.1		**-7**	**-21**
8	4/11/2018	10:18:05	AM	0	598	R	0.1		**-9**	**61**
9	4/11/2018	10:18:17	AM	0	503	R	0.1		**-9**	**-62**
10	4/11/2018	10:27:39	AM	5	572	R	0.1	Grid 2	**2**	**27**
11	4/11/2018	10:27:51	AM	1	490	R	0.1		**-7**	**-79**
12	4/11/2018	10:28:02	AM	2	515	R	0.1		**-5**	**-47**
13	4/11/2018	10:28:14	AM	1	530	R	0.1		**-7**	**-27**
14	4/11/2018	10:28:26	AM	2	543	R	0.1		**-5**	**-10**
15	4/11/2018	10:28:38	AM	2	521	R	0.1		**-5**	**-39**
16	4/11/2018	10:28:49	AM	1	585	R	0.1		**-7**	**44**
17	4/11/2018	10:29:01	AM	3	565	R	0.1		**-3**	**18**
18	4/11/2018	10:29:13	AM	0	502	R	0.1		**-9**	**-64**
19	4/11/2018	10:29:25	AM	0	550	R	0.1		**-9**	**-1**
20	4/11/2018	10:32:23	AM	11	501	R	0.1	Grid 3	**15**	**-65**
21	4/11/2018	10:32:34	AM	13	543	R	0.1		**20**	**-10**
22	4/11/2018	10:32:46	AM	11	578	R	0.1		**15**	**35**
23	4/11/2018	10:32:58	AM	6	544	R	0.1		**4**	**-9**
24	4/11/2018	10:33:10	AM	1	562	R	0.1		**-7**	**14**
25	4/11/2018	10:33:21	AM	0	569	R	0.1		**-9**	**23**
26	4/11/2018	10:33:33	AM	2	545	R	0.1		**-5**	**-8**
27	4/11/2018	10:33:45	AM	1	524	R	0.1		**-7**	**-35**
28	4/11/2018	10:33:57	AM	3	524	R	0.1		**-3**	**-35**
29	4/11/2018	10:34:08	AM	0	508	R	0.1		**-9**	**-56**
30	4/11/2018	10:37:42	AM	0	506	R	0.1	Grid 4	**-9**	**-59**
31	4/11/2018	10:37:53	AM	0	530	R	0.1		**-9**	**-27**
32	4/11/2018	10:38:05	AM	5	557	R	0.1		**2**	**8**
33	4/11/2018	10:38:17	AM	7	557	R	0.1		**6**	**8**
34	4/11/2018	10:38:29	AM	1	528	R	0.1		**-7**	**-30**
35	4/11/2018	10:38:40	AM	2	551	R	0.1		**-5**	**0**
36	4/11/2018	10:38:52	AM	2	631	R	0.1		**-5**	**104**
37	4/11/2018	10:39:04	AM	1	591	R	0.1		**-7**	**52**
38	4/11/2018	10:39:16	AM	1	536	R	0.1		**-7**	**-20**

39	4/11/2018	10:39:27	AM	2	535	R	0.1		**-5**	**-21**
40	4/11/2018	10:44:56	AM	0	558	R	0.1	Grid 5	**-9**	**9**
41	4/11/2018	10:45:08	AM	15	566	R	0.1		**24**	**20**
42	4/11/2018	10:45:20	AM	3	570	R	0.1		**-3**	**25**
43	4/11/2018	10:45:31	AM	0	551	R	0.1		**-9**	**0**
44	4/11/2018	10:45:43	AM	11	620	R	0.1		**15**	**90**
45	4/11/2018	10:46:09	AM	5	534	R	0.1		**2**	**-22**
46	4/11/2018	10:46:21	AM	1	585	R	0.1		**-7**	**44**
47	4/11/2018	10:46:32	AM	9	551	R	0.1		**11**	**0**
48	4/11/2018	10:46:44	AM	2	507	R	0.1		**-5**	**-57**
49	4/11/2018	10:46:56	AM	0	562	R	0.1		**-9**	**14**
50	4/11/2018	10:48:54	AM	3	521	R	0.1	Grid 6	**-3**	**-39**
51	4/11/2018	10:49:05	AM	2	542	R	0.1		**-5**	**-12**
52	4/11/2018	10:49:17	AM	1	586	R	0.1		**-7**	**46**
53	4/11/2018	10:49:29	AM	1	548	R	0.1		**-7**	**-4**
54	4/11/2018	10:49:41	AM	2	517	R	0.1		**-5**	**-44**
55	4/11/2018	10:49:52	AM	3	550	R	0.1		**-3**	**-1**
56	4/11/2018	10:50:04	AM	0	759	R	0.1		**-9**	**271**
57	4/11/2018	10:50:16	AM	12	670	R	0.1		**17**	**155**
58	4/11/2018	10:50:28	AM	8	598	R	0.1		**8**	**61**
59	4/11/2018	10:50:39	AM	7	563	R	0.1		**6**	**16**
60	4/11/2018	10:52:19	AM	0	512	R	0.1	Grid 7	**-9**	**-51**
61	4/11/2018	10:52:31	AM	5	528	R	0.1		**2**	**-30**
62	4/11/2018	10:52:42	AM	1	588	R	0.1		**-7**	**48**
63	4/11/2018	10:52:54	AM	0	650	R	0.1		**-9**	**129**
64	4/11/2018	10:53:06	AM	3	671	R	0.1		**-3**	**156**
65	4/11/2018	10:53:18	AM	0	1059	R	0.1		**-9**	**661**
66	4/11/2018	10:53:29	AM	0	1322	R	0.1		**-9**	**1004**
67	4/11/2018	10:53:41	AM	5	1460	R	0.1		**2**	**1183**
68	4/11/2018	10:53:53	AM	9	1000	R	0.1		**11**	**584**
69	4/11/2018	10:54:05	AM	2	684	R	0.1		**-5**	**173**
70	4/11/2018	10:57:02	AM	0	540	R	0.1	Grid 8	**-9**	**-14**
71	4/11/2018	10:57:14	AM	0	784	R	0.1		**-9**	**303**
72	4/11/2018	10:57:25	AM	4	1087	R	0.1		**0**	**698**
73	4/11/2018	10:57:37	AM	1	1043	R	0.1		**-7**	**640**
74	4/11/2018	10:57:49	AM	0	1222	R	0.1		**-9**	**873**
75	4/11/2018	10:58:01	AM	0	1104	R	0.1		**-9**	**720**
76	4/11/2018	10:58:12	AM	11	1346	R	0.1		**15**	**1035**
77	4/11/2018	10:58:24	AM	2	1324	R	0.1		**-5**	**1006**
78	4/11/2018	10:58:36	AM	0	1126	R	0.1		**-9**	**748**
79	4/11/2018	10:58:48	AM	4	978	R	0.1		**0**	**556**
80	4/11/2018	12:49:38	PM	2	1120	R	0.1	Grid 9	**-5**	**741**
81	4/11/2018	12:49:50	PM	3	1356	R	0.1		**-3**	**1048**
82	4/11/2018	12:50:02	PM	2	927	R	0.1		**-5**	**489**
83	4/11/2018	12:50:14	PM	9	913	R	0.1		**11**	**471**
84	4/11/2018	12:50:25	PM	2	826	R	0.1		**-5**	**358**
85	4/11/2018	1:05:40	PM	2	533	R	0.1	Grid 10	**-5**	**-23**
86	4/11/2018	1:05:52	PM	1	637	R	0.1		**-7**	**112**
87	4/11/2018	1:06:04	PM	0	581	R	0.1		**-9**	**39**
88	4/11/2018	1:06:15	PM	16	713	R	0.1		**26**	**211**
89	4/11/2018	1:06:27	PM	7	842	R	0.1		**6**	**379**
90	4/11/2018	1:06:39	PM	1	760	R	0.1		**-7**	**272**
91	4/11/2018	1:06:51	PM	0	756	R	0.1		**-9**	**267**

92	4/11/2018	1:07:02 PM	1	615	R	0.1		**-7**	**83**
93	4/11/2018	1:07:14 PM	2	555	R	0.1		**-5**	**5**
94	4/11/2018	1:07:26 PM	2	618	R	0.1		**-5**	**87**
95	4/11/2018	1:10:41 PM	0	628	R	0.1	Grid 11	**-9**	**100**
96	4/11/2018	1:10:53 PM	4	752	R	0.1		**0**	**262**
97	4/11/2018	1:11:05 PM	1	738	R	0.1		**-7**	**243**
98	4/11/2018	1:11:16 PM	4	895	R	0.1		**0**	**448**
99	4/11/2018	1:11:28 PM	0	872	R	0.1		**-9**	**418**
100	4/11/2018	1:23:12 PM	3	578	R	0.1	Grid 12	**-3**	**35**
101	4/11/2018	1:23:24 PM	0	567	R	0.1		**-9**	**21**
102	4/11/2018	1:23:36 PM	0	534	R	0.1		**-9**	**-22**
103	4/11/2018	1:23:47 PM	2	526	R	0.1		**-5**	**-33**
104	4/11/2018	1:23:59 PM	0	538	R	0.1		**-9**	**-17**
105	4/11/2018	1:26:13 PM	8	535	R	0.1	Grid 13	**8**	**-21**
106	4/11/2018	1:26:25 PM	2	581	R	0.1		**-5**	**39**
107	4/11/2018	1:26:37 PM	0	557	R	0.1		**-9**	**8**
108	4/11/2018	1:26:49 PM	0	557	R	0.1		**-9**	**8**
109	4/11/2018	1:27:00 PM	0	561	R	0.1		**-9**	**13**
110	4/11/2018	1:27:12 PM	13	601	R	0.1		**20**	**65**
111	4/11/2018	1:27:24 PM	12	533	R	0.1		**17**	**-23**
112	4/11/2018	1:27:36 PM	6	525	R	0.1		**4**	**-34**
113	4/11/2018	1:27:47 PM	1	580	R	0.1		**-7**	**38**
114	4/11/2018	1:27:59 PM	5	550	R	0.1		**2**	**-1**
115	4/11/2018	1:29:43 PM	0	499	R	0.1	Grid 14	**-9**	**-68**
116	4/11/2018	1:29:55 PM	6	502	R	0.1		**4**	**-64**
117	4/11/2018	1:30:06 PM	1	544	R	0.1		**-7**	**-9**
118	4/11/2018	1:30:18 PM	10	523	R	0.1		**13**	**-36**
119	4/11/2018	1:30:30 PM	7	543	R	0.1		**6**	**-10**
120	4/11/2018	1:30:42 PM	1	514	R	0.1		**-7**	**-48**
121	4/11/2018	1:30:53 PM	0	499	R	0.1		**-9**	**-68**
122	4/11/2018	1:31:05 PM	0	489	R	0.1		**-9**	**-81**
123	4/11/2018	1:31:17 PM	8	523	R	0.1		**8**	**-36**
124	4/11/2018	1:31:29 PM	2	506	R	0.1		**-5**	**-59**
125	4/11/2018	1:34:44 PM	0	509	R	0.1	Grid 15	**-9**	**-55**
126	4/11/2018	1:34:56 PM	0	565	R	0.1		**-9**	**18**
127	4/11/2018	1:35:08 PM	11	552	R	0.1		**15**	**1**
128	4/11/2018	1:35:19 PM	2	494	R	0.1		**-5**	**-74**
129	4/11/2018	1:35:31 PM	2	547	R	0.1		**-5**	**-5**
130	4/11/2018	1:35:43 PM	0	556	R	0.1		**-9**	**7**
131	4/11/2018	1:35:55 PM	1	545	R	0.1		**-7**	**-8**
132	4/11/2018	1:36:06 PM	2	502	R	0.1		**-5**	**-64**
133	4/11/2018	1:36:18 PM	3	507	R	0.1		**-3**	**-57**
134	4/11/2018	1:36:30 PM	1	497	R	0.1		**-7**	**-70**
135	4/11/2018	1:38:48 PM	2	524	R	0.1	Grid 16	**-5**	**-35**
136	4/11/2018	1:39:00 PM	0	688	R	0.1		**-9**	**178**
137	4/11/2018	1:39:12 PM	10	729	R	0.1		**13**	**232**
138	4/11/2018	1:39:23 PM	2	628	R	0.1		**-5**	**100**
139	4/11/2018	1:39:35 PM	3	766	R	0.1		**-3**	**280**
140	4/11/2018	1:39:47 PM	2	665	R	0.1		**-5**	**148**
141	4/11/2018	1:39:59 PM	1	630	R	0.1		**-7**	**103**
142	4/11/2018	1:40:10 PM	0	648	R	0.1		**-9**	**126**
143	4/11/2018	1:40:22 PM	8	802	R	0.1		**8**	**327**
144	4/11/2018	1:40:34 PM	7	943	R	0.1		**6**	**510**

145	4/11/2018	1:42:20 PM	0	568	R	0.1	Grid 17	**-9**	**22**
146	4/11/2018	1:42:32 PM	0	726	R	0.1		**-9**	**228**
147	4/11/2018	1:42:44 PM	7	782	R	0.1		**6**	**301**
148	4/11/2018	1:42:56 PM	1	672	R	0.1		**-7**	**158**
149	4/11/2018	1:43:07 PM	2	734	R	0.1		**-5**	**238**
150	4/11/2018	1:43:19 PM	1	1085	R	0.1		**-7**	**695**
151	4/11/2018	1:43:31 PM	1	1180	R	0.1		**-7**	**819**
152	4/11/2018	1:43:43 PM	3	1236	R	0.1		**-3**	**892**
153	4/11/2018	1:43:54 PM	2	915	R	0.1		**-5**	**474**
154	4/11/2018	1:44:06 PM	2	676	R	0.1		**-5**	**163**
155	4/11/2018	1:53:40 PM	1	585	R	0.1	Grid 18	**-7**	**44**
156	4/11/2018	1:53:51 PM	1	860	R	0.1		**-7**	**402**
157	4/11/2018	1:54:03 PM	11	881	R	0.1		**15**	**430**
158	4/11/2018	1:54:15 PM	14	902	R	0.1		**22**	**457**
159	4/11/2018	1:54:27 PM	14	896	R	0.1		**22**	**449**
160	4/11/2018	1:54:38 PM	3	922	R	0.1		**-3**	**483**
161	4/11/2018	1:54:50 PM	0	847	R	0.1		**-9**	**385**
162	4/11/2018	1:55:02 PM	0	817	R	0.1		**-9**	**346**
163	4/11/2018	1:55:14 PM	5	683	R	0.1		**2**	**172**
164	4/11/2018	1:55:25 PM	8	626	R	0.1		**8**	**98**
165	4/11/2018	1:57:44 PM	13	529	R	0.1	Grid 19	**20**	**-29**
166	4/11/2018	1:57:56 PM	3	550	R	0.1		**-3**	**-1**
167	4/11/2018	1:58:08 PM	0	675	R	0.1		**-9**	**161**
168	4/11/2018	1:58:20 PM	10	560	R	0.1		**13**	**12**
169	4/11/2018	1:58:31 PM	14	592	R	0.1		**22**	**53**
170	4/11/2018	1:58:43 PM	3	499	R	0.1		**-3**	**-68**
171	4/11/2018	1:58:55 PM	3	488	R	0.1		**-3**	**-82**
172	4/11/2018	1:59:07 PM	19	531	R	0.1		**33**	**-26**
173	4/11/2018	1:59:18 PM	4	594	R	0.1		**0**	**56**
174	4/11/2018	1:59:30 PM	10	585	R	0.1		**13**	**44**
175	4/11/2018	2:01:43 PM	0	555	R	0.1	Grid 20	**-9**	**5**
176	4/11/2018	2:01:55 PM	3	589	R	0.1		**-3**	**49**
177	4/11/2018	2:02:06 PM	2	527	R	0.1		**-5**	**-31**
178	4/11/2018	2:02:18 PM	1	512	R	0.1		**-7**	**-51**
179	4/11/2018	2:02:30 PM	2	546	R	0.1		**-5**	**-7**
180	4/11/2018	2:02:42 PM	4	513	R	0.1		**0**	**-49**
181	4/11/2018	2:02:53 PM	1	491	R	0.1		**-7**	**-78**
182	4/11/2018	2:03:05 PM	0	508	R	0.1		**-9**	**-56**
183	4/11/2018	2:03:17 PM	0	532	R	0.1		**-9**	**-25**
184	4/11/2018	2:03:29 PM	0	564	R	0.1		**-9**	**17**
185	4/11/2018	2:04:52 PM	0	499	R	0.1	Grid 21	**-9**	**-68**
186	4/11/2018	2:05:04 PM	15	480	R	0.1		**24**	**-92**
187	4/11/2018	2:05:16 PM	3	510	R	0.1		**-3**	**-53**
188	4/11/2018	2:05:27 PM	3	525	R	0.1		**-3**	**-34**
189	4/11/2018	2:05:39 PM	2	498	R	0.1		**-5**	**-69**
190	4/11/2018	2:05:51 PM	2	552	R	0.1		**-5**	**1**
191	4/11/2018	2:06:03 PM	2	551	R	0.1		**-5**	**0**
192	4/11/2018	2:06:14 PM	1	526	R	0.1		**-7**	**-33**
193	4/11/2018	2:06:26 PM	2	510	R	0.1		**-5**	**-53**
194	4/11/2018	2:06:38 PM	10	572	R	0.1		**13**	**27**
195	4/11/2018	2:08:12 PM	13	588	R	0.1	Grid 22	**20**	**48**
196	4/11/2018	2:08:24 PM	3	535	R	0.1		**-3**	**-21**
197	4/11/2018	2:08:36 PM	8	483	R	0.1		**8**	**-89**

198	4/11/2018	2:08:47 PM	2	517	R	0.1		**-5**	**-44**
199	4/11/2018	2:08:59 PM	0	502	R	0.1		**-9**	**-64**
200	4/11/2018	2:11:07 PM	0	528	R	0.1	Grid 23	**-9**	**-30**
201	4/11/2018	2:11:19 PM	10	507	R	0.1		**13**	**-57**
202	4/11/2018	2:11:31 PM	2	533	R	0.1		**-5**	**-23**
203	4/11/2018	2:11:42 PM	0	532	R	0.1		**-9**	**-25**
204	4/11/2018	2:11:54 PM	3	529	R	0.1		**-3**	**-29**
205	4/11/2018	2:12:06 PM	2	562	R	0.1		**-5**	**14**
206	4/11/2018	2:12:18 PM	1	571	R	0.1		**-7**	**26**
207	4/11/2018	2:12:29 PM	2	523	R	0.1		**-5**	**-36**
208	4/11/2018	2:12:41 PM	1	498	R	0.1		**-7**	**-69**
209	4/11/2018	2:12:53 PM	1	499	R	0.1		**-7**	**-68**
210	4/11/2018	2:15:59 PM	8	536	R	0.1	Grid 24	**8**	**-20**
211	4/11/2018	2:16:10 PM	7	568	R	0.1		**6**	**22**
212	4/11/2018	2:16:22 PM	1	521	R	0.1		**-7**	**-39**
213	4/11/2018	2:16:34 PM	0	506	R	0.1		**-9**	**-59**
214	4/11/2018	2:16:46 PM	9	504	R	0.1		**11**	**-61**
215	4/11/2018	2:16:57 PM	5	504	R	0.1		**2**	**-61**
216	4/11/2018	2:17:09 PM	1	508	R	0.1		**-7**	**-56**
217	4/11/2018	2:17:21 PM	2	501	R	0.1		**-5**	**-65**
218	4/11/2018	2:17:33 PM	2	551	R	0.1		**-5**	**0**
219	4/11/2018	2:17:44 PM	3	505	R	0.1		**-3**	**-60**
220	4/11/2018	2:19:30 PM	12	498	R	0.1	Grid 25	**17**	**-69**
221	4/11/2018	2:19:42 PM	4	521	R	0.1		**0**	**-39**
222	4/11/2018	2:19:54 PM	1	544	R	0.1		**-7**	**-9**
223	4/11/2018	2:20:05 PM	0	530	R	0.1		**-9**	**-27**
224	4/11/2018	2:20:17 PM	0	554	R	0.1		**-9**	**4**
225	4/11/2018	2:20:29 PM	6	528	R	0.1		**4**	**-30**
226	4/11/2018	2:20:41 PM	1	507	R	0.1		**-7**	**-57**
227	4/11/2018	2:20:52 PM	2	511	R	0.1		**-5**	**-52**
228	4/11/2018	2:21:04 PM	1	564	R	0.1		**-7**	**17**
229	4/11/2018	2:21:16 PM	2	526	R	0.1		**-5**	**-33**
230	4/11/2018	2:23:40 PM	2	487	R	0.1	Grid 26	**-5**	**-83**
231	4/11/2018	2:23:52 PM	3	562	R	0.1		**-3**	**14**
232	4/11/2018	2:24:04 PM	1	522	R	0.1		**-7**	**-38**
233	4/11/2018	2:24:15 PM	2	511	R	0.1		**-5**	**-52**
234	4/11/2018	2:24:27 PM	8	502	R	0.1		**8**	**-64**
235	4/11/2018	2:24:39 PM	2	477	R	0.1		**-5**	**-96**
236	4/11/2018	2:24:51 PM	0	626	R	0.1		**-9**	**98**
237	4/11/2018	2:25:02 PM	0	520	R	0.1		**-9**	**-40**
238	4/11/2018	2:25:14 PM	11	496	R	0.1		**15**	**-72**
239	4/11/2018	2:25:26 PM	2	502	R	0.1		**-5**	**-64**
240	4/11/2018	2:27:33 PM	2	565	R	0.1	Grid 27	**-5**	**18**
241	4/11/2018	2:27:45 PM	1	502	R	0.1		**-7**	**-64**
242	4/11/2018	2:27:57 PM	0	560	R	0.1		**-9**	**12**
243	4/11/2018	2:28:08 PM	5	535	R	0.1		**2**	**-21**
244	4/11/2018	2:28:20 PM	1	603	R	0.1		**-7**	**68**
245	4/11/2018	2:28:32 PM	0	614	R	0.1		**-9**	**82**
246	4/11/2018	2:28:44 PM	0	603	R	0.1		**-9**	**68**
247	4/11/2018	2:28:55 PM	8	617	R	0.1		**8**	**86**
248	4/11/2018	2:29:07 PM	2	493	R	0.1		**-5**	**-75**
249	4/11/2018	2:29:19 PM	7	483	R	0.1		**6**	**-89**
250	4/11/2018	2:42:15 PM	2	556	R	0.1	Grid 28	**-5**	**7**

251	4/11/2018	2:42:27 PM	1	524	R	0.1		**-7**	**-35**
252	4/11/2018	2:42:39 PM	2	481	R	0.1		**-5**	**-91**
253	4/11/2018	2:42:51 PM	0	550	R	0.1		**-9**	**-1**
254	4/11/2018	2:43:02 PM	5	551	R	0.1		**2**	**0**
255	4/12/2018	10:29:06 AM	7	482	R	0.1	Grid 34	**6**	**-90**
256	4/12/2018	10:29:18 AM	5	722	R	0.1		**2**	**223**
257	4/12/2018	10:29:30 AM	1	636	R	0.1		**-7**	**111**
258	4/12/2018	10:29:42 AM	0	784	R	0.1		**-9**	**303**
259	4/12/2018	10:29:53 AM	0	819	R	0.1		**-9**	**349**
260	4/12/2018	10:30:49 AM	9	523	R	0.1		**11**	**-36**
261	4/12/2018	10:31:01 AM	2	589	R	0.1		**-5**	**49**
262	4/12/2018	10:31:13 AM	2	502	R	0.1		**-5**	**-64**
263	4/12/2018	10:31:25 AM	1	499	R	0.1		**-7**	**-68**
264	4/12/2018	10:31:36 AM	2	533	R	0.1		**-5**	**-23**
265	4/12/2018	10:36:23 AM	1	498	R	0.1	Grid 35	**-7**	**-69**
266	4/12/2018	10:36:35 AM	2	557	R	0.1		**-5**	**8**
267	4/12/2018	10:36:47 AM	2	487	R	0.1		**-5**	**-83**
268	4/12/2018	10:36:58 AM	1	523	R	0.1		**-7**	**-36**
269	4/12/2018	10:37:10 AM	6	498	R	0.1		**4**	**-69**
270	4/12/2018	10:37:22 AM	1	507	R	0.1		**-7**	**-57**
271	4/12/2018	10:37:34 AM	12	523	R	0.1		**17**	**-36**
272	4/12/2018	10:37:45 AM	3	487	R	0.1		**-3**	**-83**
273	4/12/2018	10:37:57 AM	2	517	R	0.1		**-5**	**-44**
274	4/12/2018	10:38:09 AM	1	508	R	0.1		**-7**	**-56**
275	4/12/2018	10:41:49 AM	2	495	R	0.1	Grid 36	**-5**	**-73**
276	4/12/2018	10:42:01 AM	2	530	R	0.1		**-5**	**-27**
277	4/12/2018	10:42:13 AM	7	507	R	0.1		**6**	**-57**
278	4/12/2018	10:42:24 AM	6	554	R	0.1		**4**	**4**
279	4/12/2018	10:42:36 AM	1	514	R	0.1		**-7**	**-48**
280	4/12/2018	10:42:48 AM	5	551	R	0.1		**2**	**0**
281	4/12/2018	10:43:00 AM	1	520	R	0.1		**-7**	**-40**
282	4/12/2018	10:43:11 AM	0	522	R	0.1		**-9**	**-38**
283	4/12/2018	10:43:23 AM	11	480	R	0.1		**15**	**-92**
284	4/12/2018	10:43:35 AM	2	499	R	0.1		**-5**	**-68**
285	4/12/2018	10:46:25 AM	1	517	R	0.1	Grid 37	**-7**	**-44**
286	4/12/2018	10:46:37 AM	2	527	R	0.1		**-5**	**-31**
287	4/12/2018	10:46:48 AM	1	569	R	0.1		**-7**	**23**
288	4/12/2018	10:47:00 AM	0	563	R	0.1		**-9**	**16**
289	4/12/2018	10:47:12 AM	11	556	R	0.1		**15**	**7**
290	4/12/2018	10:47:24 AM	2	523	R	0.1		**-5**	**-36**
291	4/12/2018	10:47:35 AM	0	513	R	0.1		**-9**	**-49**
292	4/12/2018	10:47:47 AM	0	528	R	0.1		**-9**	**-30**
293	4/12/2018	10:47:59 AM	10	493	R	0.1		**13**	**-75**
294	4/12/2018	10:48:11 AM	2	488	R	0.1		**-5**	**-82**
295	4/12/2018	10:49:50 AM	0	498	R	0.1	Grid 38	**-9**	**-69**
296	4/12/2018	10:50:02 AM	10	517	R	0.1		**13**	**-44**
297	4/12/2018	10:50:14 AM	11	581	R	0.1		**15**	**39**
298	4/12/2018	10:50:26 AM	2	636	R	0.1		**-5**	**111**
299	4/12/2018	10:50:38 AM	12	516	R	0.1		**17**	**-46**
300	4/12/2018	10:50:49 AM	3	610	R	0.1		**-3**	**77**
301	4/12/2018	10:51:01 AM	2	523	R	0.1		**-5**	**-36**
302	4/12/2018	10:51:13 AM	1	616	R	0.1		**-7**	**85**
303	4/12/2018	10:51:25 AM	2	570	R	0.1		**-5**	**25**

304	4/12/2018	10:51:36 AM	0	502	R	0.1	**-9**	**-64**
		Maximum:	**19**	**1460**			**33**	**1183**
		Average:	**3**	**608**			**-2**	**74**
		StDev:	**4**	**172**			**9**	**224**

2360 SN:297766
43-93# 323074
Cal Due Date: 12/20/2018
Surveyor: Thomas Hogan
Bldg 227
Room 100 Lower Wall Grids 28 thru 33 39 thru 44
Alpha Efficiency: 0.404
Beta/Gamma Efficiency: 0.254
Alpha Background: 1.9
Beta/Gamma Background: 207

S=Scaler, R=Ratemeter

Sample #	Date	Time		Alpha	Beta	S/R	Count Time	Location	dpm/100cm^2	
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1	4/12/2018	8:46:37	AM	2	202	R	0.1	Grid 28	**0**	**-52**
2	4/12/2018	8:46:49	AM	0	208	R	0.1		**-3**	**10**
3	4/12/2018	8:47:01	AM	1	202	R	0.1		**-2**	**-52**
4	4/12/2018	8:47:12	AM	2	211	R	0.1		**0**	**42**
5	4/12/2018	8:47:24	AM	1	200	R	0.1		**-2**	**-73**
6	4/12/2018	8:47:36	AM	2	212	R	0.1		**0**	**52**
7	4/12/2018	8:47:47	AM	2	207	R	0.1		**0**	**0**
8	4/12/2018	8:47:59	AM	1	195	R	0.1		**-2**	**-126**
9	4/12/2018	8:48:11	AM	1	200	R	0.1		**-2**	**-73**
10	4/12/2018	8:48:22	AM	3	198	R	0.1		**2**	**-94**
11	4/12/2018	8:48:34	AM	0	199	R	0.1		**-3**	**-84**
12	4/12/2018	8:48:46	AM	1	199	R	0.1		**-2**	**-84**
13	4/12/2018	8:48:57	AM	2	206	R	0.1		**0**	**-10**
14	4/12/2018	8:49:09	AM	2	207	R	0.1		**0**	**0**
15	4/12/2018	8:49:21	AM	0	201	R	0.1		**-3**	**-63**
16	4/12/2018	8:49:32	AM	0	221	R	0.1		**-3**	**147**
17	4/12/2018	8:49:44	AM	19	230	R	0.1		**29**	**241**
18	4/12/2018	8:49:56	AM	4	198	R	0.1		**4**	**-94**
19	4/12/2018	8:50:07	AM	1	206	R	0.1		**-2**	**-10**
20	4/12/2018	8:50:19	AM	2	238	R	0.1		**0**	**325**
21	4/12/2018	8:50:31	AM	0	200	R	0.1		**-3**	**-73**
22	4/12/2018	8:50:42	AM	1	198	R	0.1		**-2**	**-94**
23	4/12/2018	8:50:54	AM	2	201	R	0.1		**0**	**-63**
24	4/12/2018	8:51:06	AM	3	207	R	0.1		**2**	**0**
25	4/12/2018	8:51:17	AM	2	199	R	0.1		**0**	**-84**
26	4/12/2018	8:51:29	AM	2	270	R	0.1		**0**	**661**
27	4/12/2018	8:51:41	AM	1	272	R	0.1		**-2**	**682**
28	4/12/2018	8:51:52	AM	1	207	R	0.1		**-2**	**0**
29	4/12/2018	8:52:04	AM	5	199	R	0.1		**5**	**-84**
30	4/12/2018	8:52:16	AM	2	201	R	0.1		**0**	**-63**
31	4/12/2018	8:52:27	AM	1	204	R	0.1		**-2**	**-31**
32	4/12/2018	8:52:39	AM	2	198	R	0.1		**0**	**-94**
33	4/12/2018	8:52:51	AM	1	210	R	0.1		**-2**	**31**
34	4/12/2018	8:53:02	AM	1	198	R	0.1		**-2**	**-94**
35	4/12/2018	8:53:14	AM	0	201	R	0.1		**-3**	**-63**
36	4/12/2018	8:53:26	AM	0	264	R	0.1		**-3**	**598**
37	4/12/2018	8:53:37	AM	11	271	R	0.1		**15**	**672**
38	4/12/2018	8:53:49	AM	2	270	R	0.1		**0**	**661**
39	4/12/2018	8:54:00	AM	0	276	R	0.1		**-3**	**724**
40	4/12/2018	9:00:59	AM	3	198	R	0.1	Grid 29	**2**	**-94**

41	4/12/2018	9:01:11 AM	2	203	R	0.1	**0**	**-42**
42	4/12/2018	9:01:22 AM	1	226	R	0.1	**-2**	**199**
43	4/12/2018	9:01:34 AM	1	220	R	0.1	**-2**	**136**
44	4/12/2018	9:01:46 AM	2	198	R	0.1	**0**	**-94**
45	4/12/2018	9:01:57 AM	1	208	R	0.1	**-2**	**10**
46	4/12/2018	9:02:09 AM	2	201	R	0.1	**0**	**-63**
47	4/12/2018	9:02:21 AM	2	202	R	0.1	**0**	**-52**
48	4/12/2018	9:02:32 AM	1	200	R	0.1	**-2**	**-73**
49	4/12/2018	9:02:44 AM	1	200	R	0.1	**-2**	**-73**
50	4/12/2018	9:02:56 AM	3	249	R	0.1	**2**	**441**
51	4/12/2018	9:03:07 AM	0	201	R	0.1	**-3**	**-63**
52	4/12/2018	9:03:19 AM	6	226	R	0.1	**7**	**199**
53	4/12/2018	9:03:31 AM	1	199	R	0.1	**-2**	**-84**
54	4/12/2018	9:03:42 AM	0	201	R	0.1	**-3**	**-63**
55	4/12/2018	9:03:54 AM	0	209	R	0.1	**-3**	**21**
56	4/12/2018	9:04:06 AM	6	198	R	0.1	**7**	**-94**
57	4/12/2018	9:04:17 AM	1	198	R	0.1	**-2**	**-94**
58	4/12/2018	9:04:29 AM	2	199	R	0.1	**0**	**-84**
59	4/12/2018	9:04:41 AM	0	204	R	0.1	**-3**	**-31**
60	4/12/2018	9:04:52 AM	3	201	R	0.1	**2**	**-63**
61	4/12/2018	9:05:04 AM	0	224	R	0.1	**-3**	**178**
62	4/12/2018	9:05:16 AM	0	205	R	0.1	**-3**	**-21**
63	4/12/2018	9:05:27 AM	10	206	R	0.1	**14**	**-10**
64	4/12/2018	9:05:39 AM	2	239	R	0.1	**0**	**336**
65	4/12/2018	9:05:51 AM	2	332	R	0.1	**0**	**1312**
66	4/12/2018	9:06:02 AM	1	399	R	0.1	**-2**	**2016**
67	4/12/2018	9:06:14 AM	2	295	R	0.1	**0**	**924**
68	4/12/2018	9:06:26 AM	2	211	R	0.1	**0**	**42**
69	4/12/2018	9:06:37 AM	1	235	R	0.1	**-2**	**294**
70	4/12/2018	9:06:49 AM	1	207	R	0.1	**-2**	**0**
71	4/12/2018	9:07:01 AM	3	226	R	0.1	**2**	**199**
72	4/12/2018	9:07:12 AM	1	284	R	0.1	**-2**	**808**
73	4/12/2018	9:07:24 AM	0	296	R	0.1	**-3**	**934**
74	4/12/2018	9:07:36 AM	0	406	R	0.1	**-3**	**2089**
75	4/12/2018	9:07:47 AM	0	329	R	0.1	**-3**	**1281**
76	4/12/2018	9:07:59 AM	4	356	R	0.1	**4**	**1564**
77	4/12/2018	9:08:11 AM	1	302	R	0.1	**-2**	**997**
78	4/12/2018	9:08:22 AM	0	297	R	0.1	**-3**	**945**
79	4/12/2018	9:08:34 AM	0	390	R	0.1	**-3**	**1921**
80	4/12/2018	9:21:01 AM	0	209	R	0.1 Grid 30	**-3**	**21**
81	4/12/2018	9:21:13 AM	0	195	R	0.1	**-3**	**-126**
82	4/12/2018	9:21:25 AM	0	267	R	0.1	**-3**	**630**
83	4/12/2018	9:21:36 AM	5	287	R	0.1	**5**	**840**
84	4/12/2018	9:21:48 AM	1	200	R	0.1	**-2**	**-73**
85	4/12/2018	9:22:00 AM	1	198	R	0.1	**-2**	**-94**
86	4/12/2018	9:22:11 AM	1	203	R	0.1	**-2**	**-42**
87	4/12/2018	9:22:23 AM	2	242	R	0.1	**0**	**367**
88	4/12/2018	9:22:35 AM	2	198	R	0.1	**0**	**-94**
89	4/12/2018	9:22:46 AM	3	211	R	0.1	**2**	**42**
90	4/12/2018	9:22:58 AM	1	198	R	0.1	**-2**	**-94**
91	4/12/2018	9:23:10 AM	2	198	R	0.1	**0**	**-94**
92	4/12/2018	9:23:21 AM	2	208	R	0.1	**0**	**10**
93	4/12/2018	9:23:33 AM	1	200	R	0.1	**-2**	**-73**
94	4/12/2018	9:23:45 AM	1	208	R	0.1	**-2**	**10**
95	4/12/2018	9:23:56 AM	2	201	R	0.1	**0**	**-63**

96	4/12/2018	9:24:08 AM	2	222	R	0.1		**0**	**157**
97	4/12/2018	9:24:20 AM	1	203	R	0.1		**-2**	**-42**
98	4/12/2018	9:24:31 AM	1	211	R	0.1		**-2**	**42**
99	4/12/2018	9:24:43 AM	3	202	R	0.1		**2**	**-52**
100	4/12/2018	9:24:55 AM	2	199	R	0.1		**0**	**-84**
101	4/12/2018	9:25:06 AM	2	201	R	0.1		**0**	**-63**
102	4/12/2018	9:25:18 AM	1	213	R	0.1		**-2**	**63**
103	4/12/2018	9:25:30 AM	2	200	R	0.1		**0**	**-73**
104	4/12/2018	9:25:41 AM	2	233	R	0.1		**0**	**273**
105	4/12/2018	9:25:53 AM	1	268	R	0.1		**-2**	**640**
106	4/12/2018	9:26:05 AM	1	319	R	0.1		**-2**	**1176**
107	4/12/2018	9:26:16 AM	2	422	R	0.1		**0**	**2257**
108	4/12/2018	9:26:28 AM	3	422	R	0.1		**2**	**2257**
109	4/12/2018	9:26:40 AM	2	242	R	0.1		**0**	**367**
110	4/12/2018	9:26:51 AM	1	259	R	0.1		**-2**	**546**
111	4/12/2018	9:27:03 AM	2	245	R	0.1		**0**	**399**
112	4/12/2018	9:27:15 AM	1	324	R	0.1		**-2**	**1228**
113	4/12/2018	9:27:26 AM	2	283	R	0.1		**0**	**798**
114	4/12/2018	9:27:38 AM	4	239	R	0.1		**4**	**336**
115	4/12/2018	9:27:50 AM	6	244	R	0.1		**7**	**388**
116	4/12/2018	9:28:01 AM	1	292	R	0.1		**-2**	**892**
117	4/12/2018	9:28:13 AM	0	289	R	0.1		**-3**	**861**
118	4/12/2018	9:28:25 AM	0	229	R	0.1		**-3**	**231**
119	4/12/2018	9:28:36 AM	0	284	R	0.1		**-3**	**808**
120	4/12/2018	9:35:44 AM	10	198	R	0.1	Grid 31	**14**	**-94**
121	4/12/2018	9:35:55 AM	5	202	R	0.1		**5**	**-52**
122	4/12/2018	9:36:07 AM	8	199	R	0.1		**10**	**-84**
123	4/12/2018	9:36:19 AM	2	201	R	0.1		**0**	**-63**
124	4/12/2018	9:36:30 AM	0	198	R	0.1		**-3**	**-94**
125	4/12/2018	9:36:42 AM	5	209	R	0.1		**5**	**21**
126	4/12/2018	9:36:54 AM	7	200	R	0.1		**9**	**-73**
127	4/12/2018	9:37:05 AM	1	211	R	0.1		**-2**	**42**
128	4/12/2018	9:37:17 AM	0	279	R	0.1		**-3**	**756**
129	4/12/2018	9:37:29 AM	0	277	R	0.1		**-3**	**735**
130	4/12/2018	9:37:40 AM	0	203	R	0.1		**-3**	**-42**
131	4/12/2018	9:37:52 AM	12	401	R	0.1		**17**	**2037**
132	4/12/2018	9:38:04 AM	2	368	R	0.1		**0**	**1690**
133	4/12/2018	9:38:16 AM	7	327	R	0.1		**9**	**1260**
134	4/12/2018	9:38:27 AM	8	434	R	0.1		**10**	**2383**
135	4/12/2018	9:38:39 AM	11	280	R	0.1		**15**	**766**
136	4/12/2018	9:38:51 AM	2	341	R	0.1		**0**	**1407**
137	4/12/2018	9:39:02 AM	10	522	R	0.1		**14**	**3307**
138	4/12/2018	9:39:14 AM	2	444	R	0.1		**0**	**2488**
139	4/12/2018	9:39:26 AM	2	213	R	0.1		**0**	**63**
140	4/12/2018	9:45:11 AM	1	199	R	0.1		**-2**	**-84**
141	4/12/2018	9:45:22 AM	1	202	R	0.1		**-2**	**-52**
142	4/12/2018	9:45:34 AM	2	232	R	0.1		**0**	**262**
143	4/12/2018	9:45:46 AM	3	203	R	0.1		**2**	**-42**
144	4/12/2018	9:45:57 AM	1	201	R	0.1		**-2**	**-63**
145	4/12/2018	9:46:09 AM	2	212	R	0.1		**0**	**52**
146	4/12/2018	9:46:21 AM	0	198	R	0.1		**-3**	**-94**
147	4/12/2018	9:46:32 AM	7	200	R	0.1		**9**	**-73**
148	4/12/2018	9:46:44 AM	1	202	R	0.1		**-2**	**-52**
149	4/12/2018	9:46:56 AM	0	198	R	0.1		**-3**	**-94**
150	4/12/2018	9:47:07 AM	3	258	R	0.1		**2**	**535**

151	4/12/2018	9:47:19 AM	0	216	R	0.1		**-3**	**94**
152	4/12/2018	9:47:31 AM	4	273	R	0.1		**4**	**693**
153	4/12/2018	9:47:42 AM	1	199	R	0.1		**-2**	**-84**
154	4/12/2018	9:47:54 AM	0	225	R	0.1		**-3**	**189**
155	4/12/2018	9:48:06 AM	0	309	R	0.1		**-3**	**1071**
156	4/12/2018	9:48:17 AM	0	198	R	0.1		**-3**	**-94**
157	4/12/2018	9:48:29 AM	8	198	R	0.1		**10**	**-94**
158	4/12/2018	9:48:41 AM	2	288	R	0.1		**0**	**850**
159	4/12/2018	9:48:52 AM	2	316	R	0.1		**0**	**1144**
160	4/12/2018	9:53:06 AM	1	196	R	0.1	Grid 32	**-2**	**-115**
161	4/12/2018	9:53:17 AM	1	199	R	0.1		**-2**	**-84**
162	4/12/2018	9:53:29 AM	1	200	R	0.1		**-2**	**-73**
163	4/12/2018	9:53:41 AM	3	230	R	0.1		**2**	**241**
164	4/12/2018	9:53:52 AM	4	198	R	0.1		**4**	**-94**
165	4/12/2018	9:54:04 AM	2	229	R	0.1		**0**	**231**
166	4/12/2018	9:54:16 AM	3	225	R	0.1		**2**	**189**
167	4/12/2018	9:54:27 AM	2	202	R	0.1		**0**	**-52**
168	4/12/2018	9:54:39 AM	2	224	R	0.1		**0**	**178**
169	4/12/2018	9:54:51 AM	3	207	R	0.1		**2**	**0**
170	4/12/2018	9:55:02 AM	2	201	R	0.1		**0**	**-63**
171	4/12/2018	9:55:14 AM	2	206	R	0.1		**0**	**-10**
172	4/12/2018	9:55:26 AM	1	206	R	0.1		**-2**	**-10**
173	4/12/2018	9:55:37 AM	1	205	R	0.1		**-2**	**-21**
174	4/12/2018	9:55:49 AM	0	211	R	0.1		**-3**	**42**
175	4/12/2018	9:56:01 AM	2	200	R	0.1		**0**	**-73**
176	4/12/2018	9:56:12 AM	1	208	R	0.1		**-2**	**10**
177	4/12/2018	9:56:24 AM	5	214	R	0.1		**5**	**73**
178	4/12/2018	9:56:36 AM	1	200	R	0.1		**-2**	**-73**
179	4/12/2018	9:56:47 AM	12	201	R	0.1		**17**	**-63**
180	4/12/2018	9:56:59 AM	3	206	R	0.1		**2**	**-10**
181	4/12/2018	9:57:11 AM	2	232	R	0.1		**0**	**262**
182	4/12/2018	9:57:23 AM	1	206	R	0.1		**-2**	**-10**
183	4/12/2018	9:57:34 AM	2	227	R	0.1		**0**	**210**
184	4/12/2018	9:57:46 AM	0	347	R	0.1		**-3**	**1470**
185	4/12/2018	9:57:58 AM	2	322	R	0.1		**0**	**1207**
186	4/12/2018	9:58:09 AM	4	244	R	0.1		**4**	**388**
187	4/12/2018	9:58:21 AM	1	225	R	0.1		**-2**	**189**
188	4/12/2018	9:58:33 AM	0	240	R	0.1		**-3**	**346**
189	4/12/2018	9:58:44 AM	3	198	R	0.1		**2**	**-94**
190	4/12/2018	9:58:56 AM	5	209	R	0.1		**5**	**21**
191	4/12/2018	9:59:08 AM	1	268	R	0.1		**-2**	**640**
192	4/12/2018	9:59:19 AM	1	358	R	0.1		**-2**	**1585**
193	4/12/2018	9:59:31 AM	2	273	R	0.1		**0**	**693**
194	4/12/2018	9:59:43 AM	2	245	R	0.1		**0**	**399**
195	4/12/2018	9:59:54 AM	1	313	R	0.1		**-2**	**1113**
196	4/12/2018	10:00:06 AM	1	280	R	0.1		**-2**	**766**
197	4/12/2018	10:00:18 AM	3	198	R	0.1		**2**	**-94**
198	4/12/2018	10:00:29 AM	2	189	R	0.1		**0**	**-189**
199	4/12/2018	10:00:41 AM	3	222	R	0.1		**2**	**157**
200	4/12/2018	10:07:46 AM	0	208	R	0.1	Grid 33	**-3**	**10**
201	4/12/2018	10:07:58 AM	0	202	R	0.1		**-3**	**-52**
202	4/12/2018	10:08:09 AM	0	210	R	0.1		**-3**	**31**
203	4/12/2018	10:08:21 AM	3	227	R	0.1		**2**	**210**
204	4/12/2018	10:08:33 AM	8	303	R	0.1		**10**	**1008**
205	4/12/2018	10:08:44 AM	2	244	R	0.1		**0**	**388**

206	4/12/2018	10:08:56	AM	16	208	R	0.1	**24**	**10**
207	4/12/2018	10:09:08	AM	3	256	R	0.1	**2**	**514**
208	4/12/2018	10:09:19	AM	6	216	R	0.1	**7**	**94**
209	4/12/2018	10:09:31	AM	12	200	R	0.1	**17**	**-73**
210	4/12/2018	10:09:43	AM	3	213	R	0.1	**2**	**63**
211	4/12/2018	10:09:54	AM	2	256	R	0.1	**0**	**514**
212	4/12/2018	10:10:06	AM	1	212	R	0.1	**-2**	**52**
213	4/12/2018	10:10:18	AM	1	191	R	0.1	**-2**	**-168**
214	4/12/2018	10:10:29	AM	2	279	R	0.1	**0**	**756**
215	4/12/2018	10:10:41	AM	2	287	R	0.1	**0**	**840**
216	4/12/2018	10:10:53	AM	1	221	R	0.1	**-2**	**147**
217	4/12/2018	10:11:04	AM	1	191	R	0.1	**-2**	**-168**
218	4/12/2018	10:11:16	AM	2	208	R	0.1	**0**	**10**
219	4/12/2018	10:11:28	AM	3	257	R	0.1	**2**	**525**
220	4/12/2018	10:11:39	AM	1	268	R	0.1	**-2**	**640**
221	4/12/2018	10:11:51	AM	3	386	R	0.1	**2**	**1879**
222	4/12/2018	10:12:03	AM	2	228	R	0.1	**0**	**220**
223	4/12/2018	10:12:15	AM	1	222	R	0.1	**-2**	**157**
224	4/12/2018	10:12:26	AM	2	229	R	0.1	**0**	**231**
225	4/12/2018	10:12:38	AM	1	217	R	0.1	**-2**	**105**
226	4/12/2018	10:12:50	AM	2	255	R	0.1	**0**	**504**
227	4/12/2018	10:13:01	AM	3	296	R	0.1	**2**	**934**
228	4/12/2018	10:13:13	AM	1	266	R	0.1	**-2**	**619**
229	4/12/2018	10:13:25	AM	0	208	R	0.1	**-3**	**10**
230	4/12/2018	10:13:36	AM	7	265	R	0.1	**9**	**609**
231	4/12/2018	10:13:48	AM	1	197	R	0.1	**-2**	**-105**
232	4/12/2018	10:14:00	AM	1	244	R	0.1	**-2**	**388**
233	4/12/2018	10:14:11	AM	2	279	R	0.1	**0**	**756**
234	4/12/2018	10:14:23	AM	2	284	R	0.1	**0**	**808**
235	4/12/2018	10:14:35	AM	1	226	R	0.1	**-2**	**199**
236	4/12/2018	10:14:46	AM	1	253	R	0.1	**-2**	**483**
237	4/12/2018	10:14:58	AM	2	247	R	0.1	**0**	**420**
238	4/12/2018	10:15:10	AM	3	372	R	0.1	**2**	**1732**
239	4/12/2018	10:15:21	AM	1	273	R	0.1	**-2**	**693**
240	4/12/2018	12:11:30	PM	2	206	R	0.1 Grid 39	**0**	**-10**
241	4/12/2018	12:11:42	PM	2	201	R	0.1	**0**	**-63**
242	4/12/2018	12:11:54	PM	1	245	R	0.1	**-2**	**399**
243	4/12/2018	12:12:05	PM	1	209	R	0.1	**-2**	**21**
244	4/12/2018	12:12:17	PM	2	201	R	0.1	**0**	**-63**
245	4/12/2018	12:12:29	PM	0	205	R	0.1	**-3**	**-21**
246	4/12/2018	12:12:40	PM	0	198	R	0.1	**-3**	**-94**
247	4/12/2018	12:12:52	PM	0	218	R	0.1	**-3**	**115**
248	4/12/2018	12:13:04	PM	3	207	R	0.1	**2**	**0**
249	4/12/2018	12:13:15	PM	2	198	R	0.1	**0**	**-94**
250	4/12/2018	12:13:27	PM	1	201	R	0.1	**-2**	**-63**
251	4/12/2018	12:13:39	PM	1	199	R	0.1	**-2**	**-84**
252	4/12/2018	12:13:50	PM	2	200	R	0.1	**0**	**-73**
253	4/12/2018	12:14:02	PM	3	199	R	0.1	**2**	**-84**
254	4/12/2018	12:14:14	PM	1	278	R	0.1	**-2**	**745**
255	4/12/2018	12:14:25	PM	2	209	R	0.1	**0**	**21**
256	4/12/2018	12:14:37	PM	1	203	R	0.1	**-2**	**-42**
257	4/12/2018	12:14:49	PM	0	199	R	0.1	**-3**	**-84**
258	4/12/2018	12:15:00	PM	1	241	R	0.1	**-2**	**357**
259	4/12/2018	12:15:12	PM	1	201	R	0.1	**-2**	**-63**
260	4/12/2018	12:15:24	PM	2	206	R	0.1	**0**	**-10**

261	4/12/2018	12:15:35 PM	1	257	R	0.1	**-2**	**525**
262	4/12/2018	12:15:47 PM	0	209	R	0.1	**-3**	**21**
263	4/12/2018	12:15:59 PM	1	198	R	0.1	**-2**	**-94**
264	4/12/2018	12:16:10 PM	2	233	R	0.1	**0**	**273**
265	4/12/2018	12:16:22 PM	4	293	R	0.1	**4**	**903**
266	4/12/2018	12:16:34 PM	1	413	R	0.1	**-2**	**2163**
267	4/12/2018	12:16:45 PM	3	300	R	0.1	**2**	**976**
268	4/12/2018	12:16:57 PM	0	254	R	0.1	**-3**	**493**
269	4/12/2018	12:17:09 PM	1	198	R	0.1	**-2**	**-94**
270	4/12/2018	12:17:20 PM	1	202	R	0.1	**-2**	**-52**
271	4/12/2018	12:17:32 PM	0	225	R	0.1	**-3**	**189**
272	4/12/2018	12:17:44 PM	3	278	R	0.1	**2**	**745**
273	4/12/2018	12:17:55 PM	2	193	R	0.1	**0**	**-147**
274	4/12/2018	12:18:07 PM	1	199	R	0.1	**-2**	**-84**
275	4/12/2018	12:18:19 PM	3	283	R	0.1	**2**	**798**
276	4/12/2018	12:18:30 PM	0	336	R	0.1	**-3**	**1354**
277	4/12/2018	12:18:42 PM	1	375	R	0.1	**-2**	**1764**
278	4/12/2018	12:18:54 PM	1	413	R	0.1	**-2**	**2163**
279	4/12/2018	12:19:05 PM	4	299	R	0.1	**4**	**966**
280	4/12/2018	12:26:18 PM	2	226	R	0.1 Grid 40	**0**	**199**
281	4/12/2018	12:26:30 PM	1	205	R	0.1	**-2**	**-21**
282	4/12/2018	12:26:41 PM	2	220	R	0.1	**0**	**136**
283	4/12/2018	12:26:53 PM	2	197	R	0.1	**0**	**-105**
284	4/12/2018	12:27:05 PM	1	209	R	0.1	**-2**	**21**
285	4/12/2018	12:27:16 PM	0	197	R	0.1	**-3**	**-105**
286	4/12/2018	12:27:28 PM	14	199	R	0.1	**21**	**-84**
287	4/12/2018	12:27:40 PM	3	203	R	0.1	**2**	**-42**
288	4/12/2018	12:27:51 PM	1	202	R	0.1	**-2**	**-52**
289	4/12/2018	12:28:03 PM	2	197	R	0.1	**0**	**-105**
290	4/12/2018	12:28:15 PM	1	194	R	0.1	**-2**	**-136**
291	4/12/2018	12:28:26 PM	1	201	R	0.1	**-2**	**-63**
292	4/12/2018	12:28:38 PM	2	198	R	0.1	**0**	**-94**
293	4/12/2018	12:28:50 PM	2	195	R	0.1	**0**	**-126**
294	4/12/2018	12:29:01 PM	3	197	R	0.1	**2**	**-105**
295	4/12/2018	12:29:13 PM	1	204	R	0.1	**-2**	**-31**
296	4/12/2018	12:29:25 PM	2	197	R	0.1	**0**	**-105**
297	4/12/2018	12:29:36 PM	3	202	R	0.1	**2**	**-52**
298	4/12/2018	12:29:48 PM	1	259	R	0.1	**-2**	**546**
299	4/12/2018	12:30:00 PM	2	207	R	0.1	**0**	**0**
300	4/12/2018	12:30:12 PM	3	197	R	0.1	**2**	**-105**
301	4/12/2018	12:30:23 PM	2	198	R	0.1	**0**	**-94**
302	4/12/2018	12:30:35 PM	3	203	R	0.1	**2**	**-42**
303	4/12/2018	12:30:47 PM	0	194	R	0.1	**-3**	**-136**
304	4/12/2018	12:30:58 PM	10	230	R	0.1	**14**	**241**
305	4/12/2018	12:31:10 PM	2	203	R	0.1	**0**	**-42**
306	4/12/2018	12:31:22 PM	1	299	R	0.1	**-2**	**966**
307	4/12/2018	12:31:33 PM	2	335	R	0.1	**0**	**1344**
308	4/12/2018	12:31:45 PM	3	251	R	0.1	**2**	**462**
309	4/12/2018	12:31:57 PM	2	205	R	0.1	**0**	**-21**
310	4/12/2018	12:32:08 PM	1	232	R	0.1	**-2**	**262**
311	4/12/2018	12:32:20 PM	2	204	R	0.1	**0**	**-31**
312	4/12/2018	12:32:32 PM	3	213	R	0.1	**2**	**63**
313	4/12/2018	12:32:43 PM	1	230	R	0.1	**-2**	**241**
314	4/12/2018	12:32:55 PM	2	301	R	0.1	**0**	**987**
315	4/12/2018	12:33:07 PM	7	315	R	0.1	**9**	**1134**

316	4/12/2018	12:33:18 PM	4	203	R	0.1	**4**	**-42**
317	4/12/2018	12:33:30 PM	1	299	R	0.1	**-2**	**966**
318	4/12/2018	12:33:42 PM	10	268	R	0.1	**14**	**640**
319	4/12/2018	12:33:54 PM	2	248	R	0.1	**0**	**430**
320	4/12/2018	12:38:38 PM	2	198	R	0.1 Grid 41	**0**	**-94**
321	4/12/2018	12:38:49 PM	1	201	R	0.1	**-2**	**-63**
322	4/12/2018	12:39:01 PM	1	242	R	0.1	**-2**	**367**
323	4/12/2018	12:39:13 PM	2	243	R	0.1	**0**	**378**
324	4/12/2018	12:39:25 PM	1	203	R	0.1	**-2**	**-42**
325	4/12/2018	12:39:36 PM	1	204	R	0.1	**-2**	**-31**
326	4/12/2018	12:39:48 PM	2	208	R	0.1	**0**	**10**
327	4/12/2018	12:40:00 PM	2	199	R	0.1	**0**	**-84**
328	4/12/2018	12:40:11 PM	1	228	R	0.1	**-2**	**220**
329	4/12/2018	12:40:23 PM	8	208	R	0.1	**10**	**10**
330	4/12/2018	12:40:35 PM	2	201	R	0.1	**0**	**-63**
331	4/12/2018	12:40:46 PM	11	200	R	0.1	**15**	**-73**
332	4/12/2018	12:40:58 PM	2	206	R	0.1	**0**	**-10**
333	4/12/2018	12:41:10 PM	2	201	R	0.1	**0**	**-63**
334	4/12/2018	12:41:21 PM	1	209	R	0.1	**-2**	**21**
335	4/12/2018	12:41:33 PM	1	202	R	0.1	**-2**	**-52**
336	4/12/2018	12:41:45 PM	2	204	R	0.1	**0**	**-31**
337	4/12/2018	12:41:56 PM	0	211	R	0.1	**-3**	**42**
338	4/12/2018	12:42:08 PM	2	206	R	0.1	**0**	**-10**
339	4/12/2018	12:42:20 PM	1	200	R	0.1	**-2**	**-73**
340	4/12/2018	12:42:31 PM	1	206	R	0.1	**-2**	**-10**
341	4/12/2018	12:42:43 PM	2	196	R	0.1	**0**	**-115**
342	4/12/2018	12:42:55 PM	0	217	R	0.1	**-3**	**105**
343	4/12/2018	12:43:07 PM	0	213	R	0.1	**-3**	**63**
344	4/12/2018	12:43:18 PM	5	207	R	0.1	**5**	**0**
345	4/12/2018	12:43:30 PM	1	216	R	0.1	**-2**	**94**
346	4/12/2018	12:43:42 PM	2	199	R	0.1	**0**	**-84**
347	4/12/2018	12:43:53 PM	1	205	R	0.1	**-2**	**-21**
348	4/12/2018	12:44:05 PM	2	208	R	0.1	**0**	**10**
349	4/12/2018	12:44:17 PM	2	203	R	0.1	**0**	**-42**
350	4/12/2018	12:44:28 PM	3	209	R	0.1	**2**	**21**
351	4/12/2018	12:44:40 PM	0	212	R	0.1	**-3**	**52**
352	4/12/2018	12:44:52 PM	0	212	R	0.1	**-3**	**52**
353	4/12/2018	12:45:03 PM	3	310	R	0.1	**2**	**1081**
354	4/12/2018	12:45:15 PM	2	302	R	0.1	**0**	**997**
355	4/12/2018	12:45:27 PM	1	214	R	0.1	**-2**	**73**
356	4/12/2018	12:45:38 PM	2	196	R	0.1	**0**	**-115**
357	4/12/2018	12:45:50 PM	1	198	R	0.1	**-2**	**-94**
358	4/12/2018	12:46:02 PM	2	199	R	0.1	**0**	**-84**
359	4/12/2018	12:46:14 PM	6	221	R	0.1	**7**	**147**
360	4/12/2018	12:50:38 PM	3	200	R	0.1 Grid 42	**2**	**-73**
361	4/12/2018	12:50:49 PM	4	211	R	0.1	**4**	**42**
362	4/12/2018	12:51:01 PM	1	199	R	0.1	**-2**	**-84**
363	4/12/2018	12:51:13 PM	3	203	R	0.1	**2**	**-42**
364	4/12/2018	12:51:24 PM	2	207	R	0.1	**0**	**0**
365	4/12/2018	12:51:36 PM	0	201	R	0.1	**-3**	**-63**
366	4/12/2018	12:51:48 PM	0	198	R	0.1	**-3**	**-94**
367	4/12/2018	12:51:59 PM	10	203	R	0.1	**14**	**-42**
368	4/12/2018	12:52:11 PM	2	199	R	0.1	**0**	**-84**
369	4/12/2018	12:52:23 PM	2	206	R	0.1	**0**	**-10**
370	4/12/2018	12:52:35 PM	3	198	R	0.1	**2**	**-94**

371	4/12/2018	12:52:46 PM	1	204	R	0.1		**-2**	**-31**
372	4/12/2018	12:52:58 PM	2	200	R	0.1		**0**	**-73**
373	4/12/2018	12:53:10 PM	2	198	R	0.1		**0**	**-94**
374	4/12/2018	12:53:21 PM	4	205	R	0.1		**4**	**-21**
375	4/12/2018	12:53:33 PM	3	201	R	0.1		**2**	**-63**
376	4/12/2018	12:53:45 PM	0	199	R	0.1		**-3**	**-84**
377	4/12/2018	12:53:56 PM	9	200	R	0.1		**12**	**-73**
378	4/12/2018	12:54:08 PM	2	203	R	0.1		**0**	**-42**
379	4/12/2018	12:54:20 PM	1	201	R	0.1		**-2**	**-63**
380	4/12/2018	12:54:31 PM	2	204	R	0.1		**0**	**-31**
381	4/12/2018	12:54:43 PM	0	198	R	0.1		**-3**	**-94**
382	4/12/2018	12:54:55 PM	0	206	R	0.1		**-3**	**-10**
383	4/12/2018	12:55:07 PM	10	213	R	0.1		**14**	**63**
384	4/12/2018	12:55:18 PM	2	281	R	0.1		**0**	**777**
385	4/12/2018	12:55:30 PM	0	208	R	0.1		**-3**	**10**
386	4/12/2018	12:55:42 PM	15	198	R	0.1		**22**	**-94**
387	4/12/2018	12:55:53 PM	3	200	R	0.1		**2**	**-73**
388	4/12/2018	12:56:05 PM	2	298	R	0.1		**0**	**955**
389	4/12/2018	12:56:17 PM	1	201	R	0.1		**-2**	**-63**
390	4/12/2018	12:56:28 PM	1	200	R	0.1		**-2**	**-73**
391	4/12/2018	12:56:40 PM	2	194	R	0.1		**0**	**-136**
392	4/12/2018	12:56:52 PM	0	201	R	0.1		**-3**	**-63**
393	4/12/2018	12:57:04 PM	2	229	R	0.1		**0**	**231**
394	4/12/2018	12:57:15 PM	3	205	R	0.1		**2**	**-21**
395	4/12/2018	12:57:27 PM	2	198	R	0.1		**0**	**-94**
396	4/12/2018	12:57:39 PM	0	206	R	0.1		**-3**	**-10**
397	4/12/2018	12:57:50 PM	0	214	R	0.1		**-3**	**73**
398	4/12/2018	12:58:02 PM	0	197	R	0.1		**-3**	**-105**
399	4/12/2018	12:58:14 PM	15	201	R	0.1		**22**	**-63**
400	4/12/2018	1:04:46 PM	1	201	R	0.1	Grid 43	**-2**	**-63**
401	4/12/2018	1:04:58 PM	2	207	R	0.1		**0**	**0**
402	4/12/2018	1:05:10 PM	1	199	R	0.1		**-2**	**-84**
403	4/12/2018	1:05:22 PM	1	198	R	0.1		**-2**	**-94**
404	4/12/2018	1:05:33 PM	3	199	R	0.1		**2**	**-84**
405	4/12/2018	1:05:45 PM	4	273	R	0.1		**4**	**693**
406	4/12/2018	1:05:57 PM	2	280	R	0.1		**0**	**766**
407	4/12/2018	1:06:08 PM	2	211	R	0.1		**0**	**42**
408	4/12/2018	1:06:20 PM	1	209	R	0.1		**-2**	**21**
409	4/12/2018	1:06:32 PM	3	218	R	0.1		**2**	**115**
410	4/12/2018	1:06:43 PM	4	201	R	0.1		**4**	**-63**
411	4/12/2018	1:06:55 PM	2	202	R	0.1		**0**	**-52**
412	4/12/2018	1:07:07 PM	3	196	R	0.1		**2**	**-115**
413	4/12/2018	1:07:19 PM	2	200	R	0.1		**0**	**-73**
414	4/12/2018	1:07:30 PM	1	204	R	0.1		**-2**	**-31**
415	4/12/2018	1:07:42 PM	0	198	R	0.1		**-3**	**-94**
416	4/12/2018	1:07:54 PM	3	195	R	0.1		**2**	**-126**
417	4/12/2018	1:08:05 PM	2	198	R	0.1		**0**	**-94**
418	4/12/2018	1:08:17 PM	1	202	R	0.1		**-2**	**-52**
419	4/12/2018	1:08:29 PM	0	198	R	0.1		**-3**	**-94**
420	4/12/2018	1:08:40 PM	3	197	R	0.1		**2**	**-105**
421	4/12/2018	1:08:52 PM	0	198	R	0.1		**-3**	**-94**
422	4/12/2018	1:09:04 PM	0	227	R	0.1		**-3**	**210**
423	4/12/2018	1:09:15 PM	0	201	R	0.1		**-3**	**-63**
424	4/12/2018	1:09:27 PM	4	207	R	0.1		**4**	**0**
425	4/12/2018	1:09:39 PM	1	206	R	0.1		**-2**	**-10**

426	4/12/2018	1:09:51 PM	2	214	R	0.1		**0**	**73**
427	4/12/2018	1:10:02 PM	1	198	R	0.1		**-2**	**-94**
428	4/12/2018	1:10:14 PM	2	207	R	0.1		**0**	**0**
429	4/12/2018	1:10:26 PM	3	203	R	0.1		**2**	**-42**
430	4/12/2018	1:10:37 PM	0	197	R	0.1		**-3**	**-105**
431	4/12/2018	1:10:49 PM	2	202	R	0.1		**0**	**-52**
432	4/12/2018	1:11:01 PM	3	207	R	0.1		**2**	**0**
433	4/12/2018	1:11:12 PM	2	198	R	0.1		**0**	**-94**
434	4/12/2018	1:11:24 PM	0	211	R	0.1		**-3**	**42**
435	4/12/2018	1:11:36 PM	11	212	R	0.1		**15**	**52**
436	4/12/2018	1:11:48 PM	2	213	R	0.1		**0**	**63**
437	4/12/2018	1:11:59 PM	0	197	R	0.1		**-3**	**-105**
438	4/12/2018	1:12:11 PM	0	199	R	0.1		**-3**	**-84**
439	4/12/2018	1:12:23 PM	9	200	R	0.1		**12**	**-73**
440	4/12/2018	1:16:10 PM	0	193	R	0.1	Grid 44	**-3**	**-147**
441	4/12/2018	1:16:21 PM	7	206	R	0.1		**9**	**-10**
442	4/12/2018	1:16:33 PM	11	202	R	0.1		**15**	**-52**
443	4/12/2018	1:16:45 PM	2	251	R	0.1		**0**	**462**
444	4/12/2018	1:16:56 PM	0	198	R	0.1		**-3**	**-94**
445	4/12/2018	1:17:08 PM	7	199	R	0.1		**9**	**-84**
446	4/12/2018	1:17:20 PM	1	198	R	0.1		**-2**	**-94**
447	4/12/2018	1:17:31 PM	0	201	R	0.1		**-3**	**-63**
448	4/12/2018	1:17:43 PM	5	200	R	0.1		**5**	**-73**
449	4/12/2018	1:17:55 PM	1	210	R	0.1		**-2**	**31**
450	4/12/2018	1:18:07 PM	2	208	R	0.1		**0**	**10**
451	4/12/2018	1:18:18 PM	1	252	R	0.1		**-2**	**472**
452	4/12/2018	1:18:30 PM	1	222	R	0.1		**-2**	**157**
453	4/12/2018	1:18:42 PM	2	203	R	0.1		**0**	**-42**
454	4/12/2018	1:18:53 PM	2	205	R	0.1		**0**	**-21**
455	4/12/2018	1:19:05 PM	1	210	R	0.1		**-2**	**31**
456	4/12/2018	1:19:17 PM	3	205	R	0.1		**2**	**-21**
457	4/12/2018	1:19:28 PM	6	209	R	0.1		**7**	**21**
458	4/12/2018	1:19:40 PM	1	197	R	0.1		**-2**	**-105**
459	4/12/2018	1:19:52 PM	0	199	R	0.1		**-3**	**-84**
		Maximum:	**19**	**522**				**29**	**3307**
		Average:	**2**	**228**				**1**	**224**
		StDev:	**3**	**48**				**5**	**509**

Appendix I

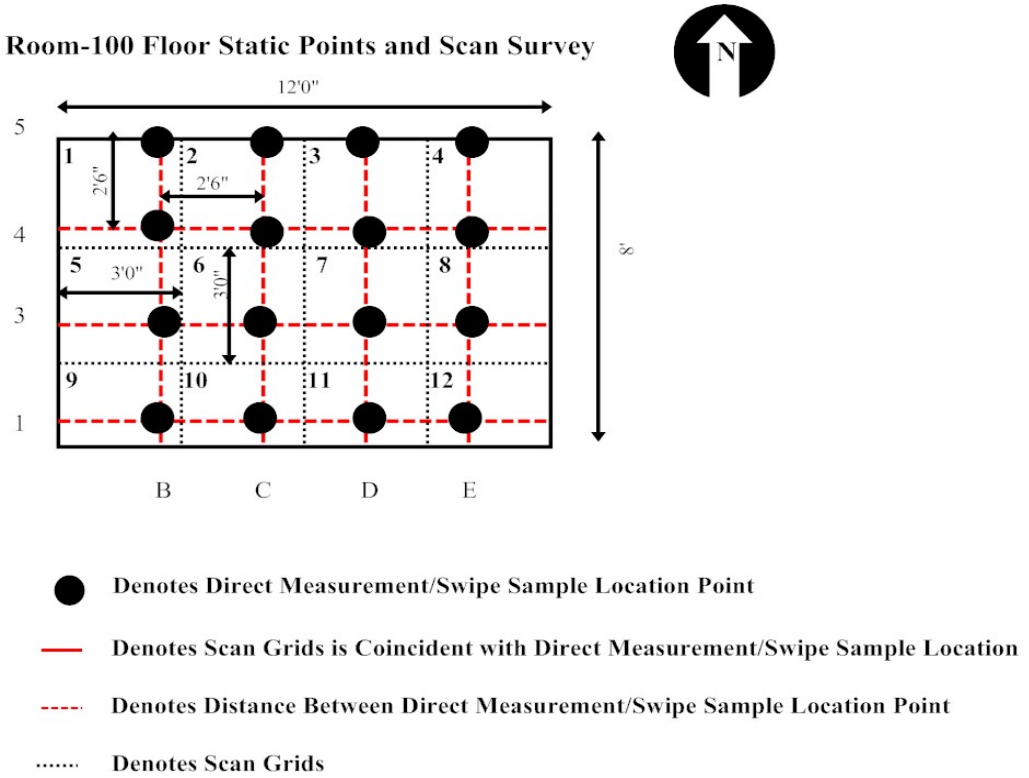
Building 218/227 Rooms Direct Measurement Data

Room 100 Floor

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 08:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 55.9	α 17.0
		43-93	268605		βγ 26.8%	βγ 10.1%	βγ 521.0	βγ 2378.1
LOCATION:	Bldg. 218 Room 100 Floor	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Joan Cosgrove							
DATE: 4/20/2018	TIME: 09:14 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Joan Cosgrove

LOCATION: Bldg. 218 Room 100 Floor

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
B1				1.9	-84.6	-1.2	-26.2	See Map For Location
C1				30.3	94.5	-1.2	-21.1	See Map For Location
D1				1.9	268.7	-1.2	-26.2	See Map For Location
E1				1.9	34.8	-1.2	-8.6	See Map For Location
B2				-17.0	-94.5	-1.2	-23.6	See Map For Location
C2				-7.6	0.0	1.9	-18.6	See Map For Location
D2				-7.6	-124.4	1.9	-28.7	See Map For Location
E2				6.6	-44.8	-1.2	-8.6	See Map For Location
B3				6.6	-109.5	-1.2	-18.6	See Map For Location
C3				-2.8	-49.8	-1.2	-16.1	See Map For Location
D3				1.9	253.7	1.9	-3.5	See Map For Location
E3				1.9	159.2	-1.2	-18.6	See Map For Location
B4				6.6	10.0	-1.2	-28.7	See Map For Location
C4				20.8	-99.5	1.9	-31.2	See Map For Location
D4				-2.8	-29.9	-1.2	-18.6	See Map For Location
E4				1.9	124.4	-1.2	-1.0	See Map For Location
B1D						-1.2	-28.7	Duplicate Swipe
D3D						1.9	-8.6	Duplicate Swipe
Maximum:				**30.3**	**268.7**	**1.9**	**-1.0**	
Average:				**2.8**	**19.3**	**-0.4**	**-18.6**	
StDev:				**10.9**	**126.6**	**1.4**	**9.3**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 9:14

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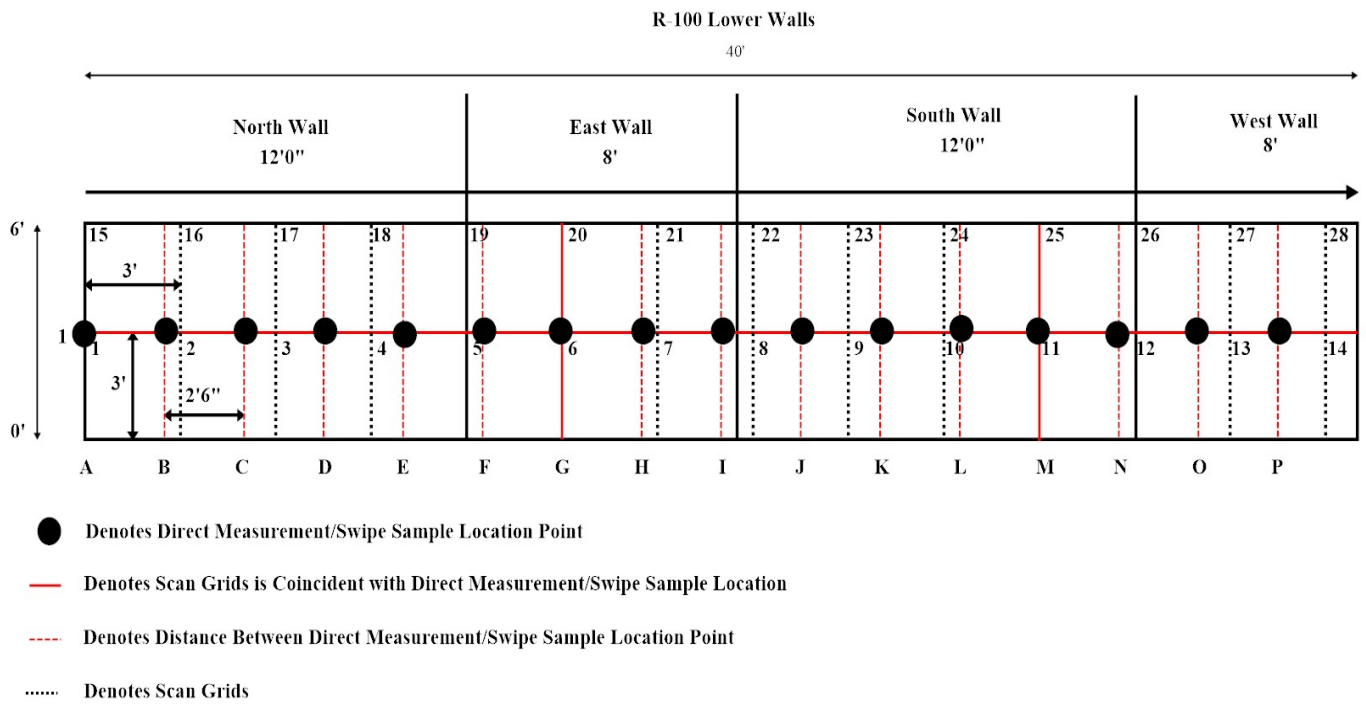
Room 100 Lower Walls

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 09:15	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 83.1	α 46.3
		43-93	268605		βγ 26.8%	βγ 10.1%	βγ 629.1	βγ 3502.5
LOCATION:	Bldg. 218 Room 100 Lower Walls	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Joan Cosgrove							
DATE: 4/20/2018	TIME: 09:34 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Joan Cosgrove

LOCATION: Bldg. 218 Room 100 Lower Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				-32.2	134.3	1.9	-6.0	See Map For Location
B1				-36.9	24.9	-1.2	-26.2	See Map For Location
C1				-18.0	-59.7	1.9	-18.6	See Map For Location
D1				-41.6	-10.0	-1.2	-8.6	See Map For Location
E1				-32.2	5.0	1.9	-26.2	See Map For Location
F1				-46.3	199.0	-1.2	-13.6	See Map For Location
G1				-41.6	283.6	-1.2	-13.6	See Map For Location
H1				-22.7	-69.7	1.9	-18.6	See Map For Location
I1				-36.9	646.8	-1.2	-23.6	See Map For Location
J1				-46.3	204.0	1.9	-28.7	See Map For Location
K1				-41.6	-34.8	-1.2	-13.6	See Map For Location
L1				-27.4	-44.8	-1.2	-8.6	See Map For Location
M1				-18.0	74.6	-1.2	-3.5	See Map For Location
N1				-32.2	-49.8	5.0	-33.7	See Map For Location
O1				-36.9	-69.7	-1.2	-11.1	See Map For Location
P1				-36.9	114.4	-1.2	-31.2	See Map For Location
E1						1.9	-28.7	Duplicate Swipe
N1						-1.2	-26.2	Duplicate Swipe
Maximum:				**-18.0**	**646.8**	**5.0**	**-3.5**	
Average:				**-34.2**	**84.3**	**0.1**	**-18.9**	
StDev:				**9.0**	**186.7**	**1.9**	**9.4**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 9:34

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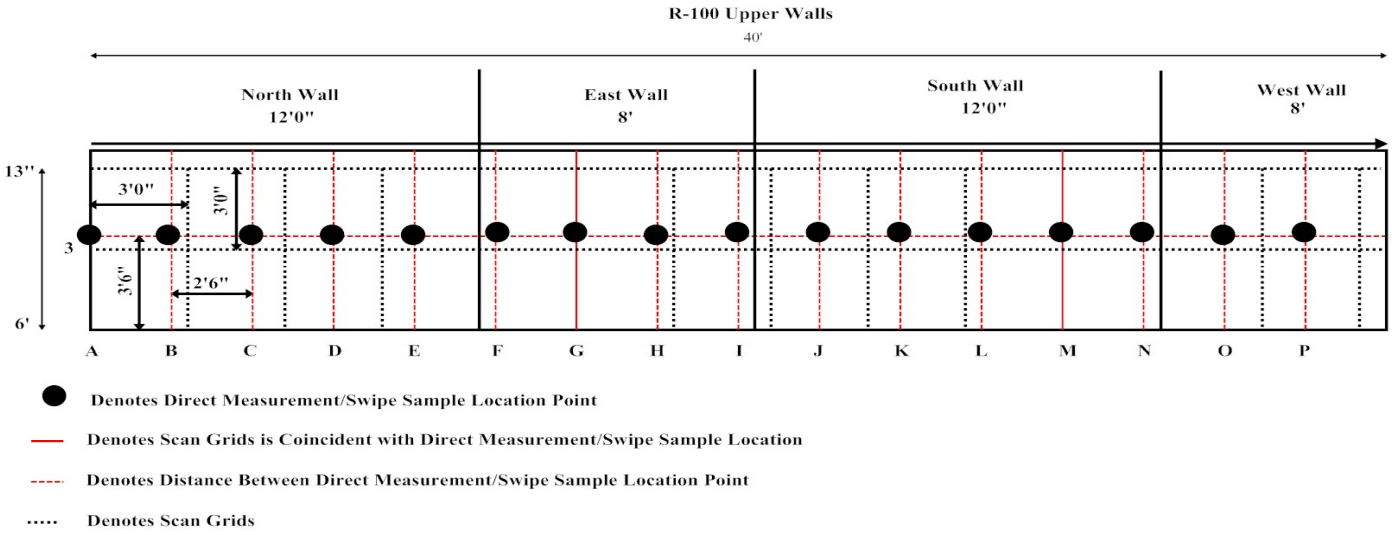
Room 100 Upper Walls

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 10:00	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	184949	3/6/2019	α 42.3%	α 10.6%	α 83.1	α 46.3
SURVEY NUMBER:	N/A	43-93	268605		βγ 26.8%	βγ 10.1%	βγ 629.1	βγ 3502.5
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
LOCATION:	Bldg. 218 Room 100 Upper Walls				βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Joan Cosgrove							
DATE: 4/20/2018	TIME: 10:12	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Joan Cosgrove

LOCATION: Bldg. 218 Room 100 Upper Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A3				-41.6	611.9	-1.2	-33.7	See Map For Location
B3				-27.4	79.6	1.9	-31.2	See Map For Location
C3				-18.0	144.3	5.0	4.0	See Map For Location
D3				-46.3	422.9	1.9	-58.9	See Map For Location
E3				-8.5	64.7	-1.2	-11.1	See Map For Location
F3				-32.2	-79.6	-1.2	-6.0	See Map For Location
G3				-46.3	233.8	1.9	-13.6	See Map For Location
H3				-41.6	-79.6	-1.2	-8.6	See Map For Location
I3				-13.2	39.8	-1.2	-3.5	See Map For Location
J3				-8.5	213.9	-1.2	-6.0	See Map For Location
K3				-36.9	149.3	1.9	-26.2	See Map For Location
L3				-22.7	114.4	5.0	-8.6	See Map For Location
M3				-3.8	-54.7	-1.2	-11.1	See Map For Location
N3				-36.9	144.3	-1.2	-18.6	See Map For Location
O3				-27.4	194.0	-1.2	-6.0	See Map For Location
P3				-27.4	149.3	-1.2	-26.2	See Map For Location
E3D						-1.2	-13.6	Duplicate Swipe
J3D						-1.2	-11.1	Duplicate Swipe
Maximum:				**-3.8**	**611.9**	**5.0**	**4.0**	
Average:				**-27.4**	**146.8**	**0.1**	**-16.1**	
StDev:				**13.9**	**177.7**	**2.2**	**14.6**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 10:12

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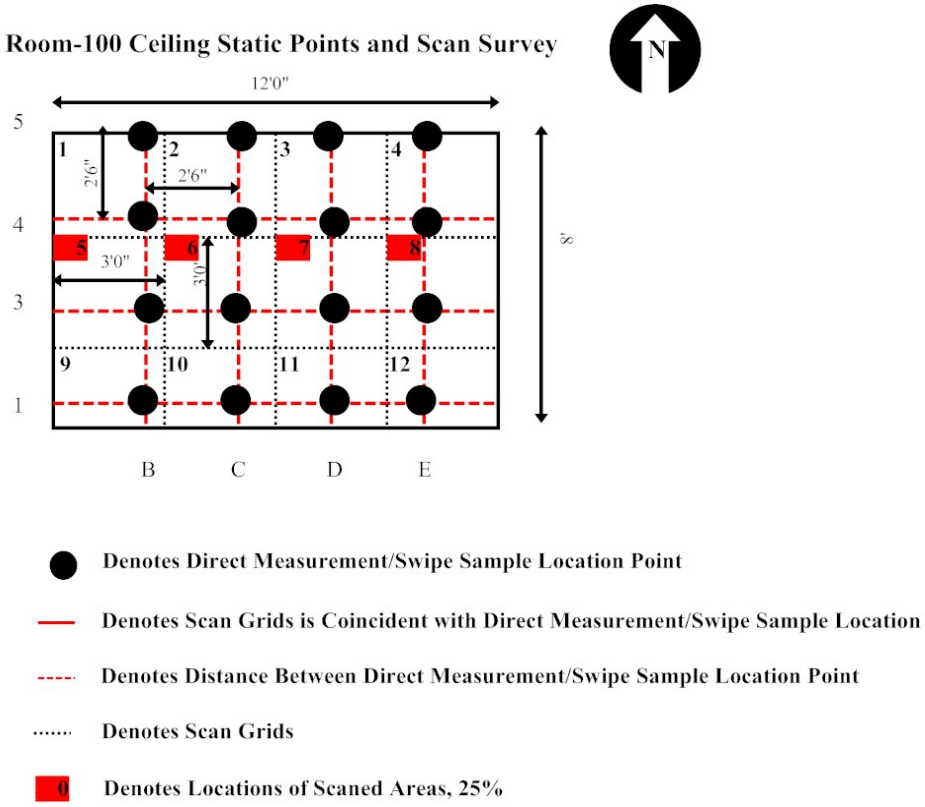
Room 100 Ceiling/Overhead

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 10:40	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 44.6	α 9.9
		43-93	299597		βγ 31.3%	βγ 11.7%	βγ 358.4	βγ 1295.0
LOCATION:	Bldg. 218 Room 100 Ceiling	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/23/2018	TIME: 10:53	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Bldg. 218 Room 100 Ceiling

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
B1				12.6	379.1	-1.2	-16.1	See Map For Location
C1				8.1	447.3	-1.2	-21.1	See Map For Location
D1				3.6	400.4	-1.2	-1.0	See Map For Location
E1				-5.4	383.4	-1.2	-26.2	See Map For Location
B2				3.6	391.9	-1.2	-18.6	See Map For Location
C2				-5.4	370.6	-1.2	-6.0	See Map For Location
D2				3.6	421.7	-1.2	-13.6	See Map For Location
E2				-0.9	302.4	1.9	1.5	See Map For Location
B3				-0.9	370.6	1.9	-16.1	See Map For Location
C3				-0.9	311.0	-1.2	-11.1	See Map For Location
D3				-5.4	387.6	-1.2	-18.6	See Map For Location
E3				-5.4	417.5	-1.2	-13.6	See Map For Location
B4				3.6	443.0	-1.2	-3.5	See Map For Location
C4				12.6	519.7	1.9	-8.6	See Map For Location
D4				-9.9	545.3	5.0	-3.5	See Map For Location
E4				-0.9	421.7	-1.2	-18.6	See Map For Location
B2D						-1.2	-13.6	Duplicate Swipe
E3D						-1.2	-8.6	Duplicate Swipe
Maximum:				**12.6**	**545.3**	**5.0**	**1.5**	
Average:				**0.8**	**407.1**	**-0.4**	**-12.0**	
StDev:				**6.6**	**63.3**	**1.8**	**7.5**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 10:53

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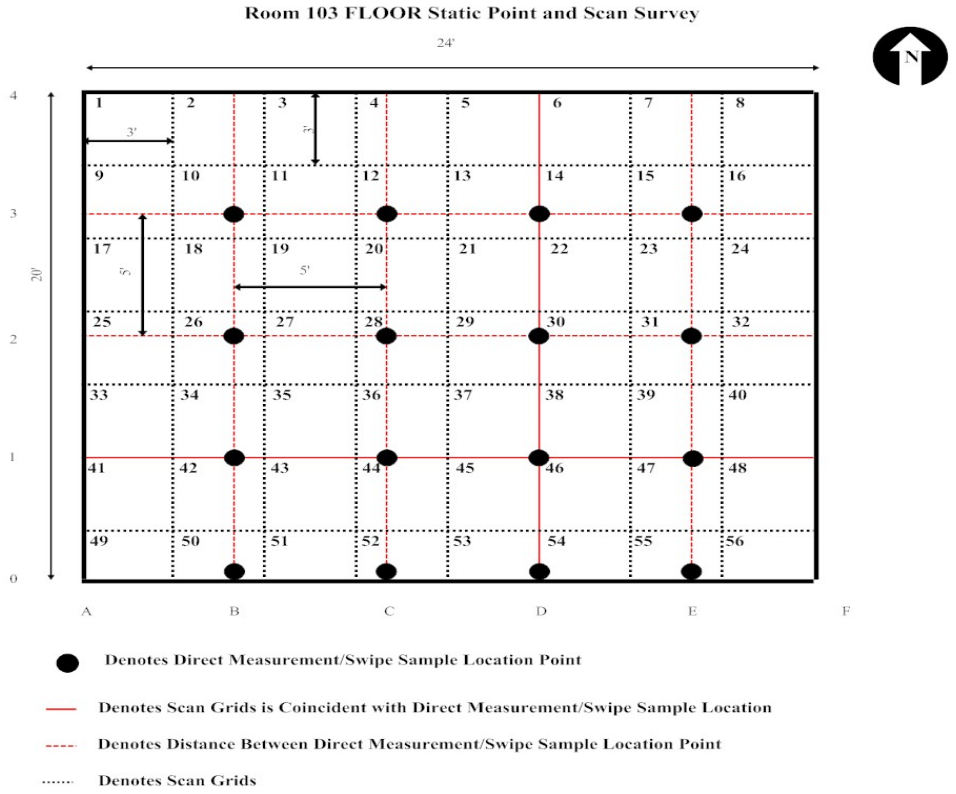
Room 103 Floor

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 08:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 53.3	α 16.2
		43-93	299597		βγ 31.3%	βγ 11.7%	βγ 481.0	βγ 2377.0
LOCATION:	Room 103 Floor	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Josefina Matus							
DATE: 4/20/2018	TIME: 08:51	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Josefina Matus

LOCATION: Room 103 Floor

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
B0				15.3	-72.4	1.9	-8.6	See Map For Location
C0				10.8	-34.1	-1.2	-16.1	See Map For Location
D0				-2.7	89.5	5.0	-1.0	See Map For Location
E0				15.3	230.0	-1.2	1.5	See Map For Location
B1				19.8	8.5	5.0	4.0	See Map For Location
C1				-2.7	-200.2	-1.2	-11.1	See Map For Location
D1				6.3	-8.5	8.0	-18.6	See Map For Location
E1				-7.2	42.6	5.0	1.5	See Map For Location
B2				24.3	8.5	1.9	-13.6	See Map For Location
C2				1.8	-25.6	1.9	-23.6	See Map For Location
D2				-2.7	-106.5	5.0	-1.0	See Map For Location
E2				1.8	89.5	-1.2	-13.6	See Map For Location
B3				10.8	34.1	8.0	-23.6	See Map For Location
C3				24.3	-8.5	11.1	-26.2	See Map For Location
D3				19.8	-63.9	1.9	-8.6	See Map For Location
E3				6.3	-38.3	-1.2	-13.6	See Map For Location
DOD						5.0	-6.0	Duplicate Swipe
C2D						1.9	-18.6	Duplicate Swipe
Maximum:				**24.3**	**230.0**	**11.1**	**4.0**	
Average:				**8.8**	**-3.5**	**3.1**	**-10.9**	
StDev:				**10.3**	**95.2**	**3.7**	**9.4**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 8:51

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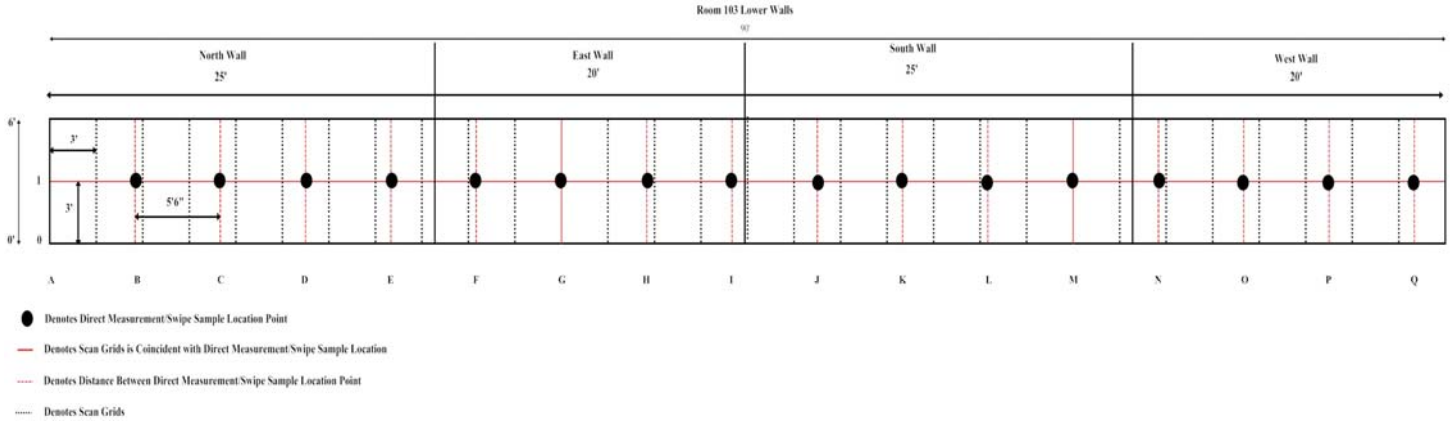
Room 103 Lower Wall

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 09:21	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 90.2	α 60.4
		43-93	299597		βγ 31.3%	βγ 11.7%	βγ 622.4	βγ 4029.8
LOCATION:	Room 103 Lower Walls	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Josefina Matus							
DATE: 4/20/2018	TIME: 09:34	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Josefina Matus

LOCATION: Room 103 Lower Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
B1				-51.4	102.2	-1.2	-23.6	See Map For Location
C1				-6.3	-59.6	1.9	-74.0	See Map For Location
D1				-55.9	25.6	-1.2	-53.8	See Map For Location
E1				-10.8	230.0	-1.2	-1.0	See Map For Location
F1				2.7	-8.5	1.9	-28.7	See Map For Location
G1				-6.3	76.7	-1.2	-11.1	See Map For Location
H1				-24.3	-106.5	1.9	-13.6	See Map For Location
I1				-15.3	-178.9	-1.2	-6.0	See Map For Location
J1				2.7	-12.8	-1.2	-8.6	See Map For Location
K1				-19.8	-21.3	-1.2	-3.5	See Map For Location
L1				-1.8	264.1	-1.2	-6.0	See Map For Location
M1				-19.8	59.6	-1.2	-1.0	See Map For Location
N1				2.7	132.1	-1.2	-3.5	See Map For Location
O1				-51.4	80.9	1.9	-8.6	See Map For Location
P1				-6.3	157.6	-1.2	-28.7	See Map For Location
Q1				-60.4	123.5	-1.2	-26.2	See Map For Location
F1D						1.9	-26.2	Duplicate Swipe
L1D						-1.2	-8.6	Duplicate Swipe
Maximum:				**2.7**	**264.1**	**1.9**	**-1.0**	
Average:				**-20.1**	**54.0**	**-0.4**	**-18.5**	
StDev:				**22.3**	**117.8**	**1.4**	**19.4**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 9:34

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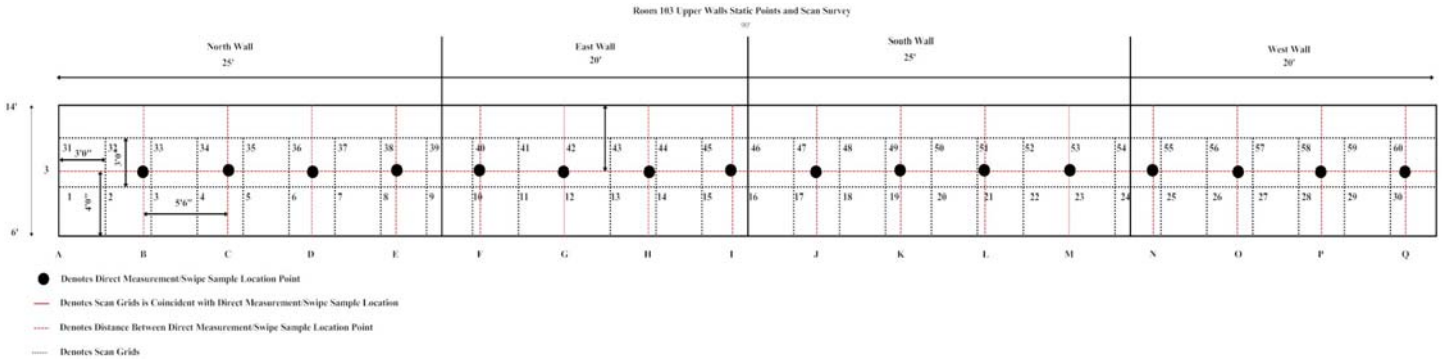
Room 103 Upper Wall

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 14:12	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 90.2	α 60.4
		43-93	299597		βγ 31.3%	βγ 15.7%	βγ 466.8	βγ 3022.4
LOCATION:	Room 103 Upper Walls	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 26.5%	βγ 62.8	βγ 149.8
SURVEYOR:	Josefina Matus							
DATE: 4/20/2018	TIME: 14:32	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



4 8 14

Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Josefina Matus

LOCATION: Room 103 Upper Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
B3								N/A No Access
C3								N/A No Access
D3								N/A No Access
E3								N/A No Access
F3				-28.8	0.0	-1.2	-8.3	See Map For Location
G3				-51.4	54.3	-1.2	-10.2	See Map For Location
H3				-1.8	60.7	1.9	-4.5	See Map For Location
I3				2.7	-79.9	-1.2	-2.6	See Map For Location
J3				-28.8	-12.8	1.9	-14.0	See Map For Location
K3				-33.3	115.0	1.9	-4.5	See Map For Location
L3				-6.3	-6.4	-1.2	-4.5	See Map For Location
M3				-1.8	-38.3	-1.2	-6.4	See Map For Location
N3				-6.3	57.5	5.0	-8.3	See Map For Location
O3				-10.8	-35.1	8.0	-19.6	See Map For Location
P3				7.2	-79.9	5.0	-4.5	See Map For Location
Q3				-1.8	28.8	8.0	-6.4	See Map For Location
I3D						-1.2	-4.5	Duplicate Swipe
O3D						5.0	-15.8	Duplicate Swipe
Maximum:				**7.2**	**115.0**	**8.0**	**-2.6**	
Average:				**-13.4**	**5.3**	**2.1**	**-8.2**	
StDev:				**17.9**	**59.8**	**3.5**	**5.0**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 14:32

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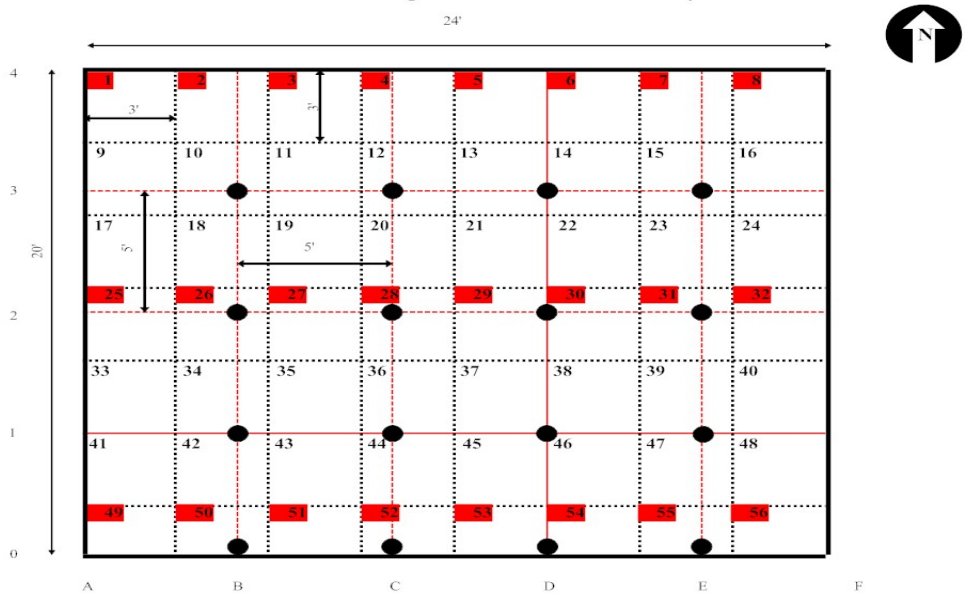
Room 103 Ceiling/Overhead

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 09:28	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 37.3	α 7.3
		43-93	326725		βγ 32.7%	βγ 12.3%	βγ 329.7	βγ 1141.7
LOCATION:	Room 103 Ceiling	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Thomas Hogan/ Adolfo Matus							
DATE: 4/23/2018	TIME: 09:41 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment

Room 103 Ceiling Static Point and Scan Survey



Denotes Direct Measurement/Swipe Sample Location Point

Denotes Scan Grids is Coincident with Direct Measurement/Swipe Sample Location

Denotes Distance Between Direct Measurement/Swipe Sample Location Point

Denotes Scan Grids

Denotes Locations of Scanned Areas, 25% or Better.

Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/ Adolfo Matus

LOCATION: Room 103 Ceiling

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
B0				12.8	415.9	-1.2	-3.5	See Map For Location
C0				0.7	407.7	-1.2	-21.1	See Map For Location
D0				12.8	473.0	1.9	-26.2	See Map For Location
E0				4.7	517.8	-1.2	-46.3	See Map For Location
B1				8.8	256.9	-1.2	-13.6	See Map For Location
C1				-7.3	154.9	-1.2	-48.8	See Map For Location
D1				4.7	191.6	-1.2	-28.7	See Map For Location
E1				20.8	411.8	-1.2	24.2	See Map For Location
B2				0.7	256.9	-1.2	-8.6	See Map For Location
C2				-3.3	159.0	-1.2	-23.6	See Map For Location
D2				4.7	199.8	1.9	-8.6	See Map For Location
E2				-3.3	212.0	1.9	-6.0	See Map For Location
B3				-3.3	232.4	1.9	-13.6	See Map For Location
C3				-7.3	118.2	-1.2	-31.2	See Map For Location
D3				-7.3	269.1	-1.2	-11.1	See Map For Location
E3				0.7	126.4	-1.2	-21.1	See Map For Location
D0D						1.9	-31.2	Duplicate Swipe
C2D						-1.2	-21.1	Duplicate Swipe
Maximum:				**20.8**	**517.8**	**1.9**	**24.2**	
Average:				**2.5**	**275.2**	**-0.4**	**-18.9**	
StDev:				**8.2**	**128.6**	**1.4**	**16.7**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 9:41

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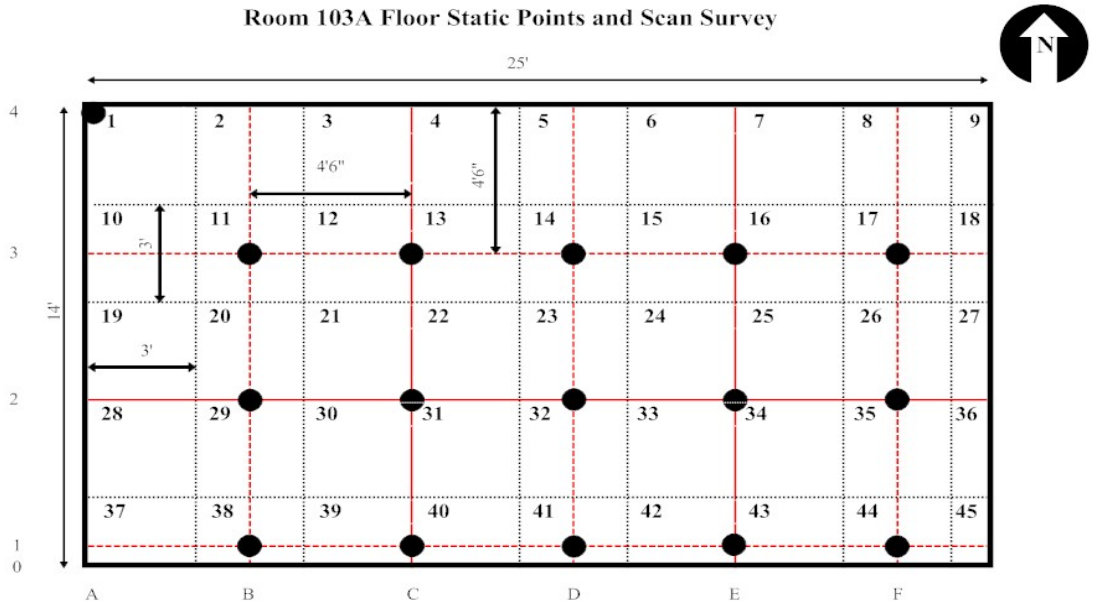
Room 103A Floor

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 13:50	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	297766	12/20/2018	α 40.4%	α 10.1%	α 49.0	α 10.9
SURVEY NUMBER:	N/A	43-93	323074		βγ 25.4%	βγ 9.5%	βγ 459.4	βγ 1732.3
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
LOCATION:	Room 103A Floor				βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/20/2018	TIME: 13:58	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment

Room 103A Floor Static Points and Scan Survey



Denotes Direct Measurement/Swipe Sample Location Point

Denotes Scan Grids is Coincident with Direct Measurement/Swipe Sample Location

Denotes Distance Between Direct Measurement/Swipe Sample Location Point

Denotes Scan Grids

Comments:

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: Room 103A Floor

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
B1				4.0	220.5	-1.2	-23.6	See Map For Location
C1				13.9	467.2	-1.2	-11.1	See Map For Location
D1				8.9	278.2	-1.2	-18.6	See Map For Location
E1				18.8	540.7	-1.2	-11.1	See Map For Location
F1				4.0	267.7	1.9	-3.5	See Map For Location
B2				13.9	294.0	-1.2	4.0	See Map For Location
C2				8.9	2026.2	1.9	6.5	See Map For Location
D2				23.8	892.4	-1.2	-11.1	See Map For Location
E2				-1.0	986.9	-1.2	-6.0	See Map For Location
F2				13.9	341.2	-1.2	-16.1	See Map For Location
B3				23.8	246.7	-1.2	-18.6	See Map For Location
C3				-1.0	1149.6	1.9	-8.6	See Map For Location
D3				-1.0	194.2	-1.2	1.5	See Map For Location
E3				8.9	598.4	5.0	-3.5	See Map For Location
F3				-1.0	446.2	-1.2	-11.1	See Map For Location
A4				8.9	593.2	-1.2	-13.6	See Map For Location
E1D					N/A	-1.2	-6.0	Duplicate Swipe
C3D					N/A	1.9	-11.1	Duplicate Swipe
Maximum:				**23.8**	**2026.2**	**5.0**	**6.5**	
Average:				**9.2**	**596.5**	**-0.2**	**-9.0**	
StDev:				**8.4**	**477.8**	**1.8**	**8.0**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 13:58

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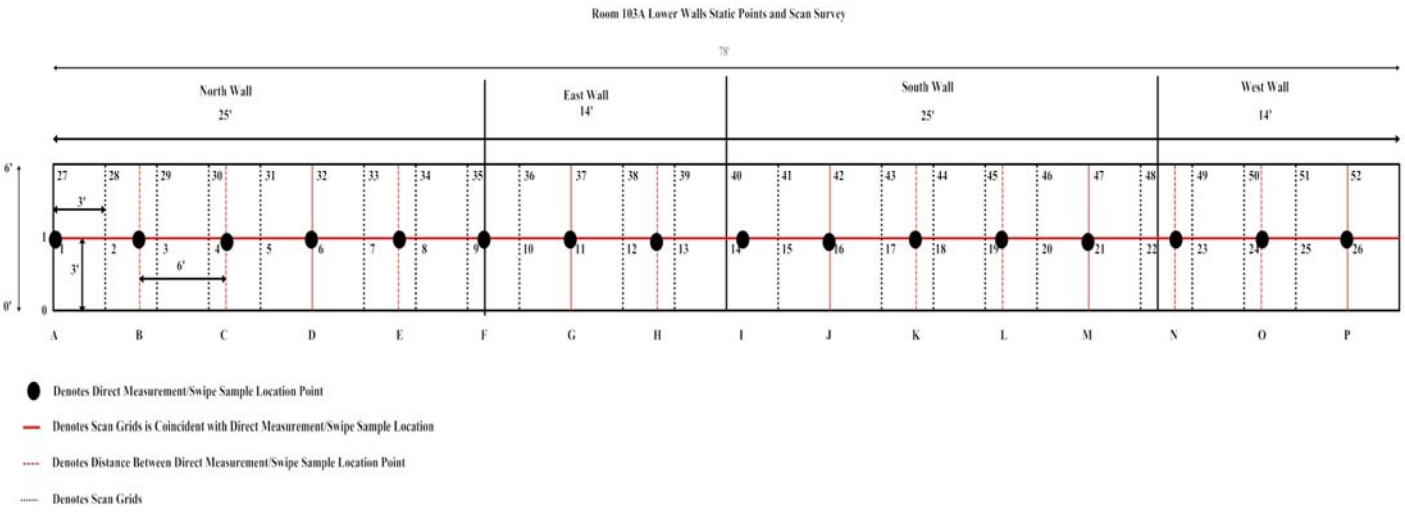
Room 103A Lower Wall

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 09:50	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 40.4%	α 10.1%	α 47.4	α 9.9
		43-93	323074		βγ 25.4%	βγ 9.5%	βγ 459.4	βγ 1732.3
LOCATION:	Room103A Lower Walls	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/20/2018	TIME: 09:58 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: Room103A Lower Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				5.0	78.7	-1.2	-18.6	See Map For Location
B1				0.0	5.2	-1.2	-5.0	See Map For Location
C1				5.0	755.9	-1.2	-5.0	See Map For Location
D1				-5.0	2719.2	-1.2	-9.6	See Map For Location
E1				0.0	1301.8	1.9	-54.8	See Map For Location
F1				14.9	682.4	-1.2	-3.5	See Map For Location
G1				0.0	47.2	-1.2	-0.5	See Map For Location
H1				24.8	89.2	1.9	8.6	See Map For Location
I1				9.9	1333.3	-1.2	-8.6	See Map For Location
J1				-5.0	703.4	1.9	-9.6	See Map For Location
K1				9.9	-78.7	-1.2	4.0	See Map For Location
L1				14.9	608.9	1.9	-1.0	See Map For Location
M1				9.9	-47.2	1.9	1.5	See Map For Location
N1				5.0	-73.5	-1.2	-36.2	See Map For Location
O1				-5.0	-42.0	1.9	-9.6	See Map For Location
P1				-5.0	-99.7	1.9	-32.2	See Map For Location
D1D						-1.2	-11.1	Duplicate Swipe
N1D						1.9	-33.7	Duplicate Swipe
Maximum:				**24.8**	**2719.2**	**1.9**	**8.6**	
Average:				**5.0**	**499.0**	**0.1**	**-12.5**	
StDev:				**8.7**	**767.1**	**1.6**	**16.5**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 9:58

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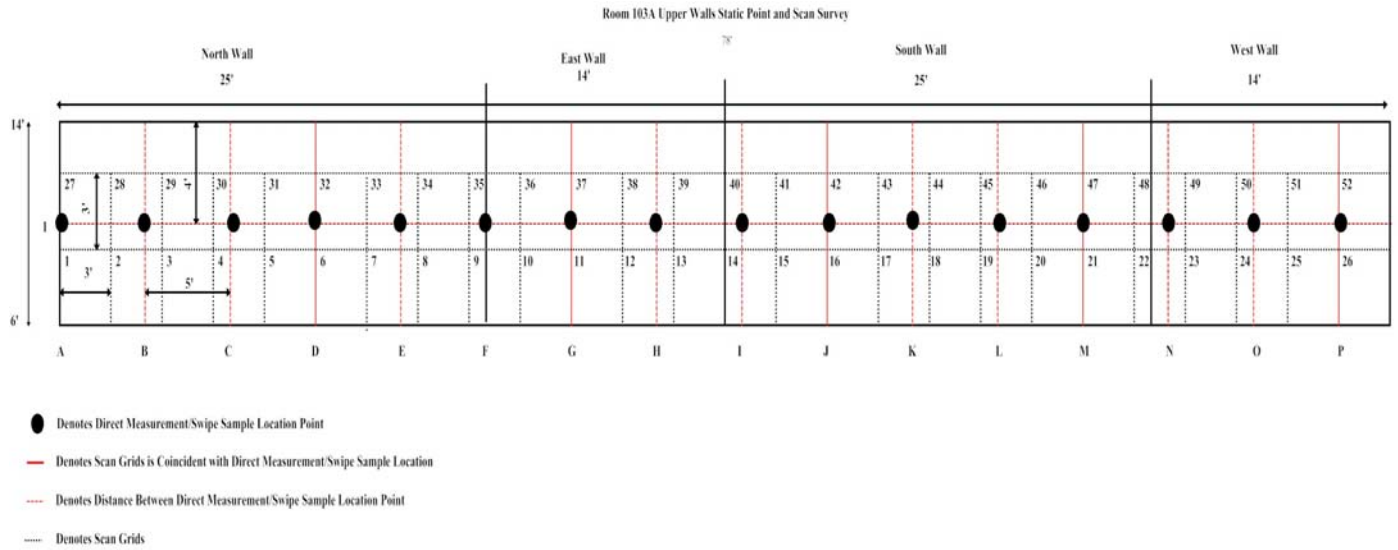
Room 103A Upper Wall

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 12:54	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 44.6	α 9.9
		43-93	299597		βγ 31.3%	βγ 11.7%	βγ 358.4	βγ 1295.0
LOCATION:	Room 103A Upper Walls	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/23/2018	TIME: 13:06 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Room 103A Upper Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				-9.9	85.2	-1.2	-21.1	See Map For Location
B1				12.6	-72.4	-1.2	-3.5	See Map For Location
C1				8.1	690.1	1.9	-13.6	See Map For Location
D1				3.6	1870.1	-1.2	1.5	See Map For Location
E1				3.6	1482.4	-1.2	9.1	See Map For Location
F1				-0.9	1026.6	-1.2	-23.6	See Map For Location
G1				-5.4	1295.0	-1.2	-8.6	See Map For Location
H1				-0.9	1857.3	1.9	4.0	See Map For Location
I1				8.1	800.9	-1.2	-3.5	See Map For Location
J1				-0.9	613.4	-1.2	-18.6	See Map For Location
K1				-0.9	2645.4	-1.2	4.0	See Map For Location
L1				-5.4	447.3	1.9	-3.5	See Map For Location
M1				12.6	779.6	1.9	-1.0	See Map For Location
N1				12.6	38.3	-1.2	-26.2	See Map For Location
O1				-5.4	25.6	1.9	-28.7	See Map For Location
P1				-0.9	110.8	-1.2	-6.0	See Map For Location
E1D						-1.2	1.5	Duplicate Swipe
L1D						1.9	-8.6	Duplicate Swipe
Maximum:				**12.6**	**2645.4**	**1.9**	**9.1**	
Average:				**1.9**	**856.0**	**-0.2**	**-8.1**	
StDev:				**7.1**	**794.9**	**1.5**	**11.4**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 13:06

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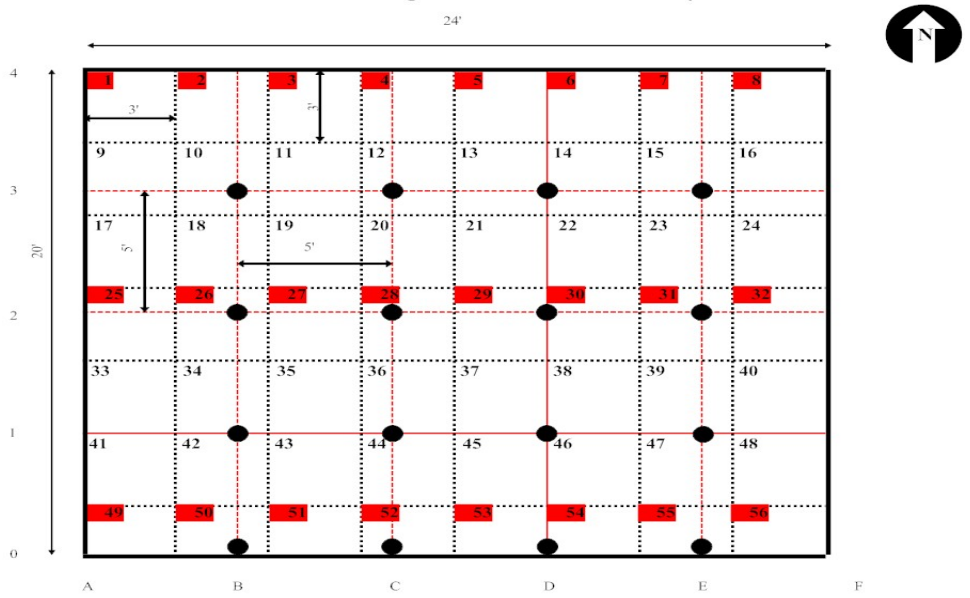
Room 103A Ceiling/Overhead

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 09:28	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 37.3	α 7.3
		43-93	326725		βγ 32.7%	βγ 12.3%	βγ 329.7	βγ 1141.7
LOCATION:	Room 103 Ceiling	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Thomas Hogan/ Adolfo Matus							
DATE: 4/23/2018	TIME: 09:41 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment

Room 103 Ceiling Static Point and Scan Survey



Denotes Direct Measurement/Swipe Sample Location Point

Denotes Scan Grids is Coincident with Direct Measurement/Swipe Sample Location

Denotes Distance Between Direct Measurement/Swipe Sample Location Point

Denotes Scan Grids

Denotes Locations of Scanned Areas, 25% or Better.

Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/ Adolfo Matus

LOCATION: Room 103 Ceiling

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
B0				12.8	415.9	-1.2	-3.5	See Map For Location
C0				0.7	407.7	-1.2	-21.1	See Map For Location
D0				12.8	473.0	1.9	-26.2	See Map For Location
E0				4.7	517.8	-1.2	-46.3	See Map For Location
B1				8.8	256.9	-1.2	-13.6	See Map For Location
C1				-7.3	154.9	-1.2	-48.8	See Map For Location
D1				4.7	191.6	-1.2	-28.7	See Map For Location
E1				20.8	411.8	-1.2	24.2	See Map For Location
B2				0.7	256.9	-1.2	-8.6	See Map For Location
C2				-3.3	159.0	-1.2	-23.6	See Map For Location
D2				4.7	199.8	1.9	-8.6	See Map For Location
E2				-3.3	212.0	1.9	-6.0	See Map For Location
B3				-3.3	232.4	1.9	-13.6	See Map For Location
C3				-7.3	118.2	-1.2	-31.2	See Map For Location
D3				-7.3	269.1	-1.2	-11.1	See Map For Location
E3				0.7	126.4	-1.2	-21.1	See Map For Location
D0D						1.9	-31.2	Duplicate Swipe
C2D						-1.2	-21.1	Duplicate Swipe
Maximum:				**20.8**	**517.8**	**1.9**	**24.2**	
Average:				**2.5**	**275.2**	**-0.4**	**-18.9**	
StDev:				**8.2**	**128.6**	**1.4**	**16.7**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 9:41

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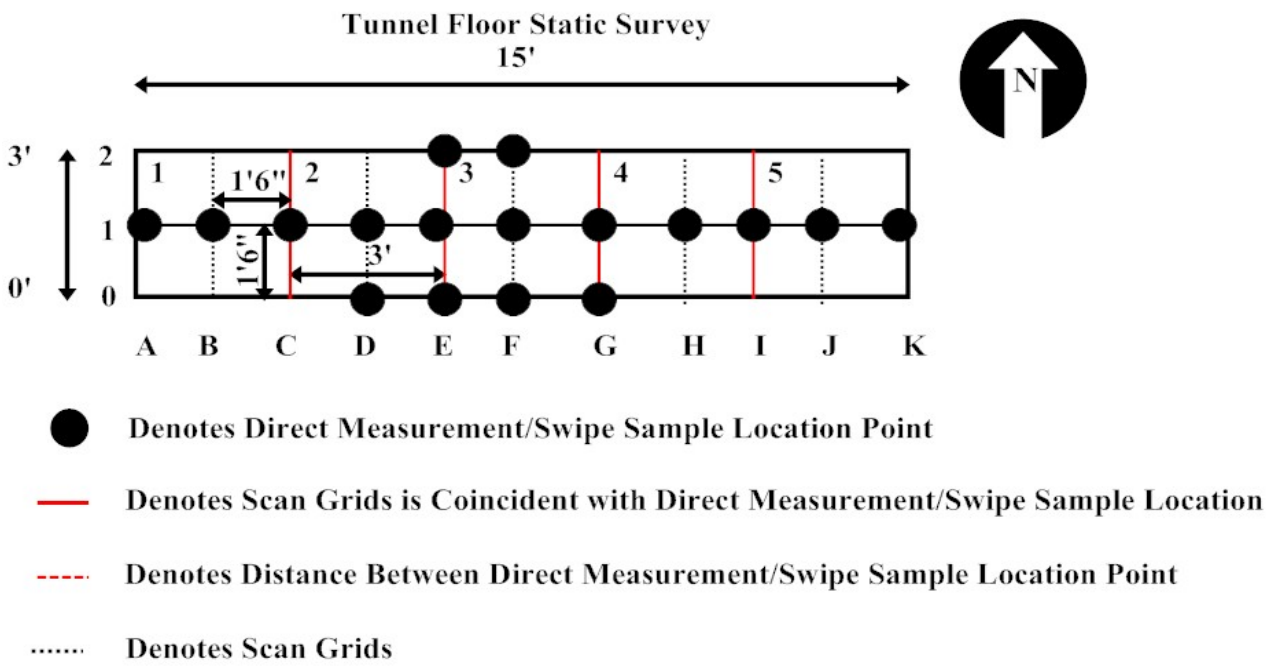
Tunnel Floor

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 14:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 40.4%	α 10.1%	α 62.1	α 20.8
		43-93	323074		βγ 25.4%	βγ 9.5%	βγ 584.4	βγ 2845.1
LOCATION:	Tunnel Floor	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/23/2018	TIME: 14:39	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

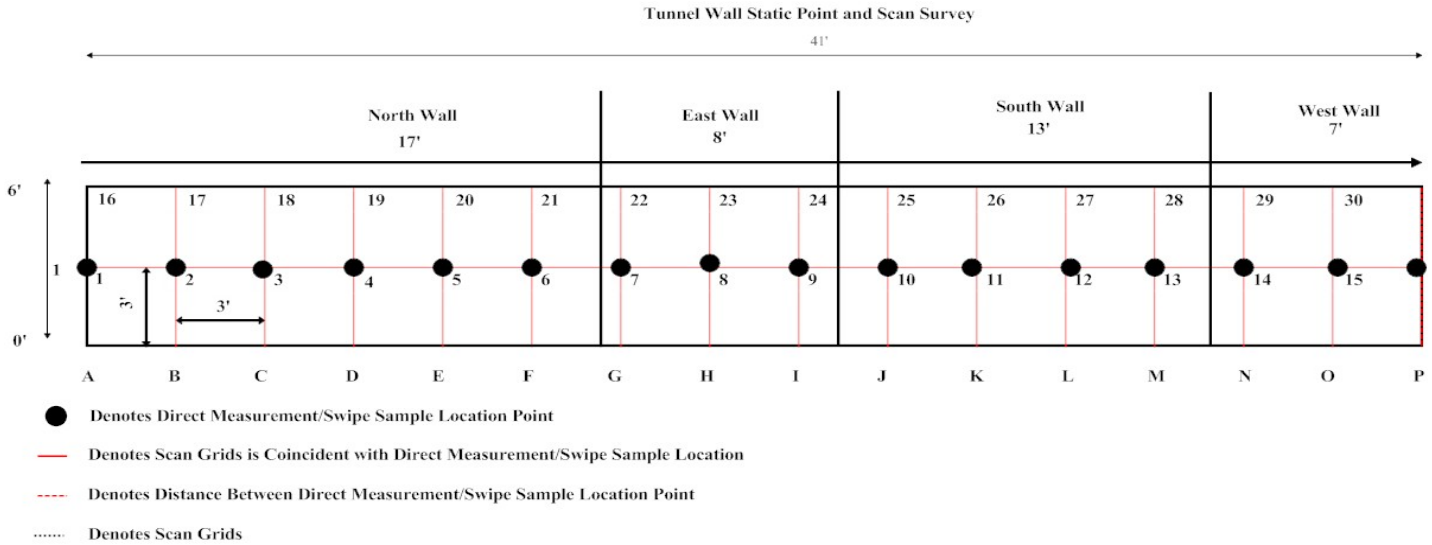
Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

Tunnel Lower/Upper Walls

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 13:37	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 40.2	α 6.6
		43-93	268605		βγ 26.8%	βγ 10.1%	βγ 436.7	βγ 1651.7
LOCATION:	Tunnel Lower Walls	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Joan Cosgrove							
DATE: 4/23/2018	TIME: 14:16 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Joan Cosgrove

LOCATION: Tunnel Lower Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				12.3	328.4	-1.2	-6.0	See Map For Location
B1				12.3	253.7	1.9	-1.0	See Map For Location
C1				2.8	278.6	-1.2	-26.2	See Map For Location
D1				17.0	233.8	-1.2	-1.0	See Map For Location
E1				7.6	363.2	-1.2	-36.2	See Map For Location
F1				7.6	268.7	1.9	-31.2	See Map For Location
G1				12.3	263.7	-1.2	-23.6	See Map For Location
H1				-1.9	-24.9	-1.2	-3.5	See Map For Location
I1				17.0	283.6	-1.2	-28.7	See Map For Location
J1				2.8	363.2	1.9	-16.1	See Map For Location
K1				7.6	482.6	1.9	-16.1	See Map For Location
L1				-1.9	223.9	-1.2	-23.6	See Map For Location
M1				7.6	462.7	-1.2	-1.0	See Map For Location
N1				12.3	213.9	-1.2	-26.2	See Map For Location
O1				-6.6	218.9	-1.2	-23.6	See Map For Location
P1				92.7	164.2	-1.2	-21.1	See Map For Location
G1D						-1.2	-28.7	Duplicate Swipe
M1D						-1.2	-3.5	Duplicate Swipe
Maximum:				**92.7**	**482.6**	**1.9**	**-1.0**	
Average:				**12.6**	**273.6**	**-0.6**	**-17.6**	
StDev:				**22.4**	**118.5**	**1.3**	**11.9**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 14:16

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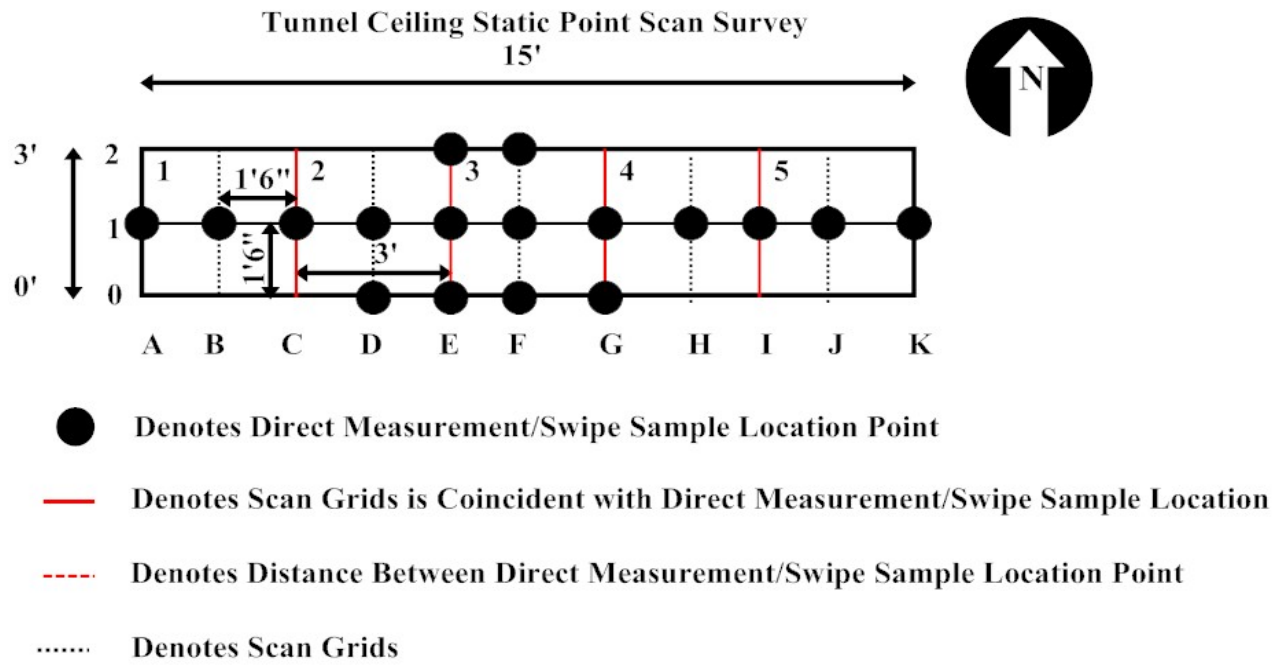
Tunnel Overhead/Ceiling

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 14:52	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 40.2	α 6.6
		43-93	268605		βγ 26.8%	βγ 10.1%	βγ 436.7	βγ 1651.7
LOCATION:	Tunnel Ceiling	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Joan Cosgrove							
DATE: 4/23/2018	TIME: 14:55	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Joan Cosgrove

LOCATION: Tunnel Ceiling

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
D0				-6.6	278.6	-1.2	-8.6	See Map For Location
E0				-1.9	318.4	-1.2	4.0	See Map For Location
F0				7.6	189.1	1.9	-13.6	See Map For Location
G0				2.8	174.1	1.9	1.5	See Map For Location
A1				-6.6	288.6	-1.2	-26.2	See Map For Location
B1				2.8	328.4	1.9	-16.1	See Map For Location
C1				2.8	293.5	-1.2	-11.1	See Map For Location
D1				2.8	308.5	-1.2	-26.2	See Map For Location
E1				2.8	253.7	-1.2	-6.0	See Map For Location
F1				-1.9	248.8	-1.2	-8.6	See Map For Location
G1				-1.9	189.1	1.9	-13.6	See Map For Location
H1				-6.6	-54.7	1.9	-28.7	See Map For Location
I1				-1.9	194.0	1.9	-11.1	See Map For Location
J1				17.0	303.5	1.9	-6.0	See Map For Location
K1				-1.9	184.1	1.9	-13.6	See Map For Location
E2				7.6	293.5	-1.2	1.5	See Map For Location
F2				7.6	233.8	-1.2	-28.7	Duplicate Swipe
B1D						1.9	-11.1	Duplicate Swipe
Maximum:				**17.0**	**328.4**	**1.9**	**4.0**	
Average:				**1.4**	**236.8**	**0.3**	**-12.3**	
StDev:				**6.2**	**91.5**	**1.6**	**10.0**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 14:55

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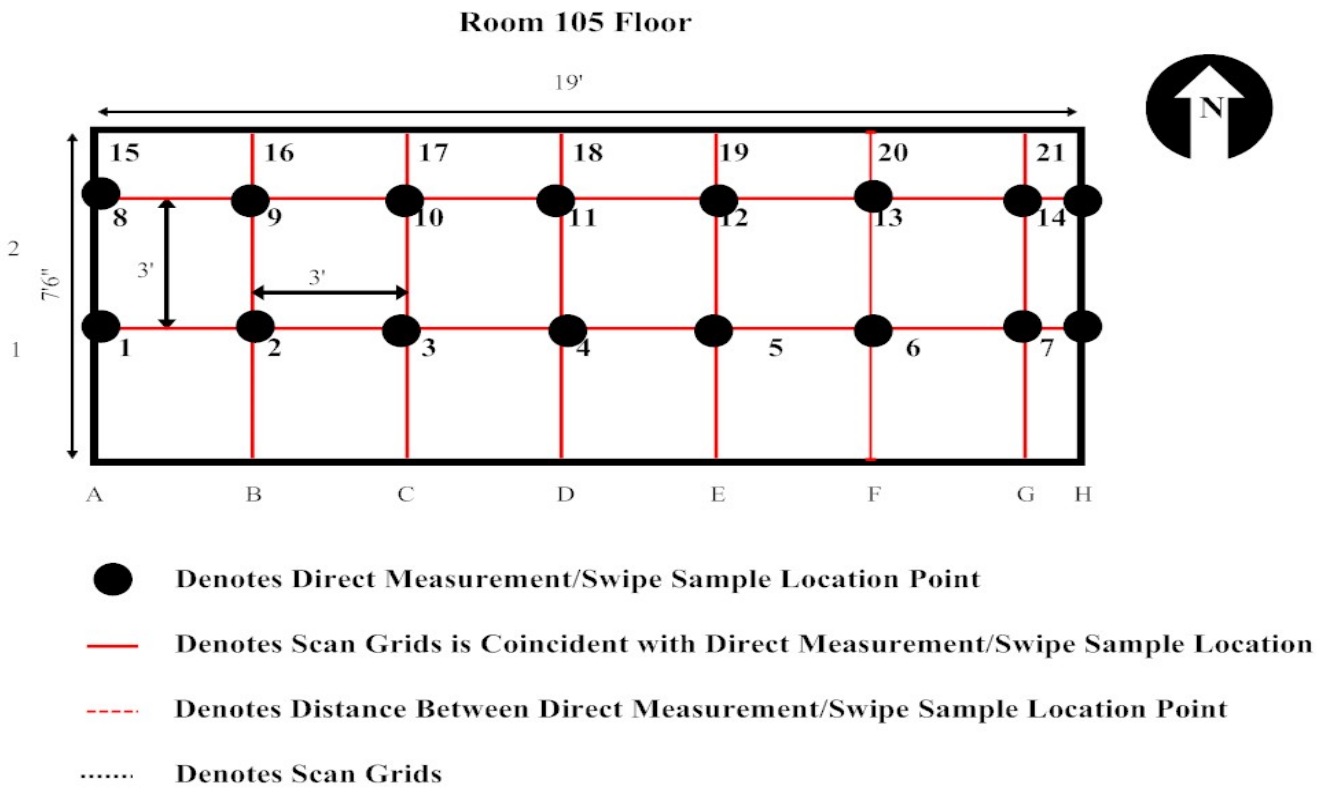
Room 105 Floor

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 15:00	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 53.3	α 16.2
		43-93	299597		βγ 31.3%	βγ 11.7%	βγ 481.0	βγ 2377.0
LOCATION:	Room 105 Floor	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Thomas Hogan/Joan Cosgrove							
DATE: 4/23/2018	TIME: 15:05 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

The 3' by 3' area at each direct measurement location was 100% gross alpha/beta-gamma surveyed.

Scan results were: 0-5 CPM alpha, 250-300 cpm beta-gamma.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Joan Cosgrove

LOCATION: Room 105 Floor

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				19.8	106.5	1.9	-13.6	See Map For Location
B1				-2.7	-68.2	1.9	-8.6	See Map For Location
C1				10.8	-42.6	-1.2	-21.1	See Map For Location
D1				-2.7	-42.6	-1.2	-11.1	See Map For Location
E1				-7.2	-119.3	-1.2	-13.6	See Map For Location
F1				-2.7	-115.0	-1.2	-3.5	See Map For Location
G1				-2.7	-132.1	1.9	-16.1	See Map For Location
H1				-7.2	132.1	-1.2	4.0	See Map For Location
A2				24.3	-132.1	-1.2	-26.2	See Map For Location
B2				-2.7	-115.0	-1.2	-18.6	See Map For Location
C2				6.3	119.3	1.9	-16.1	See Map For Location
D2				1.8	29.8	-1.2	-31.2	See Map For Location
E2				-2.7	-115.0	-1.2	-11.1	See Map For Location
F2				-16.2	98.0	-1.2	-6.0	See Map For Location
G2				1.8	123.5	-1.2	-3.5	See Map For Location
H2				6.3	34.1	1.9	-23.6	See Map For Location
E1D						-1.2	-11.1	Duplicate Swipe
F2D						-1.2	-8.6	Duplicate Swipe
Maximum:				**24.3**	**132.1**	**1.9**	**4.0**	
Average:				**1.5**	**-14.9**	**-0.4**	**-13.3**	
StDev:				**10.2**	**104.4**	**1.4**	**8.8**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 15:05

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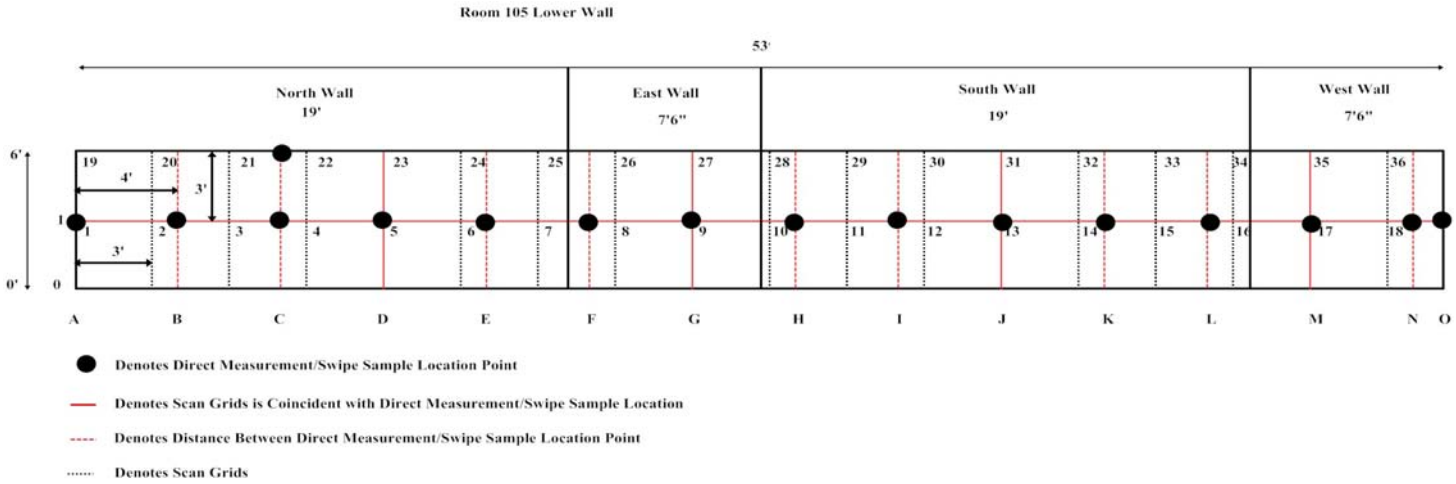
Room 105 Lower/Upper Walls

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 13:22	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	193668	8/15/2018	α 49.7%	α 12.4%	α 45.6	α 12.9
SURVEY NUMBER:	N/A	43-93	326725		βγ 32.7%	βγ 12.3%	βγ 364.1	βγ 1402.7
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
LOCATION:	Room 105 Lower Walls				βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Thomas Hogan							
DATE: 4/23/2018	TIME: 13:41	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

The 3' by 3' area at each direct measurement location was 100% gross alpha/beta-gamma surveyed.

Scan results were: 0-4 CPM alpha, 150-200 cpm beta-gamma.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Room 105 Lower Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				-0.8	403.7	-1.2	-6.0	See Map For Location
B1				-4.8	191.6	-1.2	-1.0	See Map For Location
C1				-4.8	77.5	1.9	-16.1	See Map For Location
D1				3.2	28.5	-1.2	-3.5	See Map For Location
E1				11.3	167.2	-1.2	4.0	See Map For Location
F1				-4.8	273.2	-1.2	-11.1	See Map For Location
G1				-8.9	191.6	-1.2	-16.1	See Map For Location
H1				3.2	110.1	-1.2	-3.5	See Map For Location
I1				3.2	53.0	-1.2	-18.6	See Map For Location
J1				3.2	36.7	-1.2	-26.2	See Map For Location
K1				-12.9	-36.7	1.9	-6.0	See Map For Location
L1				3.2	-85.6	-1.2	-3.5	See Map For Location
M1				-4.8	-8.2	-1.2	-3.5	See Map For Location
N1				-0.8	32.6	-1.2	-8.6	See Map For Location
O1				-0.8	473.0	-1.2	-3.5	See Map For Location
C2				7.2	28.5	-1.2	-8.6	See Map For Location
C1D						1.9	-8.6	Duplicate Swipe
K1D						1.9	-13.6	Duplicate Swipe
Maximum:				**11.3**	**473.0**	**1.9**	**4.0**	
Average:				**-0.6**	**121.0**	**-0.6**	**-8.6**	
StDev:				**6.1**	**155.3**	**1.3**	**7.3**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 13:41

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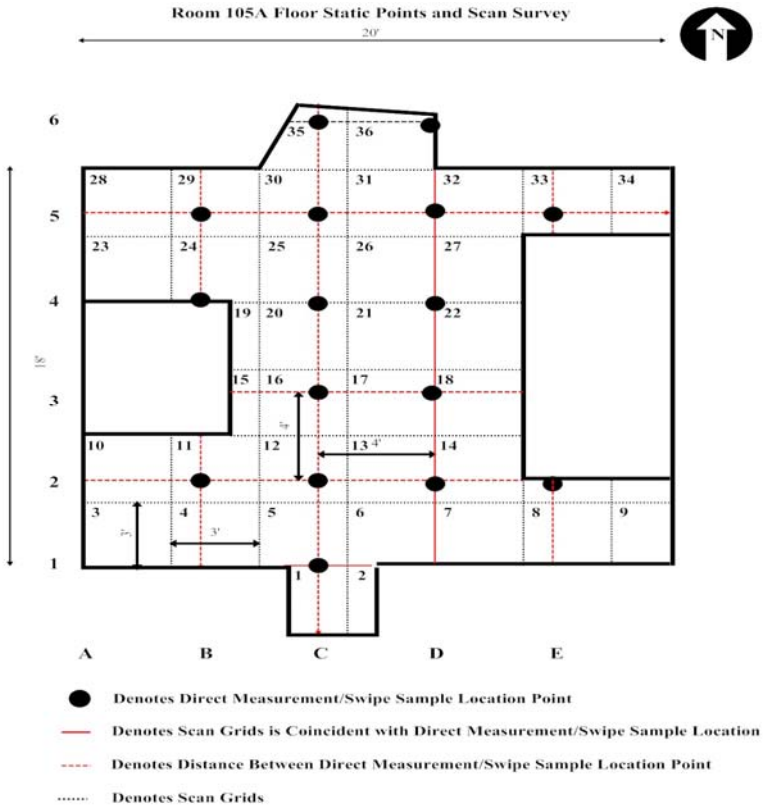
Room 105A Floor

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 08:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 40.4%	α 10.1%	α 62.1	α 20.8
		43-93	323074		βγ 25.4%	βγ 9.5%	βγ 584.4	βγ 2845.1
LOCATION:	Room 105A Floor	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/23/2018	TIME: 08:47	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: Room 105A Floor

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
C1				-1.0	246.7	-1.2	-6.0	See Map For Location
B2				28.7	73.5	-1.2	-21.1	See Map For Location
C2				-5.9	178.5	-1.2	-3.5	See Map For Location
D2				4.0	425.2	1.9	1.5	See Map For Location
E2				-10.9	-89.2	5.0	4.0	See Map For Location
C3				-1.0	68.2	-1.2	-3.5	See Map For Location
D3				-5.9	199.5	1.9	-26.2	See Map For Location
B4				-1.0	21.0	1.9	-13.6	See Map For Location
C4				13.9	378.0	-1.2	-8.6	See Map For Location
D4				-15.8	183.7	-1.2	-11.1	See Map For Location
B5				-1.0	110.2	-1.2	-31.2	See Map For Location
C5				23.8	-157.5	-1.2	-1.0	See Map For Location
D5				13.9	68.2	1.9	-3.5	See Map For Location
E5				-1.0	262.5	-1.2	-18.6	See Map For Location
C6				33.7	540.7	-1.2	-11.1	See Map For Location
D6				4.0	-89.2	1.9	-26.2	See Map For Location
C3D						-1.2	-6.0	Duplicate Swipe
E5D						1.9	-23.6	Duplicate Swipe
Maximum:				**33.7**	**540.7**	**5.0**	**4.0**	
Average:				**4.9**	**151.2**	**0.1**	**-11.6**	
StDev:				**14.1**	**192.0**	**1.9**	**10.6**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 8:47

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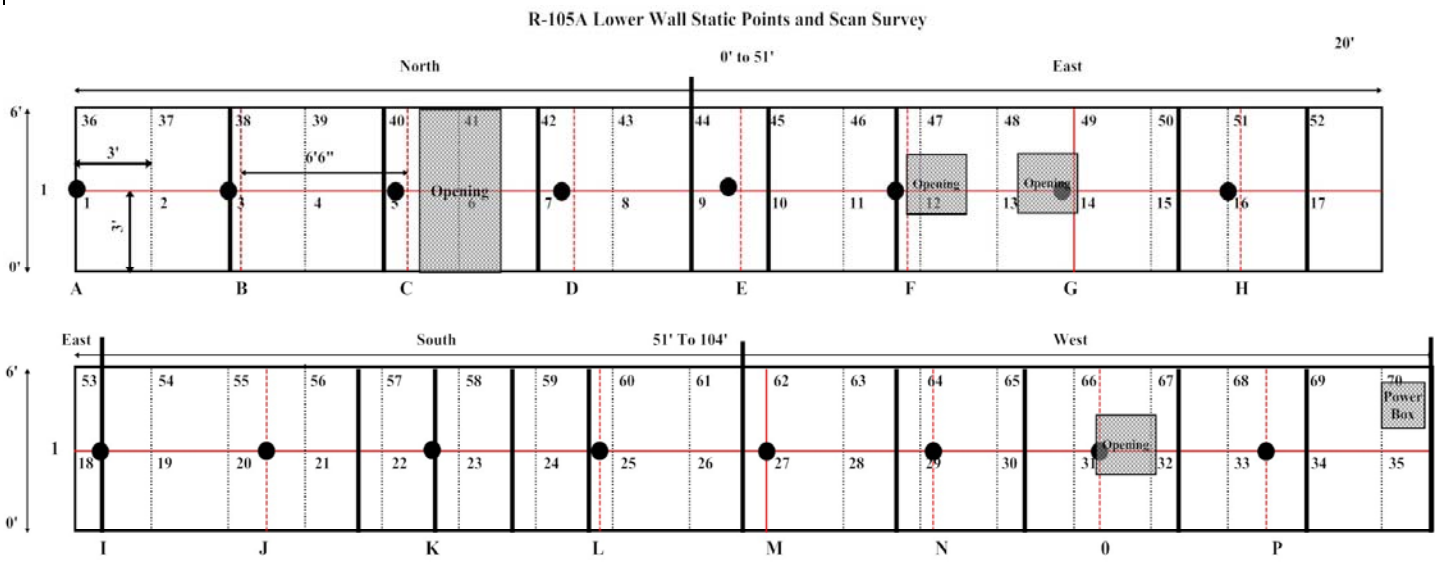
Room 105A Lower\Upper Walls

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 13:00	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 40.4%	α 10.1%	α 47.4	α 9.9
		43-93	323074		βγ 25.4%	βγ 9.5%	βγ 494.4	βγ 2015.7
LOCATION:	Room 105A Lower/Upper Walls	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/23/2018	TIME: 13:17 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: Ra-226, Sr-90		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: Room 105A Lower/Upper Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				-5.0	246.7	-1.2	-3.5	See Map For Location
B1				9.9	430.4	5.0	-6.0	See Map For Location
C1				5.0	252.0	-1.2	-11.1	See Map For Location
D1				9.9	362.2	5.0	-16.1	See Map For Location
E1				9.9	257.2	-1.2	-1.0	See Map For Location
F1				9.9	78.7	1.9	-16.1	See Map For Location
G1				19.8	351.7	5.0	-23.6	See Map For Location
H1				5.0	73.5	-1.2	-23.6	See Map For Location
I1				14.9	115.5	5.0	4.0	See Map For Location
J1				14.9	63.0	-1.2	-13.6	See Map For Location
K1				5.0	21.0	1.9	4.0	See Map For Location
L1				5.0	68.2	1.9	-1.0	See Map For Location
M1				0.0	0.0	1.9	-11.1	See Map For Location
N1				9.9	-15.7	5.0	-3.5	See Map For Location
O1				24.8	-89.2	-1.2	-16.1	See Map For Location
P1				5.0	-68.2	-1.2	-26.2	See Map For Location
C1D						-1.2	-6.0	Duplicate Swipe
N1D						5.0	-6.0	Duplicate Swipe
Maximum:				**24.8**	**430.4**	**5.0**	**4.0**	
Average:				**9.0**	**134.2**	**1.5**	**-9.8**	
StDev:				**7.3**	**161.1**	**2.8**	**9.2**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 13:17

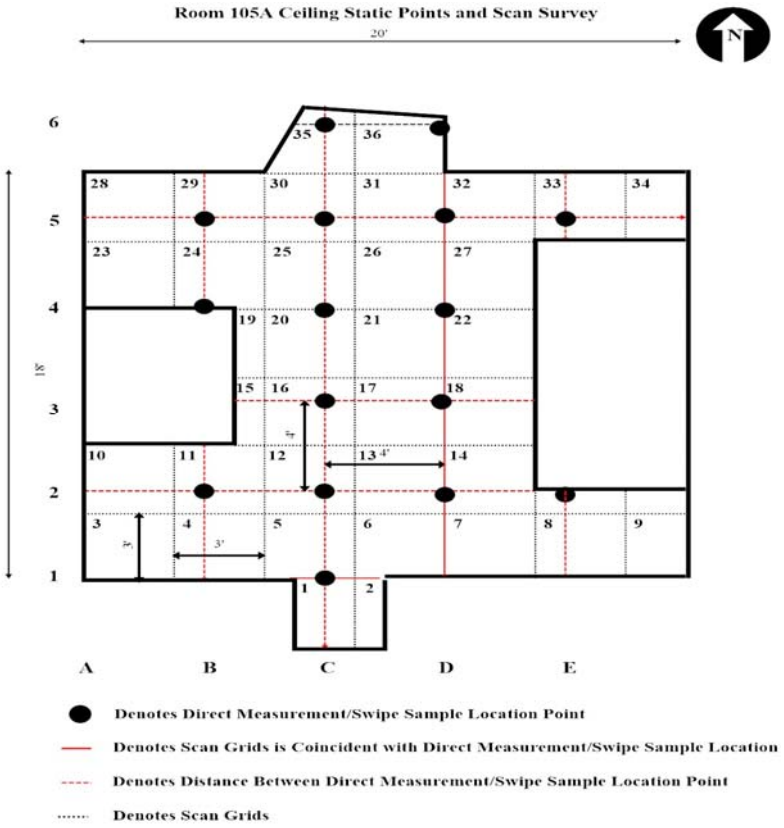
THIS AREA INTENTIONALLY LEFT BLANK

Room 105A Ceiling/Overhead

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 13:45	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 43.2	α 9.0
		43-93	299597		βγ 31.3%	βγ 15.7%	βγ 287.7	βγ 1118.2
LOCATION:	Room 105A Ceiling	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 26.5%	βγ 62.8	βγ 149.8
SURVEYOR:	Adolfo Matus							
DATE: 4/23/2018	TIME: 14:04	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

The 3' by 3' area at each direct measurement location was 100% gross alpha/beta-gamma surveyed.

Scan results were: 0-5 CPM alpha, 160-200 cpm beta-gamma.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Room 105A Ceiling

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
C1				13.5	169.3	-1.2	-14.0	See Map For Location
B2				9.0	220.4	-1.2	-15.8	See Map For Location
C2				4.5	182.1	-1.2	-0.8	See Map For Location
D2				-4.5	293.9	-1.2	-19.6	See Map For Location
E2				4.5	162.9	-1.2	3.0	See Map For Location
C3				-4.5	159.7	-1.2	-4.5	See Map For Location
D3				4.5	198.1	-1.2	-21.5	See Map For Location
B4				0.0	121.4	1.9	8.7	See Map For Location
C4				0.0	150.2	1.9	-19.6	See Map For Location
D4				0.0	16.0	-1.2	-8.3	See Map For Location
B5				-4.5	162.9	-1.2	-14.0	See Map For Location
C5				-4.5	150.2	-1.2	-10.2	See Map For Location
D5				4.5	156.5	-1.2	-2.6	See Map For Location
E5				13.5	115.0	1.9	-19.6	See Map For Location
C6				-9.0	38.3	-1.2	-6.4	See Map For Location
D6				0.0	124.6	-1.2	-15.8	See Map For Location
D2D						-1.2	-23.4	Duplicate Swipe
C5D						-1.2	-12.1	Duplicate Swipe
Maximum:				**13.5**	**293.9**	**1.9**	**8.7**	
Average:				**1.7**	**151.4**	**-0.7**	**-10.9**	
StDev:				**6.6**	**64.8**	**1.2**	**9.0**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 14:04

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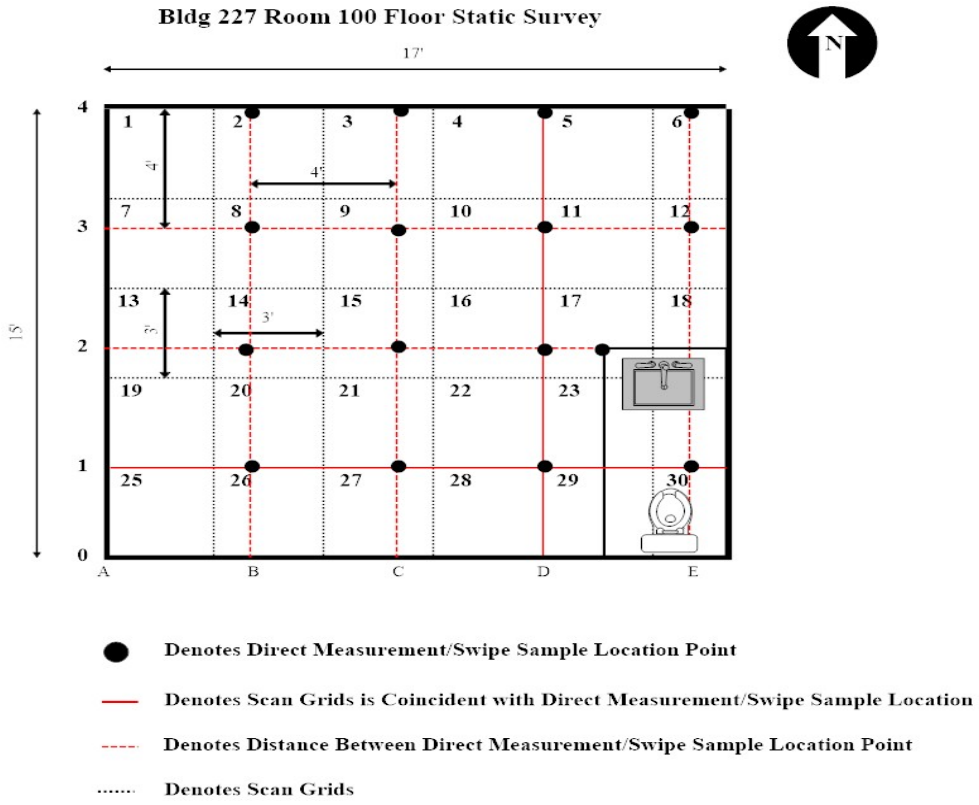
Building 227

Room 100 Floor

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 08:51	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 53.3	α 16.2
		43-93	299597		βγ 31.3%	βγ 11.7%	βγ 481.0	βγ 2377.0
LOCATION:	Bldg 227 Room 100 Floor	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Josefina Matus							
DATE: 4/23/2018	TIME: 09:09 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Josefina Matus

LOCATION: Bldg 227 Room 100 Floor

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
B1				6.3	-51.1	1.9	-13.6	See Map For Location
C1				-11.7	-38.3	1.9	-1.0	See Map For Location
D1				19.8	-123.5	-1.2	-3.5	See Map For Location
E1				1.8	187.4	1.9	11.6	See Map For Location
B2				10.8	-8.5	-1.2	-8.6	See Map For Location
C2				6.3	76.7	-1.2	-26.2	See Map For Location
D2				6.3	119.3	-1.2	-13.6	See Map For Location
E2				19.8	276.9	1.9	-18.6	See Map For Location
B3				10.8	38.3	-1.2	-3.5	See Map For Location
C3				10.8	149.1	-1.2	-6.0	See Map For Location
D3				1.8	80.9	-1.2	21.6	See Map For Location
E3				24.3	178.9	1.9	4.0	See Map For Location
B4				1.8	217.3	-1.2	-18.6	See Map For Location
C4				10.8	89.5	-1.2	-13.6	See Map For Location
D4				15.3	-68.2	1.9	-11.1	See Map For Location
E4				10.8	136.3	-1.2	-6.0	See Map For Location
B2D						-1.2	-11.1	Duplicate Swipe
E3D						1.9	-1.0	Duplicate Swipe
Maximum:				**24.3**	**276.9**	**1.9**	**21.6**	
Average:				**9.1**	**78.8**	**0.0**	**-6.6**	
StDev:				**8.7**	**113.3**	**1.6**	**11.3**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 9:09

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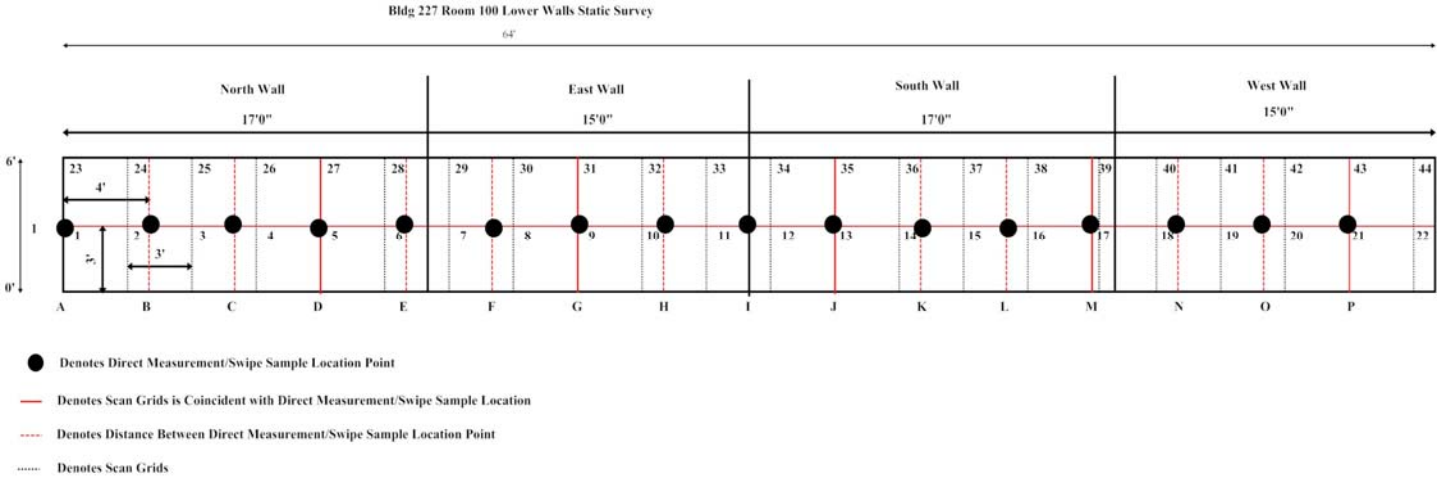
Building 227

Room 100 Lower Walls

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/23/2018	TIME: 08:10	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 46.8	α 10.4
		43-93	268605		βγ 26.8%	βγ 10.1%	βγ 441.8	βγ 1691.5
LOCATION:	Bldg 227 Room 100 Lower Walls	2929	146870	6/17/2019	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Joan Cosgrove							
DATE: 4/23/2018	TIME: 08:22 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Joan Cosgrove

LOCATION: Bldg 227 Room 100 Lower Walls

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
A1				-10.4	79.6	-1.2	-1.0	See Map For Location
B1				-5.7	64.7	-1.2	-3.5	See Map For Location
C1				8.5	-14.9	-1.2	-21.1	See Map For Location
D1				-10.4	84.6	-1.2	4.0	See Map For Location
E1				8.5	-10.0	-1.2	6.5	See Map For Location
F1				-10.4	393.0	-1.2	-3.5	See Map For Location
G1				-10.4	398.0	1.9	9.1	See Map For Location
H1				-10.4	353.2	-1.2	-26.2	See Map For Location
I1				-0.9	621.9	-1.2	-6.0	See Map For Location
J1				3.8	517.4	-1.2	-3.5	See Map For Location
K1				-5.7	19.9	-1.2	-1.0	See Map For Location
L1				-5.7	119.4	-1.2	-1.0	See Map For Location
M1				-0.9	243.8	-1.2	-21.1	See Map For Location
N1				-0.9	303.5	-1.2	-81.5	See Map For Location
O1				-10.4	462.7	-1.2	-3.5	See Map For Location
P1				-5.7	-19.9	1.9	-6.0	See Map For Location
F1D						-1.2	-6.0	Duplicate Swipe
L1D						-1.2	1.5	Duplicate Swipe
Maximum:				**8.5**	**621.9**	**1.9**	**9.1**	
Average:				**-4.2**	**226.1**	**-0.9**	**-9.1**	
StDev:				**6.6**	**211.8**	**1.0**	**20.3**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 8:22

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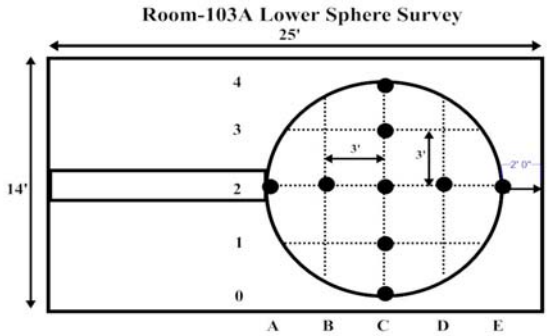
Target Sphere

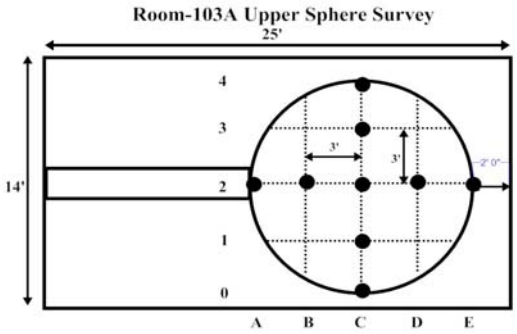
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/25/2018	TIME: 14:27	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	184949	3/6/2019	α 42.3%	α 10.6%	α 42.0	α 7.6
SURVEY NUMBER:	N/A	43-93	268605		βγ 26.8%	βγ 10.1%	βγ 396.7	βγ 1353.2
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
LOCATION:	Bldg. 218 Target Sphere Interior				βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/25/2018	TIME: 14:42	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Beach Detachment Bldg. 218 Target Sphere



● Denotes Direct Measurement/Swipe Sample Location Point



● Denotes Direct Measurement/Swipe Sample Location Point

Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Bldg. 218 Target Sphere Interior

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
C0				-2.8	-19.9	1.9	-23.6	Sphere Top/See Map For Location
C1				1.9	-5.0	5.0	-26.2	Sphere Top/See Map For Location
C2				6.6	-64.7	1.9	-18.6	Sphere Top/See Map For Location
C3				6.6	-29.9	8.0	-23.6	Sphere Top/See Map For Location
C4				1.9	29.9	1.9	-16.1	Sphere Top/See Map For Location
A2				11.3	273.6	1.9	-28.7	Sphere Top/See Map For Location
B2				1.9	84.6	-1.2	-11.1	Sphere Top/See Map For Location
D2				-2.8	-14.9	1.9	-21.1	Sphere Top/See Map For Location
E2				1.9	547.3	1.9	-31.2	Sphere Top/See Map For Location
C0				6.6	-34.8	-1.2	-3.5	Sphere Bottom/See Map For Location
C1				-2.8	497.5	1.9	1.5	Sphere Bottom/See Map For Location
C2				1.9	-24.9	5.0	-16.1	Sphere Bottom/See Map For Location
C3				6.6	14.9	1.9	-26.2	Sphere Bottom/See Map For Location
C4				1.9	-10.0	-1.2	-23.6	Sphere Bottom/See Map For Location
A2				-2.8	3447.8	1.9	-11.1	Sphere Bottom/See Map For Location
B2				6.6	184.1	1.9	-16.1	Sphere Bottom/See Map For Location
D2				-2.8	-19.9	-1.2	-13.6	Sphere Bottom/See Map For Location
E2				1.9	527.4	-1.2	-8.6	Sphere Bottom/See Map For Location
Maximum:				**11.3**	**3447.8**	**8.0**	**1.5**	Duplicate Swipe
Average:				**2.4**	**299.1**	**1.7**	**-17.6**	Duplicate Swipe
StDev:				**4.3**	**812.7**	**2.5**	**8.8**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/25/2018

Time: 14:42

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Appendix J

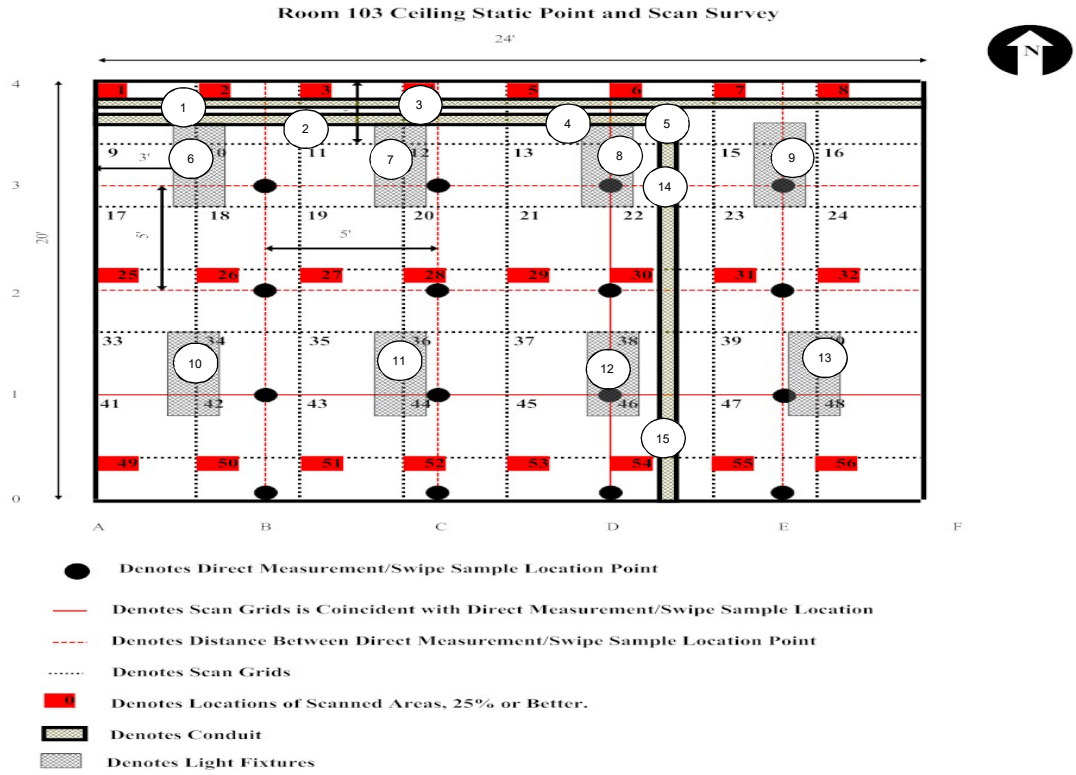
Building 218/227 Rooms Biased Survey Data

Room 103 Ceiling/Overhead

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/9/2018	TIME: 08:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 49.7%	α 12.4%	α 58.2	α 8.9
		43-93	323074		βγ 32.7%	βγ 12.3%	βγ 446.6	βγ 1345.6
LOCATION:	Room 103 Ceiling/Overhead Biased Readings	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan/Adolfo Matus							
DATE: 4/9/2018	TIME: 08:47 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 103



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER:	N/A							
SURVEYOR:	Thomas Hogan/Josefina Matus/Adolfo Matus				LOCATION: Room 103 Ceiling/Overhead Biased Readings			
Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				7.2	1924.6	11.1	12.5	See Map For Location
2				15.3	2625.9	5.0	4.9	See Map For Location
3				23.3	2177.4	17.3	-6.4	See Map For Location
4				7.2	3441.4	11.1	-10.2	See Map For Location
5				47.5	3033.6	17.3	-2.6	See Map For Location
6				47.5	4893.0	5.0	4.9	See Map For Location
7				23.3	3995.9	-1.2	8.7	See Map For Location
8				31.4	3522.9	-1.2	16.2	See Map For Location
9				55.5	4216.1	5.0	-10.2	See Map For Location
10				15.3	3498.5	11.1	-29.1	See Map For Location
11				23.3	2911.3	11.1	-21.5	See Map For Location
12				23.3	2992.9	5.0	-14.0	See Map For Location
13				39.4	3310.9	11.1	-6.4	See Map For Location
14				31.4	3082.6	5.0	31.3	See Map For Location
15				15.3	3392.5	5.0	16.2	See Map For Location
Maximum:				**55.5**	**4893.0**	**17.3**	**31.3**	
Average:				**27.1**	**3268.0**	**7.8**	**-0.4**	

Reviewer	Date: 4/9/2018
Daniel Spicuzza	Time: 8:47

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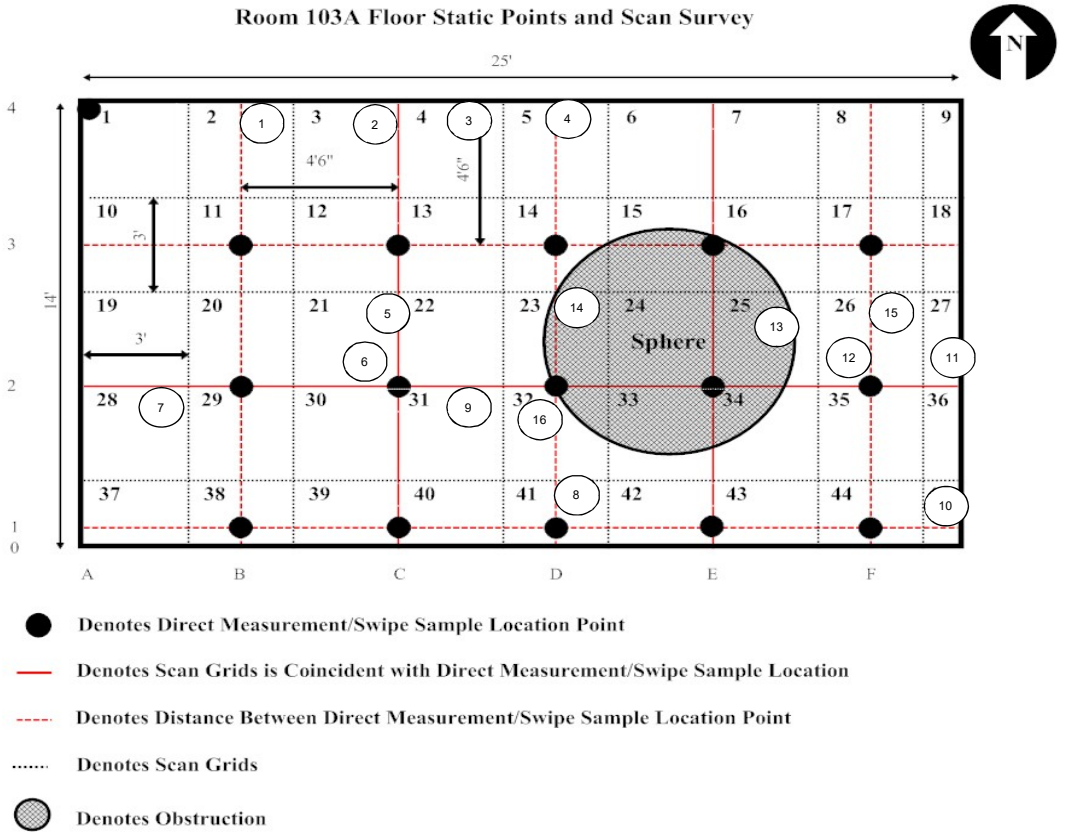
Room 103A Floor

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/12/2018	TIME: 08:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
		43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
LOCATION:	Room 103A Floor Biased Readings	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Ricjard Thatcher/Joan Cosgrove							
DATE: 4/12/2018	TIME: 08:46 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 103A



Comments:

Cross hatched areas are elevated areas.

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Room 103A Floor Biased Readings

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				8.0	2389.4	11.1	-10.2	See Map For Location
2				8.0	4191.6	11.1	12.5	See Map For Location
3				24.1	3368.0	5.0	-2.6	See Map For Location
4				8.0	2577.0	5.0	12.5	See Map For Location
5				0.0	2479.1	17.3	20.0	See Map For Location
6				8.0	2952.1	11.1	8.7	See Map For Location
7				8.0	2307.8	11.1	-2.6	See Map For Location
8				0.0	2373.1	5.0	1.1	See Map For Location
9				16.1	2356.8	11.1	-6.4	See Map For Location
10				0.0	3123.3	17.3	-17.7	See Map For Location
11				8.0	2519.9	5.0	-6.4	See Map For Location
12				16.1	2218.1	11.1	-10.2	See Map For Location
13				0.0	2340.5	17.3	4.9	See Map For Location
14				8.0	2470.9	5.0	4.9	See Map For Location
15				8.0	1843.0	5.0	-6.4	See Map For Location
16				8.0	2519.9	-1.2	8.7	See Map For Location
Maximum:				**24.1**	**4191.6**	**17.3**	**20.0**	
Average:				**8.0**	**2626.9**	**9.2**	**0.7**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/12/2018

Time: 8:46

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Room 103A Lower Wall

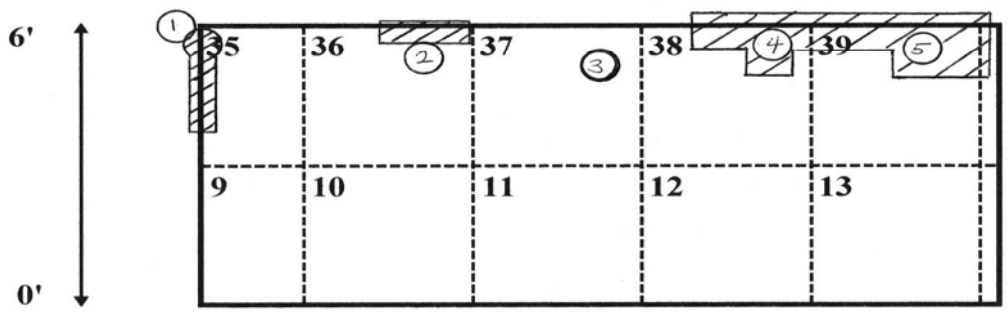
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/13/2018	TIME: 12:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
SURVEY NUMBER:	N/A	43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
LOCATION:	Room 103A Lower Walls Biased Readings				βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan/Josefina Matus							
DATE: 4/13/2018	TIME: 12:54	Reviewed by: Daniel Spicuzza						

R-103A East Lower Wall Scan Survey

East Wall

14'



15

11

8

10

Comments:

Cross hatched areas are elevated areas.

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

\+ Unless Otherwise Noted

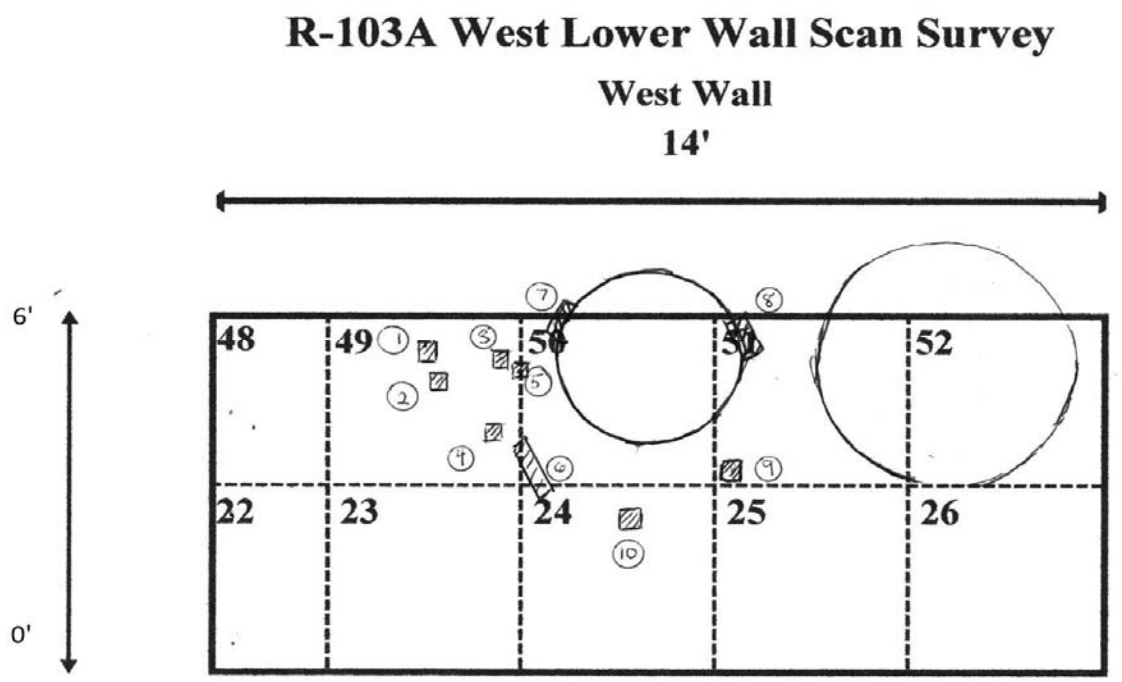
All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/12/2018	TIME: 08:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
		43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
LOCATION:	Bldg. 218 Room 103A Lower Walls Biased Readings	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Richard Thatcher/Joan Cosgrove							
DATE: 4/13/2018	TIME: 12:54 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 103A



Comments:

Cross hatched areas are elevated.

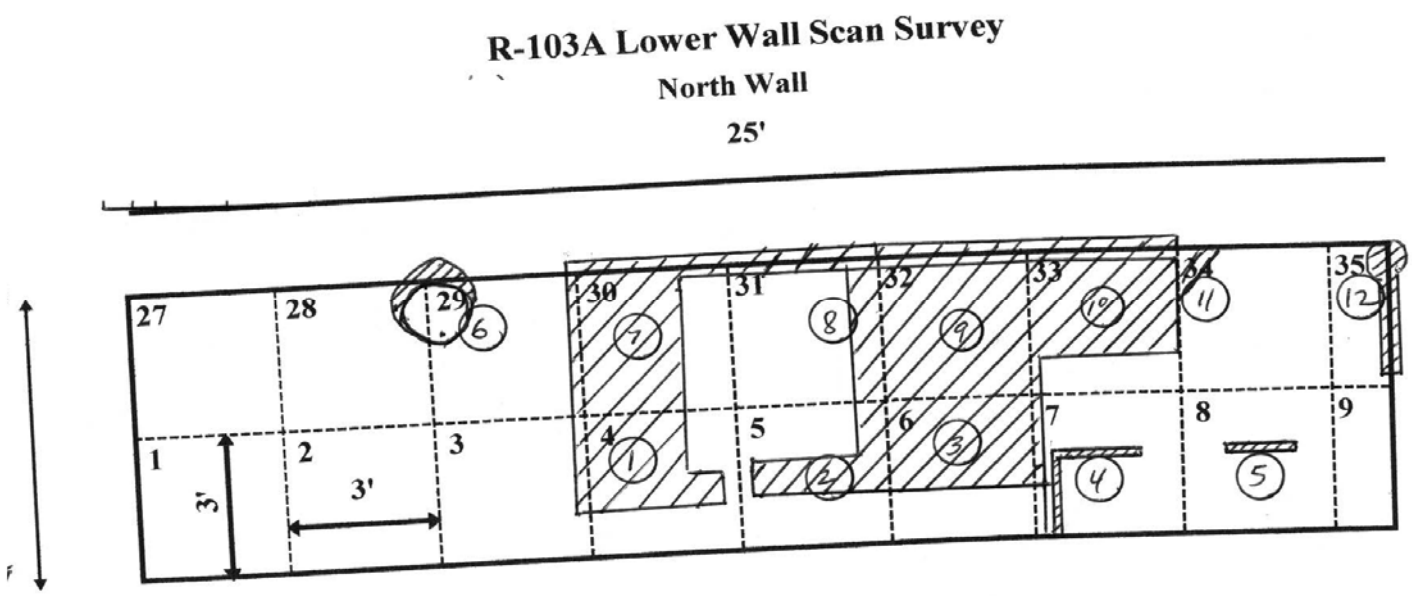
Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/13/2018	TIME: 12:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
		43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
LOCATION:	Room 103A Lower Walls Biased Readings	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan/Josefina Matus							
DATE: 4/13/2018	TIME: 12:54 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: Cs-137		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 103A



Comments:

Cross hatched areas are elevated.

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY FORM

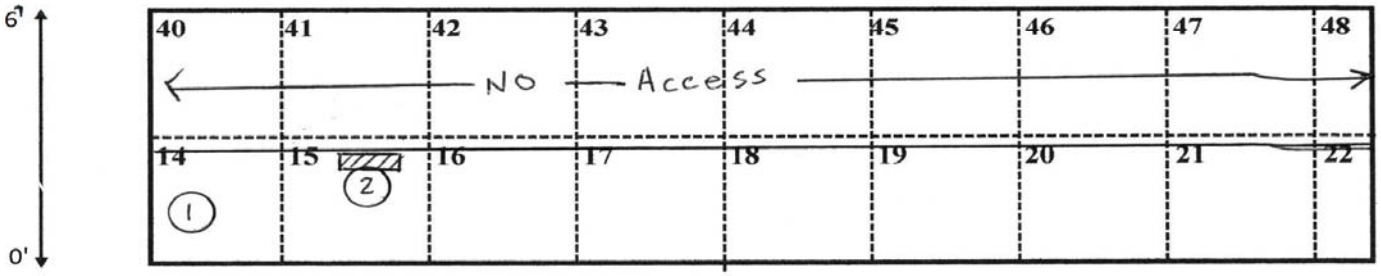
DATE: 4/13/2018	TIME: 12:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
SURVEY NUMBER:	N/A	43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
LOCATION:	Room 103A Lower Walls Biased Readings				βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan/Josefina Matus							
DATE: 4/13/2018	TIME: 12:54 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 103A

R-103A South Lower Wall Scan Survey

South Wall

25'



Comments:

Cross hatched areas are elevated.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Josefina Matus

LOCATION: Room 103A Lower Walls Biased Readings

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				8.0	1981.7	11.1	12.5	East Lower Wall/See Map For Location
2				8.0	1476.0	5.0	16.2	East Lower Wall/See Map For Location
3				8.0	2846.1	5.0	27.5	East Lower Wall/See Map For Location
4				8.0	1908.3	5.0	-14.0	East Lower Wall/See Map For Location
5				8.0	2943.9	-1.2	-2.6	East Lower Wall/See Map For Location
1				16.1	415.9	11.1	-21.5	West Lower Wall/See Map For Location
2				0.0	815.5	11.1	12.5	West Lower Wall/See Map For Location
3				0.0	1027.5	5.0	1.1	West Lower Wall/See Map For Location
4				24.1	554.5	11.1	4.9	West Lower Wall/See Map For Location
5				0.0	709.5	5.0	-10.2	West Lower Wall/See Map For Location
6				8.0	65.2	5.0	-17.7	West Lower Wall/See Map For Location
7				16.1	840.0	11.1	-6.4	West Lower Wall/See Map For Location
8				0.0	986.7	5.0	-21.5	West Lower Wall/See Map For Location
9				8.0	807.3	5.0	1.1	West Lower Wall/See Map For Location
10				8.0	448.5	11.1	12.5	West Lower Wall/See Map For Location
1				8.0	2756.4	-1.2	-2.6	North Lower Wall/See Map For Location
2				8.0	2577.0	5.0	-10.2	North Lower Wall/See Map For Location
3				8.0	4420.0	5.0	-6.4	North Lower Wall/See Map For Location
4				16.1	3302.8	-1.2	12.5	North Lower Wall/See Map For Location
5				8.0	1924.6	11.1	4.9	North Lower Wall/See Map For Location
6				8.0	3392.5	-1.2	1.1	North Lower Wall/See Map For Location
7				0.0	2095.8	5.0	-6.4	North Lower Wall/See Map For Location
8				8.0	3482.2	11.1	-6.4	North Lower Wall/See Map For Location
9				0.0	2136.6	-1.2	4.9	North Lower Wall/See Map For Location
10				8.0	2112.1	-1.2	8.7	North Lower Wall/See Map For Location
11				8.0	2136.6	-1.2	1.1	North Lower Wall/See Map For Location
12				0.0	2030.6	-1.2	16.2	North Lower Wall/See Map For Location
1				16.1	2756.4	-1.2	12.5	South Lower Wall/See Map For Location
2				0.0	4101.9	-1.2	1.1	South Lower Wall/See Map For Location
Maximum:				**24.1**	**4420.0**	**11.1**	**27.5**	
Average:				**7.5**	**1967.3**	**4.5**	**0.9**	
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/13/2018

Time: 12:54

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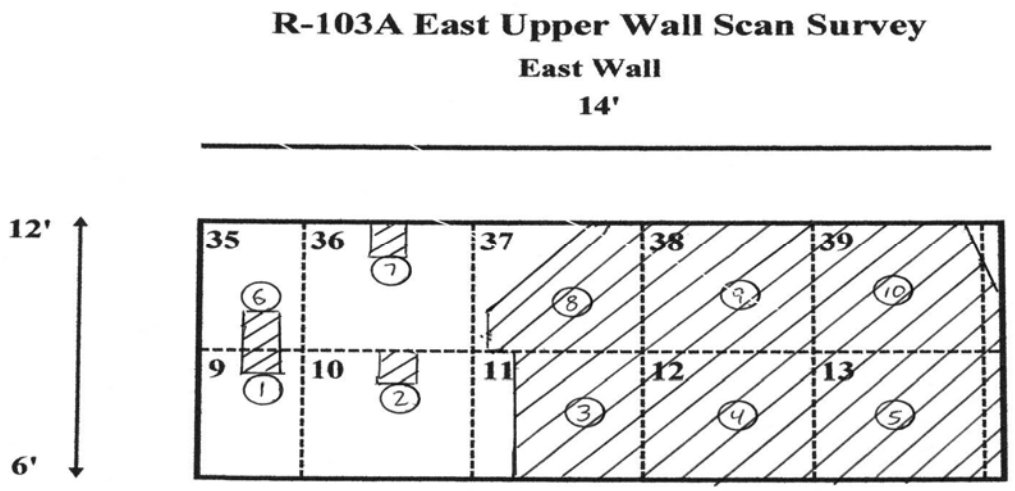
Room 103A Upper Wall

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/26/2018	TIME: 13:00	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
SURVEY NUMBER:	N/A	43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
LOCATION:	Room 103A Upper Walls Biased Readings				βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan/Josefina Matus/Adolfo Matus							
DATE: 4/26/2018	TIME: 13:29 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 103A



Comments:

Cross hatched areas are elevated areas.

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

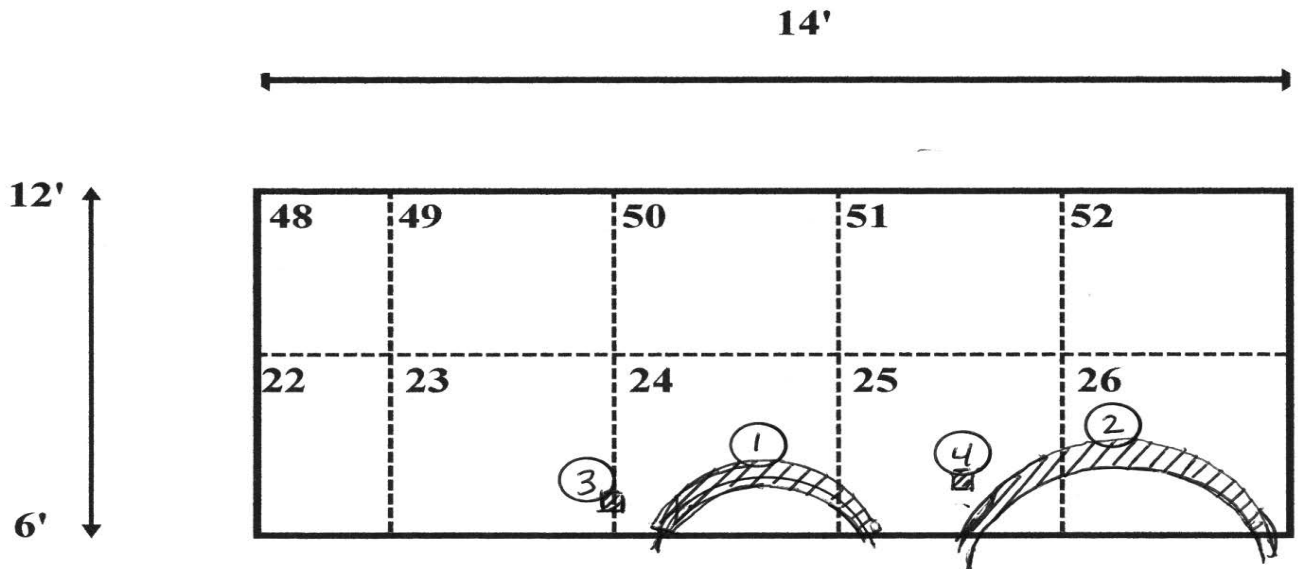
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/12/2018	TIME: 08:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
		43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
LOCATION:	Bldg. 218 Room 103A Floor	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Richard Thatcher/Joan Cosgrove							
DATE: 4/26/2018	TIME: 13:29 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 103A

R-103A West Upper Wall Scan Survey

West Wall



Comments:

Cross hatched areas are elevated.

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

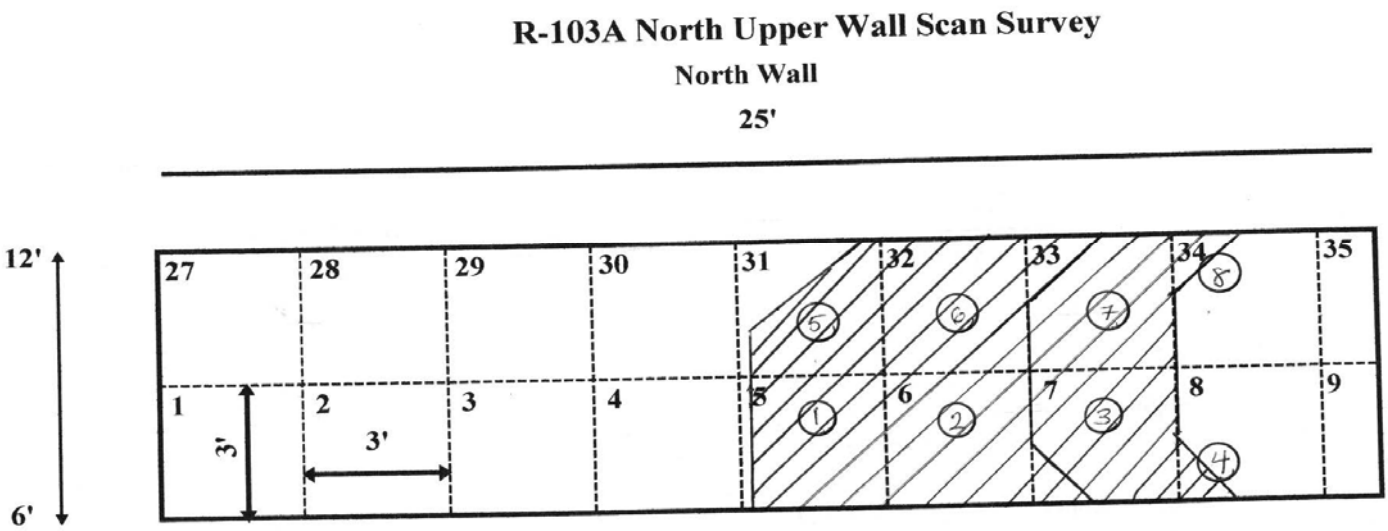
\+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/26/2018	TIME: 13:00	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
SURVEY NUMBER:	N/A	43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
LOCATION:	Room 103A Upper Walls Biased Readings				βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan/Josefina Matus/Adolfo Matus							
DATE: 4/26/2018	TIME: 13:29 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: Cs-137		Static Count Time: 1 Minutes						
NRL Chesapeake Building 218 Room 103A								



Comments:

Cross hatched areas are elevated.

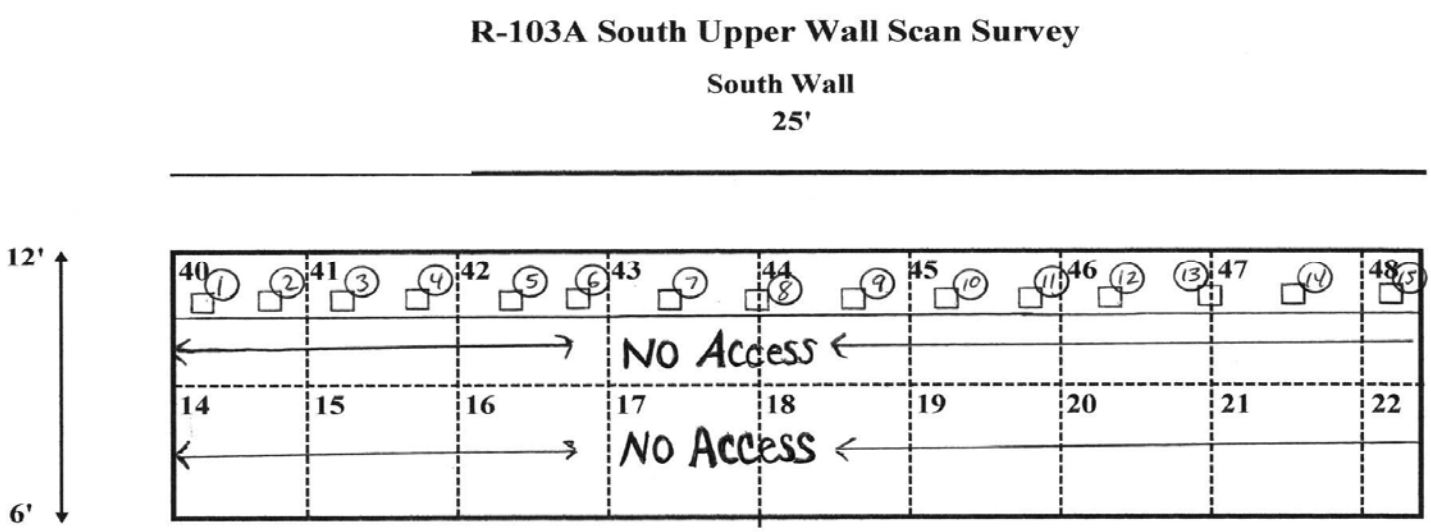
Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/26/2018	TIME: 13:00	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
		43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
LOCATION:	Room 103A Upper Walls Biased Readings	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan/Josefina Matus/Adolfo Matus							
DATE: 4/26/2018	TIME: 13:29 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 103A



Comments:

Cross hatched areas are elevated.

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Josefina Matus/Adolfo Matus

LOCATION: Room 103A Upper Walls Biased Readings

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				8.0	1321.1	11.1	16.2	East Upper Wall/See Map For Location
2				8.0	3767.6	5.0	8.7	East Upper Wall/See Map For Location
3				8.0	2552.5	5.0	35.1	East Upper Wall/See Map For Location
4				8.0	2756.4	5.0	16.2	East Upper Wall/See Map For Location
5				8.0	2136.6	-1.2	4.9	East Upper Wall/See Map For Location
6				16.1	2030.6	11.1	-2.6	East Upper Wall/See Map For Location
7				0.0	2144.8	11.1	12.5	East Upper Wall/See Map For Location
8				0.0	5838.9	5.0	1.1	East Upper Wall/See Map For Location
9				24.1	4542.3	11.1	4.9	East Upper Wall/See Map For Location
10				0.0	4583.1	5.0	-6.4	East Upper Wall/See Map For Location
1				8.0	5268.1	5.0	4.9	West Upper Wall/See Map For Location
2				16.1	3767.6	11.1	-2.6	West Upper Wall/See Map For Location
3				0.0	1492.4	5.0	16.2	West Upper Wall/See Map For Location
4				8.0	1296.6	5.0	12.5	West Upper Wall/See Map For Location
1				16.1	4012.2	11.1	20.0	North Upper Wall/See Map For Location
2				0.0	2976.6	-1.2	-2.6	North Upper Wall/See Map For Location
3				8.0	2593.3	5.0	8.7	North Upper Wall/See Map For Location
4				8.0	1745.2	5.0	1.1	North Upper Wall/See Map For Location
5				16.1	2911.3	-1.2	-17.7	North Upper Wall/See Map For Location
6				8.0	2577.0	11.1	-10.2	North Upper Wall/See Map For Location
7				8.0	2397.6	-1.2	-2.6	North Upper Wall/See Map For Location
8				0.0	1834.9	5.0	4.9	North Upper Wall/See Map For Location
1				8.0	5268.1	11.1	20.0	South Upper Wall/See Map For Location
2				0.0	3743.1	-1.2	31.3	North Upper Wall/See Map For Location
3				8.0	8375.1	-1.2	12.5	North Upper Wall/See Map For Location
4				8.0	5912.3	-1.2	-2.6	North Upper Wall/See Map For Location
5				0.0	4738.0	-1.2	12.5	North Upper Wall/See Map For Location
6				16.1	3302.8	-1.2	20.0	South Upper Wall/See Map For Location
7				0.0	4917.4	-1.2	12.5	South Upper Wall/See Map For Location
8				16.1	6222.2	5.0	35.1	South Upper Wall/See Map For Location
9				8.0	5553.5	-1.2	12.5	South Upper Wall/See Map For Location
10				16.1	6369.0	11.1	-6.4	South Upper Wall/See Map For Location
11				24.1	4550.5	-1.2	4.9	South Upper Wall/See Map For Location
12				0.0	1720.7	5.0	-6.4	South Upper Wall/See Map For Location
13				8.0	4012.2	-1.2	12.5	South Upper Wall/See Map For Location
14				16.1	8619.8	5.0	1.1	South Upper Wall/See Map For Location
15				8.0	2911.3	5.0	12.5	South Upper Wall/See Map For Location
Maximum:				**24.1**	**8619.8**	**11.1**	**35.1**	
Average:				**8.5**	**3804.4**	**4.3**	**8.0**	

Reviewer
Daniel Spicuzza

Date: 4/26/2018

Time: 13:29

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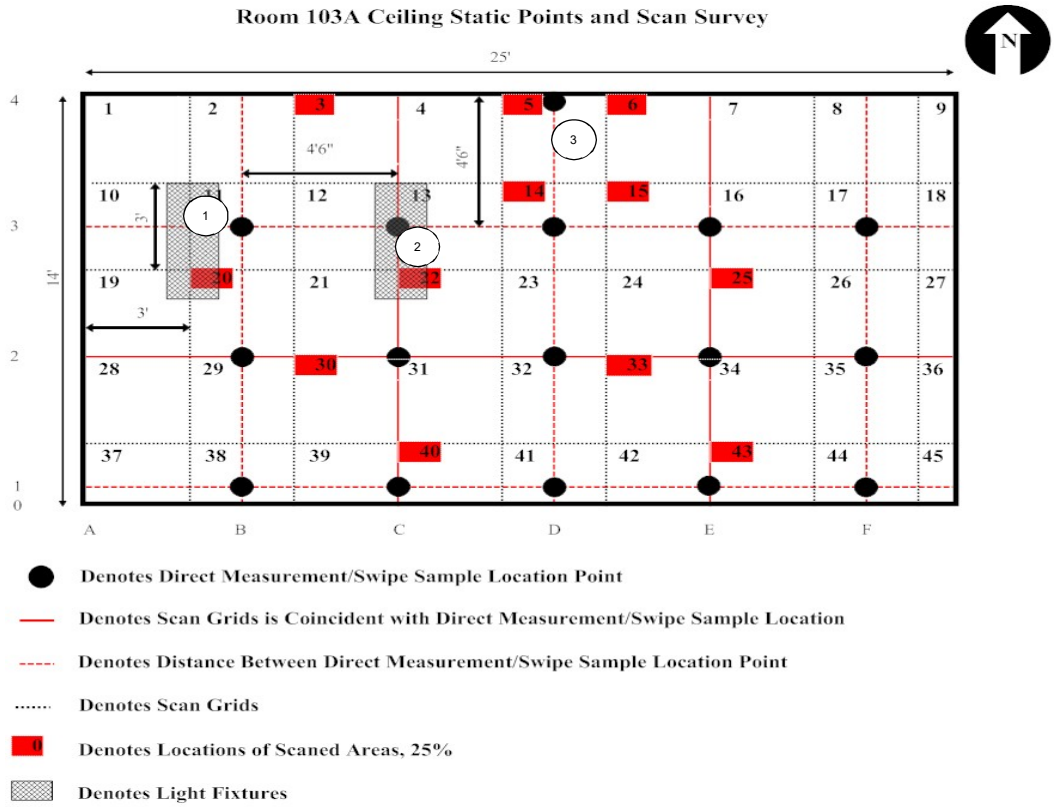
Room 103A Ceiling/Overhead

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/12/2018	TIME: 14:22	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 62.4	α 7.6
		43-93	268605		βγ 26.8%	βγ 10.1%	βγ 499.1	βγ 1363.2
LOCATION:	Room 103A Ceiling/Overhead Biased Readings	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/12/2018	TIME: 14:33	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 103A



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Room 103A Ceiling/Overhead Biased Readings

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				15.3	2185.5	5.0	23.8	See Map For Location
2				31.4	2740.1	5.0	35.1	See Map For Location
3				15.3	3718.7	11.1	8.7	See Map For Location
Maximum:				**31.4**	**3718.7**	**11.1**	**35.1**	
Average:				**20.7**	**2881.4**	**7.0**	**22.5**	

Reviewer
Daniel Spicuzza

Date: 4/12/2018

Time: 14:33

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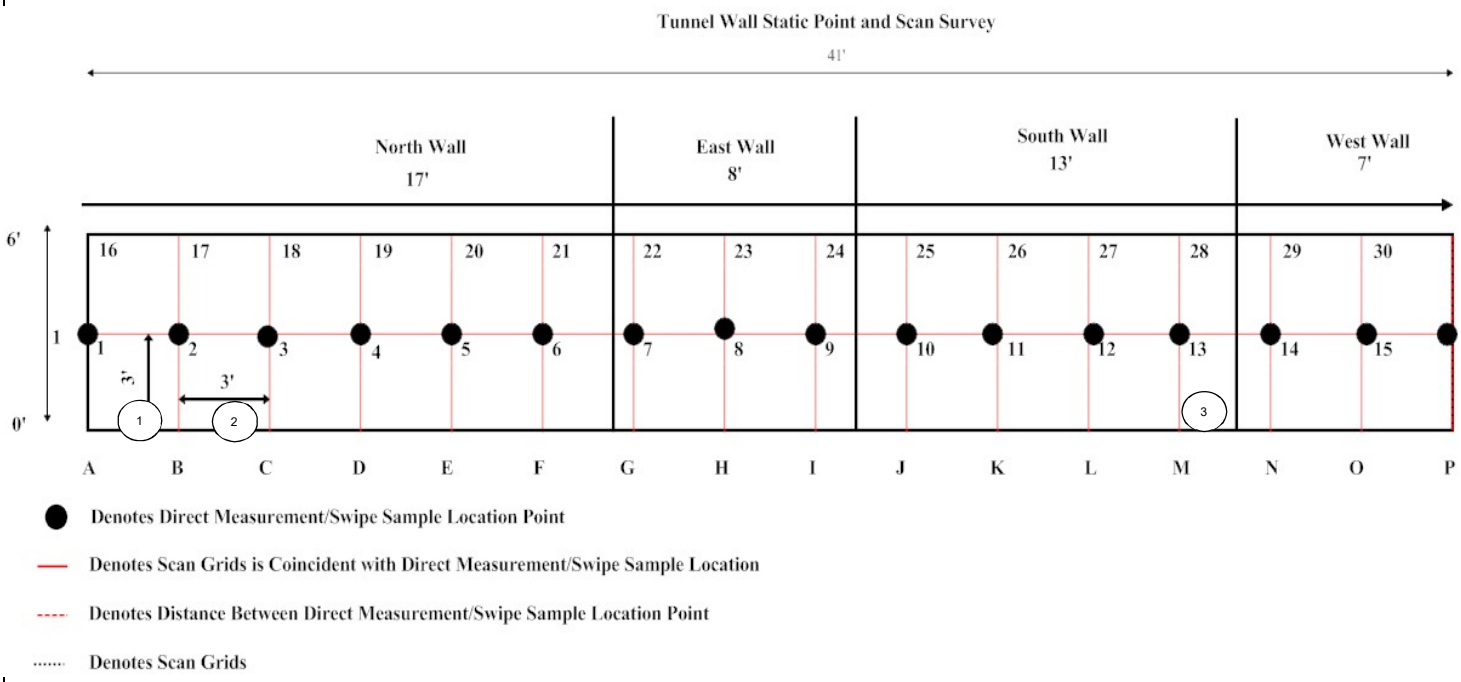
Tunnel Lower/Upper Walls

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/5/2018	TIME: 10:15	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 40.4%	α 10.1%	α 69.6	α 9.9
		43-93	323074		βγ 25.4%	βγ 9.5%	βγ 619.2	βγ 2026.2
LOCATION:	Tunnel Lower Wall Biased Readings	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/5/2018	TIME: 10:31 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Tunnel



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: Tunnel Lower Walls Biased Readings

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				23.3	2421.7	5.0	31.3	See Map For Location
2				31.4	2494.2	11.1	27.5	See Map For Location
3				15.3	2365.4	11.1	-2.6	See Map For Location
Maximum:				**31.4**	**2494.2**	**11.1**	**31.3**	
Average:				**23.3**	**2427.1**	**9.1**	**18.7**	

Reviewer
Daniel Spicuzza

Date: 4/5/2018

Time: 10:31

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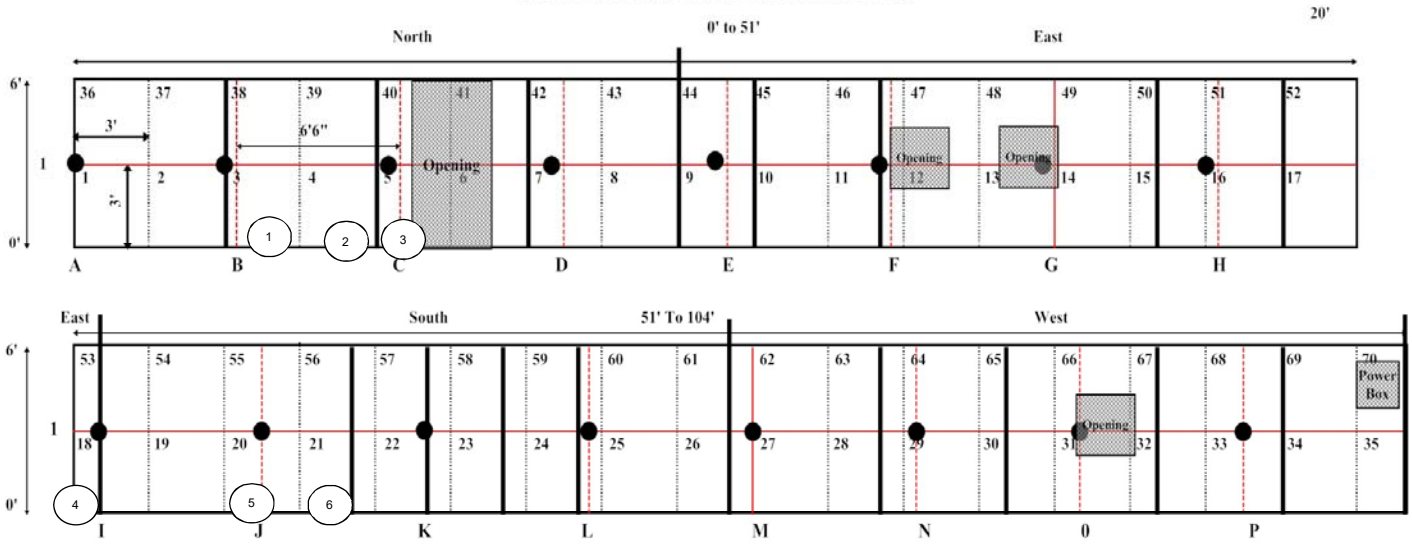
Room 105A Lower\Upper Walls

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 10:40	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
		43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
LOCATION:	Room 105A Biased Readings	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan							
DATE: 4/20/2018	TIME: 10:53 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Room 105A

R-105A Lower Wall Static Points and Scan Survey



- Denotes Direct Measurement/Swipe Sample Location Point
- Denotes Scan Grids is Coincident with Direct Measurement/Swipe Sample Location
- Denotes Distance Between Direct Measurement/Swipe Sample Location Point
- Denotes Scan Grids
- Denotes Obstructions

Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Room 105A Lower Walls Biased Readings

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				8.0	1321.1	17.3	1.1	See Map For Location
2				16.1	1476.0	11.1	8.7	See Map For Location
3				24.1	1321.1	5.0	8.7	See Map For Location
4				8.0	1198.8	11.1	-6.4	See Map For Location
5				0.0	1296.6	17.3	-2.6	See Map For Location
6				8.0	1582.1	5.0	31.3	See Map For Location
Maximum:				**24.1**	**1582.1**	**17.3**	**31.3**	
Average:				**10.7**	**1366.0**	**11.1**	**6.8**	

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 10:53

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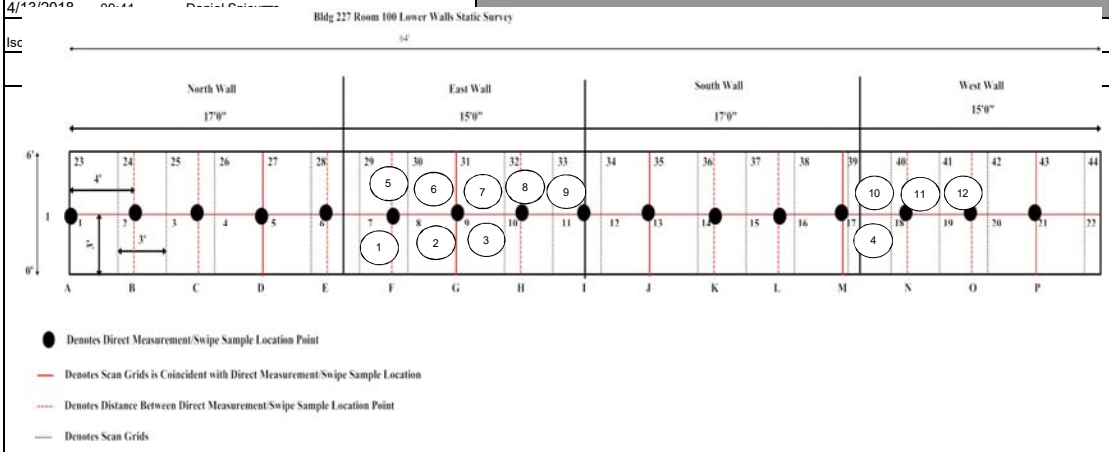
Building 227

Room 100 Lower Walls

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/13/2018	TIME: 09:32	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm²)	Background + (dpm/100cm²)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 40.4%	α 10.1%	α 84.7	α 18.8
		43-93	323074		βγ 25.4%	βγ 9.5%	βγ 640.1	βγ 2173.2
LOCATION:	Bldg. 227 Room 100 Lower Walls Biased Readings	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan							
DATE: 4/13/2018	TIME: 09:41	Reviewed by: Daniel Sniavitz						

Isc



Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Bldg. 227 Room 100 Lower Walls Biased Readings

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				10.9	1658.8	5.0	1.1	See Map For Location
2				1.0	1448.8	5.0	8.7	See Map For Location
3				10.9	1910.8	11.1	-2.6	See Map For Location
4				10.9	2824.1	-1.2	-14.0	See Map For Location
5				1.0	1931.8	-1.2	-10.2	See Map For Location
6				10.9	2362.2	5.0	-6.4	See Map For Location
7				-8.9	3202.1	11.1	8.7	See Map For Location
8				1.0	1438.3	5.0	-10.2	See Map For Location
9				10.9	1616.8	11.1	4.9	See Map For Location
10				1.0	1889.8	-1.2	1.1	See Map For Location
11				10.9	1018.4	-1.2	-6.4	See Map For Location
12				1.0	1144.4	5.0	-10.2	See Map For Location
Maximum:				**10.9**	**3202.1**	**11.1**	**8.7**	
Average:				**5.1**	**1870.5**	**4.4**	**-3.0**	

Reviewer
Daniel Spicuzza

Date: 4/13/2018

Time: 9:41

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Appendix K

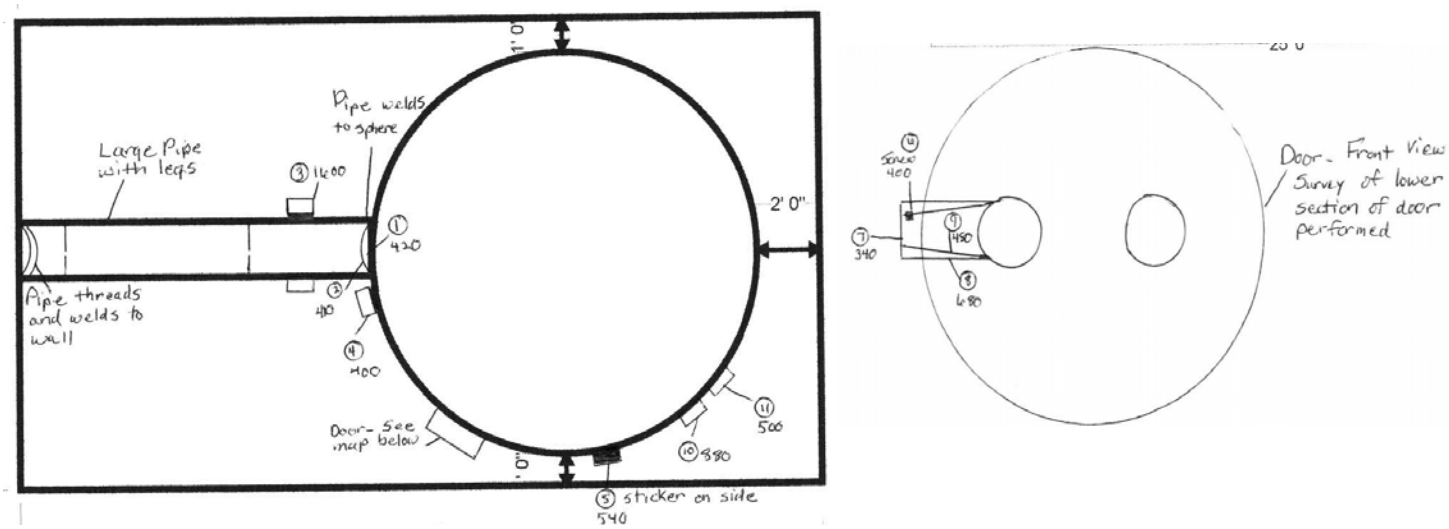
Building 218 Target Sphere/Orthogonal Optics/Blast Chambers/Flight Tube Survey Data

Target Sphere

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/17/2018	TIME: 09:02	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	193668	8/15/2018	α 49.7%	α 12.4%	α 56.6	α 8.0
SURVEY NUMBER:	N/A	43-93	326725		βγ 32.7%	βγ 12.3%	βγ 413.3	βγ 1141.7
		2929	146700	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
LOCATION:	Target Sphere Lower Exterior				βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Joan Cosgrove							
DATE: 4/17/2018	TIME: 10:13 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Target Sphere



Comments:

The sphere was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Joan Cosgrove

LOCATION: Target Sphere Lower Exterior

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-8.0	32.2	2283.4	2283.4			See Map For Location
2				-8.0	24.1	2120.3	2120.3			See Map For Location
3				-8.0	32.2	11906.2	11906.2			See Map For Location
4				-8.0	24.1	2120.3	2120.3			See Map For Location
5				-8.0	24.1	3262.0	3262.0			See Map For Location
6				-8.0	24.1	3751.3	3751.3			See Map For Location
7				-8.0	40.2	1631.0	1631.0			See Map For Location
8				-8.0	16.1	4403.7	4403.7			See Map For Location
9				-8.0	8.0	2772.7	2772.7			See Map For Location
10				-8.0	24.1	6034.7	6034.7			See Map For Location
11				-8.0	24.1	2935.8	2935.8			See Map For Location

Reviewer
Daniel Spicuzza

Date: 4/17/2018

Time: 10:13

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Joan Cosgrove

LOCATION: Target Sphere Lower Exterior

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
3				0.0	11889.9	5.0	-21.5	See Map For Location
5				8.0	3196.7	-1.2	4.9	See Map For Location
6				0.0	3661.6	11.1	16.2	See Map For Location
8				8.0	4493.4	5.0	-2.6	See Map For Location
10				16.1	6124.4	17.3	-10.2	See Map For Location
11				0.0	3033.6	11.1	-6.4	See Map For Location
Maximum:				**16.1**	**11889.9**	**17.3**	**16.2**	
Average:				**5.4**	**5399.9**	**8.0**	**-3.3**	

Reviewer
Daniel Spicuzza

Date: 4/17/2018

Time: 10:13

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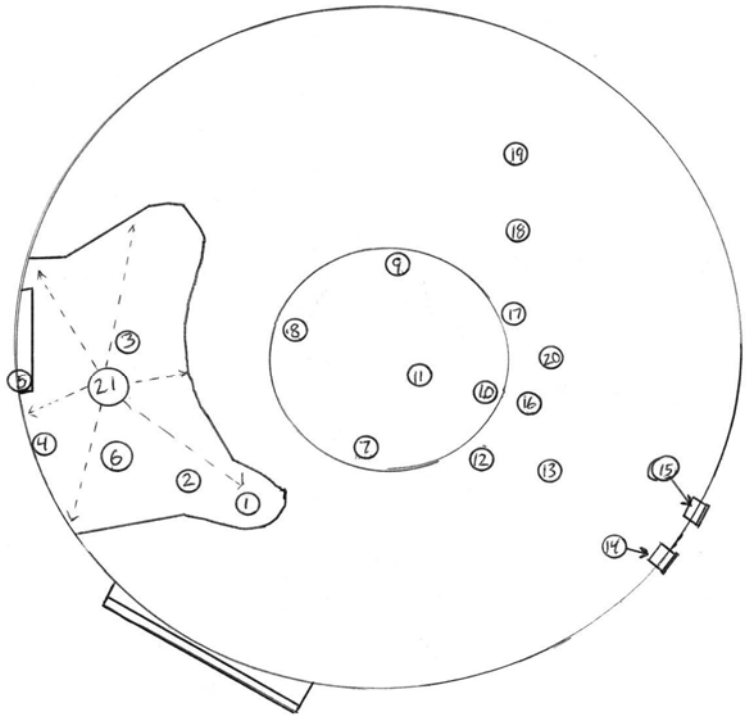
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/17/2018	TIME: 09:35	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 65.1	α 9.9
		43-93	299597		βγ 31.3%	βγ 11.7%	βγ 448.8	βγ 1295.0
LOCATION:	Target Sphere Lower Interior	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/17/2018	TIME: 09:42	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Target Sphere



Comments:

The sphere was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) [ ] **Non-routine** [X]

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Target Sphere Lower Interior

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-9.9	35.1	2112.9	2112.9			See Map For Location
2				-0.9	26.1	4242.8	4242.8			See Map For Location
3				-0.9	35.1	15744.4	15744.4			See Map For Location
4				-0.9	26.1	7224.7	7224.7			See Map For Location
5				-0.9	17.1	14040.5	14040.5			See Map For Location
6				-0.9	26.1	8928.6	8928.6			See Map For Location
7				-9.9	44.1	4668.8	4668.8			See Map For Location
8				-0.9	17.1	10632.6	10632.6			See Map For Location
9				-0.9	8.1	14040.5	14040.5			See Map For Location
10				-0.9	26.1	12336.5	12336.5			See Map For Location
11				-9.9	26.1	1686.9	1686.9			See Map For Location
12				-0.9	35.1	2964.9	2964.9			See Map For Location
13				-0.9	8.1	7224.7	7224.7			See Map For Location
14				-9.9	26.1	11484.6	11484.6			See Map For Location
15				-0.9	26.1	4668.8	4668.8			See Map For Location
16				-0.9	17.1	2964.9	2964.9			See Map For Location
17				-0.9	17.1	2964.9	2964.9			See Map For Location
18				-0.9	8.1	1686.9	1686.9			See Map For Location
19				-0.9	17.1	2538.9	2538.9			See Map For Location
20				-0.9	17.1	2538.9	2538.9			See Map For Location
21				-0.9	17.1	1260.9	10632.6			See Map For Location

Reviewer
Daniel Spicuzza

Date: 4/17/2018

Time: 9:42

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Target Sphere Lower Interior

Location	Exposure Rate (μR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
3				8.1	15642.2	5.0	4.9	See Map For Location
8				17.1	10445.2	11.1	-6.4	See Map For Location
10				26.1	14066.0	17.3	8.7	See Map For Location
13				8.1	7037.3	5.0	1.1	See Map For Location
14				-0.9	11126.7	-1.2	-2.6	See Map For Location
21				8.1	10896.7	5.0	-10.2	See Map For Location
Maximum:				**26.1**	**15642.2**	**17.3**	**8.7**	
Average:				**11.1**	**11535.7**	**7.0**	**-0.8**	

Reviewer
Daniel Spicuzza

Date: 4/17/2018

Time: 9:42

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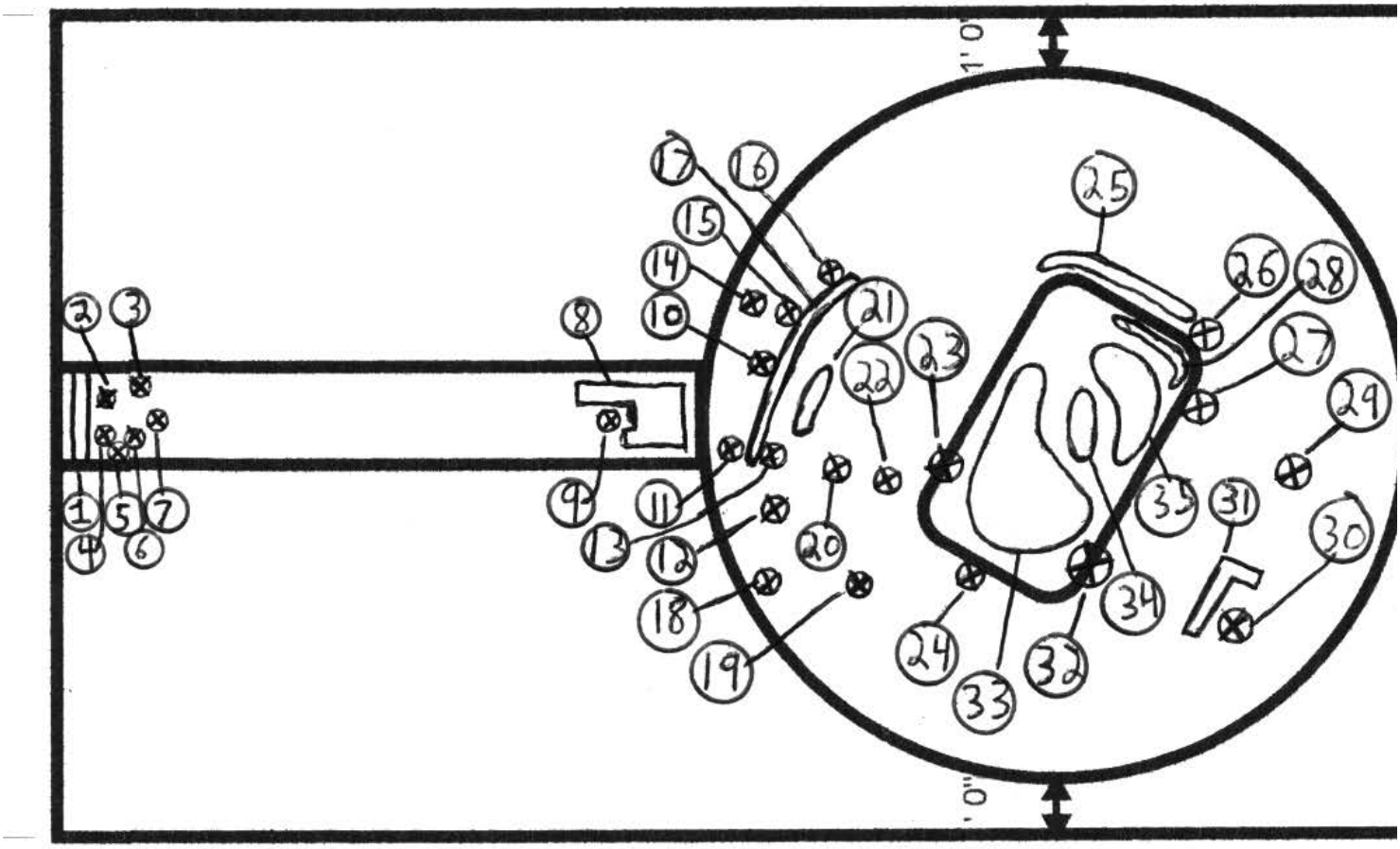
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/17/2018	TIME: 11:12	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 40.4%	α 10.1%	α 69.6	α 9.9
		43-93	323074		βγ 25.4%	βγ 9.5%	βγ 574.9	βγ 1732.3
LOCATION:	Target Sphere Upper Exterior	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Thomas Hogan							
DATE: 4/17/2018	TIME: 11:19 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						
NRL Chesapeake Building 218 Target Sphere								



RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Target Sphere Upper Exterior

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-9.9	39.6	367.5	12965.9			See Map For Location
2				0.0	29.7	12965.9	12965.9			See Map For Location
3				0.0	39.6	3517.1	3517.1			See Map For Location
4				-9.9	29.7	4566.9	4566.9			See Map For Location
5				0.0	29.7	4566.9	4566.9			See Map For Location
6				-9.9	29.7	4566.9	4566.9			See Map For Location
7				0.0	-9.9	2467.2	2467.2			See Map For Location
8				0.0	49.5	1417.3	10866.1			See Map For Location
9				-9.9	9.9	8766.4	8766.4			See Map For Location
10				-9.9	29.7	1417.3	17165.4			See Map For Location
11				0.0	-9.9	367.5	10866.1			See Map For Location
12				-9.9	49.5	1417.3	12965.9			See Map For Location
13				0.0	29.7	17165.4	19265.1			See Map For Location
14				0.0	9.9	1417.3	3517.1			See Map For Location
15				-9.9	19.8	1417.3	6666.7			See Map For Location
16				-9.9	9.9	1417.3	2467.2			See Map For Location
17				0.0	29.7	1417.3	17165.4			See Map For Location
18				0.0	39.6	1417.3	3517.1			See Map For Location
19				0.0	29.7	1417.3	4566.9			See Map For Location
20				0.0	39.6	1417.3	2467.2			See Map For Location
21				0.0	49.5	1417.3	5616.8			See Map For Location
22				0.0	29.7	1417.3	2467.2			See Map For Location
23				-9.9	39.6	1942.3	1942.3			See Map For Location
24				0.0	29.7	1417.3	2467.2			See Map For Location
25				-9.9	49.5	1417.3	2467.2			See Map For Location
26				0.0	39.6	1417.3	2992.1			See Map For Location
27				0.0	29.7	1417.3	3517.1			See Map For Location
28				0.0	19.8	1417.3	1417.3			See Map For Location
29				-9.9	29.7	1417.3	3517.1			See Map For Location
30				0.0	49.5	1417.3	4566.9			See Map For Location
31				0.0	39.6	1417.3	4566.9			See Map For Location
32				0.0	19.8	1417.3	1417.3			See Map For Location
33				-9.9	39.6	1417.3	10866.1			See Map For Location
34				0.0	29.7	1417.3	8766.4			See Map For Location
35				-9.9	19.8	1417.3	3517.1			See Map For Location

Reviewer
Daniel Spicuzza

Date: 4/17/2018

Time: 11:19

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Target Sphere Upper Exterior

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
2				0.0	12850.4	5.0	-2.6	See Map For Location
5				9.9	4692.9	5.0	4.9	See Map For Location
8				9.9	11013.1	11.1	1.1	See Map For Location
10				19.8	17490.8	5.0	-6.4	See Map For Location
12				0.0	12713.9	5.0	-2.6	See Map For Location
13				9.9	19716.5	11.1	4.9	See Map For Location
17				0.0	17228.3	5.0	1.1	See Map For Location
21				29.7	5637.8	5.0	-10.2	See Map For Location
27				19.8	3706.0	-1.2	-6.4	See Map For Location
33				9.9	11002.6	11.1	1.1	See Map For Location
35				0.0	3370.1	5.0	-10.2	See Map For Location
Maximum:				**19.8**	**19716.5**	**11.1**	**4.9**	
Average:				**8.3**	**13079.6**	**7.0**	**-0.1**	

Reviewer
Daniel Spicuzza

Date: 4/17/2018

Time: 11:19

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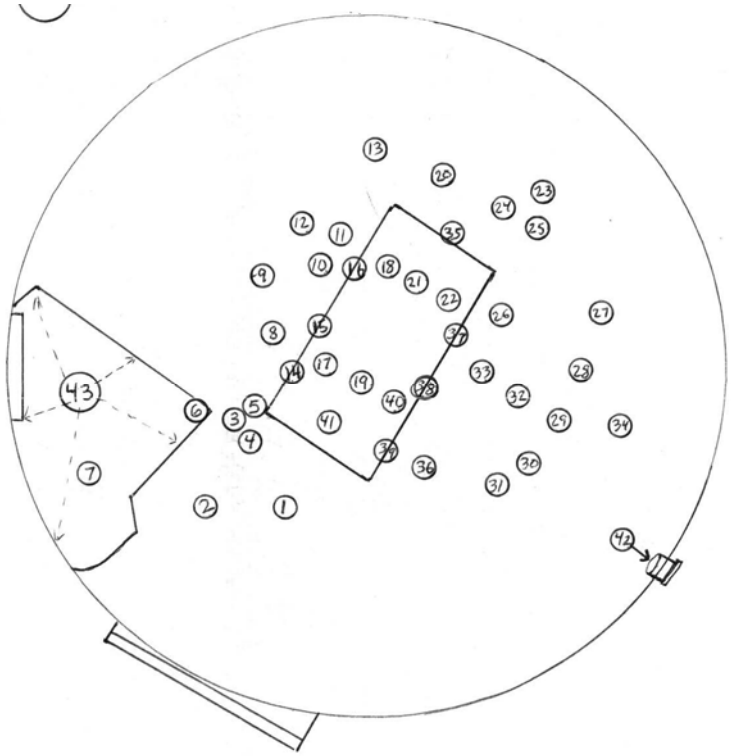
RADIATION/CONTAMINATION SURVEY FORM

DATE:	TIME:	INSTRUMENTATION USED						
4/16/2018	09:00	Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	297758	2/14/2019	α 44.4%	α 11.1%	α 44.6	α 9.9
SURVEY NUMBER:	N/A	43-93	299597		βγ 31.3%	βγ 11.7%	βγ 358.4	βγ 1295.0
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
LOCATION:	Target Sphere Upper Interior				βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/16/2018	TIME: 09:21	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Target Sphere



Comments:

The sphere was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Target Sphere Upper Interior

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-9.9	35.1	3816.8	3816.8			See Map For Location
2				-0.9	26.1	1686.9	1686.9			See Map For Location
3				-0.9	35.1	1260.9	1260.9			See Map For Location
4				-0.9	26.1	2964.9	2964.9			See Map For Location
5				-0.9	17.1	2538.9	2538.9			See Map For Location
6				-0.9	26.1	2112.9	2112.9			See Map For Location
7				-9.9	44.1	5520.8	5520.8			See Map For Location
8				-0.9	17.1	1686.9	1686.9			See Map For Location
9				-0.9	8.1	4668.8	4668.8			See Map For Location
10				-0.9	26.1	2964.9	2964.9			See Map For Location
11				-9.9	26.1	2964.9	2964.9			See Map For Location
12				-0.9	35.1	1431.3	1431.3			See Map For Location
13				-0.9	8.1	2112.9	2112.9			See Map For Location
14				-9.9	26.1	1686.9	1686.9			See Map For Location
15				-0.9	26.1	1686.9	1686.9			See Map For Location
16				-0.9	17.1	3816.8	3816.8			See Map For Location
17				-0.9	17.1	5520.8	5520.8			See Map For Location
18				-0.9	8.1	3816.8	3816.8			See Map For Location
19				-0.9	17.1	2538.9	2538.9			See Map For Location
20				-0.9	17.1	1601.7	1601.7			See Map For Location
21				-0.9	17.1	1431.3	1431.3			See Map For Location
22				-0.9	26.1	2964.9	2964.9			See Map For Location
23				-0.9	35.1	2964.9	2964.9			See Map For Location
24				-9.9	44.1	1772.1	1772.1			See Map For Location
25				-9.9	26.1	5520.8	5520.8			See Map For Location
26				-0.9	35.1	2964.9	2964.9			See Map For Location
27				-0.9	26.1	4668.8	4668.8			See Map For Location
28				-0.9	35.1	8928.6	8928.6			See Map For Location
29				-0.9	35.1	8928.6	8928.6			See Map For Location
30				-0.9	26.1	83902.0	83902.0			See Map For Location
31				-0.9	17.1	3816.8	3816.8			See Map For Location
32				-0.9	35.1	1431.3	1431.3			See Map For Location
33				-0.9	26.1	17448.3	17448.3			See Map For Location
34				-0.9	35.1	3816.8	3816.8			See Map For Location
35				-0.9	26.1	2964.9	2964.9			See Map For Location
36				-0.9	35.1	7224.7	7224.7			See Map For Location
37				-0.9	44.1	12336.5	12336.5			See Map For Location
38				-0.9	17.1	15744.4	15744.4			See Map For Location
39				-0.9	26.1	2112.9	2112.9			See Map For Location
40				-0.9	35.1	2538.9	2538.9			See Map For Location
41				-0.9	8.1	3816.8	3816.8			See Map For Location
42				-0.9	26.1	7224.7	7224.7			See Map For Location
43				-0.9	35.1	1260.9	5520.8			See Map For Location

Reviewer
Daniel Spicuzza

Date: 4/16/2018

Time: 9:21

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Target Sphere Upper Interior

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
7				8.1	5512.2	17.3	20.0	See Map For Location
9				17.1	4685.8	11.1	-2.6	See Map For Location
17				26.1	5537.8	5.0	16.2	See Map For Location
22				8.1	2939.3	5.0	8.7	See Map For Location
25				-0.9	5699.7	11.1	-2.6	See Map For Location
28				8.1	8911.6	5.0	12.5	See Map For Location
30				8.1	82658.1	-1.2	23.8	See Map For Location
33				-0.9	17320.6	-1.2	4.9	See Map For Location
38				17.1	15599.6	5.0	1.1	See Map For Location
42				-0.9	7114.0	5.0	-2.6	See Map For Location
Maximum:				**26.1**	**82658.1**	**17.3**	**23.8**	
Average:				**9.0**	**15597.9**	**6.2**	**7.9**	

Reviewer
Daniel Spicuzza

Date: 4/16/2018

Time: 9:21

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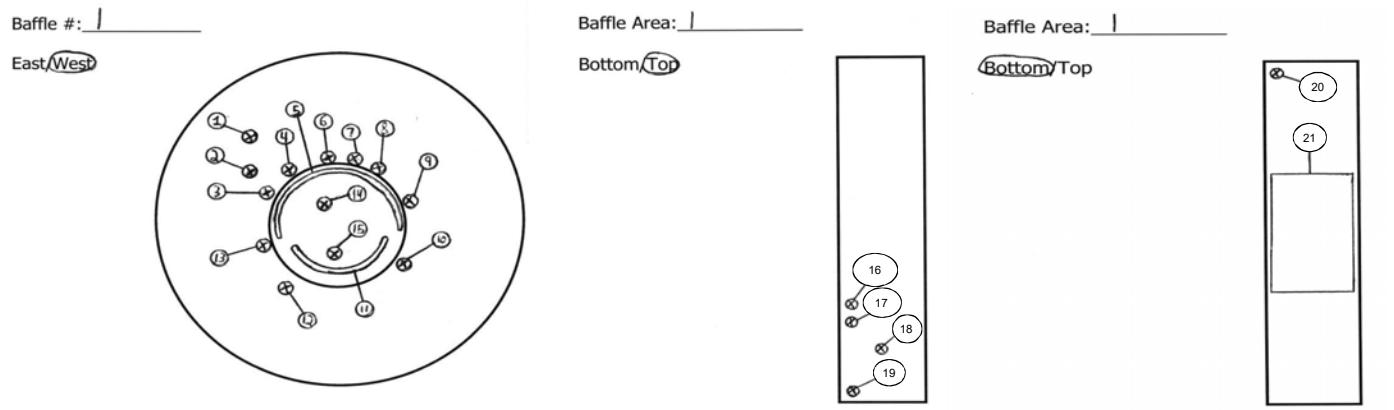
Blast Tank

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/24/2018	TIME: 14:24	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm²)	Background + (dpm/100cm²)
SURVEY NUMBER:	N/A	2360	297758	2/14/2019	α 44.4%	α 11.1%	α 44.6	α 9.9
		43-93	299597		βγ 31.3%	βγ 11.738%	βγ 358.4	βγ 1295.0
LOCATION:	Baffle #1	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Thomas Hogan							
DATE: 4/24/2018	TIME: 14:35	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Baffle #1

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-9.9	26.1	2112.9	2112.9			See Map For Location
2				-0.9	26.1	2964.9	2964.9			See Map For Location
3				-0.9	35.1	3816.8	3816.8			See Map For Location
4				-0.9	26.1	7224.7	7224.7			See Map For Location
5				-0.9	17.1	2112.9	3816.8			See Map For Location
6				-0.9	26.1	5520.8	5520.8			See Map For Location
7				-9.9	17.1	5520.8	5520.8			See Map For Location
8				-0.9	35.1	5520.8	5520.8			See Map For Location
9				-0.9	8.1	4668.8	4668.8			See Map For Location
10				-0.9	26.1	2112.9	2112.9			See Map For Location
11				-9.9	35.1	5520.8	41303.5			See Map For Location
12				-0.9	26.1	2112.9	2112.9			See Map For Location
13				-0.9	8.1	2112.9	2112.9			See Map For Location
14				-9.9	26.1	3816.8	3816.8			See Map For Location
15				-0.9	26.1	5520.8	5520.8			See Map For Location
16				-0.9	17.1	3816.8	3816.8			See Map For Location
17				-0.9	17.1	2964.9	2964.9			See Map For Location
18				-0.9	8.1	2112.9	2112.9			See Map For Location
19				-0.9	17.1	2964.9	2964.9			See Map For Location
20				-0.9	35.1	2964.9	2964.9			See Map For Location
21				-0.9	17.1	2964.9	3816.8			See Map For Location

Reviewer
Daniel Spicuzza

Date: 4/24/2018

Time: 14:35

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Baffle #1

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				8.9	2173.2	-1.2	1.1	See Map For Location
2				18.8	2493.4	-1.2	-27.2	See Map For Location
3				8.9	3580.1	5.0	-6.4	See Map For Location
4				-1.0	7475.1	-1.2	-15.8	See Map For Location
5				8.9	3868.8	-1.2	-19.6	See Map For Location
6				18.8	5490.8	8.0	-15.8	See Map For Location
7				8.9	5123.4	-1.2	3.0	See Map For Location
8				13.9	5322.8	5.0	-19.6	See Map For Location
9				8.9	4792.7	-1.2	-0.8	See Map For Location
10				28.7	2141.7	1.9	-25.3	See Map For Location
11				33.7	42530.2	-1.2	10.6	See Map For Location
12				8.9	2052.5	-1.2	16.2	See Map For Location
Maximum:				**33.7**	**42530.2**	**8.0**	**16.2**	
Average:				**13.9**	**7253.7**	**0.8**	**-8.3**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/24/2018

Time: 14:35

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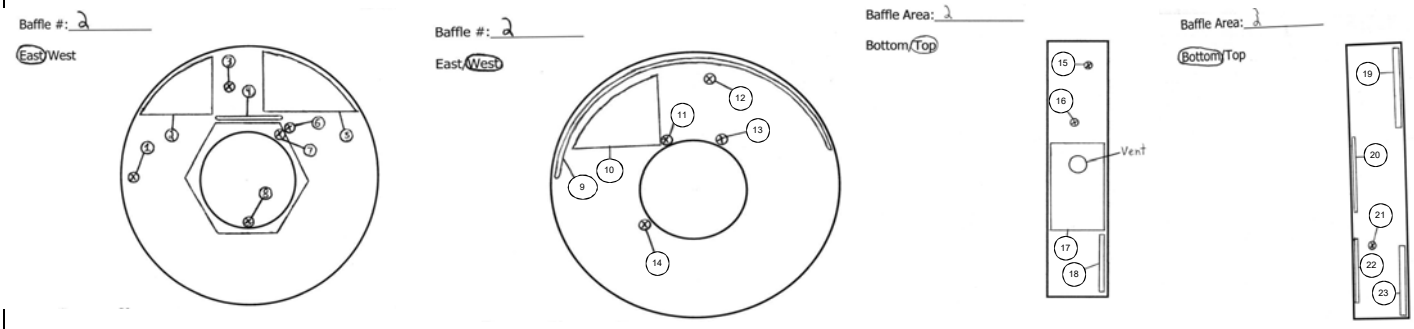
RADIATION/CONTAMINATION SURVEY FORM

DATE:	TIME:	INSTRUMENTATION USED						
4/26/2018	12:40	Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	297758	2/14/2019	α 44.4%	α 11.1%	α 44.6	α 9.9
SURVEY NUMBER:	N/A	43-93	299597		βγ 31.3%	βγ 11.738%	βγ 358.4	βγ 1295.0
		2929	146780	6/17/2018	α 71.0%	α 17.8%	α 14.5	α 1.1
LOCATION:	Baffle #2				βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Thomas Hogan							
DATE:	TIME: Reviewed by:							
4/26/2018	12:54 Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan

LOCATION: Baffle #2

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm²	Highest Observed Alpha dpm/100cm²	Lowest Observed Beta/Gamma dpm/100cm²	Highest Observed Beta/Gamma dpm/100cm²	Alpha dpm/100cm²	Beta/Gamma dpm/100cm²	
1				-0.9	17.1	2112.9	2112.9			See Map For Location
2				-0.9	26.1	1260.9	2112.9			See Map For Location
3				-0.9	17.1	3816.8	3816.8			See Map For Location
4				-0.9	26.1	2112.9	3816.8			See Map For Location
5				-0.9	17.1	1260.9	2964.9			See Map For Location
6				-0.9	26.1	2964.9	2964.9			See Map For Location
7				-9.9	17.1	2964.9	2964.9			See Map For Location
8				-0.9	35.1	2964.9	2964.9			See Map For Location
9				-0.9	8.1	1260.9	2964.9			See Map For Location
10				-0.9	26.1	1260.9	2112.9			See Map For Location
11				-9.9	35.1	4668.8	4668.8			See Map For Location
12				-0.9	26.1	2112.9	2112.9			See Map For Location
13				-0.9	8.1	3816.8	3816.8			See Map For Location
14				-9.9	26.1	3816.8	3816.8			See Map For Location
15				-0.9	26.1	1260.9	1260.9			See Map For Location
16				-0.9	17.1	2964.9	2964.9			See Map For Location
17				-0.9	17.1	1260.9	3816.8			See Map For Location
18				-0.9	8.1	1260.9	2112.9			See Map For Location
19				-0.9	17.1	1260.9	2964.9			See Map For Location
20				-0.9	35.1	1260.9	2964.9			See Map For Location
21				-0.9	17.1	2112.9	2112.9			See Map For Location
22				-0.9	62.2	1260.9	2964.9			See Map For Location
23				-0.9	17.1	2112.9	2112.9			See Map For Location

Reviewer
Daniel Spicuzza

Date: 4/26/2018

Time: 12:54

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A	
SURVEYOR: Thomas Hogan	LOCATION: Baffle #2

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
15				-0.9	1243.9	-1.2	1.1	See Map For Location
17				17.1	2304.6	-1.2	-27.2	See Map For Location
18				-0.9	2078.8	-1.2	-6.4	See Map For Location
19				-0.9	2862.6	-1.2	-15.8	See Map For Location
20				8.1	2828.5	-1.2	-19.6	See Map For Location
23				-0.9	2129.9	14.2	-4.5	See Map For Location
Maximum:				**17.1**	**2862.6**	**14.2**	**1.1**	
Average:				**3.6**	**2241.4**	**1.3**	**-12.1**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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Reviewer Daniel Spicuzza	Date: 4/26/2018 Time: 12:54	

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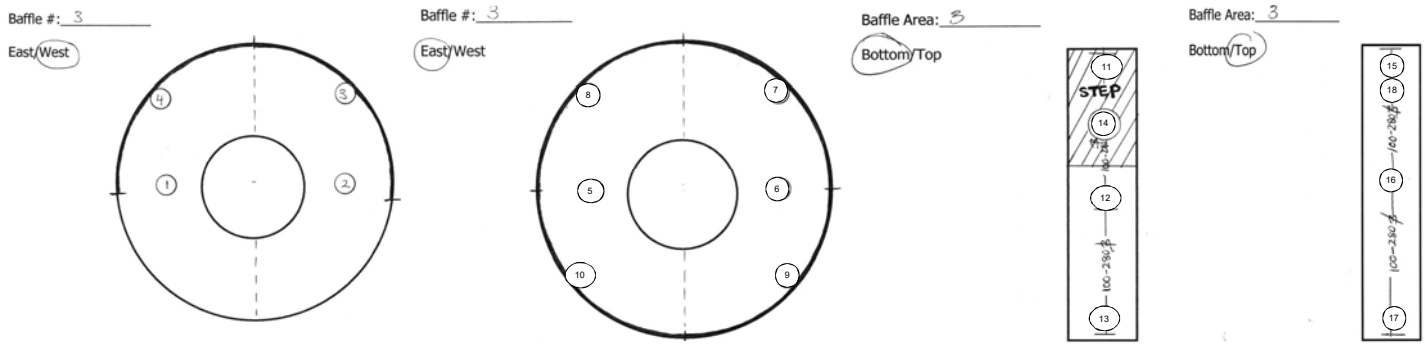
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/25/2018	TIME: 12:23	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 42.0	α 7.6
		43-93	268605		βγ 26.8%	βγ 10.050%	βγ 398.1	βγ 1363.2
LOCATION:	Baffle #3	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/25/2018	TIME: 12:54	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Baffle #3

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-7.6	11.3	-69.7	1422.9			See Map For Location
2				1.9	11.3	-169.2	1422.9			See Map For Location
3				11.3	30.3	1621.9	2616.9			See Map For Location
4				11.3	30.3	1621.9	2616.9			See Map For Location
5				1.9	20.8	-169.2	1024.9			See Map For Location
6				1.9	30.3	-169.2	1024.9			See Map For Location
7				-7.6	20.8	1621.9	2616.9			See Map For Location
8				1.9	39.7	1621.9	3611.9			See Map For Location
9				1.9	11.3	1621.9	3611.9			See Map For Location
10				11.3	30.3	1621.9	2616.9			See Map For Location
11				1.9	30.3	-169.2	1422.9			See Map For Location
12				1.9	30.3	-169.2	1422.9			See Map For Location
13				1.9	11.3	-169.2	1422.9			See Map For Location
14				-7.6	30.3	1621.9	4607.0			See Map For Location
15				1.9	30.3	-169.2	1422.9			See Map For Location
16				1.9	39.7	-169.2	1422.9			See Map For Location
17				11.3	20.8	-169.2	1422.9			See Map For Location
18				1.9	11.3	1621.9	2616.9			See Map For Location
N/A										See Map For Location
N/A										See Map For Location
N/A										See Map For Location

Reviewer
Daniel Spicuzza

Date: 4/25/2018

Time: 12:54

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Josefina Matus

LOCATION: Baffle #3

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
11				-7.6	1447.8	1.9	3.0	See Map For Location
12				-7.6	1472.6	-1.2	-10.2	See Map For Location
13				-7.6	1338.3	1.9	1.1	See Map For Location
15				-7.6	1497.5	8.0	-10.2	See Map For Location
16				1.9	1522.4	5.0	18.1	See Map For Location
17				-7.6	1437.8	1.9	-2.6	See Map For Location
Maximum:				**1.9**	**1522.4**	**8.0**	**18.1**	
Average:				**-6.0**	**1452.7**	**2.9**	**-0.1**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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N/A								

Reviewer Daniel Spicuzza	Date: 4/25/2018 Time: 12:54	

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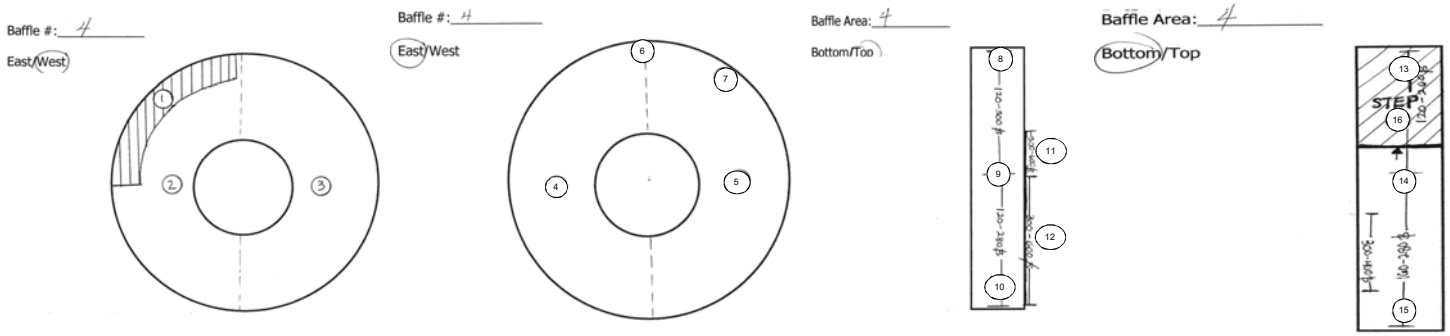
RADIATION/CONTAMINATION SURVEY FORM

DATE:	TIME:	INSTRUMENTATION USED						
4/25/2018	09:33	Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 42.0	α 7.6
		43-93	268605		βγ 26.8%	βγ 10.05%	βγ 398.1	βγ 1363.2
LOCATION:	Baffle #4	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/25/2018	TIME: 09:49 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

#	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Baffle #4

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-7.6	11.3	1621.9	3611.9			See Map For Location
2				1.9	11.3	29.9	1422.9			See Map For Location
3				11.3	30.3	-69.7	1422.9			See Map For Location
4				-7.6	39.7	-169.2	1223.9			See Map For Location
5				-7.6	39.7	-169.2	1422.9			See Map For Location
6				1.9	30.3	1621.9	2616.9			See Map For Location
7				1.9	20.8	2616.9	2616.9			See Map For Location
8				1.9	39.7	-169.2	1621.9			See Map For Location
9				1.9	11.3	-169.2	1621.9			See Map For Location
10				11.3	30.3	-169.2	1422.9			See Map For Location
11				1.9	30.3	1621.9	4607.0			See Map For Location
12				1.9	30.3	1621.9	4607.0			See Map For Location
13				1.9	11.3	-169.2	1422.9			See Map For Location
14				-7.6	30.3	1621.9	4607.0			See Map For Location
15				1.9	30.3	-169.2	1422.9			See Map For Location
16				1.9	39.7	-169.2	1422.9			See Map For Location
17				11.3	20.8	-169.2	1422.9			See Map For Location
18				1.9	11.3	1621.9	2616.9			See Map For Location
N/A										
N/A										
N/A										

Reviewer
Daniel Spicuzza

Date: 4/25/2018

Time: 9:49

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Josefina Matus

LOCATION: Baffle #4

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
8				-7.6	1611.9	1.9	3.0	See Map For Location
9				49.2	1741.3	-1.2	-10.2	See Map For Location
10				58.6	1482.6	1.9	1.1	See Map For Location
13				-7.6	1373.1	1.9	-8.3	See Map For Location
14				-7.6	4587.1	5.0	16.2	See Map For Location
15				11.3	1611.9	1.9	-2.6	See Map For Location
Maximum:				**58.6**	**4587.1**	**5.0**	**16.2**	
Average:				**16.1**	**2068.0**	**1.9**	**-0.1**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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Reviewer Daniel Spicuzza	Date: 4/25/2018	
	Time: 9:49	

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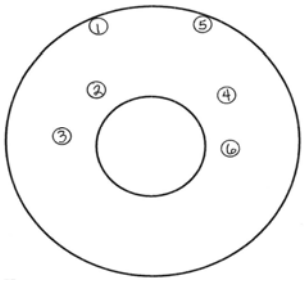
RADIATION/CONTAMINATION SURVEY FORM

DATE:	TIME:	INSTRUMENTATION USED						
4/25/2018	09:23	Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 40.4%	α 10.1%	α 49.0	α 10.9
		43-93	323074		βγ 25.4%	βγ 9.53%	βγ 459.4	βγ 1732.3
LOCATION:	Baffle #5	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/25/2018	TIME: 09:47 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank

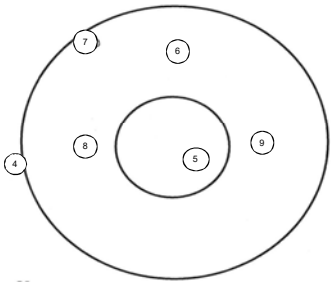
Baffle #: 5

East/West



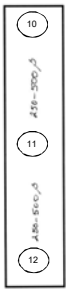
Baffle #: 5

East/West



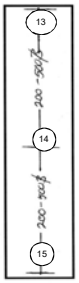
Baffle Area: 5

Bottom/Top



Baffle Area: 5

Bottom/Top



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: Baffle #5

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-10.9	8.9	1417.3	8766.4			See Map For Location
2				-1.0	48.5	2467.2	3517.1			See Map For Location
3				8.9	28.7	-157.5	1207.3			See Map For Location
4				-1.0	18.8	2467.2	3517.1			See Map For Location
5				-1.0	38.6	1417.3	8766.4			See Map For Location
6				-1.0	48.5	-52.5	1102.4			See Map For Location
7				-1.0	28.7	892.4	2992.1			See Map For Location
8				-1.0	38.6	-157.5	1207.3			See Map For Location
9				-1.0	8.9	-157.5	1312.3			See Map For Location
10				-10.9	28.7	892.4	3517.1			See Map For Location
11				-1.0	38.6	892.4	3517.1			See Map For Location
12				8.9	38.6	892.4	3517.1			See Map For Location
13				-1.0	8.9	367.5	3517.1			See Map For Location
14				-10.9	28.7	367.5	3517.1			See Map For Location
15				-1.0	28.7	367.5	3517.1			See Map For Location
N/A										
N/A										
N/A										
N/A										
N/A										
N/A										

Reviewer
Daniel Spicuzza

Date: 4/25/2018

Time: 9:47

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Josefina Matus

LOCATION: Baffle #5

Location	Exposure Rate (μR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
10				8.9	3989.5	5.0	-4.5	See Map For Location
11				28.7	4325.5	-1.2	-8.3	See Map For Location
12				28.7	3758.5	1.9	-2.6	See Map For Location
13				28.7	3979.0	1.9	14.3	See Map For Location
14				8.9	3853.0	1.9	12.5	See Map For Location
15				48.5	4220.5	1.9	3.0	See Map For Location
Maximum:				**48.5**	**4325.5**	**5.0**	**14.3**	
Average:				**25.4**	**4021.0**	**1.9**	**2.4**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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Reviewer Daniel Spicuzza	Date: 4/25/2018	
	Time: 9:47	

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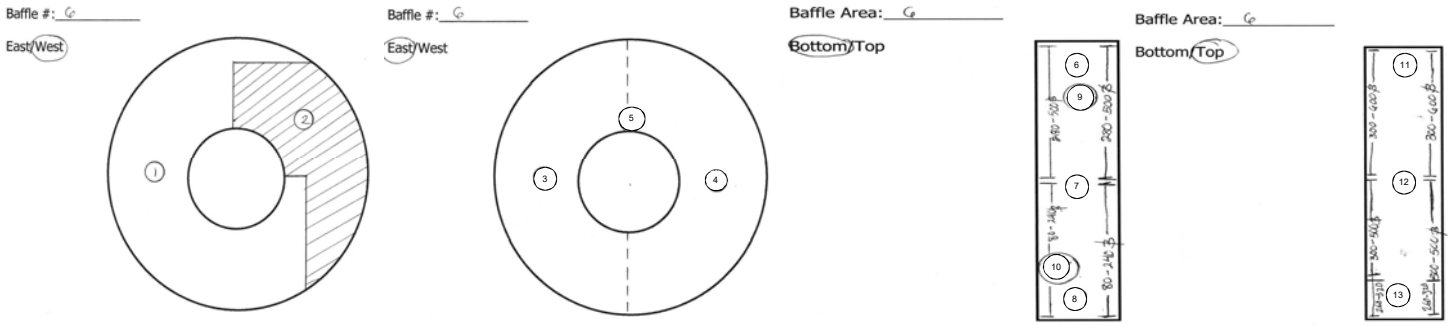
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/24/2018	TIME: 09:35	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 38.6	α 8.0
		43-93	326725		βγ 32.7%	βγ 12.26%	βγ 329.7	βγ 1141.7
LOCATION:	Baffle #6	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Adolfo Matus Jr.							
DATE: 4/24/2018	TIME: 10:17 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus Jr.

LOCATION: Baffle #6

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm²	Highest Observed Alpha dpm/100cm²	Lowest Observed Beta/Gamma dpm/100cm²	Highest Observed Beta/Gamma dpm/100cm²	Alpha dpm/100cm²	Beta/Gamma dpm/100cm²	
1										See Map For Location/Steel Removed
2				-8.0	8.0	-81.5	1141.7			See Map For Location
3				-8.0	8.0	-81.5	978.6			See Map For Location
4				-8.0	8.0	-81.5	978.6			See Map For Location
5				0.0	16.1	326.2	1631.0			See Map For Location
6				-8.0	16.1	1141.7	3343.5			See Map For Location
7				0.0	24.1	-81.5	815.5			See Map For Location
8				0.0	24.1	-81.5	815.5			See Map For Location
9				0.0	8.0	1141.7	3751.3			See Map For Location
10				-8.0	24.1	326.2	1467.9			See Map For Location
11				0.0	32.2	1304.8	3751.3			See Map For Location
12				8.0	32.2	1304.8	2935.8			See Map For Location
13				0.0	24.1	978.6	1467.9			See Map For Location
N/A										
N/A										
N/A										
N/A										
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N/A										

Reviewer
Daniel Spicuzza

Date: 4/24/2018

Time: 10:17

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Josefina Matus | LOCATION: Baffle #6

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
6				8.0	3156.0	1.9	8.7	See Map For Location
7				8.0	583.1	1.9	-2.6	See Map For Location
8				-8.0	521.9	1.9	16.2	See Map For Location
11				24.1	3437.3	5.0	-0.8	See Map For Location
12				16.1	2882.8	1.9	-6.4	See Map For Location
13				-8.0	1170.2	1.9	1.1	See Map For Location
Maximum:				**24.1**	**3437.3**	**5.0**	**16.2**	
Average:				**6.7**	**1958.5**	**2.4**	**2.7**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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N/A								

Reviewer Daniel Spicuzza	Date: 4/24/2018 Time: 10:17

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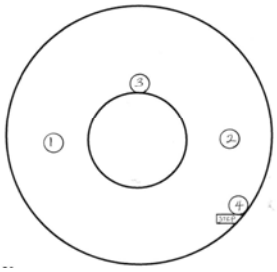
RADIATION/CONTAMINATION SURVEY FORM

DATE:	TIME:	INSTRUMENTATION USED						
4/24/2018	10:46	Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 42.0	α 7.6
		43-93	268605		βγ 26.8%	βγ 10.05%	βγ 398.1	βγ 1363.2
LOCATION:	Baffle #7	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/25/2018	TIME: 09:22 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank

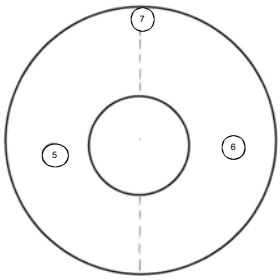
Baffle #: 7

East/West



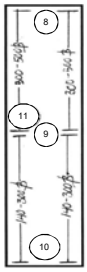
Baffle #: 7

East/West



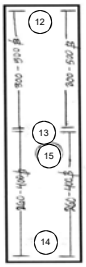
Baffle Area: 7

Bottom/Top



Baffle Area: 7

Bottom/Top



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

\+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Baffle #7

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-7.6	11.3	-69.7	1024.9			See Map For Location
2				1.9	30.3	-69.7	1223.9			See Map For Location
3				11.3	30.3	626.9	2616.9			See Map For Location
4				-7.6	39.7	626.9	2616.9			See Map For Location
5				-7.6	39.7	-69.7	1024.9			See Map For Location
6				1.9	30.3	-69.7	1223.9			See Map For Location
7				1.9	20.8	2119.4	6597.0			See Map For Location
8				1.9	39.7	1621.9	3611.9			See Map For Location
9				1.9	11.3	1621.9	3611.9			See Map For Location
10				11.3	30.3	29.9	1621.9			See Map For Location
11				1.9	39.7	8587.1	8587.1			See Map For Location
12				1.9	20.8	1621.9	3611.9			See Map For Location
13				1.9	11.3	1621.9	3611.9			See Map For Location
14				-7.6	30.3	1223.9	2616.9			See Map For Location
15				1.9	30.3	6597.0	6597.0			See Map For Location
N/A										
N/A										
N/A										
N/A										
N/A										
N/A										

Reviewer
Daniel Spicuzza

Date: 4/25/2018

Time: 9:22

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Josefina Matus

LOCATION: Baffle #7

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
8				11.3	3592.0	5.0	-2.6	See Map For Location
9				-7.6	3492.5	1.9	4.9	See Map For Location
10				30.3	1054.7	1.9	8.7	See Map For Location
12				1.9	3283.6	1.9	-4.5	See Map For Location
13				1.9	3368.2	5.0	10.6	See Map For Location
14				11.3	2776.1	1.9	-0.8	See Map For Location
Maximum:				**30.3**	**3592.0**	**5.0**	**10.6**	
Average:				**8.2**	**2927.9**	**2.9**	**2.7**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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Reviewer Daniel Spicuzza	Date: 4/25/2018 Time: 9:22	

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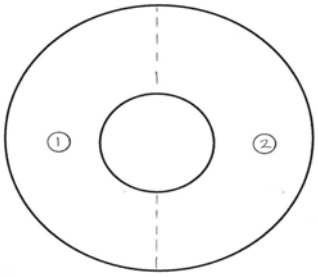
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/24/2018	TIME: 13:55	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 42.0	α 7.6
		43-93	268605		βγ 26.8%	βγ 10.05%	βγ 398.1	βγ 1363.2
LOCATION:	Baffle #8	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/26/2018	TIME: 12:21 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank

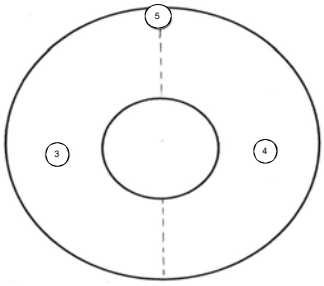
Baffle #: 8

East/West



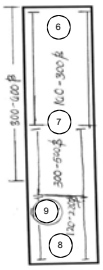
Baffle #: 8

East/West



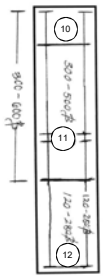
Baffle Area: 8

Bottom/Top



Baffle Area: 8

Bottom/Top



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

 # / # denotes contact / 1 meter radiation readings.

***** denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

\+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Baffle #8

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-7.6	11.3	-69.7	1223.9			See Map For Location
2				-7.6	20.8	29.9	1422.9			See Map For Location
3				1.9	30.3	-69.7	1422.9			See Map For Location
4				-7.6	11.3	-69.7	1422.9			See Map For Location
5				30.3	68.1	6597.0	6597.0			See Map For Location
6				1.9	30.3	1621.9	7592.0			See Map For Location
7				1.9	20.8	1621.9	6597.0			See Map For Location
8				1.9	39.7	-169.2	626.9			See Map For Location
9				30.3	39.7	8587.1	8587.1			See Map For Location
10				30.3	30.3	-69.7	1422.9			See Map For Location
11				1.9	39.7	1621.9	4607.0			See Map For Location
12				1.9	20.8	-169.2	1422.9			See Map For Location
N/A										
N/A										
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N/A										
N/A										

Reviewer
Daniel Spicuzza

Date: 4/26/2018

Time: 12:21

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Josefina Matus

LOCATION: Baffle #8

Location	Exposure Rate (μR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
6				58.6	10024.9	5.0	-12.1	See Map For Location
7				30.3	7422.9	5.0	16.2	See Map For Location
8				11.3	621.9	1.9	4.9	See Map For Location
10				-7.6	1119.4	1.9	-2.6	See Map For Location
11				-2.8	4562.2	1.9	1.1	See Map For Location
12				11.3	1005.0	1.9	-0.8	See Map For Location
Maximum:				**58.6**	**10024.9**	**5.0**	**16.2**	
Average:				**16.9**	**4126.0**	**2.9**	**1.1**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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Reviewer Daniel Spicuzza	Date: 4/26/2018 Time: 12:21	

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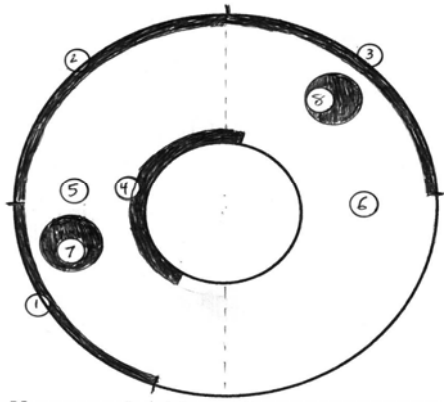
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/25/2018	TIME: 15:00	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 42.0	α 7.6
		43-93	268605		βγ 26.8%	βγ 10.05%	βγ 398.1	βγ 1363.2
LOCATION:	Blast Tank Main Baffles Room 107	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/25/2018	TIME: 15:14 Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank

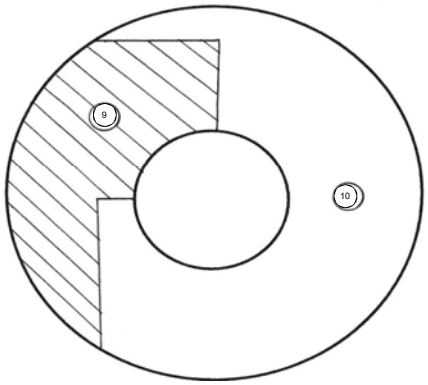
Baffle #: 107

East/West



Baffle #: 107

East/West



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Blast Tank Main Baffles Room 107

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-7.6	11.3	1621.9	3611.9			See Map For Location
2				1.9	20.8	1621.9	3611.9			See Map For Location
3				1.9	30.3	1621.9	2616.9			See Map For Location
4				-7.6	20.8	1621.9	2616.9			See Map For Location
5				30.3	68.1	-69.7	1422.9			See Map For Location
6				1.9	30.3	-169.2	1422.9			See Map For Location
7				1.9	20.8	2218.9	2218.9			See Map For Location
8				1.9	30.3	2019.9	2019.9			See Map For Location
9				1.9	20.8	-169.2	1223.9			See Map For Location
10				N/A	N/A	N/A	N/A			See Map For Location/Steel Removed
N/A										
N/A										
N/A										
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N/A										
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N/A										
N/A										

Reviewer
Daniel Spicuzza

Date: 4/25/2018

Time: 15:14

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Blast Tank Main Baffles Room 107

Location	Exposure Rate (μR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				16.1	3771.1	5.0	-19.6	See Map For Location
3				30.3	2607.0	5.0	6.8	See Map For Location
7				11.3	2124.4	1.9	-6.4	See Map For Location
8				-7.6	2044.8	1.9	-4.5	See Map For Location
Maximum:				**30.3**	**3771.1**	**5.0**	**6.8**	
Average:				**12.5**	**2636.8**	**3.4**	**-5.9**	
N/A								
N/A								
N/A								
N/A								
N/A								
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Reviewer
Daniel Spicuzza

Date: 4/25/2018

Time: 15:14

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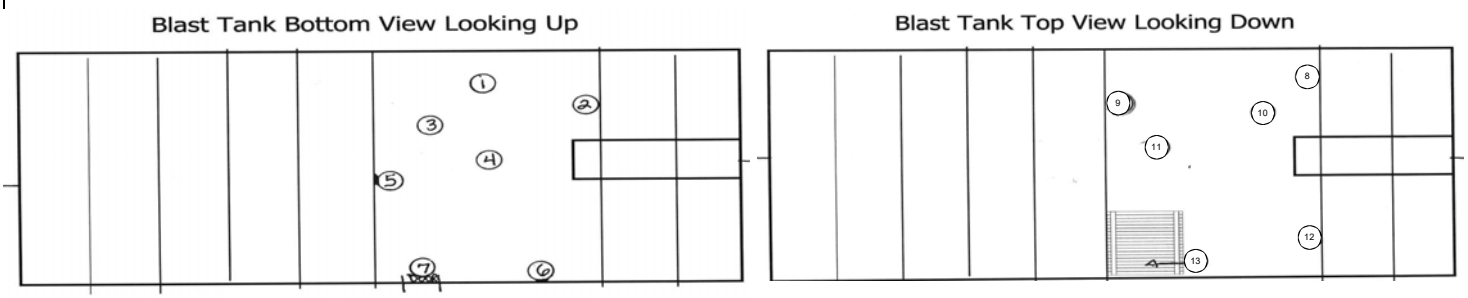
RADIATION/CONTAMINATION SURVEY FORM

DATE:	TIME:	INSTRUMENTATION USED						
4/24/2018	12:45	Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	297766	12/20/2018	α 40.4%	α 10.1%	α 49.0	α 10.9
		43-93	323074		βγ 25.4%	βγ 9.53%	βγ 459.4	βγ 1732.3
LOCATION:	Room 107	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/24/2018	TIME: 13:13 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Blast Tank



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: Room 107

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				28.7	8.9	-157.5	2467.2			See Map For Location
2				-1.0	18.8	-157.5	2467.2			See Map For Location
3				8.9	28.7	-157.5	2467.2			See Map For Location
4				-1.0	28.7	-157.5	2467.2			See Map For Location
5				-1.0	18.8	-157.5	2467.2			See Map For Location
6				-1.0	38.6	-157.5	2467.2			See Map For Location
7				-1.0	48.5	6666.7	6666.7			See Map For Location
8				-10.9	8.9	-262.5	1417.3			See Map For Location
9				-10.9	18.8	-52.5	1627.3			See Map For Location
10				-1.0	38.6	-262.5	1627.3			See Map For Location
11				-1.0	28.7	-157.5	1417.3			See Map For Location
12				8.9	18.8	157.5	2677.2			See Map For Location
13				-1.0	28.7	52.5	3517.1			See Map For Location
N/A										
N/A										
N/A										
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N/A										
N/A										

Reviewer
Daniel Spicuzza

Date: 4/24/2018

Time: 13:13

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: Room 107

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
2				13.9	2635.2	5.0	1.1	See Map For Location
7				18.8	6671.9	1.9	-2.6	See Map For Location
10				-1.0	1527.6	1.9	-4.5	See Map For Location
13				13.9	3312.3	1.9	-2.6	See Map For Location
Maximum:				**18.8**	**6671.9**	**5.0**	**1.1**	
Average:				**11.4**	**3536.7**	**2.6**	**-2.2**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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Reviewer Daniel Spicuzza	Date: 4/24/2018 Time: 13:13	

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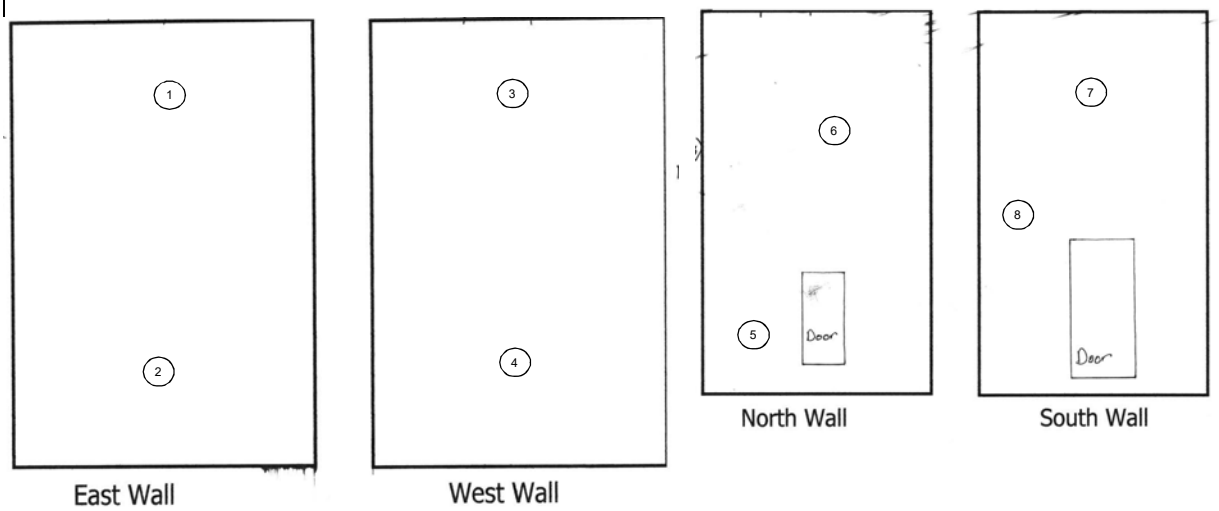
Optics Chamber

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/25/2018	TIME: 14:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	297766	12/20/2018	α 40.4%	α 10.1%	α 49.0	α 10.9
SURVEY NUMBER:	N/A	43-93	323074		βγ 25.4%	βγ 9.525%	βγ 459.4	βγ 1732.3
					64.6%	16.2%	15.9	1.2
LOCATION:	Optics Chamber Interior				53.0%	19.9%	83.7	199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/25/2018	TIME: 14:41	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Optics Chamber



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

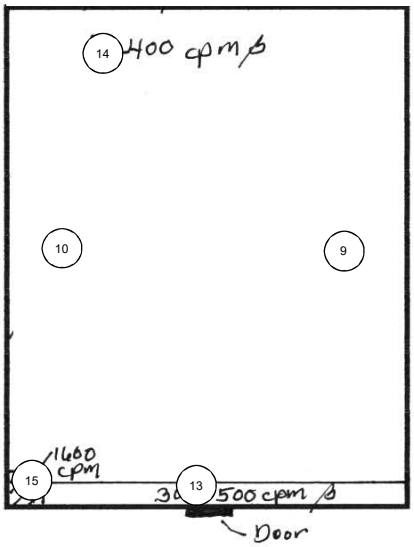
Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

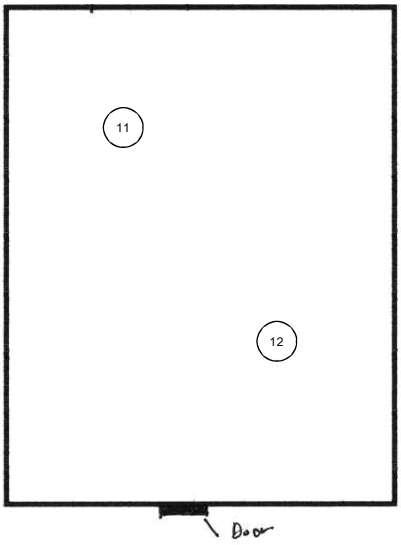
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/25/2018	TIME: 14:30	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm²)	Background + (dpm/100cm²)
		2360	297766	12/20/2018	α 40.4%	α 10.1%	α 49.0	α 10.9
SURVEY NUMBER:	N/A	43-93	323074		βγ 25.4%	βγ 9.5%	βγ 459.4	βγ 1732.3
					64.6%	16.2%	15.9	1.2
LOCATION:	Optics Chamber Interior				53.0%	19.9%	83.7	199.7
SURVEYOR:	Richard Thatcher							
DATE: 4/25/2018	TIME: 14:41	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: Cs-137		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Optics Chamber



Bottom



Top

Comments:

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: Optics Chamber Interior

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-1.0	38.6	-577.4	892.4			See Map For Location
2				-1.0	28.7	-472.4	787.4			See Map For Location
3				-1.0	38.6	-472.4	892.4			See Map For Location
4				-1.0	28.7	-472.4	892.4			See Map For Location
5				-1.0	18.8	-472.4	787.4			See Map For Location
6				-1.0	28.7	-472.4	787.4			See Map For Location
7				-10.9	18.8	-262.5	892.4			See Map For Location
8				-1.0	18.8	-262.5	892.4			See Map For Location
9				-1.0	8.9	-472.4	997.4			See Map For Location
10				-1.0	28.7	-472.4	997.4			See Map For Location
11				18.8	38.6	-157.5	997.4			See Map For Location
12				-1.0	28.7	-157.5	997.4			See Map For Location
13				-1.0	38.6	1417.3	3517.1			See Map For Location
14				-10.9	28.7	1417.3	2467.2			See Map For Location
15				-1.0	28.7	10866.1	15065.6			See Map For Location
N/A										
N/A										
N/A										
N/A										
N/A										
N/A										
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N/A										

Reviewer Daniel Spicuzza	Date: 4/25/2018	
	Time: 14:41	

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Josefina Matus

LOCATION: Northern Section East Lower Wall

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				8.9	-94.5	-1.2	1.1	See Map For Location
2				18.8	10.5	-1.2	-25.3	See Map For Location
3				28.7	-52.5	-1.2	-6.4	See Map For Location
4				-1.0	440.9	-1.2	-15.8	See Map For Location
5				8.9	965.9	-1.2	-19.6	See Map For Location
6				8.9	776.9	-1.2	-15.8	See Map For Location
7				8.9	913.4	-1.2	3.0	See Map For Location
8				8.9	1123.4	-1.2	-19.6	See Map For Location
9				8.9	944.9	-1.2	-0.8	See Map For Location
10				28.7	1018.4	-1.2	-25.3	See Map For Location
11				-10.9	477.7	-1.2	10.6	See Map For Location
12				8.9	451.4	-1.2	16.2	See Map For Location
13				23.8	3695.5	1.9	4.9	See Map For Location
14				13.9	2808.4	5.0	-4.5	See Map For Location
15				18.8	15422.6	8.0	-2.6	See Map For Location
Maximum:				**28.7**	**15422.6**	**8.0**	**16.2**	
Average:				**10.6**	**2419.9**	**0.3**	**-5.8**	
N/A								
N/A								
N/A								
N/A								
N/A								
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N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/25/2018

Time: 14:41

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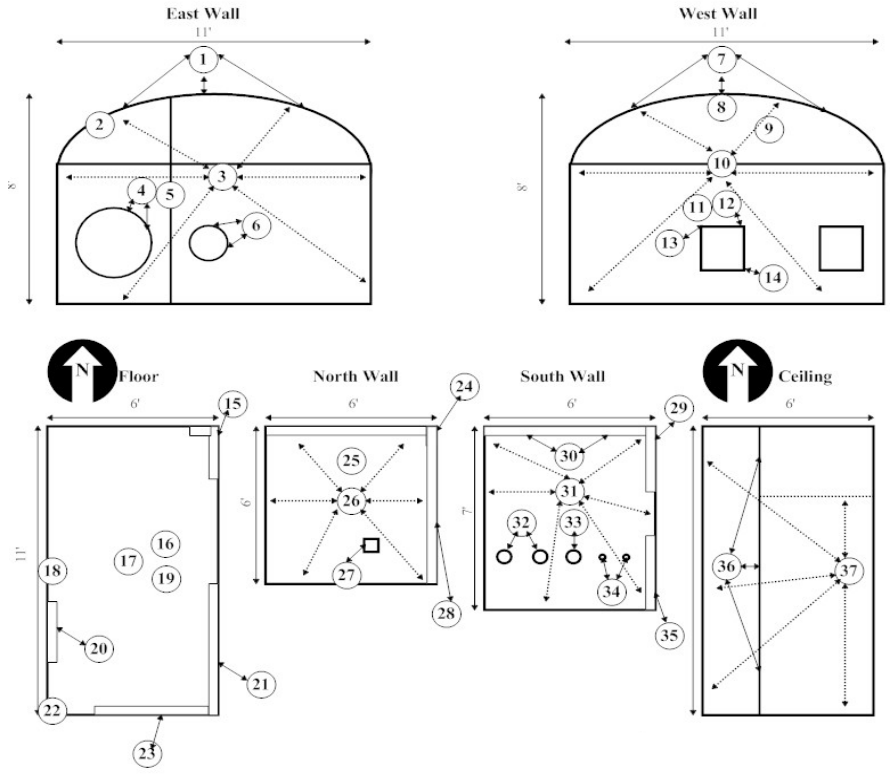
Orthogonal Chamber

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 09:00	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	193668	8/15/2018	α 49.7%	α 12.4%	α 38.6	α 8.0
		43-93	326725		βγ 32.7%	βγ 12.3%	βγ 329.7	βγ 1141.7
LOCATION:	Orthogonal Chamber Interior	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 15.9	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 83.7	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/20/2018	TIME: 09:10 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

NRL Chesapeake Building 218 Orthogonal Chamber



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

\+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Orthogonal Chamber Interior

Location	Exposure Rate (µR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-8.0	32.2	1304.8	2935.8			See Map For Location
2				0.0	24.1	5382.3	5382.3			See Map For Location
3				0.0	32.2	81.5	652.4			See Map For Location
4				0.0	24.1	1304.8	5382.3			See Map For Location
5				0.0	16.1	2120.3	2120.3			See Map For Location
6				0.0	24.1	1304.8	2935.8			See Map For Location
7				-8.0	16.1	2120.3	3751.3			See Map For Location
8				0.0	16.1	7013.3	7013.3			See Map For Location
9				0.0	8.0	2120.3	2120.3			See Map For Location
10				0.0	24.1	81.5	652.4			See Map For Location
11				-8.0	24.1	8644.2	8644.2			See Map For Location
12				0.0	24.1	2120.3	2120.3			See Map For Location
13				0.0	8.0	2935.8	2935.8			See Map For Location
14				-8.0	24.1	2120.3	2120.3			See Map For Location
15				0.0	24.1	1304.8	2935.8			See Map For Location
16				0.0	16.1	8644.2	8644.2			See Map For Location
17				0.0	16.1	10275.2	10275.2			See Map For Location
18				0.0	8.0	2935.8	2935.8			See Map For Location
19				0.0	16.1	3751.3	3751.3			See Map For Location
20				0.0	16.1	1304.8	2935.8			See Map For Location
21				0.0	16.1	2120.3	2935.8			See Map For Location
22				0.0	8.0	11906.2	11906.2			See Map For Location
23				0.0	16.1	1304.8	2935.8			See Map For Location
24				-8.0	8.0	3751.3	3751.3			See Map For Location
25				-8.0	24.1	2120.3	5382.3			See Map For Location
26				0.0	16.1	81.5	163.1			See Map For Location
27				0.0	8.0	2120.3	2120.3			See Map For Location
28				-8.0	24.1	2935.8	2935.8			See Map For Location
29				-8.0	8.0	2935.8	5382.3			See Map For Location
30				0.0	24.1	1304.8	3751.3			See Map For Location
31				0.0	16.1	81.5	652.4			See Map For Location
32				-8.0	24.1	3751.3	3751.3			See Map For Location
33				-8.0	8.0	5382.3	5382.3			See Map For Location
34				0.0	24.1	2120.3	2120.3			See Map For Location
35				0.0	16.1	1304.8	2935.8			See Map For Location
36				-8.0	8.0	2120.3	3751.3			See Map For Location
37				-8.0	8.0	1304.8	5382.3			See Map For Location

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 9:10

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Orthogonal Chamber

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
2				12.1	4652.4	5.0	-10.2	See Map For Location
8				24.1	5843.0	5.0	6.8	See Map For Location
11				8.0	7649.3	1.9	-6.4	See Map For Location
17				12.1	9325.2	1.9	-4.5	See Map For Location
22				12.1	10095.8	8.0	-0.8	
33				16.1	4774.7	5.0	-6.4	
Maximum:				**24.1**	**10095.8**	**8.0**	**6.8**	
Average:				**14.1**	**7056.7**	**4.4**	**-3.6**	
N/A								
N/A								
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Reviewer Daniel Spicuzza	Date: 4/20/2018 Time: 9:10	

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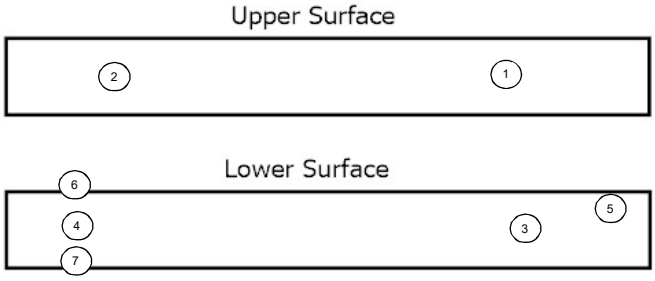
Flight Tube

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/26/2018	TIME: 14:20	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	297766	12/20/2018	α 40.4%	α 10.1%	α 71.5	α 10.9
SURVEY NUMBER:	N/A	43-93	323074		βγ 25.4%	βγ 9.525%	βγ 574.9	βγ 1732.3
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
LOCATION:	Flight Tube Interior				βγ 53.0%	βγ 19.9%	βγ 121.1	βγ 199.7
SURVEYOR:	Adolfo Matus							
DATE: 4/26/2018	TIME: 14:28	Reviewed by: Daniel Spicuzza						
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

NRL Chesapeake Building 218 Flight Tube



Comments:

The chamber was 100% gross alpha-beta/gamma scan surveyed.

All areas not marked on map were at backgroud levels.

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

#	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Flight Tube Interior

Location	Exposure Rate (μR/hr)		Scan Range (NET)					Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Lowest Observed Alpha dpm/100cm^2	Highest Observed Alpha dpm/100cm^2	Lowest Observed Beta/Gamma dpm/100cm^2	Highest Observed Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				-10.9	28.7	1417.3	8766.4			See Map For Location
2				-1.0	28.7	1417.3	50761.2			See Map For Location
3				-1.0	38.6	1417.3	6666.7			See Map For Location
4				-1.0	68.3	1417.3	24514.4			See Map For Location
N/A										
N/A										
N/A										
N/A										
N/A										
N/A										
N/A										
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Reviewer Daniel Spicuzza	Date: 4/26/2018	
	Time: 14:28	

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RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus

LOCATION: Flight Tube Interior

Location	Exposure Rate (μR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm²	Beta/Gamma dpm/100cm²	Alpha dpm/100cm²	Beta/Gamma dpm/100cm²	
1				8.9	9049.9	1.9	-68.7	See Map For Location
2				-1.0	51212.6	5.0	-74.3	See Map For Location
3				18.8	6866.1	1.9	-72.5	See Map For Location
4				-1.0	8829.4	8.0	-76.2	See Map For Location
5				8.9	11233.6	1.9	-78.1	See Map For Location
6				28.7	7023.6	-1.2	-63.0	See Map For Location
7				28.7	28168.0	-1.2	-68.7	See Map For Location
Maximum:				**28.7**	**51212.6**	**8.0**	**-63.0**	
Average:				**13.2**	**17483.3**	**2.3**	**-71.6**	
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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Reviewer Daniel Spicuzza	Date: 4/26/2018 Time: 14:28	

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Appendix L

Sample Laboratory Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-28002-1
Client Project/Site: Naval Research Lab, Chesapeake Bay, MD

For:
Aleut World Solutions
615 E. 82nd Ave.
Suite 200
Anchorage, Alaska 99518

Attn: Sarah Skrobialowski

Authorized for release by:
5/16/2018 10:52:43 AM

Ivan Vania, Project Manager II
(314)298-8566
ivan.vania@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

Table of Contents

Job ID: 160-28002-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Aleut World Solutions

Project: Naval Research Lab, Chesapeake Bay, MD

Report Number: 160-28002-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an ""as received"" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 4/25/2018 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.9º C.

TCLP METALS (ICP)
Sample NRLCBD-2 (160-28002-2) was analyzed for TCLP metals (ICP) in accordance with EPA SW-846 Method 1311/6010C. The samples were leached on 04/29/2018, prepared on 05/01/2018 and analyzed on 05/02/2018.

Job ID: 160-28002-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

The serial dilution performed for the following samples associated with batch preparation batch 160-363142 and 160-363477 and analytical batch 160-363737 was outside control limits for Lead indicating a potential matrix interference: (160-28002-A-2-D SD ^).

Due to the high concentration of Lead, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 160-363142 and 160-363477 and analytical batch 160-363737 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria: NRLCBD-2 (160-28002-2[MS]) and NRLCBD-2 (160-28002-2[MSD]).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP MERCURY
Sample NRLCBD-2 (160-28002-2) was analyzed for TCLP mercury in accordance with EPA SW-846 Methods 1311/7470A. The samples were leached on 04/29/2018, and prepared and analyzed on 05/04/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)
Sample NRLCBD-1 (160-28002-1) was analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 04/26/2018, prepared on 05/02/2018 and analyzed on 05/05/2018.

Prep Batch 160-363695:
The pulser associated with the method blank (AV91) is displaying a "FAIL" in the final report. The result for Pulser Center (217.0) is within the range of 207.0-217.0. The LIM system is identifying it as "FAIL"; however, the lab considers the value to be within limits: (MB 160-363695/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TestAmerica St. Louis
13715 Rider Trail North

Earth City, MO 63045
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other:

Client Contact	Project Manager: Daniel Spicuzza	Site Contact: Daniel Spicuzza	Date: 4-24-18	COC No: NRLCBD-1
AWS, LLC	Tel/Fax: 412 848-7022/888 705-7408	Lab Contact: Ivan Vania	Carrier: Fed Ex	1 of 1 COCs
3601 C. St., Suite 1000-32	Analysis Turnaround Time			Sampler: Cosgrove/Spicuzza
Anchorage, AK 99503	☐ CALENDAR DAYS ☑ WORKING DAYS			
(907) 278-2311 Phone	TAT if different from Below 21			Lab Sampling:
(907) 278-2350 FAX	☐ 2 weeks			
Project Name: NRL Chesapeake Building 218 FSS	☐ 1 week			Job / SDG No.:USN 2017-012
Site: NRL Chesapeake Bay Detachment, MD	☐ 2 days			
Quote #: N/A	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Isotopic Uranium (Alpha Spec)	TCLP RCRA Metals 6010C	TCLP Metals, 7470A Hg	Sample Specific Notes:
NRLCBD- 1	4/24/2018	0955	C	Solid	1	N	N	X			QC Level III
NRLCBD- 2	4/24/2018	1000	C	Solid	1	N	N		X	X	QC Level III

160-28002 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 1

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: See sample specific notes for QC Levels.

Custody Seals Intact: ☑ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company: AWS	Date/Time: 4-24-18 1530	Received by: Krystene Taylor	Company: TA St Louis	Date/Time: 4/25/18 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Login Sample Receipt Checklist

Client: Aleut World Solutions

Job Number: 160-28002-1

Login Number: 28002
List Number: 1
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Definitions/Glossary

Client: Aleut World Solutions
Project/Site: Naval Research Lab, Chesapeake Bay, MD

TestAmerica Job ID: 160-28002-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Aleut World Solutions
Project/Site: Naval Research Lab, Chesapeake Bay, MD

TestAmerica Job ID: 160-28002-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SL
7470A	Mercury (CVAA)	SW846	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
1311	TCLP Extraction	SW846	TAL SL
3010A	Preparation, Total Metals	SW846	TAL SL
7470A	Preparation, Mercury	SW846	TAL SL
Dry and Grind	Preparation, Dry and Grind	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL

Protocol References:

DOE = U.S. Department of Energy
None = None
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Aleut World Solutions
Project/Site: Naval Research Lab, Chesapeake Bay, MD

TestAmerica Job ID: 160-28002-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-28002-1	NRLCBD-1	Solid	04/24/18 09:55	04/25/18 09:20
160-28002-2	NRLCBD-2	Solid	04/24/18 10:00	04/25/18 09:20

Client Sample Results

Client: Aleut World Solutions
Project/Site: Naval Research Lab, Chesapeake Bay, MD

TestAmerica Job ID: 160-28002-1

Client Sample ID: NRLCBD-1

Lab Sample ID: 160-28002-1
Date Collected: 04/24/18 09:55
Matrix: Solid
Date Received: 04/25/18 09:20

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	3.38		0.442	0.525	1.00	0.0697	pCi/g	05/02/18 16:38	05/05/18 17:22	1
Uranium-235/236	0.305		0.148	0.150	1.00	0.0538	pCi/g	05/02/18 16:38	05/05/18 17:22	1
Uranium-238	19.4		1.06	1.94	1.00	0.0431	pCi/g	05/02/18 16:38	05/05/18 17:22	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium-232	*56.6*		*30 - 110*	*05/02/18 16:38*	*05/05/18 17:22*	*1*

Client Sample ID: NRLCBD-2

Lab Sample ID: 160-28002-2
Date Collected: 04/24/18 10:00
Matrix: Solid
Date Received: 04/25/18 09:20

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.025	0.010	mg/L		05/01/18 14:58	05/02/18 17:46	1
Barium	0.70	J	1.0	0.038	mg/L		05/01/18 14:58	05/02/18 17:46	1
Cadmium	0.50		0.013	0.0038	mg/L		05/01/18 14:58	05/02/18 17:46	1
Chromium	0.044		0.025	0.0075	mg/L		05/01/18 14:58	05/02/18 17:46	1
Lead	11		0.025	0.0075	mg/L		05/01/18 14:58	05/02/18 17:46	1
Selenium	ND		0.038	0.020	mg/L		05/01/18 14:58	05/02/18 17:46	1
Silver	ND		0.025	0.0075	mg/L		05/01/18 14:58	05/02/18 17:46	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0039		0.0010	0.00030	mg/L		05/04/18 08:49	05/04/18 15:16	1

QC Sample Results

Client: Aleut World Solutions
Project/Site: Naval Research Lab, Chesapeake Bay, MD

TestAmerica Job ID: 160-28002-1

Method: 6010C - Metals (ICP)

Lab Sample ID: LCS 160-363477/2-A
Matrix: Solid
Analysis Batch: 363737

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 363477

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.50	2.70		mg/L		108	80 - 120
Barium	2.50	2.41		mg/L		97	80 - 120
Cadmium	2.50	2.61		mg/L		104	80 - 120
Chromium	2.50	2.58		mg/L		103	80 - 120
Lead	2.50	2.54		mg/L		101	80 - 120
Selenium	1.25	1.39		mg/L		111	80 - 120
Silver	0.500	0.505		mg/L		101	80 - 120

Lab Sample ID: LB 160-363142/1-B
Matrix: Solid
Analysis Batch: 363737

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 363477

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.025	0.010	mg/L		05/01/18 14:58	05/02/18 17:22	1
Barium	ND		1.0	0.038	mg/L		05/01/18 14:58	05/02/18 17:22	1
Cadmium	ND		0.013	0.0038	mg/L		05/01/18 14:58	05/02/18 17:22	1
Chromium	ND		0.025	0.0075	mg/L		05/01/18 14:58	05/02/18 17:22	1
Lead	ND		0.025	0.0075	mg/L		05/01/18 14:58	05/02/18 17:22	1
Selenium	ND		0.038	0.020	mg/L		05/01/18 14:58	05/02/18 17:22	1
Silver	ND		0.025	0.0075	mg/L		05/01/18 14:58	05/02/18 17:22	1

Lab Sample ID: 160-28002-2 MS
Matrix: Solid
Analysis Batch: 363737

Client Sample ID: NRLCBD-2
Prep Type: TCLP
Prep Batch: 363477

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		2.50	2.72		mg/L		109	75 - 125
Barium	0.70	J	2.50	3.18		mg/L		99	75 - 125
Cadmium	0.50		2.50	3.13		mg/L		105	75 - 125
Chromium	0.044		2.50	2.61		mg/L		103	75 - 125
Lead	11		2.50	14.4	4	mg/L		127	75 - 125
Selenium	ND		1.25	1.38		mg/L		111	75 - 125
Silver	ND		0.500	0.510		mg/L		102	75 - 125

Lab Sample ID: 160-28002-2 MSD
Matrix: Solid
Analysis Batch: 363737

Client Sample ID: NRLCBD-2
Prep Type: TCLP
Prep Batch: 363477

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		2.50	2.72		mg/L		109	75 - 125	0	20
Barium	0.70	J	2.50	3.25		mg/L		102	75 - 125	2	20
Cadmium	0.50		2.50	3.13		mg/L		105	75 - 125	0	20
Chromium	0.044		2.50	2.63		mg/L		103	75 - 125	1	20
Lead	11		2.50	14.2	4	mg/L		116	75 - 125	2	20
Selenium	ND		1.25	1.38		mg/L		111	75 - 125	0	20
Silver	ND		0.500	0.516		mg/L		103	75 - 125	1	20

QC Sample Results

Client: Aleut World Solutions
Project/Site: Naval Research Lab, Chesapeake Bay, MD

TestAmerica Job ID: 160-28002-1

Method: 7470A - Mercury (CVAA)

Lab Sample ID: LCS 160-364019/2-A
Matrix: Solid
Analysis Batch: 364172

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 364019

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.0250	0.0264		mg/L		106	80 - 120

Lab Sample ID: LB 160-363142/1-D
Matrix: Solid
Analysis Batch: 364172

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 364019

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0010	0.00030	mg/L		05/04/18 08:49	05/04/18 15:12	1

Lab Sample ID: 160-28002-2 MS
Matrix: Solid
Analysis Batch: 364172

Client Sample ID: NRLCBD-2
Prep Type: TCLP
Prep Batch: 364019

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.0039		0.0250	0.0311		mg/L		109	70 - 130

Lab Sample ID: 160-28002-2 MSD
Matrix: Solid
Analysis Batch: 364172

Client Sample ID: NRLCBD-2
Prep Type: TCLP
Prep Batch: 364019

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.0039		0.0250	0.0307		mg/L		107	70 - 130	1	20

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-363695/1-A
Matrix: Solid
Analysis Batch: 364252

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 363695

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.01964	U	0.0329	0.0329	1.00	0.0590	pCi/g	05/02/18 16:38	05/05/18 17:22	1
Uranium-235/236	0.007333	U	0.0202	0.0202	1.00	0.0473	pCi/g	05/02/18 16:38	05/05/18 17:22	1
Uranium-238	0.005881	U	0.0296	0.0296	1.00	0.0668	pCi/g	05/02/18 16:38	05/05/18 17:22	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium-232	*99.1*		*30 - 110*	*05/02/18 16:38*	*05/05/18 17:22*	*1*

Lab Sample ID: LCS 160-363695/2-A
Matrix: Solid
Analysis Batch: 364253

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 363695

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-233/234	6.37	6.739		0.764	1.00	0.0694	pCi/g	106	84 - 120
Uranium-238	6.51	6.967		0.784	1.00	0.0545	pCi/g	107	82 - 122

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-363695/2-A
Matrix: Solid
Analysis Batch: 364253

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 363695

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Uranium-232	*85.9*		*30 - 110*

Lab Sample ID: 160-28002-1 DU
Matrix: Solid
Analysis Batch: 364255

Client Sample ID: NRLCBD-1
Prep Type: Total/NA
Prep Batch: 363695

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Uranium-233/234	3.38			2.565		0.435	1.00	0.149	pCi/g			0.85	1
Uranium-235/236	0.305			0.2935		0.154	1.00	0.148	pCi/g			0.04	1
Uranium-238	19.4			17.07		1.73	1.00	0.130	pCi/g			0.63	1

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Uranium-232	*63.1*		*30 - 110*

QC Association Summary

Client: Aleut World Solutions
Project/Site: Naval Research Lab, Chesapeake Bay, MD

TestAmerica Job ID: 160-28002-1

Metals

Leach Batch: 363142

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-28002-2	NRLCBD-2	TCLP	Solid	1311	
LB 160-363142/1-B	Method Blank	TCLP	Solid	1311	
LB 160-363142/1-D	Method Blank	TCLP	Solid	1311	
160-28002-2 MS	NRLCBD-2	TCLP	Solid	1311	
160-28002-2 MSD	NRLCBD-2	TCLP	Solid	1311	

Prep Batch: 363477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-28002-2	NRLCBD-2	TCLP	Solid	3010A	363142
LB 160-363142/1-B	Method Blank	TCLP	Solid	3010A	363142
LCS 160-363477/2-A	Lab Control Sample	Total/NA	Solid	3010A	
160-28002-2 MS	NRLCBD-2	TCLP	Solid	3010A	363142
160-28002-2 MSD	NRLCBD-2	TCLP	Solid	3010A	363142

Analysis Batch: 363737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-28002-2	NRLCBD-2	TCLP	Solid	6010C	363477
LB 160-363142/1-B	Method Blank	TCLP	Solid	6010C	363477
LCS 160-363477/2-A	Lab Control Sample	Total/NA	Solid	6010C	363477
160-28002-2 MS	NRLCBD-2	TCLP	Solid	6010C	363477
160-28002-2 MSD	NRLCBD-2	TCLP	Solid	6010C	363477

Prep Batch: 364019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-28002-2	NRLCBD-2	TCLP	Solid	7470A	363142
LB 160-363142/1-D	Method Blank	TCLP	Solid	7470A	363142
LCS 160-364019/2-A	Lab Control Sample	Total/NA	Solid	7470A	
160-28002-2 MS	NRLCBD-2	TCLP	Solid	7470A	363142
160-28002-2 MSD	NRLCBD-2	TCLP	Solid	7470A	363142

Analysis Batch: 364172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-28002-2	NRLCBD-2	TCLP	Solid	7470A	364019
LB 160-363142/1-D	Method Blank	TCLP	Solid	7470A	364019
LCS 160-364019/2-A	Lab Control Sample	Total/NA	Solid	7470A	364019
160-28002-2 MS	NRLCBD-2	TCLP	Solid	7470A	364019
160-28002-2 MSD	NRLCBD-2	TCLP	Solid	7470A	364019

Rad

Leach Batch: 362818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-28002-1	NRLCBD-1	Total/NA	Solid	Dry and Grind	
160-28002-1 DU	NRLCBD-1	Total/NA	Solid	Dry and Grind	

Prep Batch: 363695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-28002-1	NRLCBD-1	Total/NA	Solid	ExtChrom	362818
MB 160-363695/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-363695/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	

Rad (Continued)

Prep Batch: 363695 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-28002-1 DU	NRLCBD-1	Total/NA	Solid	ExtChrom	362818

Tracer/Carrier Summary

Client: Aleut World Solutions
Project/Site: Naval Research Lab, Chesapeake Bay, MD

TestAmerica Job ID: 160-28002-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Solid **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	**Client Sample ID**	**ranium-23 (30-110)**							
160-28002-1	NRLCBD-1	56.6							
160-28002-1 DU	NRLCBD-1	63.1							
LCS 160-363695/2-A	Lab Control Sample	85.9							
MB 160-363695/1-A	Method Blank	99.1							

Tracer/Carrier Legend

Uranium-232 = Uranium-232

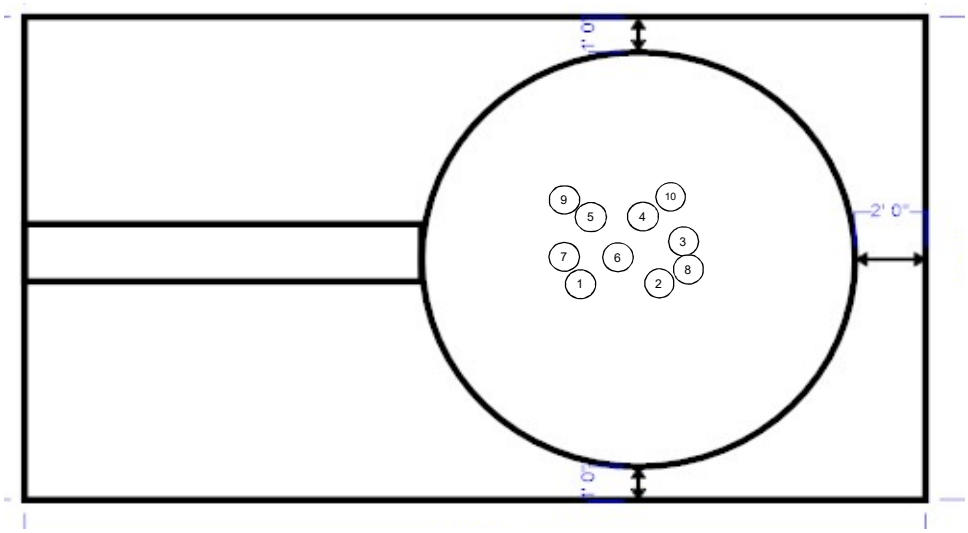
Appendix M

Miscellaneous Survey Reports

RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/17/2018	TIME: 12:45	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A							
LOCATION:	NRL Chesapeake Bldg. 218	2929	146780	6/17/2018	α 71.0%	α 17.8%	α 25.3	α 1.1
					βγ 53.0%	βγ 26.5%	βγ 89.5	βγ 144.9
SURVEYOR:	Adolfo Matus Jr.							
DATE: 4/17/2018	TIME: 13:25 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: N/A Minutes						

Swipe Survey of Sphere Interior



Comments:

Swipe Survey Of Target Sphere Interior

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#)	denotes swipe location and fixed α/β readings
#	denotes G/A radiation readings
# / #	denotes contact / 1 meter radiation readings.
*	denotes highest radiation reading on contact
LAW	denotes large area masslinn wipe
Δ	denotes static location.
+	Unless Otherwise Noted
	All readings in mr/hr unless otherwise noted
	K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus Jr. | LOCATION: NRL Chesapeake Bldg. 218

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1						-1.1	43.8	See Map For Smear Location
2						-1.1	28.7	See Map For Smear Location
3						-1.1	62.6	See Map For Smear Location
4						-1.1	32.5	See Map For Smear Location
5						-1.1	24.9	See Map For Smear Location
6						-1.1	13.6	See Map For Smear Location
7						-1.1	6.0	See Map For Smear Location
8						10.1	13.6	See Map For Smear Location
9						-1.1	2.3	See Map For Smear Location
10						4.5	36.2	See Map For Smear Location
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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N/A								
N/A								

Reviewer Daniel Spicuzza	Date: 4/17/2018	
	Time: 13:25	

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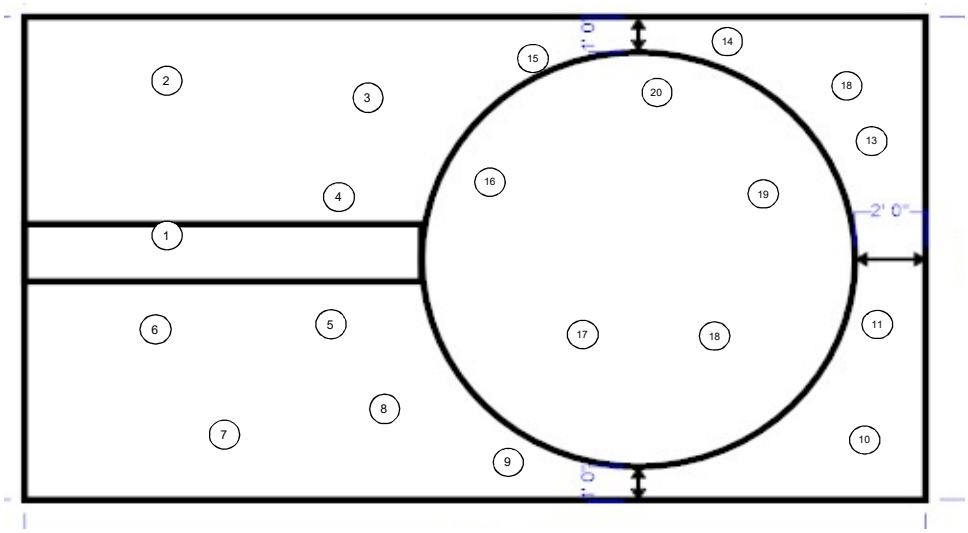
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/18/2018	TIME: 12:10	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A							
LOCATION:	NRL Chesapeake Bldg. 218	2929	146780	6/17/2018	α 71.0%	α 17.8%	α 25.3	α 1.1
					βγ 53.0%	βγ 19.9%	βγ 119.5	βγ 193.7
SURVEYOR:	Adolfo Matus Jr.							
DATE: 4/18/2018	TIME: 12:45 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: N/A Minutes						

Swipe Survey of Beam Areas



Comments:

Weekly Routine Survey

Routine (Daily / Weekly / Monthly) [ ] **Non-routine** [X]

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

\+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus Jr.

LOCATION: NRL Chesapeake Bldg. 218

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1						4.5	27.7	See Map For Smear Location
2						-1.1	17.6	See Map For Smear Location
3						-1.1	52.8	See Map For Smear Location
4						4.5	32.7	See Map For Smear Location
5						4.5	-2.5	See Map For Smear Location
6						4.5	-17.6	See Map For Smear Location
7						10.1	12.6	See Map For Smear Location
8						4.5	7.5	See Map For Smear Location
9						-1.1	2.5	See Map For Smear Location
10						4.5	-7.5	See Map For Smear Location
11						-1.1	7.5	See Map For Smear Location
12						4.5	12.6	See Map For Smear Location
13						-1.1	17.6	See Map For Smear Location
14						-1.1	7.5	See Map For Smear Location
15						4.5	2.5	See Map For Smear Location
16						4.5	12.6	See Map For Smear Location
17						-1.1	42.8	See Map For Smear Location
18						-1.1	32.7	See Map For Smear Location
19						-1.1	27.7	See Map For Smear Location
20						4.5	12.6	See Map For Smear Location
3D						-1.1	47.8	Duplicate Swipe
12D						4.5	7.5	Duplicate Swipe
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/18/2018

Time: 12:45

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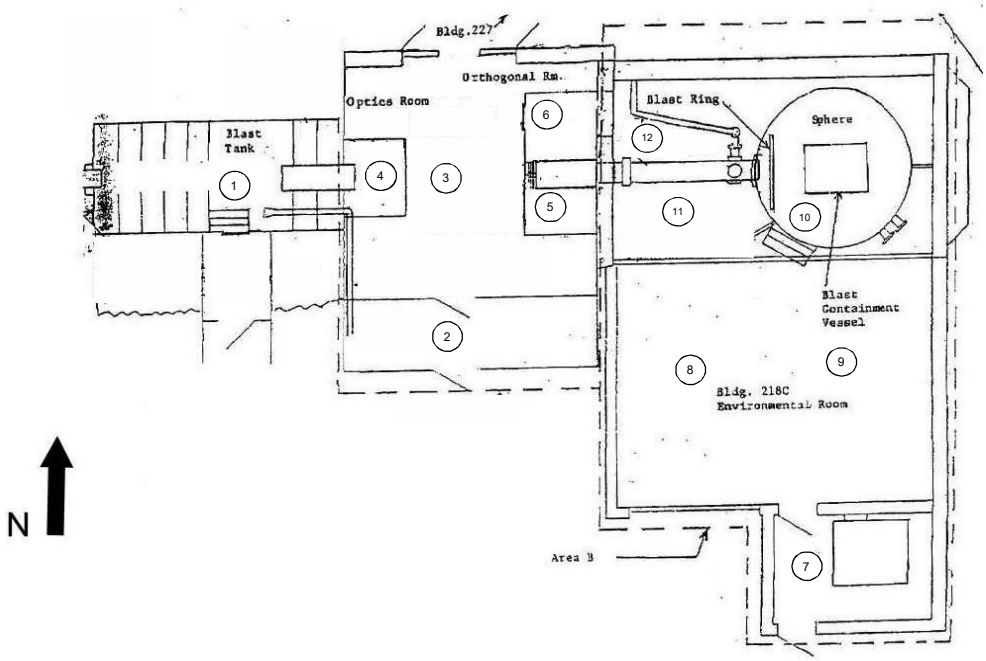
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/6/2018	TIME: 11:45	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A							
LOCATION:	NRL Chesapeake Bldg. 218	2929	146780	6/17/2018	α 71.0%	α 17.8%	α 22.9	α 0.6
					βγ 53.0%	βγ 26.5%	βγ 89.0	βγ 143.0
SURVEYOR:	Thomas Hogan/Richard Thatcher							
DATE: 4/6/2018	TIME: 12:20 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: N/A Minutes						

Swipe Survey of Floors



Comments:

Swipe Survey of Floors

Routine (Daily / Weekly / Monthly) [ ] Non-routine [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Thomas Hogan/Richard Thatcher

LOCATION: NRL Chesapeake Bldg. 218

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1						-0.6	4.2	See Map For Smear Location
2						-0.6	11.7	See Map For Smear Location
3						-0.6	-3.4	See Map For Smear Location
4						5.1	-10.9	See Map For Smear Location
5						-0.6	23.0	See Map For Smear Location
6						-0.6	4.2	See Map For Smear Location
7						5.1	7.9	See Map For Smear Location
8						-0.6	11.7	See Map For Smear Location
9						5.1	-10.9	See Map For Smear Location
10						10.7	0.4	See Map For Smear Location
11						-0.6	19.2	See Map For Smear Location
12						-0.6	4.2	See Map For Smear Location
3D						-0.6	-10.9	Duplicate Swipe
8D						-0.6	7.9	Duplicate Swipe
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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N/A								
N/A								
N/A								
N/A								

Reviewer Daniel Spicuzza	Date: 4/6/2018 Time: 12:20	

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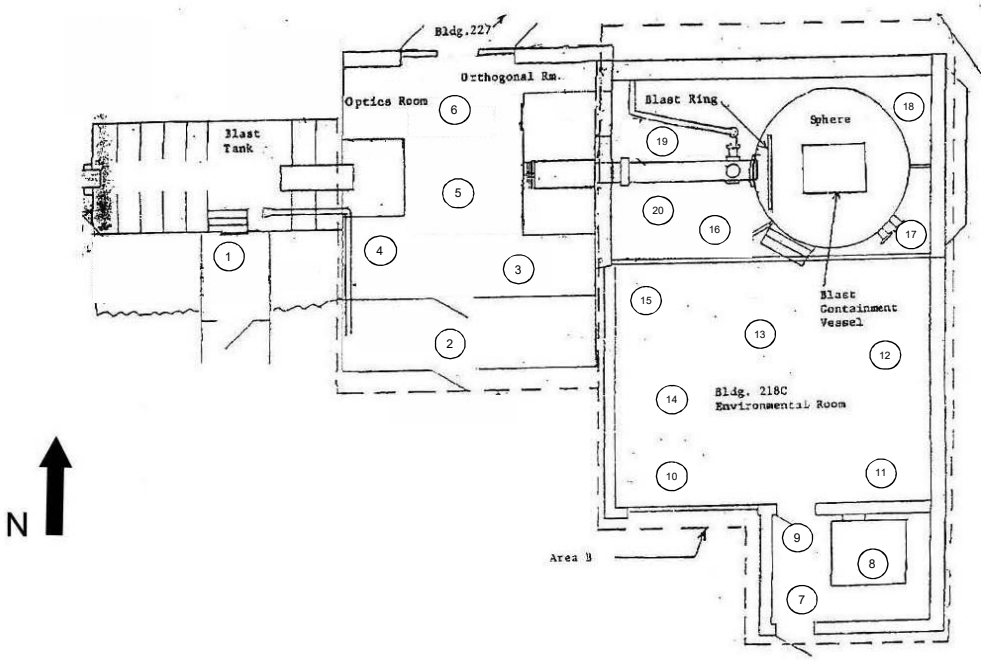
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/13/2018	TIME: 13:45	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A							
LOCATION:	NRL Chesapeake Bldg. 218	2929	146780	6/17/2018	α 71.0%	α 17.8%	α 25.3	α 1.1
					βγ 53.0%	βγ 19.9%	βγ 119.5	βγ 193.7
SURVEYOR:	Adolfo Matus Jr.							
DATE: 4/13/2018	TIME: 14:00 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: N/A Minutes						

Swipe Survey of Floor Areas



Comments:

Weekly Routine Survey

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus Jr.

LOCATION: NRL Chesapeake Bldg. 218

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1						4.5	32.7	See Map For Smear Location
2						-1.1	52.8	See Map For Smear Location
3						4.5	-2.5	See Map For Smear Location
4						4.5	32.7	See Map For Smear Location
5						10.1	7.5	See Map For Smear Location
6						4.5	27.7	See Map For Smear Location
7						10.1	2.5	See Map For Smear Location
8						-1.1	32.7	See Map For Smear Location
9						-1.1	57.9	See Map For Smear Location
10						4.5	67.9	See Map For Smear Location
11						10.1	42.8	See Map For Smear Location
12						4.5	-17.6	See Map For Smear Location
13						-1.1	2.5	See Map For Smear Location
14						-1.1	22.6	See Map For Smear Location
15						4.5	12.6	See Map For Smear Location
16						10.1	7.5	See Map For Smear Location
17						-1.1	-7.5	See Map For Smear Location
18						-1.1	-17.6	See Map For Smear Location
19						4.5	32.7	See Map For Smear Location
20						4.5	62.9	See Map For Smear Location
4D						4.5	27.7	Duplicate Swipe
15D						4.5	7.5	Duplicate Swipe
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/13/2018

Time: 14:00

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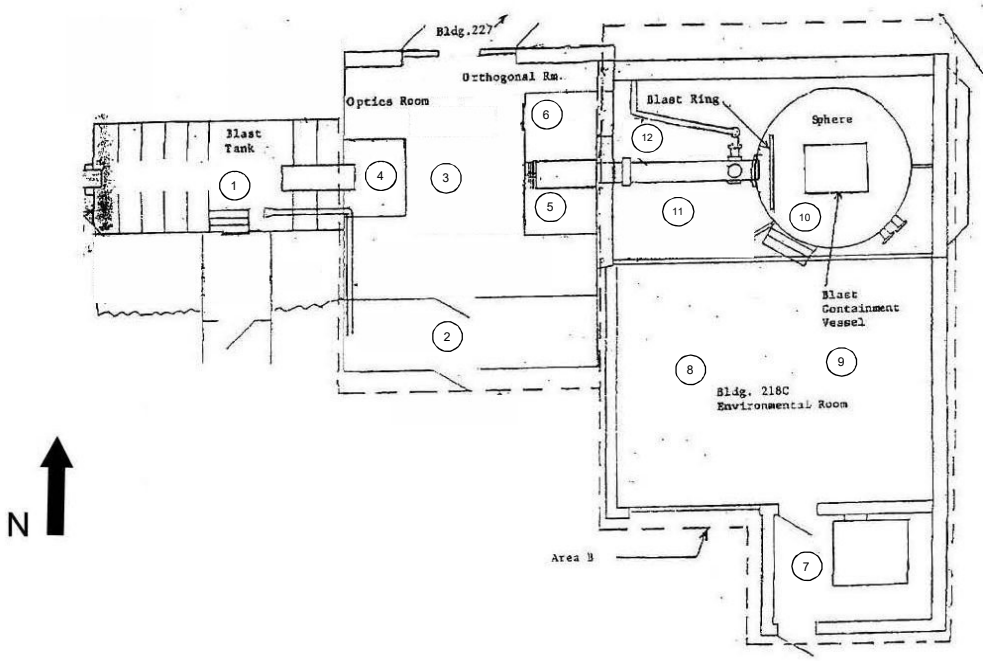
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/20/2018	TIME: 08:40	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A							
LOCATION:	NRL Chesapeake Bldg. 218	2929	146780	6/17/2018	α 71.0%	α 17.8%	α 25.3	α 1.1
					βγ 53.0%	βγ 19.9%	βγ 119.5	βγ 193.7
SURVEYOR:	Adolfo Matus Jr.							
DATE: 4/20/2018	TIME: 09:02 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: N/A Minutes						

Swipe Survey of Floor Areas



Comments:

Weekly Routine Survey

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Adolfo Matus Jr.

LOCATION: NRL Chesapeake Bldg. 218

Location	Exposure Rate (μR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1						4.5	22.6	See Map For Smear Location
2						-1.1	27.7	See Map For Smear Location
3						4.5	2.5	See Map For Smear Location
4						-1.1	32.7	See Map For Smear Location
5						-1.1	62.9	See Map For Smear Location
6						4.5	47.8	See Map For Smear Location
7						4.5	22.6	See Map For Smear Location
8						-1.1	27.7	See Map For Smear Location
9						-1.1	17.6	See Map For Smear Location
10						4.5	2.5	See Map For Smear Location
11						4.5	-42.8	See Map For Smear Location
12						4.5	-2.5	See Map For Smear Location
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/20/2018

Time: 9:02

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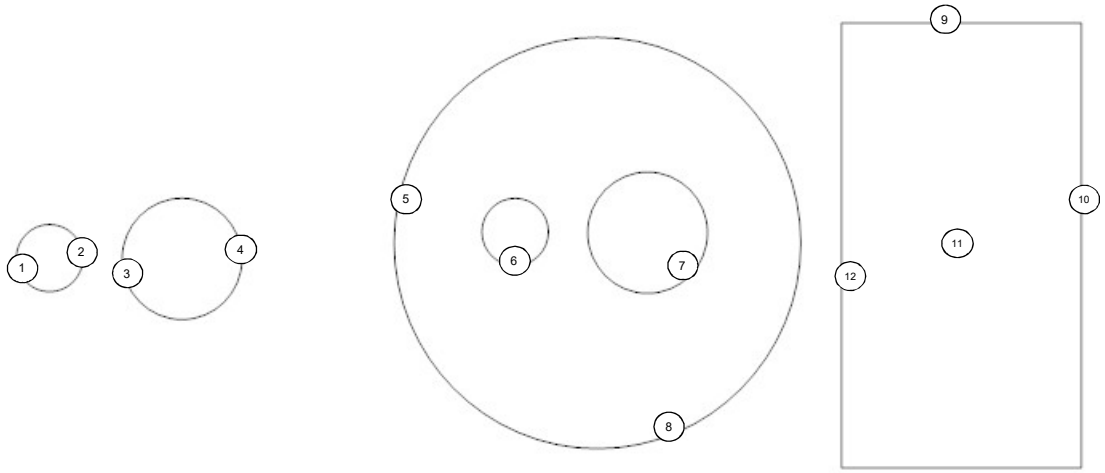
RADIATION/CONTAMINATION SURVEY FORM

DATE: 4/26/2018	TIME: 10:43	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
SURVEY NUMBER:	N/A	2360	184949	3/6/2019	α 42.3%	α 10.6%	α 62.4	α 7.6
		43-93	268605		βγ 26.8%	βγ 10.1%	βγ 497.4	βγ 1353.2
LOCATION:	NRL Chesapeake Bldg. 218	2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
					βγ 53.0%	βγ 19.9%	βγ 119.5	βγ 193.7
SURVEYOR:	Richard Thatcher							
DATE: 4/26/2018	TIME: 11:13 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 1 Minutes						

Survey of Roof Vents



Comments:

Survey Of Roof Vents

Routine (Daily / Weekly / Monthly) [ ] **Non-routine** [X]

(#) denotes swipe location and fixed α/β readings
# denotes G/A radiation readings
/ # denotes contact / 1 meter radiation readings.
* denotes highest radiation reading on contact
LAW denotes large area masslinn wipe
Δ denotes static location.
+ Unless Otherwise Noted
All readings in mr/hr unless otherwise noted
K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Richard Thatcher

LOCATION: NRL Chesapeake Bldg. 218

Location	Exposure Rate (μR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				1.9	69.7	5.0	-12.6	See Map for Smear Location
2				11.3	10.0	5.0	2.5	See Map for Smear Location
3				1.9	-19.9	5.0	12.6	See Map for Smear Location
4				11.3	69.7	-1.2	27.7	See Map for Smear Location
5				20.8	29.9	-1.2	17.6	See Map for Smear Location
6				1.9	19.9	5.0	7.5	See Map for Smear Location
7				11.3	129.4	5.0	-12.6	See Map for Smear Location
8				20.8	149.3	-1.2	-22.6	See Map for Smear Location
9				607.1	2298.5	11.1	-2.5	See Map for Smear Location
10				1.9	99.5	-1.2	-12.6	See Map for Smear Location
11				11.3	29.9	-1.2	2.5	See Map for Smear Location
12				-7.6	129.4	5.0	12.6	See Map for Smear Location
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
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N/A								
N/A								

Reviewer Daniel Spicuzza	Date: 4/26/2018 Time: 11:13	

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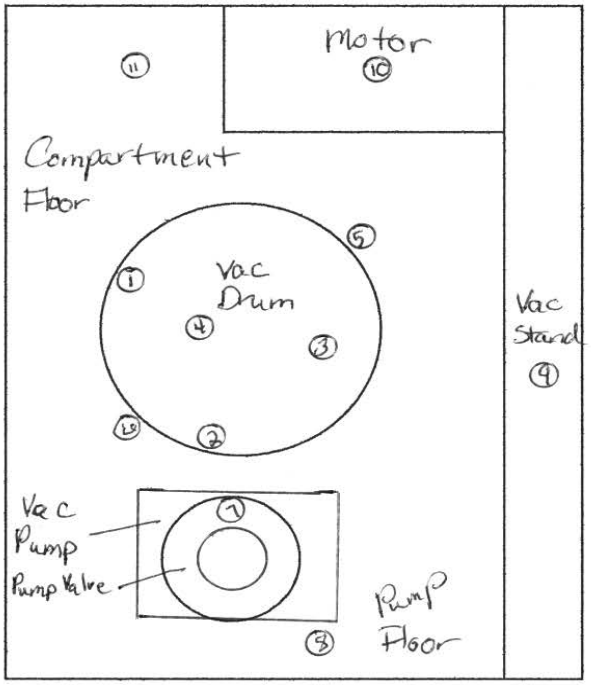
RADIATION/CONTAMINATION SURVEY FORM

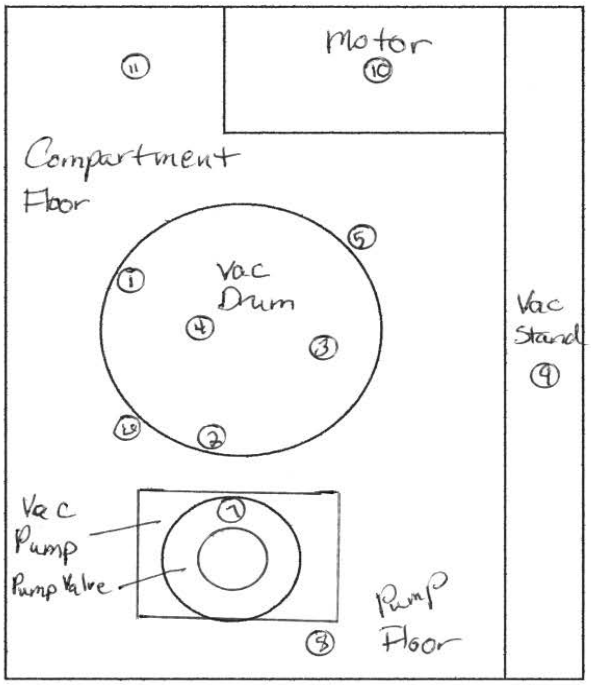
DATE: 4/23/2018	TIME: 12:05	INSTRUMENTATION USED						
		Model Inst/Det.	Serial Number	Calibration Due Date	Instrument % Efficiency	Total % Efficiency	MDC/MDA + (dpm/100cm^2)	Background + (dpm/100cm^2)
		2360	184949	3/6/2019	α 42.3%	α 10.6%	α 42.0	α 7.6
SURVEY NUMBER:	N/A	43-93	268605		βγ 26.8%	βγ 10.1%	βγ 396.7	βγ 1353.2
		2929	146780	6/17/2018	α 64.6%	α 16.2%	α 27.8	α 1.2
LOCATION:	NRL Chesapeake Bldg. 218				βγ 53.0%	βγ 19.9%	βγ 119.5	βγ 193.7
SURVEYOR:	Joan Cosgrove							
DATE: 4/23/2018	TIME: 12:42 / Reviewed by: Daniel Spicuzza							
Isotopes of Concern: DU		Static Count Time: 2 Minutes						

Survey of Vacuum Pumps in Room 105

North Pump



South Pump



Comments:

Survey of Vacuum Pumps

Routine (Daily / Weekly / Monthly) ☐ **Non-routine** X

(#) denotes swipe location and fixed α/β readings

# denotes G/A radiation readings

/ # denotes contact / 1 meter radiation readings.

* denotes highest radiation reading on contact

LAW denotes large area masslinn wipe

Δ denotes static location.

\+ Unless Otherwise Noted

All readings in mr/hr unless otherwise noted

K = 1000

RADIATION/CONTAMINATION SURVEY SUPPLEMENT

SURVEY NUMBER: N/A

SURVEYOR: Joan Cosgrove

LOCATION: NRL Chesapeake Bldg. 218

Location	Exposure Rate (µR/hr)		Fixed + Removable (NET)			Removable (NET)		Comments
	Contact	1 Meter	Gamma (cpm)	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	Alpha dpm/100cm^2	Beta/Gamma dpm/100cm^2	
1				1.9	-54.7	5.0	7.5	North Pump See Map for Smear Location
2				1.9	-59.7	-1.2	2.5	North Pump See Map for Smear Location
3				1.9	14.9	5.0	12.6	North Pump See Map for Smear Location
4				-7.6	34.8	5.0	7.5	North Pump See Map for Smear Location
5				-2.8	-139.3	11.1	2.5	North Pump See Map for Smear Location
6				6.6	-69.7	-1.2	-2.5	North Pump See Map for Smear Location
7				6.6	-44.8	5.0	-7.5	North Pump See Map for Smear Location
8				1.9	-89.6	5.0	7.5	North Pump See Map for Smear Location
9				-7.6	-44.8	11.1	2.5	North Pump See Map for Smear Location
10				-2.8	24.9	5.0	-2.5	North Pump See Map for Smear Location
11				1.9	-79.6	5.0	-7.5	North Pump See Map for Smear Location
12				-7.6	-104.5	5.0	-12.6	North Pump See Map for Smear Location
1				-7.6	-79.6	5.0	22.6	South Pump See Map for Smear Location
2				6.6	79.6	5.0	2.5	South Pump See Map for Smear Location
3				6.6	124.4	-1.2	-7.5	South Pump See Map for Smear Location
4				1.9	49.8	-1.2	-2.5	South Pump See Map for Smear Location
5				16.1	-19.9	5.0	17.6	South Pump See Map for Smear Location
6				1.9	44.8	-1.2	12.6	South Pump See Map for Smear Location
7				11.3	149.3	-1.2	-7.5	South Pump See Map for Smear Location
8				-2.8	94.5	-1.2	7.5	South Pump See Map for Smear Location
9				-7.6	-54.7	-1.2	2.5	South Pump See Map for Smear Location
10				20.8	29.9	5.0	-7.5	South Pump See Map for Smear Location
11				11.3	34.8	-1.2	-2.5	South Pump See Map for Smear Location
12				-2.8	-109.5	5.0	7.5	South Pump See Map for Smear Location
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								
N/A								

Reviewer
Daniel Spicuzza

Date: 4/23/2018

Time: 12:42

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